
Carbon Monoxide Alarms/Detection

Business Setting

Importance of Carbon Monoxide Detectors in a Business Setting. Carbon monoxide is an odorless, tasteless, invisible gas that is produced by the burning of natural fuels.

Per the 2024 International Fire Code Section 915 – Carbon Monoxide (CO) Detection

915.1.1 Where required. Carbon monoxide detection shall be installed in the locations specified in Section 915.2 where any of the following conditions exist.

1. In buildings that contain a *CO source*.
2. In buildings that contain or are supplied by a CO-producing forced-air furnace.
3. In buildings with attached private garages.
4. In buildings that have a CO-producing vehicle that is used within the building.

Possible carbon monoxide producers in your business:

1. Malfunctioning heating system
2. Generators
3. Industrial vehicles (forklifts)
4. Gas-powered stoves
5. Gas-powered heating appliance
6. Delivery or customer vehicles near building/bays/vents

Due to the undetectable nature of carbon monoxide, unsafe levels can be built in enclosures such as office buildings over time without immediate signs. The reason for this gas' danger is that when inhaled by living creatures, it bonds to the blood cells instead of oxygen, which leads to gradual oxygen deprivation.

Carbon monoxide detectors and their placement are regulated by the NFPA. This is the same organization that handles the proper installation, coverage, and maintenance of fire alarms. NFPA72 outlines the requirements for CO detectors and licensed professionals can help install CO detectors to meet these requirements.

There are many factors that affect the number and placement of CO detectors in a business: size, location, industry, and equipment onsite.

Basic guidelines recommend:

- **Near Fuel-Burning Appliances:** Install CO detectors within 10-15 feet of each fuel-burning appliance. This includes boilers, furnaces, water heaters, and kitchen equipment.
- **Sleeping Areas:** Businesses with sleeping quarters (e.g., hotels, motels) should have a CO detector placed inside each sleeping area and just outside each separate sleeping area near the sleeping rooms.
- **Multi-Level Buildings:** At least one CO detector should be installed on every floor of a multi-level building, including basements and attics. Ensure coverage extends to all accessible areas.

- **Common Areas:** Install carbon monoxide detectors in frequently populated areas like lobbies, conference rooms, and break rooms.
- **Basements and Mechanical Rooms:** It's important to have CO detectors installed in basements and mechanical rooms, particularly near equipment such as HVAC systems and generators.
- **HVAC Systems:** Place CO detectors near air handling units and return air ducts of HVAC systems to monitor and detect any CO being circulated through the building.

Difference Between Commercial and Residential Carbon Monoxide Detection

When it comes to protecting your business, patrons, and employees from the threat of carbon monoxide, it's important to know how. Many stores sell residential CO detectors and alarms that are manufactured for residential spaces. Regarding businesses, devices need to be able to provide the level of protection that your commercial space requires.

- **Commercial:** Designed to cover extensive areas such as office buildings, warehouses, hotels, and retail spaces. These models can be integrated into building management systems for centralized monitoring and control.
- **Residential:** Intended for individual homes or small apartments. They typically cover smaller areas and are standalone units.

Factors to Consider When Choosing Commercial Carbon Monoxide Alarms/Detectors

- **Compliance and Certification:** Ensure the detectors meet industry standards and local regulatory requirements, such as UL certification and compliance with OSHA guidelines.
- **Coverage Area:** Evaluate the dimensions and arrangement of the space to be monitored, selecting detectors that have suitable coverage capabilities for effective surveillance.
- **Integration Needs:** Determine the need for integration with existing fire alarm systems, HVAC systems, and building management systems for centralized control and monitoring.
- **Environment:** Consider the environmental conditions where the detectors will be installed, choosing models that can withstand dust, moisture, and temperature fluctuations if necessary.
- **Sensor Technology:** Opt for detectors with advanced electrochemical sensors for accurate and reliable detection of CO levels.
- **Maintenance Requirements:** Evaluate the maintenance and testing needs of the detectors, ensuring they fit within the building's safety protocols and available resources for regular upkeep.
- **Alert Mechanisms:** Look for detectors with both audible and visual alarms, as well as remote alert capabilities, to ensure prompt notification and response to CO incidents.

Best Practices for Placement of Carbon Monoxide Detectors in a Business

Placement Near Potential Sources of Carbon Monoxide

The best idea when it comes to placing carbon monoxide detectors is to find areas where there is a likely source of CO production. This could be in the basement, where heating systems, boilers, and furnaces are located. Or it could be in the delivery docks and entrances where idling vehicles are often parked.

Placement in Common Areas and High Occupancy Areas

Anywhere that people gather or spend long periods of time in should be protected with a CO detector. These areas are waiting rooms, patient rooms, conference rooms, bedrooms or resting areas.

Placement on Each Floor and in Different Zones of the Business

Every floor and zone should be equipped with a detector. This ensures that each area or commercial space is properly monitored.

Per the 2024 International Fire Code Section 915 – Carbon Monoxide (CO) Detection

Carbon Monoxide Alarms - A single- or multiple-station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.

915.4.1 Power source. Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than that required for overcurrent protection.

915.4.4 Interconnection. Where more than one carbon monoxide alarm is required to be installed, carbon monoxide alarms shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms. Physical interconnection of carbon monoxide alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.

Carbon Monoxide Detector - A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.

Carbon monoxide detection systems. Carbon monoxide detection systems shall be an acceptable alternative to carbon monoxide alarms and shall comply with Sections 915.5.1 through 915.5.3.

915.5.2 Locations. Carbon monoxide detectors shall be installed in the locations specified in Section 915.2. These locations supersede the locations specified in NFPA 72.

915.5.4 Occupant notification. Activation of a carbon monoxide detector shall annunciate at the control unit and shall initiate audible and visible alarm notification throughout the building.

Exception: Occupant notification is permitted to be limited to the area where the carbon monoxide alarm signal originated and other signaling zones in accordance with the fire safety plan, provided that the alarm signal from an activated carbon monoxide detector is automatically transmitted to an *approved* on-site location or off-premises location.

915.5.5 Duct detection. Carbon monoxide detectors placed in environmental air ducts or plenums shall not be used as a substitute for the required protection in Section 915.