



**BUILDING DEPARTMENT  
CITY OF ROCHESTER HILLS**



# NOTICE

## BEVERAGE DISPENSING SYSTEMS

**Beverage Dispensing Systems that utilize a Carbon Dioxide (CO<sub>2</sub>) System with more than 100 pounds of CO<sub>2</sub> shall meet the following requirements:**

- A Mechanical Permit Application, from a State Licensed Mechanical Contractor, with the information noted below shall be submitted for review and approval.
  - A report and drawings prepared, signed and sealed by a State Licensed Professional Engineer with a minimum two years experience in the evaluation and design of the methods of protection required for Hazardous Material Applications.
  - The report and drawings shall provide the information required by Section 414.1.3 of the Michigan Building Code (MBC) 2012 and the following additional information:
    - Provide information, drawings, and details to show that the storage, use, and handling of the CO<sub>2</sub> is in accordance to Chapter 53 of the International Fire Code (IFC) 2015 and NFPA 55, Chapter 13.
    - Indicate how the CO<sub>2</sub> system will be protected from damage.
    - Provide information, drawings, and details of the required protection, ventilation or emergency alarm system, in accordance with Section 5307.5 of the IFC 2015.

Please see the attached Safety Alert SA-22 – 2011 from the Compressed Gas Association, Inc. for the reason behind this requirement.

If you have any questions regarding the items noted above, please contact our Mechanical Inspector at 248-656-4615.

Thank you for your help in keeping our buildings safe in Rochester Hills!

Rochester Hills Building Department

# SAFETY ALERT

## POTENTIAL OF CARBONATED BEVERAGE SYSTEMS TO CREATE A LIFE-THREATENING ENVIRONMENT

Recently there have been several incidents involving improperly installed or poorly maintained carbonated beverage systems that have created hazardous concentrations of carbon dioxide (CO<sub>2</sub>) in enclosed areas causing restaurant patrons, employees, and first responders to get sick or die.

Carbon dioxide in the gaseous state is colorless and odorless and not easily detectable. Carbon dioxide can be deadly even when normal oxygen levels are present. Reaching hazardous levels of carbon dioxide can occur quickly and without warning and result in serious health effects or death.

Because gaseous carbon dioxide is 1.5 times heavier than air, leaking carbon dioxide can accumulate at floor level in improperly ventilated or unventilated rooms not necessarily limited to the container's location and in low areas, such as basements. Even small slow leaks can cause hazardous concentrations of carbon dioxide. Ventilation systems should exhaust from the lowest level and allow make-up air to enter at a higher point to maintain a safe environment.

Potential sources of hazardous concentrations of carbon dioxide, when carbon dioxide systems are indoors or in an enclosed outdoor area can include, but are not limited to:

- carbon dioxide storage containers that are not properly vented to a well-ventilated area outside of the building not just into walls or ceilings;
- leaking fittings, connections, piping/tubing/hoses, or storage container plumbing;
- leaking carbonators, syrup pumps, bag in box (BIB) racks (i.e., any equipment using carbon dioxide); and
- leaking beer keg connections and equipment.

Carbon dioxide detectors with alarm systems should be installed in appropriate areas to detect hazardous concentrations of carbon dioxide. Do not depend upon measuring the oxygen content of the air because carbon dioxide can be dangerous even with adequate oxygen for life support.

Carbon dioxide beverage systems, carbon dioxide detectors, and ventilation equipment need to be properly maintained and periodically inspected per the manufacturers' recommendations. Operators and users should be trained to understand the proper installation and operation of carbon dioxide systems and storage containers as well as the properties and hazards of carbon dioxide as provided in CGA G-6, *Carbon Dioxide* [1].

For more detailed information on the proper installation and maintenance of carbon dioxide supply systems, alarm systems, and carbon dioxide containers at customer sites, refer to the original equipment manufacturers' instructions and CGA G-6.5, *Standard for Small, Stationary, Insulated Carbon Dioxide Supply Systems*, and CGA SB-29, *Prevention of Injury and Loss from Carbon Dioxide Delivery to Small Customer Sites* [2, 3].

### References

Unless otherwise specified, the latest edition shall apply.

[1] CGA G-6, *Carbon Dioxide*, Compressed Gas Association, Inc., 14501 George Carter Way, Suite 103, Chantilly VA 20151. [www.cganet.com](http://www.cganet.com)

[2] CGA G-6.5, *Standard for Small, Stationary, Insulated Carbon Dioxide Supply Systems*, Compressed Gas Association, Inc., 14501 George Carter Way, Suite 103, Chantilly VA 20151. [www.cganet.com](http://www.cganet.com)

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[3] CGA SB-29, *Prevention of Injury and Loss from Carbon Dioxide Delivery to Small Customer Sites*, Compressed Gas Association, Inc., 14501 George Carter Way, Suite 103, Chantilly VA 20151. [www.cganet.com](http://www.cganet.com)

#### **Additional References**

EIGA Info 24/11, *Carbon Dioxide Physiological Hazards "Not just an asphyxiant!"*, European Industrial Gases Association, Avenue des Arts 3-5 Brussels, Belgium, B-1210. [www.eiga.eu](http://www.eiga.eu)

NFPA 55, *Compressed Gases and Cryogenic Fluids Code*, National Fire Protection Association, 1 Batterymarch Park, Quincy MA 02169-7471. [www.nfpa.org](http://www.nfpa.org)

*Fountain Carbon Dioxide Quality Guideline*, International Society of Beverage Technologists, 14070 Proton Road, Suite 100, LB 9, Dallas TX 75244-3601. [www.bevtech.org](http://www.bevtech.org)

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#### **PLEASE NOTE:**

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This document is subject to periodic review, and users are cautioned to obtain the latest edition. The Association invites comments and suggestions for consideration. In connection with such review, any such comments or suggestions will be fully reviewed by the Association after giving the party, upon request, a reasonable opportunity to be heard. Proposed changes may be submitted via the Internet at our website, [www.cganet.com](http://www.cganet.com).

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Work Item 11-119  
Carbon Dioxide Committee

FIRST EDITION: 2011

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