	FIRE MARSHAL'S OFFICE — PUBLIC GUIDELINE	
	SUBJECT: Existing Carbon Dioxide (CO2) Systems Used for Beverage Dispensing	
	PREPARED BY: Yvonne Espinoza	DATE: 9/7/18 V0
AFD Hazardous Materials Administrator, 505 Barton Springs Road, Suite 200 Austin TX 78704 512-974-0160 - Option 3, afd hazmat@austintexas.gov		

This document is intended to inform business owners, design professionals, contractors, and carbon dioxide (CO2) system installers of the requirements for existing systems. CO2 is an asphyxiation hazard due to the toxic nature with which it affects breathing. Sites using CO2 for beverage dispensing can be subject to inspection at any time. Failure to comply with the requirements of this document may result in a citation. If the system was installed prior to December 2013 see Section VII of this document.

I Scope

This document covers the requirements for CO2 systems used for beverage dispensing that are 101 lbs. or greater in capacity. For systems installed prior to December 2013 AFD requires business owners to comply with Section VII of this document but strongly encourages compliance with all sections of this document.

II Definitions

Carbon Dioxide System: An assembly of equipment consisting of one or more carbon dioxide supply containers, interconnected piping, pressure regulators, and pressure relief devices.

Existing system: A system installed prior to December 2013 or installed after that date and not permitted by the City of Austin as part of a commercial building review process.


Fire Code: The version of the International Fire Code currently adopted by the City of Austin including Local Amendments and applicable standards. As of January 8, 2018 the City of Austin has adopted the 2015 International Fire Code.

High Pressure Carbon Dioxide Tank: A compressed gas cylinder containing carbon dioxide at a high pressure.

Insulated Carbon Dioxide Tank: An insulated tank containing carbon dioxide that is stored at subfreezing temperatures as a liquid/gas mixture.

Indoor Installation: Installations that do not allow for natural ventilation due to the systems physical location. They include:

- 1) Rooms within buildings
- 2) Enclosures sheltered from weather with a roof and enclosed on two or more sides with a solid wall.
- 3) Enclosures sheltered from weather with a roof and exceeding 1500 sq. ft.
- 4) Enclosures with walls on all sides and no roof when the walls or fencing do not allow natural ventilation. Fencing or enclosed walls that are 25% open at the ground level on 2 opposite sides are considered to provide natural ventilation.

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Outdoor enclosures too small for human occupancy are not considered indoors regardless of amount of enclosure.

Small Rooms: Rooms less than 45 ft by 45 ft with a 10 ft ceiling or rooms with a volume of less than 20,250 cu.ft.

System Capacity: The capacity of the tank supplying the system or, when tanks are manifolded together, the aggregate quantity of all tanks supplying the system. Tanks in storage are not considered part of the system capacity.


III Plan Submittals

Plans must be submitted to AFD for review. The plans must show compliance with Section V of this document. Plans must be submitted in one of the following ways:

- 1) Through conventional mail to Austin Fire Department, ATT: Hazmat Administrator, 505 Barton Springs Rd. , Suite 200, Austin, TX 78704
- 2) Through email to afd hazmat@austintexas.gov
- 3) In person at 505 Barton Springs Rd., #200, Austin, TX 78704 between the hours of 8:00 am and 4:00 pm.

Plan Submittal Requirements:

- Aboveground Hazardous Materials Permit Application – See Section IV
- Specification sheet for the container(s)
- Specification sheet for the CO2 hose
- Specification sheet for the CO2 detector
- A scaled plan with the following
 1. Name and address of the location
 2. Rough square footage for entire space
 3. Room locations
 4. Location of the container(s)
 5. Container size(s)
 6. Hose line routing
 7. Detector locations
 8. Fill location
 9. Name of installing company or system designer

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IV Operational Permits:

Carbon Dioxide systems 101 lbs in capacity or greater are required to obtain an Aboveground Hazardous Materials Permit (HMP) for the storage and use of the carbon dioxide.

A. HMP applications can be obtained in the following ways:

- 1) At the following website <http://www.austintexas.gov/department/hazmat-permit>
- 2) Through email by contacting afd hazmat@austintexas.gov
- 3) In person at 505 Barton Springs Rd., #200, Austin, TX 78704 between the hours of 8:00 am and 4:00 pm.

B. HMP permits are valid for a 3 year period and the following fees apply to carbon dioxide. The storage and use of additional chemicals may result in additional fees

Up to 249 lbs	\$90
250-2499 lbs	\$180

V Carbon Dioxide System Requirements:

A. Containers and cylinders:

1. Shall meet the requirements of DOT or ASME.
2. Shall be protected from vehicular damage if located outdoors
3. Relief valve piping must be terminate outdoor
4. Fill connection must be located outdoors
5. Cannot be placed directly on soil

B. Piping system

1. Shall meet the requirements of ASME B31.3 and be designed for the temperatures and pressure of the material it will contain.
2. For insulated liquid systems piping/hoses/tubing must be able to withstand a temperature of - 109.3 F
3. Piping system must have manual or automatic shutoffs at the point of use and the source connection



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- 4. The piping/hose/tubing must be labeled with the contents and direction every 20 ft and at every change in direction.
- 5. All hoses and tubing used in insulated liquid service shall be designed for 4 times their design pressure.


C. Detection/Mechanical Ventilation

Continuous mechanical ventilation or an emergency alarm system must be provided in indoor areas where cylinders and containers, piping/tubing/hose fittings, and equipment are located or other areas when CO2 can accumulate.

- 1. Mechanical ventilation must meet the following requirements
 - a. The ventilation rate shall not be less than 1 cfm/sq.ft. of room area
 - b. The intake duct for the ventilation must be within 12 inches of the floor
 - c. The system must be designed to operate at a negative pressure in relation to its surroundings
- 2. Emergency alarm systems must meet the following requirements:
 - a. Continuous gas detection shall be provided to monitor areas where carbon dioxide can accumulate:

This includes:

 - i. Indoor installations where containers, cylinders, pipe fittings and equipment are located.
 - ii. Basement levels where the basement is in communication with the room or area with the containers, cylinders, pipe fittings, and equipment.
 - iii. All floor levels below the installation of containers, cylinders, pipe/tubing/hose fittings, and equipment where the level below is in communication with the room or area with the containers, cylinders, pipe/tubing/hose fittings, and equipment.
 - iv. In small rooms with insulated liquid CO2 lines routed above
 - b. The threshold or activation of the alarm shall be 5,000 parts per million (ppm) if the alarm only has one set point. If there are multiple alarm set point then the threshold for activation of the alarm is allowed to be 5000 ppm over an 8 hr period.
 - c. The alarm shall initiate a local alarm within the room or area in which the system is installed. The alarm must have an audible alarm that is audible to the occupant. Both audible and visual signal may be required if the audible component is not audible to the occupants. Visual only signals are not allowed.

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- d. Plug in type alarms are acceptable if the plug is visible from the detector location. A sign shall be provided indicating that unplugging of the detector is prohibited. In addition there must be a method to secure the plug in to the electrical outlet. The use of extension cords is prohibited.
- e. Alarm notification devices shall be mounted outside of walk in coolers, small rooms, and 1 floor level above basements.
- f. Alarm notification devices shall have a warning sign indicating why the alarm is sounding and what action should be taken.

D. Warning Signs

Warning signs shall below is posted at the entrance to any room, enclosure, and confined space where a container or cylinder is located. The sign shall be at least 8 inches long and 6 inches tall.

CAUTION – CARBON DIOXIDE GAS
Ventilate the area before entering.
A high carbon dioxide (CO2) gas concentration in this
Area can cause suffocation

VI Maintenance:


Carbon dioxide equipment, mechanical ventilation systems, and detection systems shall be maintained in proper working order and shall be inspected and tested per the manufacturer’s instructions.

VII Carbon Dioxide Systems installed prior to December 2013

A. Operational Permits

Carbon Dioxide systems 101 lbs in capacity or greater are required to obtain an Aboveground Hazardous Materials Permit (HMP) for the storage and use of the carbon dioxide.

- 1. HMP applications can be obtained in the following ways:
 - a. At the following website <http://www.austintexas.gov/department/hazmat-permit>
 - b. Through email by contacting afd hazmat@austintexas.gov
 - c. In person at 505 Barton Springs Rd., #200, Austin, TX 78704 between the hours of 8:00 am and 4:00 pm. .

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2. HMP permits are valid for a 3 year period and the following fees apply to carbon dioxide.

Up to 249 lbs \$90
250-2499 lbs \$180

3. The following information needs to be submitted with the HMP
- a. Site/floor plan showing where carbon dioxide is located
 - b. Specification sheet for the CO2 cylinder/container
 - c. Specification sheet for the CO2 hose
 - d. Specification sheet for the CO2 tubing
 - e. Specification sheet for the detector if one is installed
 - f. Proof that the CO2 system was installed prior to December 2013. Only the following documentation is accepted as proof.
 - i. Invoices or receipts for delivery prior to December 2013
 - ii. Letter from the owner or owners representative stating that the current system was installed prior to December 2013
 - iii. Letter from the supplier stating that the current system was installed prior to December 2013

B Carbon Dioxide System Requirements

Carbon dioxide systems installed prior to December 2013 must meet the minimum requirements below. Total compliance with this entire document is strongly encouraged.

1. Indoor filling of insulated liquid containers and cylinders is prohibited.
2. Pressure relief valves on insulated liquid containers shall terminate outdoors
3. Containers, cylinders, pipe/hose/tubing, and equipment located in basements must meet the requirements of Section V-C of this document
4. Containers in small rooms must meet the requirements of Section V-C of this documents.
5. Warning sign shall be installed in accordance with Section V-D of this document.