CLARK COUNTY FIRE DEPARTMENT - FIRE PREVENTION BUREAU
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Permit Submittal Guideline

CARBON DIOXIDE ENRICHMENT SYSTEMS

This guide is to assist in the permitting process for obtaining an annual renewable operational permit for gaseous carbon dioxide (CO_2) enrichment systems. These are mainly used in cannabis cultivation facilities. A permit is required for CO_2 as compressed gas used in enrichment systems in excess to 875 ft^3*(100 lbs.) per section 105.5.6 of the IFC. This includes the sum of all CO_2 at the facility.

CO_2 for other uses such as theatrical stage effects, beverage dispensing and industrial uses also require permits and are covered in other permit guides.

APPLICABLE CODES:

The following codes and standard apply to this permit.

- *International Fire Code*, 2024 edition (IFC)
- *Clark County Fire Code Amendments*, 2024 edition (CCFC)
- *Standard System for the Identification of the Hazards of Materials for Emergency Response, 2022 Edition NFPA 704*
- *Compressed Gases and Cryogenic Fluids Code,* 2023 edition NFPA 55

SUBMITTAL REQUIREMENTS:

The requirements listed in this guide are not intended to be all inclusive, nor do they entail a limit to the extent of the information, etc., which may be necessary to properly evaluate the submitted plans and documents. Reference IFC Section 5307.4.1 and Chapter 13 of NFPA 55, not all items may apply to your project.

Consolidate your PDFs and upload all applicable information that pertains to your permit to the PLAN ROOM.

1. **PROJECT INFORMATION:**
   - Project name, address, and APN (Assessor's Parcel Number).
   - Contractor's/Owner's contact information.
   - Total aggregate quantity of liquid carbon dioxide in pounds/cu.ft. at normal temperature and pressure
   - Information on the storage, use, and handling of carbon dioxide in accordance with IFC Chapter 53 and NFPA 55

2. **PLAN INFORMATION:** Provide Plans showing the following information
   - Location and total volume of the room where the carbon dioxide enrichment operation will be conducted. (include above or below grade)
   - Location of containers relative to equipment, building openings and means of egress
   - Piping and instrumentation diagram that shows piping support and remote fill locations

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- Details of container venting, including but not limited to vent line size, material and termination point.
- Seismic support as required by IFC 5307.4.1

3. **SYSTEM DESIGN**: Include information on alarm and detection system and equipment
    - Include gas detection system and settings for low-level and high-level alarms
    - System activation sequences, clarification on what happens for activation for low-level and high-level alarms, as well as information on what the mechanical ventilation system does
    - Information on pressurization and ventilation, clarification on negative pressure in room as well as mechanical ventilation to be provided
    - Location of mechanical exhaust and where the mechanical ventilation system discharges
    - Information on container re-filling procedures

4. **MANUFACTURER'S SPECIFICATIONS:** Provide a copy of manufacturer's specification sheets for all components including the pressure rating and information on pressure relief, vent piping, fill indicators, fill connections, vent terminations, and the storage, use and handling of the carbon dioxide.

5. **SIGNAGE: Hazard identification shall be posted at the entrance**
    - Locations where signs need to be posted (the entrance to the room, and indoor areas where carbon dioxide process is located, or where containers are located
    - Include the required sign size (not less than 8 inches in width and 6 inches in height)
    - Provide a diagram of the placement of the NFPA 704 hazard identification placard.



- Sign needs to state the following information:

WHEN THE CO2 ALARM IS ACTIVATED
VENTILATE THE AREA BEFORE ENTERING.
A HIGH CARBON DIOXIDE (CO2) GAS CONCENTRATION
IN THIS AREA CAN CAUSE ASPHIXIATION

PERMIT DURATION:

Carbon dioxide enrichment systems are Operational Permits and are limited to a duration of one (1) year and shall be renewed annually. Revisions are to be submitted.

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