

**Permit Requirements
Carbon Dioxide Enrichment Systems
To operate, alter or modify a Carbon Enrichment System**

Kern County Fire Department



Office of the Fire Marshal ~ Fire Prevention
2820 M St. ~ Bakersfield, CA 93301
Telephone (661) 391-3310 ~ Fax (661) 636-0466/67
Website: kerncountyfire.org
Email: fireprevention@kerncountyfire.org



**Please include completed Application for Permit (KCFD 200) with submittal
This is a use permit and shall be renewed annually. Permit fees and an application shall be
submitted annually.**

**Fee Amount: \$145.00
Fee Code: 2.14**

The intent of this document is to aid in the construction permitting process, including Change of Use/Occupancy, for Carbon Dioxide Enrichment Systems used within commercial buildings or tenant spaces, regarding what should be submitted for review to the Fire Marshal's Office. Because every building differs, the applicant **SHALL** be required follow **KCO 17.32.083 & CFC Chapter 39 & 53** for any construction under review. Other Fire Department operational permits may be required.

1. Permits for Carbon Dioxide Enrichment Systems shall be applied for at 2820 M St., Bakersfield, CA 93301.
2. Fee shall be submitted at time of application submittal. Make check payable to Kern County Fire Department. **Visa and MasterCard accepted.**
3. Provide three (3) copies of plans, include site plan, utilities and mechanical drawings only.
4. A Carbon Dioxide Enrichment System with more than 100 pounds of CO2 shall comply with the 2019 California Fire Code (**CFC**) **Section 5307.4**.
5. Fire sprinkler systems are required for all cannabis cultivation, manufacturing and plant extraction operations. A Building Code analysis shall be submitted with any construction permit or change of use/occupancy, which is typically conducted by a licensed Architect or Engineer. (**KCO 3905.1/CFC 903.3.1.1**)
6. The California Fire Code prohibits the use of extension cords or power strips as permanent wiring to equipment, lighting, fans, etc. The electrical loads and wiring for grow lighting, fans, etc. shall be reviewed and permitted for use. (**CFC 604.5, CBC, CEC**)
7. The type of proposed locking hardware on all exit doors shall be submitted for review. Please submit cut sheets from the manufacturer. (**KCO 3903.4/CFC 1010.1.10**)
8. **Equipment.** The storage, use, and handling of liquid carbon dioxide shall be in accordance with **CFC 5304.1 and the applicable requirements of NFPA 55**. Insulated liquid carbon dioxide systems shall have pressure relief devices vented in accordance with NFPA 55.
9. **Protection from damage.** Carbon dioxide systems shall be installed so the storage tanks, cylinders, piping and fittings are protected from damage by occupants or equipment during normal facility operations.

10. **Required protection.** Where carbon dioxide storage tanks, cylinders, piping and equipment are located indoors, or in rooms or areas containing carbon dioxide storage tanks, cylinders, piping, fittings or other areas where a leak of carbon dioxide can collect, they shall be provided with ventilation in accordance with **CFC Section 5307.4.4** and/or an emergency alarm system in accordance with **CFC Section 5307.4.3.1**.
11. **Gas Detection System.** A continuous gas detection system shall be provided in the room or indoor area in which the carbon dioxide system is located and in areas where the heavier-than-air gas can congregate, **CFC 5307.4.3/916**. If a fire alarm system is installed in the building, the gas detection system shall be integrated. Carbon Dioxide sensors shall be provided within 12 inches of the floor in the area where the gas is most likely to accumulate, or where leaks are most likely to occur. The system shall be designed to detect and notify at a low-level alarm initiation and high-level alarm initiation.
 - a. The threshold for activation of the low-level alarm shall not exceed a carbon dioxide concentration of 5000 ppm Time Weighted Average over 8 hours.
 - b. The threshold for activation of the high-level alarm shall not exceed a carbon dioxide concentration of 30,000 ppm. When carbon dioxide is detected at the high-level alarm, the system shall activate an audible and visible alarm in an approved location and set off a full fire alarm notification.
12. **Documentation.** The following information shall be provided with the application for permit:
 - a. Total aggregate of liquid CO₂ in pounds or cubic feet at normal temperature and pressure.
 - b. Location and total volume of the room where the carbon dioxide operation will be conducted. Identify whether the room is at grade or below grade.
 - c. Location of containers relative to equipment, building openings and means of egress.
 - d. Manufacturer's specifications and pressure rating, including cut sheets, of all tubing to be used.
 - e. A piping and instrumentation diagram that shows piping support and remote fill connections.
 - f. Details of container venting, including but not limited to vent line size, material and termination location.
 - g. Alarm and detection system equipment.
 - h. Seismic support for containers.
13. **Signage.** Hazard identification signs shall be posted at the entrance to the room and indoor areas where the carbon dioxide containers are located. The sign shall be a minimum 8 inches wide and 6 inches high and indicate **(CFC 5307.4.5)**:

CAUTION: CARBON DIOXIDE GAS
Ventilate the area before entering.
A high carbon dioxide gas concentration in this area can cause asphyxiation.
14. **Container refilling.** Carbon dioxide containers located indoors **SHALL** not be refilled unless filled from a remote connection located outdoors. **(CFC 5307.4.7)**

Additional Requirements: _____

Mailing Address:

Kern County Fire Department
 2820 M St.
 Bakersfield, CA 93301
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