



COLORADO SPRINGS FIRE DEPARTMENT
Division of the Fire Marshal
Administrative Ruling/Interpretation

Number:	2011-1		
Subject:	Requirements for Small Insulated Carbon Dioxide Systems used in Beverage Dispensing		
Reference:	2009 International Fire Code (IFC) Chapter 30, Section 3007 Compressed Gases Not Otherwise Regulated and Chapter 1, Section 104 General Authority and Responsibilities		
Effective Date:	May 1, 2011	Issued By:	Kay Yeager, Hazardous Materials Program Coordinator
Revision Date:	January 1, 2012	Revised By:	Kay Yeager
Approval Date:	May 1, 2011	Approved By:	Brett T. Lacey, Fire Marshal

PURPOSE:

To provide a definition of Small Insulated Carbon Dioxide Systems used in beverage dispensing; to define the system and quantity which shall initiate the ventilation requirements for new construction projects; to name the review authorities; and to describe alternative design modifications.

Section 3007 of the IFC addresses compressed gases posing material hazards not otherwise regulated by the IFC. As such, the provisions of this section require ventilation when stored or used indoors. Gaseous Carbon Dioxide is an asphyxiant gas and exposure to high concentrations may cause toxic effects including asphyxiation. To provide for the safety of building occupants and emergency personnel, ventilation in accordance with the IFC Sections 3007.2, 2704.3 or 2705.1.9 is required where concentrations of this gas are stored or present.

SCOPE:

The following definition shall be used for Small Insulated Carbon Dioxide Systems used in beverage dispensing or other similar applications: "An assembly of equipment consisting of one or more insulated carbon dioxide containers, interconnecting piping, pressure regulators, and pressure relief devices. The capacity of individual container(s) is 100 pounds (874 standard cubic feet [scf]) to 1,000 pounds (8,741 scf) of carbon dioxide."

When a carbon dioxide system(s) is declared and meets the definition, then the Pikes Peak Regional Building Department-Mechanical Division shall review ventilation requirements according to 2009, IMC, Chapter 5, Sections 502.8.1, 502.8.1.1 (corresponding 2009, IFC, Section 2704.3). New construction, change of occupancy or remodel projects that declare carbon dioxide systems shall submit a ventilation system design for review and release for permit to the Pikes Peak Regional Building Department, Mechanical Division.

DESCRIPTION OF ISSUE:

Due to increases of storage and use of carbon dioxide in *existing* locations where fountain soft drinks are sold, the new addition and retrofit of ventilation can be difficult. An existing location is one that has a system which meets the definition listed above and installed prior to the effective date of this Administrative Ruling, May 1, 2011.

Therefore, the following policy revisions have been established for the purpose of regulating the above:

DECISION:

In all cases, the preferred solution to this situation is compliance with the fire code through mechanical exhaust ventilation or natural ventilation in accordance with 2704.3 or 2705.1.9. Compliance may be demonstrated by one of the following methods:

- 1) To demonstrate that the building's existing ventilation system meets the requirements of Section 2704.3 or 2705.1.9, the facility shall submit to the fire official construction plan data and/or a technical report by a qualified design professional that the existing ventilation system complies with said requirements.
- 2) When installation of ventilation requirements may cause difficulty, a gas detection and alarm system may be considered as an appropriate modification as allowed under IFC section 104.8. This modification, if approved, allows detection and notification of a hazardous condition which can be mitigated or referred to emergency response forces. Proposals for consideration to modify the core fire code requirement shall include a minimum of the following:
 - a) A Listed (by an approved testing laboratory or organization) gas detection and alarm system that is capable of detecting and notifying the building occupants of a gas release that creates carbon dioxide vapors in excess of its Permissible Exposure Level (PEL) at 5,000 parts per million.
 - b) The gas detection and alarm system shall initiate an audible alarm within the room or area in which the system is installed. Activation shall sound a local alarm to notify persons responsible for system operation of a hazardous condition in the area where installed.
 - c) The automatic gas detection and alarm system shall be installed in accordance with the manufacturer's requirements and recommendations. Documentation shall be provided at the time of inspection.

Note: Carbon dioxide is 1.5 times heavier than air. Vapors accumulate in low elevations, and in non-ventilated rooms not necessarily limited to the location of the container. The detector(s) should be located in areas where carbon dioxide from a leak will concentrate. Most manufacturers' gas detection sensors are recommended to be installed 12 inches to 24 inches above floor level.

Carbon dioxide systems as defined in this policy shall comply with these provisions whether used in beverage dispensing or other applications. Carbon Dioxide suppression systems are excluded from the provisions of this policy and are regulated by the IFC and other applicable codes, regulations, standards and ordinances. The Division of the Fire Marshal reserves the right to modify or delete any portion of this policy as necessary for the safe design and installation of Carbon Dioxide systems.

All mandated changes will be provided in writing so as to inform all affected parties and individuals.

Approved by:

A handwritten signature in black ink, appearing to read 'Brett T. Lacey', written over the printed name. The signature is stylized with a large loop at the end.

Brett T. Lacey, Fire Marshal