

SAFETY & TECHNOLOGY ORGANIZER

AUGUST 2014

ENCLOSED

Safety Topic: *Carbon Dioxide Asphyxiation*

Please contact GAWDA's OSHA and EPA Consultant, Mike Dodd for more information.

Traffic Bulletin: *Auditing Your Hydrotest Vendor*

Please contact GAWDA's DOT and Security Consultant, Mike Dodd for more information.

Medical Gas Bulletin: *FAQ, Medical Gas Roundtable and Micro-audit*

Please contact GAWDA Medical Gas Consultant, Tom Badstubner for more information.

GAWDA is pleased to distribute this information to: Distributor and Supplier Key Contacts and all Compliance Manual Owners. Please carefully review this mailing and be sure the information is passed to the appropriate person within your organization. Timely Safety data is a benefit of Membership in GAWDA



Carbon Dioxide Asphyxiation

You can suffer an accidental death by asphyxiation from carbon dioxide (CO₂). Customer employees, supplier employees, and drivers that work in or around CO₂ need to know and understand its properties and recognize potential asphyxiation situations. In addition to the facts presented here, you should also review the content of your CO₂ Material Safety Data Sheet (MSDS) with your employees.

CO₂ Need to Know Facts

- It is a colorless, odorless gas and about 1.5 times as heavy as air. Since it is denser than air, high concentrations can occur in open pits and other areas below grade.
- It is an asphyxiant and displaces oxygen, which can cause death. At concentrations of 10 percent and above, it can result in unconsciousness in 1 minute or less.
- It can cause asphyxiation when leaks or discharges occur in enclosed areas, poor or unventilated work areas, or below grade locations that are not confined spaces.
- It can result in impairment in performance during prolonged exposure of 3 percent.
- It can increase the heart rate and blood pressure and can cause headaches, dizziness, sweating, rapid breathing, shortness of breath, dizziness, mental depression, visual disturbance, or shaking depending on the length of exposure and the strength of the concentration.

Other Facts About CO₂

- It is relatively nonreactive and nontoxic.
- It will not burn or support combustion.
- It is normally present in the atmosphere at about 0.035 percent by volume.
- It can cause freeze burns or tissue damage upon contact with dry ice or compressed CO₂.

Driver delivery personnel must also be trained regarding the properties and hazards associated with CO₂. In addition, these are some of the situations that the supplier sales person, driver and customer should be looking for at the customer location.

- Basement container installations should be avoided if at all possible.
- Container installations that are in confined, low or restricted space should have appropriate warning signs and floor-mounted positive ventilation systems to prevent both asphyxiation and pressure buildup.
- If concentrations of CO₂ in the atmosphere are possible, a CO₂ detector with an alarm system should be in place.



- The outlet from the pressure relief device must be piped outdoors for indoors, restricted, confined or limited space installations.
- Any type of built in discharge should be piped outdoors.
- All fill connections should be piped so the connections are made outdoors.
- Suggested wording for warning sign is:

CAUTION
CARBON DIOXIDE GAS
Ventilate before entering
A high CO₂ gas concentration may occur
in this area and may cause asphyxiation.

Additional Information

OSHA issued an alert on the dangers of carbon dioxide deliveries in 1996. The subject of that alert still has merit today.

http://www.osha.gov/dts/hib/hib_data/hib19960605.html

If you ship and deliver carbon dioxide in tankers or micro bulk units, you should make sure you are following the requirements set out in the latest copies of the CGA pamphlets G-6, G-6.1, G-6.2, G-6.3, G-6.4, G-6.5 & G-6.6, which can be obtained at www.cganet.com. There is also a CGA Safety Bulletin SB-29, Injury and Loss Prevention Resulting from Carbon Dioxide Delivery to Small Customer Sites, which outlines the precautions when filling carbon dioxide containers indoors at customer sites. It is recommended you obtain a copy for review with your workforce.

As always, if there are questions or items that I can help you with, please don't hesitate to contact me.

Michael Dodd

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TRAFFIC BULLETIN

August 2014

Auditing Your Hydrotest Vendor

Do you know if the cylinders that you send out for requalification are being done properly and that the facility is in compliance?

Use the checklist on the following 3 pages as a guideline for auditing vendors.

Some additional questions to ask are:

- Are they using an oxygen compatible thread lubricant?
- Are they applying the “+” and the “five-pointed star” on the proper cylinders?
- Are they using a valving procedure that helps eliminate neck leaks?

A suggested valving procedure for ¾” NPT style valves to help eliminate leaks is as follows:

(Please note: Verify the cylinder really is empty immediately prior to removing any valve from a cylinder. This is done by injecting a hydrocarbon free compatible gas into the valve opening. If gas comes back out, it proves the valve is open and not plugged.)

- Ask yourself the question, “Did this valve come out of this cylinder?” If not, then you need to do what I call double valving.
- Wrap the end of the valve threads with 1 ½ turns of an oxygen compatible Teflon tape. Any more than that is wasting tape and possibly increasing your chances of a leak.
- Insert the valve into the cylinder until snug with a gloved hand. The valve must be in at least 4 turns and no more than 8 turns. This will leave 1 thread left showing. If you want 2 threads left, then limit the number by hand to 7 turns.
- Tighten the valve 3 more turns with a wrench or valving machine.
- If this is the first time this valve has been in this cylinder, then remove the valve and repeat these steps again.

The first valving mates the valve threads to the cylinder threads but it still has a good chance of being a leaker. The second valving takes a properly mated valve and installs it with a seal that will help eliminate most neck leaks. Try it; it works.

If there are any questions regarding this Bulletin, please contact:

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TRAFFIC BULLETIN

Facility Name: _____

Physical Address: _____

RIN: _____ Primary Contact: _____

Phone: _____ Fax: _____

Date of Review: _____ Reviewed By: _____

	Review Item	Satisfactory	Unsatisfactory	Conditional
1	Is the facility registered with the DOT? (You should see the DOT letter of approval posted near or next to the testing equipment. Check the date of the approval. It is valid for 5 years past the date of the approval.)			
2	Is the equipment, management, hydrotest operators, etc. the same as when the third party inspector performed their review? (You will find this information in the application letter. 107.805(g) Each holder of a current RIN shall report in writing any change in its name, address, ownership, testing equipment, or management or personnel performing any function under this section, to the Associate Administrator (DHM-32) within 20 days of the change. If any of the above has changed, did they send in the update letter?)			
3	Does the facility maintain current copies of 49 CFR that pertain to hydrotesting? (This will be the 49 CFR 100-185 and Part 180 is the section on requalification. The CFR should be within 2 years.)			
4	Does the facility maintain the current copies of the CGA Pamphlets? (They should have C-1, C-5, and then based the type of cylinder then might require the following pamphlets: C-6 for steel, C-6.1 for high pressure aluminum, C-6.2 for fiber reinforced cylinders, and C-8 for 3HT cylinders. Check the CGA website for the current versions available. There may be other pamphlets as needed.)			
5	Does the operator understand how to handle cylinders marked with DOT exemption numbers E 6498, E 7042, E 8107, E 8364, and E8422? (Must be stamped 3AL above the E XXXX number.)			
6	Are the markings stamped on the cylinders legible?			
7	Are cylinders hydrotested to the required test pressure? (Check the cylinder specification stamped on the cylinder and then look at the table found in 180.209 or on the DOT exemption.)(Special permit cylinders will have the test pressure specified in the actual special permit.)			
8	Is the test pressure maintained for at least 30 seconds or longer if the cylinder is still expanding? Some special permits require 60 seconds. (The 30 second hold time starts after the pressure and expansion have stopped.)			
9	Does the facility have a clock, timer, etc. that is used to measure the test holding time? (There must be something for the operator to check to make sure the 30 or 60 seconds have passed.)			
10	Does the facility have the proper equipment to perform a visual inspection? Such as high intensity light, mirrors for aluminum and composite cylinders, etc.?			





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	Review Item	Satisfactory	Unsatisfactory	Conditional
11	Does the facility have the ability to shot blast cylinders?			
12	Are bands/footrings loosened or removed prior to testing?			
13	Is the pressure-indicating device able to read within 1% accuracy?			
14	Is the equipment capable of proving 1% accuracy?			
15	Is their system calibrated daily before testing?			
16	Do they demonstrate calibration within 500 psi. for all test pressures?			
17	Can they demonstrate calibration during the review within the required 1% tolerance? (You should have the operator calibrate the equipment for you.)			
18	Is the equipment capable of reaching the necessary test pressures? Example, if the equipment is only rated at 6,000 psi. do their records document cylinders with a higher test pressure being tested.			
19	Does the facility have the current certificate for the calibrated cylinder? (There should be a letter showing the test pressures and corresponding expansions. The calibrated cylinder is good so long as there is no permanent expansion and the cylinder hits the expansion numbers shown on the letter.)			
20	Does their calibrated cylinder show permanent expansion?			
21	Are their gauges calibrated per the requirements? (CGA C-1, Appendix E, requires every 6 months for the working pressure gauge and every 12 months for a master gauge.)			
22	If they have to repeat a test because of equipment failure, are all successful and unsuccessful tests recorded?			
23	If they have to repeat a test because of equipment failure, is the test repeated at an increase of 100 psi or 10% whichever is less? (The cylinder test can be repeated once, but there is a limit of 10% over the required test pressure. If you exceed this limit, the cylinder must be failed.)			
24	Once a cylinder serial number is entered on the hydrotest report, is the cylinder either passed or failed?			
25	If a cylinder is condemned, do they stamp XXXX's over the DOT specification number and service pressure or stamp it with the word "CONDEMNED"? (180.205 (i)(2) When a cylinder must be condemned, the requalifier must stamp a series of X's over the DOT specification number and the marked pressure or stamp "CONDEMNED" on the shoulder, top head, or neck using a steel stamp. Alternatively, at the direction of the owner, the requalifier may render the cylinder incapable of holding pressure.)			
26	Do they notify the cylinder owner in writing if they condemn their cylinder? (180.205 (i)(2) ... the requalifier must notify the cylinder owner, in writing, that the cylinder is condemned and may not be filled with hazardous material and offered for transportation in commerce where use of a specification packaging is required.)			





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	Review Item	Satisfactory	Unsatisfactory	Conditional
27	<p>Does their hydrotesting log record all the DOT required information? (180.215 (b)(2) <i>Pressure test and visual inspection records</i>. The date of requalification; serial number; DOT specification or exemption number; marked pressure; actual dimensions; manufacturer's name or symbol; owner's name or symbol, if present; result of visual inspection; actual test pressure; total, elastic and permanent expansions; percent permanent expansion; disposition, with reason for any repeated test, rejection or condemnation; and legible identification of test operator. For each cylinder marked with a "+", the test sheet must indicate the method by which any average or maximum wall stress was computed. Records must be kept for all completed, as well as unsuccessful tests. The entry for a second test after a failure to hold test pressure must indicate the date of the earlier test.</p> <p>(Make sure the actual cylinder dimensions are being written in and not a cylinder "code")</p>			
28	<p>Are 3HT cylinders stamped with low stress stamps, including a low stress RIN?</p>			
29	<p>Can the operators explain the "+" sign? Can they tell you where the criteria is found and the proper use of the "+" sign. (The rules can be found in 173.302a (b).)</p>			
30	<p>Can the operators explain the "star"? Can they tell you where the criteria are found and the proper use of the "star". (The rule can be found in 180.209 (b).)</p>			
31	<p>Can the facility produce current copies of DOT exemptions for any DOT E cylinders tested? (Check the exemption expiration date. The exemption being used must be current.)</p>			
32	<p>Can the facility produce training records in compliance with 49 CFR 172.704, including all DOT exemptions?</p> <p>(172.704 (d)(1) The training certification must show the following: The hazmat employee's name, the most recent training completion date of the hazmat employee's training, a description, copy, or the location of the training materials used to meet the requirements of this section, the name and address of the person providing the training; and certification that the hazmat employee has been trained and tested, as required by this subpart.)</p> <p>(The training record must be within the past 3 years.)</p>			
33	<p>Are foreign cylinders for export marked with a RIN? (The cylinders should be marked with only a month and year.)</p>			

Other notes:

If the cylinders are being internally cleaned, are they using an oxygen compatible cleaning agent?

Are the valves on aluminum cylinders being properly torqued according to the manufacturer?





MEDICAL GAS BULLETIN

Medical Gas Bulletin
08/01/2014

Frequently Asked Questions

Q – What procedures should I follow if a supplier initiates a recall?

A – This issue was discussed on the July 15, 2014 Medical Alert teleconference. The teleconference was recorded for future listening. We have developed sample recall procedures for GAWDA members you may adopt or revise to fit your local needs. These sample procedures include supplier-initiated and device instructions as well as an action plan to more easily document your compliance. The recording link or for the sample procedures are posted on the GAWDA website. Contact tom@asteriskllc.com for more information.

GAWDA Professional Compliance Seminar

Hold The Date (October 21 – 23, 2014)... GAWDA Professional Compliance Seminar at Weldcoa, Aurora, IL. This seminar focuses on certified DOT and FDA certified training. See this link for more details: <https://asteriskllc.box.com/s/m43zq8xqr2hc80z73iuh>

August Medical Gas Roundtable (08/29/2014) – CGMP – Practical validation for the cylinder plant

These GAWDA Medical Gas roundtables are excellent sources of CGMP training and the latest industry compliance news. In August we will be discussing practical validation techniques for cylinder fill operations:

- sample systems
- check valves
- fill processes
- portable fill manifolds
- analytical methods.

This seminar focuses on ways to save money while improving compliance.

For your information, we are also conducting the following webinars in August:

- **ISO 17025** - ISO 17025 – Establishing NIST Traceability for analytical measurements
- **Specialty Gas** - Fuel/Oxidizer Safe Practices

These and other webinars are available as a streaming recording at a time convenient to you. If you are unable to view the webinar live, just let us know and we will send you the link to the recording. If you would like to receive invitations to the training webinars, just send an email to juliet@asteriskllc.com.





MEDICAL GAS BULLETIN

Micro-audit

This section of the Medical Gas Bulletin lists small steps you can take each month to improve your medical gas management system. These steps are not designed to be a full audit, but rather small steps to sample your compliance.

For this month, simply do these items:

1. **Portable Oxygen Manifolds** – If you are using a portable oxygen manifold, be sure you have validated and documented the manifold.
2. **Automatic, mechanical or electronic equipment** – Be sure all major equipment used to produce your medical gases are covered in a maintenance program. The equipment that needs calibration should be within the calibration date (gauges, thermometers, etc.).

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