



# **Carbon Dioxide (CO<sub>2</sub>) Systems Used in Beverage Dispensing**

Public Information  
Handout F-64

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The use of Carbon Dioxide (CO<sub>2</sub>) as an additive in beverages dates back to 1767. In many drinking and dining establishments, Carbon Dioxide has been added to flavored water on site, delivered from pressurized containers.

For high-volume establishments, this has meant the carbon dioxide containers must be replaced frequently.

In response, industry has been providing containers of liquid Carbon Dioxide that provide significantly more (CO<sub>2</sub>) in essentially the same size or smaller container. Instead of changing the containers daily, they can be changed out weekly or even at longer frequencies.

On May 31, 2011, the Phoenix Fire Department had a “near miss” that was a result of a leaky Carbon Dioxide (CO<sub>2</sub>) dispensing system in a fast food restaurant. The leaking Carbon Dioxide displaced oxygen in the basement of the restaurant creating an oxygen deficient atmosphere that was nearly lethal to restaurant employees and responding firefighters ([re-enactment video](#)).

The 2015 International Fire Code contains new requirements when carbon dioxide systems, using more than 100 lbs of carbon dioxide, are used in beverage dispensing. The following apply to both new and existing systems:

1. An [Operational Permit](#) is required
2. Pressure relief valves are required on insulated liquid CO<sub>2</sub> systems
3. Storage tanks, cylinders, piping and fittings must be protected from damage by occupants or equipment
4. When systems (tanks, cylinders, piping and/or equipment) are located indoors, either:

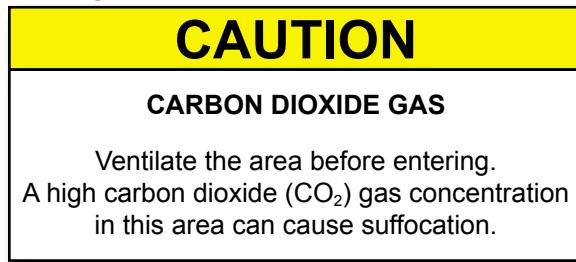


- A. Mechanical Ventilation not less than 1 cfm/sf
  - Exhaust taken from a point within 12" of the floor
  - Ventilation designed to operate at a negative pressure in relation to the surrounding area

Or

- B. Emergency Alarm System
  - Continuous gas detection to monitor areas where carbon dioxide can accumulate
  - Threshold for alarm activation not to exceed 5,000 parts per million
  - Activation of the alarm shall initiate a local alarm within the room or area where the system is installed
- 5. A warning sign shall be posted at the entrance to the building, room, enclosure, or confined area where the container is located. The warning sign shall be at least 8 inches wide and 6 inches high and state the following:  
**CAUTION — CARBON DIOXIDE GAS.**  
*Ventilate the area before entering. A high carbon dioxide (CO<sub>2</sub>) gas concentration in this area can cause suffocation.*

## **Example:**



## **For additional information:**

- International Fire Code (2015) Section 5307
- National Fire Protection Association Standard 55, Chapter 13
- Phoenix Fire Department [Carbonated Beverage System](#) web page
- Compressed Gas Association Safety Alert [SA-22 2011](#)