



# Risk Management Services

## CARBON MONOXIDE (CO)

### Sources of Carbon Monoxide:

Carbon monoxide (CO) is produced thru incomplete burning of various fuel sources, i.e. coal, wood, oil, propane, natural gas, kerosene and charcoal. Malfunctioning fuel burning appliances such as water and room heaters, furnaces, and stoves/ovens; engine powered equipment such as portable generators, and fireplaces or cooking grills are all sources of CO, which can be deadly if proper safety precautions are not taken.

A CO detecting device should have an audible or visual warning mechanism with the capability to alert residents or occupants of a potential problem.

### Types of Detectors:

#### Combination Carbon Monoxide and Smoke Alarms

The different types of CO detectors are electrical hardwired with battery backup and battery powered. Detectors using electrical current (hardwired) typically employ a solid-state sensor that purges itself and re-samples for CO on a periodic basis. Detectors powered by batteries typically use a passive sensor technology, which reacts to prolonged exposure to CO.

### Placement of Detectors:

The United States Fire Administration (USFA) indicates detectors should not be placed within 5 feet of any appliance which uses products of combustion (e.g., gas stove, fire place, furnaces, hot water heaters). Detectors trigger an alarm based on an accumulation of CO over time. CO is approximately the same weight as air and as such will rise with warmer air. Therefore, the best location to install a detector is on the ceiling. Detectors should be centrally located outside of each sleeping area and/or within the immediate vicinity of the all bedrooms on each floor level. Installation in these areas ensures rapid detection of any CO within the ambient air of the building, and the ability to hear the alarm from all sleeping areas. The electrical power to the alarm should be continuous. Battery powered alarms must have a battery life of one year. Testing should be completed monthly or per the manufacturer's instructions.

### Health Effects:

CO is a gas that has no odor or color, and it is very dangerous. It can cause sudden illness and death. CO is found in fumes, such as those made by vehicles, lanterns, stoves, gas ranges and heating systems. These fumes can build up in places that have inadequate ventilation to fresh air. Poisoning can result from the inhalation of CO in these fumes. The most common symptoms of CO poisoning are:

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

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 an overexposure to CO before they display common 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.
- CO poisoning often causes a victim's blood pressure to rise, causing the victim's skin to take on a pink or red appearance.
- CO indicator cards and other devices are also intended to detect elevated CO levels, 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 5 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 ignited. Never use charcoal grills inside a home, tent, camper or unventilated garage or leave vehicles running in an enclosed garage, even to "warm up" your car on a cold morning.

# CARBON MONOXIDE (CO) - *continued*

## Know How to Respond to a Carbon Monoxide Detector Alarm

If your alarm sounds, immediately open windows and doors for ventilation. Never ignore the alarm! If anyone in the home is experiencing symptoms of CO poisoning, i.e. headache, dizziness or other flu-like symptoms, immediately evacuate the premises and call "911". If no one is experiencing these symptoms, continue to ventilate, turn off all fuel-burning appliances, and call a qualified technician to inspect heating systems and appliances as soon as possible. Do not operate any fuel-burning appliances until a qualified technician has identified and corrected the source of the CO.

## Additional Resources

National Conference of State Legislatures; Carbon Monoxide Detector Laws and Regulation

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

Consumer Product Safety Commission - detailed information in a "question and answer" format.

[CPSC Questions and Answers](#)

Consumer Product Safety Commission - The "Invisible Killer".

[CPSC Tri-Fold Brochure](#)

The National Fire Protection Association gives you facts and various types of information on and the effects of carbon monoxide poisoning.

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

Underwriters Laboratory Standard for Single and Multiple Station Carbon Monoxide Alarms

[UL 2034 Standard](#)

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