

## **Carbon Monoxide**

Carbon monoxide (CO) is a colorless, odorless, deadly gas. Because you can't see, taste or smell it, carbon monoxide can kill you before you know it's there. At lower levels of exposure, carbon monoxide may cause numerous health problems. Symptoms of CO poisoning may be as follows:

- Slight headache and dizziness
- Nausea
- Drowsiness and an euphoric feeling
- Confusion and irritability
- Unconsciousness
- Death

Everyone is at risk for carbon monoxide poisoning. Some individuals may be more vulnerable to poisoning though, such as unborn babies, infants, children, senior citizens and people with heart or lung problems.

### **Why is it so dangerous?**

The great danger of carbon monoxide is its attraction to hemoglobin in the bloodstream, which normally carries life-giving oxygen to cells and tissues. As even small amounts are breathed in, carbon monoxide quickly bonds with hemoglobin in the blood, displacing the oxygen that organs need to function. When CO is present in the air, it rapidly accumulates in the blood, forming a toxic compound known as carboxyhemoglobin (COHb).

### **Where does it come from?**

Carbon monoxide is a common by-product of combustion, present whenever fossil fuels are burned. It is produced by malfunctioning or un-vented gas or oil home appliances such as furnaces, clothes dryers, ranges, ovens, water heaters and space heaters, as well as fireplaces, charcoal grills and wood burning stoves. Automobile exhaust also contains high levels of carbon monoxide that can seep into a home if a car is left running in an attached garage. All of these sources can contribute to a CO problem in the home. Usually, carbon monoxide is vented safely to the outside. However, insulation meant to keep indoor air warm during the winter or cool in the summer can help trap CO-polluted air in the home. Furnace heat exchangers can crack; vents and chimneys may reverse direction causing a downdraft, which traps combustion gases in the home.

### **How can I protect my family?**

The Consumer Product Safety Commission (CSPC) recommends installing at least one carbon monoxide alarm with an audible warning signal near the sleeping area. Choose an Underwriters Laboratories Inc. (UL) listed alarm that sounds an audible warning. Look for the UL logo on the package.

The International Association of Fire Chiefs (IAFC) also recommends UL listed carbon monoxide alarms on every level of the home and in areas near appliances that are potential sources of CO. Look for the IAFC logo of the package when you select an alarm.

In addition to installing carbon monoxide alarms as a first line of defense, residents should have a qualified professional check all fuel burning appliances, furnaces, venting and chimney systems at least once a year or as recommended by the manufacturer.

### What do the numbers mean?

Newer CO detectors are provided with a digital readout for the level of CO found. These numbers combined with the length of exposure provide the danger level.

<b>Concentration (ppm)</b>	<b>Length of Exposure</b>	<b>Effects</b>
100	6 to 8 hours	No effect
200	2 to 3 hours	Mild headache
400	1 to 2 hours	Headache, nausea, dizziness
800	45 minutes	Headache, nausea, dizziness
800	3 hours	Death
1000	1 hour	Loss of consciousness
1600	20 minutes	Headache, nausea, dizziness
3200	5 to 10 minutes	Headache, nausea, dizziness
3200	30 minutes	Loss of consciousness
6400	10 to 15 minutes	Unconsciousness and danger of death
12800	1 to 3 minutes	Unconsciousness and danger of death