



# LOSS CONTROL

## CARBON MONOXIDE (CO)

### Sources of CO

Unvented kerosene and gas space heaters; leaking chimneys and furnaces; back-drafting from furnaces, gas water heaters, wood stoves, and fireplaces; gas stoves; generators and other gasoline powered equipment; automobile exhaust from attached garages; and tobacco smoke. These products are all sources of CO which can be deadly if proper safety precautions are not taken.

### Where to Install Detectors

According to the USFA (United States Fire Administration) a CO detector should be installed outside all sleeping areas (about 10 feet away from a bedroom). The USFA says that detectors should not be placed within 5 feet of any appliance which uses products of combustion (e.g., stove, heater, automobile) The device should have an audible or visual warning device with the capability to alert residents or occupants to a potential problem.

### Types of Detectors

#### [Combination CO and Smoke Alarms](#)

There are different types and brands of CO detectors. They can be separated into two classes based on how they operate: household current or batteries. Underlying this, in most cases, is the type of sensor employed in the detectors operation. Detectors using a main current (hardwired) typically employ some type of solid-state sensor that purges itself and re-samples for CO on a periodic basis. This cycling of the sensor is the source of its increased power demands. Detectors powered by batteries typically use a passive sensor technology, which reacts to prolonged exposure to CO gas.

### How CO Detectors Work

CO detectors trigger an alarm based on an accumulation of CO over time. CO detectors require a continuous power supply, so if the power cuts off the alarm becomes ineffective. Models are available that offer back-up battery power.

CO is approximately the same weight as air and will rise with warmer air; therefore the best location to install a detector is the ceiling. A CO detector should be centrally located outside of each separate sleeping area in the immediate vicinity of the bedrooms on each floor level. Installation in these areas ensures rapid detection of any potentially malfunctioning appliances and the ability to hear the alarm from all sleeping areas. The power to operate the alarm should signal for at least 12 continuous hours. If battery powered, then it must have 1 year of battery life. Testing should be done at least once per month and per manufacturer's instructions.

### Health Effects of CO

CO is a gas that has no odor or color, but it is very dangerous. It can cause sudden illness and death. CO is found in combustion fumes, such as those made by cars and trucks, lanterns, stoves, gas ranges and heating systems. CO from these fumes can build up in places that don't have a good flow of fresh air. You can be poisoned by breathing in these fumes. The most common symptoms of CO poisoning are:

- Headache
- Vomiting
- Dizziness
- Chest pain
- Weakness
- Confusion
- Nausea

It is often hard to tell if someone has CO poisoning because the symptoms may be like those of other illnesses. People who are sleeping or intoxicated can die from CO poisoning before they have symptoms.

### Safety Tips

- Have a qualified technician inspect fuel-burning appliances at least once each year. Fuel-burning appliances such as furnaces, hot water heaters and stoves require annual maintenance. Over time, components can become damaged or deteriorate. A qualified technician can identify and repair problems with your fuel-burning appliances.
- Be alert to the danger signs that signal a CO problem: streaks of carbon or soot around the service door of your fuel-burning appliances; the absence of a draft in your chimney; excessive rusting on flue pipes or appliance jackets; moisture collecting on the windows and walls of furnace rooms; fallen soot from the fireplace; small amounts of water leaking from the base of the chimney, vent or flue pipe; damaged or discolored bricks at the top of your chimney and rust on the portion of the vent pipe visible from outside your home.

# CARBON MONOXIDE (CO) - *continued*

- Be aware that CO poisoning may be the cause of flu-like symptoms such as headaches, chest tightness, dizziness, fatigue, confusion and breathing difficulties. Because CO poisoning often causes a victim's blood pressure to rise, the victim's skin may take on a pink or red cast.
- Install a UL listed CO detector outside sleeping areas. A UL Listed CO detector will sound an alarm before dangerous levels of CO accumulate. CO indicator cards and other devices are also intended to detect elevated levels of CO, but most are not equipped with an audible alarm, and cannot wake you at night, when most CO poisonings occur.
- Read the manufacturer's instructions carefully before installing a CO detector. Do not place the detector within five feet of household appliances. If your detector is wired directly into your home's electrical system, you should test it monthly. If your unit operates off of a battery, test the detector weekly and replace the battery at least once a year.
- Avoid placing your detector directly on top of or directly across from fuel-burning appliances. These appliances will emit some CO when initially turned-on. Never use charcoal grills inside a home, tent, camper or unventilated garage. Don't leave vehicles running in an enclosed garage, even to "warm up" your car on a cold morning.

## Know how to respond to a CO Detector Alarm

If your alarm sounds, immediately open windows and doors for ventilation. If anyone in the home is experiencing symptoms of CO poisoning - headache, dizziness or other flu-like symptoms - immediately evacuate the premises and call the fire department. If no one is experiencing these symptoms, continue to ventilate, turn off fuel-burning appliances and call a qualified technician to inspect your heating system and appliances as soon as possible. Because you have provided ventilation, the CO buildup may have dissipated by the time help responds and your problem may appear to be temporarily solved.

Do not operate any fuel-burning appliances until you have clearly identified the source of the problem. A CO detector alarm indicates elevated levels of CO in the area. Never ignore the alarm!

**Resources:** [CO Questions and Answers](#)

**By State:** [CO Detectors State Statues](#)

Consumer Product Safety Commission - detailed information on everything you need to know about CO in a Question and Answer format:

[CPSC Questions and Answers](#)

[CPSC Tri-Fold Brochure](#)

[National Fire Protection Association Fact Sheet \(CO\)](#)

This website is put out by the National Fire Protection Association gives you facts and various types of information on CO and the effects of CO Poisoning.

[US Fire Administration](#)

(Exposing an Invisible Killer: The Dangers of CO)

General information on CO:

[UL 2034 Standard](#)

Underwriters Laboratory Standard for Single and Multiple Station CO Alarms

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