

SAFETY ALERT

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

There have been several incidents involving improperly installed or poorly maintained carbonated beverage systems that have created hazardous concentrations of carbon dioxide (CO₂) 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 concentrations are present. Reaching hazardous concentrations of carbon dioxide can occur quickly and without warning and result in serious health effects or death.

Leaking carbon dioxide, regardless of amount, can accumulate to hazardous concentrations in low areas and basements as well as improperly ventilated or unventilated areas and is not necessarily limited to the storage container's location. Gaseous carbon dioxide is 1.5 times heavier than air, therefore the 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 shall be installed and operational 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]. Consult state, local, and/or provincial fire and mechanical codes for additional information on installation safety and requirements.

References

Unless otherwise specified, the latest edition shall apply.

[1] CGA G-6, *Carbon Dioxide*, Compressed Gas Association, Inc. www.cganet.com

[2] CGA G-6.5, *Standard for Small Stationary Insulated Carbon Dioxide Supply Systems*, Compressed Gas Association, Inc. www.cganet.com

[3] CGA SB-29, *Prevention of Injury and Loss from Carbon Dioxide Delivery to Small Customer Sites*, Compressed Gas Association, Inc. www.cganet.com

Additional References

EIGA Info 24/11, *Carbon Dioxide Physiological Hazards "Not just an asphyxiant!"*, European Industrial Gases Association. www.eiga.eu

NFPA 55, *Compressed Gases and Cryogenic Fluids Code*, National Fire Protection Association. www.nfpa.org

Fountain Carbon Dioxide Quality Guideline, International Society of Beverage Technologists. www.bevtech.org

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