



# Carbon Dioxide Beverage Systems

## Operational Permit Submittal Requirements

- A “Compressed Gases” operational permit is required for any Occupancy which has **more than 100 lbs.** of carbon dioxide used in insulated liquid carbon dioxide beverage dispensing applications.
- A “gas detection systems” construction permit is also required when installing a new CO2 alarm system.
- The construction permit is a one-time issuance. The operational permit is currently issued until revoked but will be an annual permit in the future. This permit may be revoked at any time for non-compliance.
- These permits may be omitted by reducing total quantities to 100 lbs. or less in use, per system.

### Application Requirements:

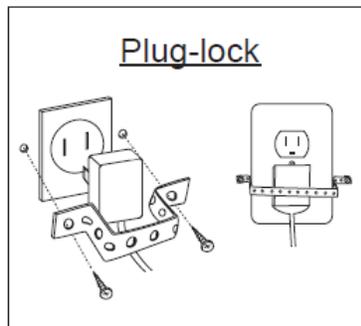
- Complete a **Tucson Fire Code Operational Permit Application** @ [https://www.tucsonaz.gov/files/fire/TFD\\_FIRE\\_CODE\\_OPERATIONAL\\_PERMIT\\_APPLICATION.pdf](https://www.tucsonaz.gov/files/fire/TFD_FIRE_CODE_OPERATIONAL_PERMIT_APPLICATION.pdf)
- Complete a **Tucson Fire Code Construction Permit Application** @ [https://www.tucsonaz.gov/files/fire/TFD\\_Construction\\_Permit\\_9.pdf](https://www.tucsonaz.gov/files/fire/TFD_Construction_Permit_9.pdf)
- The Contractor shall submit **three** sets of full size shop drawings/plans (24”x36” minimum).
- Provide datasheets for all equipment.
- Plans shall indicate if a fire alarm panel is located at the building.
- Installer needs to be on the approved list of contractors for our jurisdiction.

### CO2 Alarm requirements:

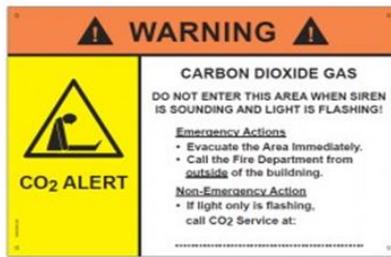
- Alarms:
  - Central unit shall be accessible and located where all tones that are emitted can be heard. It shall not be mounted next to a point of use or inside a manager’s office that has a locking door.
  - Detectors/sensors are to be installed at all points of use (POU) located inside the building.
  - Notification devices (horn/strobes) shall be installed in each room/area where a detector is located. An additional notification device is required in a room/area where the public gathers (dining room area). All wall mounted notification devices shall be mounted such that the entire lens is not less than 80 in. and not greater than 96 in. above the finished floor.
  - CO2 notification devices shall be distinctive from fire alarm notification devices. Activation of the CO2 notification devices shall not activate the fire alarm notification devices.

- If there is a fire alarm system or sprinkler monitoring system, the CO2 alarm shall be interconnected and monitored. In buildings without a fire alarm, the CO2 alarm DOES NOT need to be monitored.
- Monitoring requirements when interconnected to a fire alarm:
  - Primary AC power loss (trouble)
  - High alarm 30,000ppm (alarm)
- CO2 alarm set points shall be set at the following levels:
  - Time weighted average-0.5% (5,000ppm) TWA over 8-hours. Alarm shall provide local annunciation at the central unit.
  - Low alarm 1.5% (15,000ppm). Alarm shall provide local annunciation at the central unit and activation of all CO2 strobes.
  - High alarm 3.0% (30,000ppm). Alarm shall activate all CO2 notification devices (horns and strobes). Protocols shall be in place to evacuate and call 911. Central station will dispatch the fire department when the high alarm is monitored.
- POWER SUPPLY:
  - Emergency and standby power: Standby or emergency power shall be provided **or** the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.
  - Primary power shall be supervised when the CO2 alarm is interconnected to the fire alarm panel.
  - Circuit breaker shall be located, labeled and locked.
  - Detectors/sensors may be hard wired or plugged into an outlet. If plugged in, plug lock must be installed to prevent tampering or accidental removal. All circuits used shall be labeled and locked. Plug locks also required on the connections made to the battery backup (UPS).

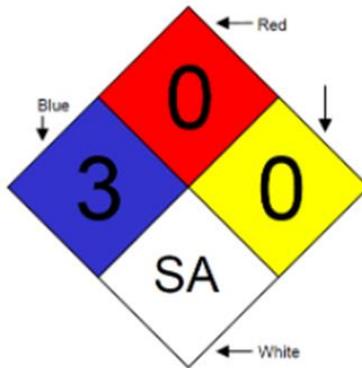
Example:



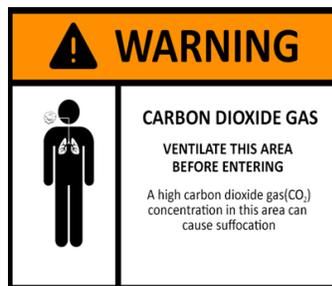
- SINGAGE:
  - A 911 Notification label (what to do in case of alarm) shall be posted next to the central unit.
  - A CO2 warning label shall be placed next to each notification device.



- An NFPA 704 diamond shall be placed on the exterior side of the door leading to the CO2 tank, outdoor storage cabinets, and fill box lid. Sign shall be constructed of outdoor durable material. Decals only acceptable on the fill box lid.



- A warning sign shall be placed at the entrance to the room where the CO2 tank is located. Sign shall be 8" wide and 6" high.



**To Submit:**

- \* Remember to save the Operational Permit Application as a pdf. Email the application and all required drawings/information to: [tfd-permit-submittal@tucsonaz.gov](mailto:tfd-permit-submittal@tucsonaz.gov). Upon TFD review, you will receive an email from your Inspector with confirmation to complete the permit process.