



# SAFETY BULLETIN 16/19

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## RECEIVING CYLINDERS AFTER NATURAL DISASTER EXPOSURE

This safety bulletin is issued to provide recommended practices for gas suppliers receiving cylinders that have been exposed to a natural disaster event such as flooding, hurricane, tornado, fire, earthquake, etc. The devastation caused by these events can result in damaged gas cylinders and related equipment, which can affect their integrity and safe operation.

Natural disasters can result in exposing a cylinder to a variety of hazardous conditions including fresh and salt water submersion; impact from debris; exposure to foreign contaminants such as mud, sewage, and oil or grease; damage from falling, etc. Cylinders exposed to adverse conditions require extra attention in the receipt, inspection, cleaning, and repair processes prior to reuse.

When handling cylinders from disaster areas, you should wear personal protective equipment (PPE) such as safety glasses, leather protective gloves, and safety shoes with metatarsal and toe protection. Additional PPE such as chemical-resistant gloves worn under leather gloves and contaminant-resistant clothing may also be required. Due to the potential for biological and other contaminants, contaminated PPE or clothing should be removed and cleaned or discarded. Frequent hand washing is encouraged.

It is important to remember that some cylinder contents can be dangerous if not properly handled and decontaminated. Cylinders could be contaminated but have no visible signs of contamination. Cylinders that have been submerged should be initially treated as contaminated.

Cylinders containing oxidizers with signs of grease, oil, or other hydrocarbon contamination should be treated with extreme caution. Clean these cylinders if possible before handling. Ensure that your gloves are not contaminated with oil, grease, fuel, or other hydrocarbons. Do not allow these cylinders to impact the ground, truck, or any hard surfaces as a sudden impact could cause a flash or cylinder failure.

If you are unsure of the cylinder's condition or the cylinder is determined to be unsafe to move, you should not move the cylinder. You should contact your company for further instruction and alert others not to touch the cylinder until additional help arrives.

You should document the location where the cylinder was picked up.

As cylinders are received at the supplier facility from disaster areas:

- Visually inspect the cylinders and valves for contamination and damage, including:
  - residues of foreign material on the cylinders, caps, and valves
  - mud, grass, or debris lodged in the caps or in or around the valve, valve outlet, and pressure relief device
  - water lines on the cylinders (see Figure 1)



- large dents or gouges on the cylinders; and
- Segregate cylinders that are damaged or contaminated from other cylinders.

Cylinders that appear to have been submerged, damaged, or contaminated should undergo an external visual inspection to determine whether they are fit for continued service. Cylinders that are suspected to have been submerged or have low or no pressure should also undergo an internal visual inspection.

**Figure 1—Example of cylinders with a water line**

For detailed information on inspection procedures, see the following CGA publications:

- CGA C-6, *Standard for Visual Inspection of Steel Compressed Gas Cylinders*;
- CGA C-6.1, *Standard for Visual Inspection of High Pressure Aluminum Alloy Compressed Gas Cylinders*;
- CGA C-6.2, *Standard for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders*;
- CGA C-6.3, *Standard for Visual Inspection of Low Pressure Aluminum Alloy Compressed Gas Cylinders*;
- CGA C-6.4, *Methods for External Visual Inspection of Natural Gas Vehicle (NGV) and Hydrogen Gas Vehicle (HGV) Fuel Containers and their Installations*;
- CGA C-13, *Guidelines for Periodic Visual Inspection and Requalification of Acetylene Cylinders*; and
- CGA C-17, *Methods to Avoid and Detect Internal Gas Cylinder Corrosion* [1-7].

For related information on safe handling practices, see the following CGA publications:

- CGA P-1, *Standard for Safe Handling of Compressed Gases in Containers*;
- CGA P-38, *Guideline for Devolving Cylinders*;

- CGA P-63, *Disposal of Gases*; and
- CGA P-70, *Standard for the Safe Handling of Oxygen Cylinders in the Offshore Marine Industry* [8-11].

## References

Unless otherwise specified, the latest edition shall apply.

- [1] CGA C-6, *Standard for Visual Inspection of Steel Compressed Gas Cylinders*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)
- [2] CGA C-6.1, *Standard for Visual Inspection of High Pressure Aluminum Alloy Compressed Gas Cylinders*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)
- [3] CGA C-6.2, *Standard for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)
- [4] CGA C-6.3, *Standard for Visual Inspection of Low Pressure Aluminum Alloy Compressed Gas Cylinders*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)
- [5] CGA C-6.4, *Methods for External Visual Inspection of Natural Gas Vehicle (NGV) and Hydrogen Gas Vehicle (HGV) Fuel Containers and their Installations*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)
- [6] CGA C-13, *Guidelines for Periodic Visual Inspection and Requalification of Acetylene Cylinders*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)
- [7] AIGA 062/09, *Methods to Avoid and Detect Internal Gas Cylinder Corrosion*, Asia Industrial Gases Association, [www.asiaiga.com](http://www.asiaiga.com)
- [8] CGA P-1, *Standard for Safe Handling of Compressed Gases in Containers*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)
- [9] CGA P-38, *Guideline for Devolving Cylinders*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)
- [10] AIGA 083, *Disposal of Gases*, Asia Industrial Gases Association, [www.asiaiga.com](http://www.asiaiga.com)
- [11] CGA P-70, *Standard for the Safe Handling of Oxygen Cylinders in the Offshore Marine Industry*, Compressed Gas Association, Inc. [www.cganet.com](http://www.cganet.com)

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