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## Carbon Dioxide

Carbon dioxide (CO<sub>2</sub>) is a colorless, odorless gas. It is naturally present in the air in very small amounts and it is heavier than air. Breathing CO<sub>2</sub> causes suffocation.

### Carbon Dioxide Dangers in Restaurants

Carbon dioxide (CO<sub>2</sub>) is used in restaurants to carbonate soda. CO<sub>2</sub> is a concern because there is a trend to replace smaller cylinders that were typically found under soda fountains with larger CO<sub>2</sub> dispenser systems. These new systems have leaked in several cases, causing multiple fatalities.

### No Regulations for Carbon Dioxide Detection

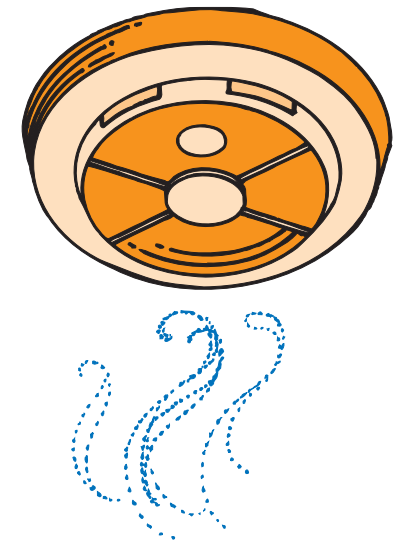
New, larger CO<sub>2</sub> systems are not regulated. If you have one of these systems, we recommend exploring the installation of a CO<sub>2</sub> detector where these large dispensers are stored. Contact a fire alarm company to determine if CO<sub>2</sub> detectors can be installed with the current fire alarm system.

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## More Information

For questions, contact the local fire department or the Department of Fire Services, Code Compliance and Enforcement Unit at (978) 567-3375.

# Carbon Monoxide and Dioxide Protection in Restaurants



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Guide for  
**Owners, Operators,  
and Fire Departments**



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On February 23, 2014, a carbon monoxide (CO) incident at a New York restaurant resulted in one death and multiple injuries.

The Massachusetts State Fire and Building Codes do not require restaurants to install CO detectors. However, restaurants can take steps to protect workers and patrons. This brochure describes the regulations and standards for CO detection.

## Carbon Monoxide

Carbon monoxide is known as the **invisible killer** because it is a poisonous gas that has no visible color, taste, or odor. Breathing CO causes nausea, dizziness, headaches, and fatigue, like having the flu. It also makes it hard to think clearly. CO poisons the body by preventing oxygen from entering the blood stream.

### How is CO Produced?

Faulty heating equipment is the leading cause of CO incidents, but other sources of CO include hot water heaters, gas stoves, gas dryers, barbecue grills, fireplaces, cars, lawn mowers, snow blowers and generators. CO is created by incomplete combustion of carbon-based fuels including wood, natural gas, propane and oil. CO is toxic and flammable.

## Carbon Monoxide Detectors

### Residential and Commercial

National standards for CO detectors exist to make sure detectors work correctly in different environments. CO detectors for the home are **not** the same as CO detectors for commercial

establishments like restaurants. A CO detector listed to UL2034 meets a performance standard for residential dwellings. Residential CO detectors are not designed for restaurants and are likely to create false or nuisance alarms.

CO detectors designed for commercial environments are available at building supply companies that support contractors because the detectors must be installed by a licensed professional on a low-voltage electrical system, like a fire alarm. A CO detector listed to UL2075 meets performance standards for commercial environments.

### Small Restaurants

Small restaurants may not have fire alarm systems. Installation of CO detectors meeting commercial standards and listings requires the installation of a fire alarm control panel that meets the standards for commercial CO detectors.

### Larger Restaurants

Larger restaurants usually have fire alarm systems due to their size and occupancy ratings. The installation of CO detectors is fairly easy in these buildings because they already have fire alarm control panels. Contact a fire alarm company to determine if CO detectors can be connected to the existing fire alarm system.

## Massachusetts Regulations on Carbon Monoxide

The Massachusetts Fire and Building Codes do not require restaurants to install CO detectors. The regulations cover places where people are likely to sleep, including residential occupancies.

## Some Restaurants Already Have Limited CO Detection

The Massachusetts Gas Code requires a way to ensure that kitchen exhaust systems are operational prior to allowing gas to flow. Specific equipment ensures that ventilation fans are operating. However, in October, 2009, the State Board of Plumbers and Gasfitters issued a ruling that the use of CO devices can serve as an alternative means of complying with this part of the code, instead of using a method to ensure that ventilation is operating. Therefore, if new appliances were installed after October 2009, there may already be a CO detection system in the kitchen. Verify the installation to determine if CO protection was installed. The Gas Code also may require CO devices in certain other situations. These limited situations do not provide full protection throughout the restaurant.

## Installing CO Detectors

Anyone can exceed state code requirements and install CO detectors. Installed CO detectors must meet the standards and listings required by the State Fire and Building Codes. CO detectors also need to meet the requirements of the National Fire Protection Association (NFPA) standards 72 and NFPA 720. These standards require the use of an UL2075 listed CO detector. The detectors are installed by a licensed contractor. For more information, contact a fire alarm company.