



FIRE DEPARTMENT

City of REDLANDS

Incorporated 1888
City of Redlands
35 Cajon Street, Suite 12, Redlands, CA 92373
909-798-7601

www.cityofredlands.org/fire-department



COMMUNITY RISE
REDUCTION

CARBON DIOXIDE DETECTION SYSTEMS FOR BEVERAGE DISPENSING

PURPOSE

Carbon dioxide (CO₂) detection in beverage dispensing is crucial for the safety of the public and first responders. CO₂ leaks from pressurized gas systems used in beverage dispensers can lead to oxygen depletion and asphyxiation risks. Early detection ensures prompt evacuation and intervention, safeguarding public spaces. This proactive approach minimizes the risk of respiratory distress or other health issues, enhancing both public safety and the safety of those who respond to emergencies in environments with CO₂ beverage dispensing systems.

SCOPE

Per section 5307.3 of the 2022 California Fire Code, adequate ventilation and gas detection are required components of CO₂ systems with more than 100 pounds used in beverage dispensing systems. The following information outlines the required steps to process CO₂ system design and plan review.

SUBMITAL REQUIREMENTS

1. **General Requirements** – Submit scaled plans electronically. These plans shall contain the following information and items:
 - a. **Project Information:** Provide the Project Name and address, Contractor/Owner contact information and Scope of work (CBC 107.2.1)
 - b. **Plans:** Provide a scaled plan of the building indicating where the installation will occur. (CBC 107.2.6)
 - c. **Tank(s):** Include make and model of tank(s) including quantity of CO₂ in pounds. Show tank location(s) on floor plan including tank's method(s) of restraint. (CFC 5003.2.8)
 - d. **Signage:** An NFPA 704 placard/hazard identification sign is required on the exterior door(s). Please see exhibit "A" for details. 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 in. wide and 6 in. high and state the following: "CAUTION - Carbon Dioxide Gas. A high carbon dioxide gas concentration in the area can cause suffocation." Please see exhibit "B" for details. (CFC 916.9, NFPA 704)
 - e. **Piping:** Indicate piping routing used for system to include CO₂ supply line(s) for bulk CO₂ tank to soft drink dispensing locations and remote fill connection in accordance with NFPA 55. Provide piping details of container venting, vent line size, and termination

location. The piping that is to be used shall be suitable for gaseous/liquid carbon dioxide service. (CFC 5003.2.2, NFPA 55:13.11.1)

- f. **Gas Detection System:** Indicate locations of proposed CO₂ gas detectors and system horn/strobe(s) on floor plan installed per manufacturer's specifications. CO₂ gas system detectors shall initiate an audio/visual supervisory alarm if the gas concentration exceeds one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system. Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle. Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions. (CFC 916.1)
2. **Data Specification Sheets** - Provide the following data specification sheets for review:
 - a. Piping and pipe restraints.
 - b. Tank and tank anchoring/restraints.
 - c. Gas detection system detectors and horn strobes.

NOTE: Any CO₂ tanks for beverage dispensing systems installed without a permit will be billed additional fees at time of permit application.

Figure 1: CO₂ NFPA 704 Sign



Figure 2 CO₂ Warning Sign

