

## ***Carbon Monoxide***

Carbon monoxide is often referred to as the “silent killer.” It’s referred to by that name because it’s colorless, odorless and often **NOT** detectable without a Carbon Monoxide (CO) detector. Because of its potential to cause problems because it is poisonous, there has been a recent surge in encouragement to outfit your home with CO detectors, particularly because it forms when things like natural gas, propane and oil burn incompletely. These types of “fuel” are all commonly supplied to houses. In your home there are numerous sources of potential CO problems; high CO levels may develop from home heating equipment, cooking equipment such as stoves or from fume producing engines such as generators or cars in an attached garage.

CO is dangerous because it attaches to the portions of your red blood cells that oxygen typically attaches to. Oxygen is circulated and distributed around the body to feed tissue. CO has a high affinity for your red blood cells, limiting where oxygen can attach. CO grabs on so tightly on the red blood cells that unlike oxygen, it doesn’t detach to feed the tissues like oxygen would, it remains bound to the red blood cell for a long while, continuously limiting the number of spots oxygen can grab.

The dangers and symptoms of CO exposure can vary and depend on things including the victim's overall health level. Because CO affects oxygen levels in the body, infants, pregnant women, and people with conditions such as emphysema or asthma affect the way the body uses oxygen and can cause individuals to be more prone to the dangers of CO. CO can be tricky as well, even poisoning you with small amounts over time because of its ability to grab onto the red blood cells and not let go. Again, with its colorless and odorless properties, it’s imperative you educate yourself about proper detection equipment.

According to the National Fire Protection Agency Web Site , published January 5, 2009 from the 20th edition of NFPA’s Fire Protection Handbook, CO is measured in parts per million. It’s easy to see, as illustrated below in this partial list, how relatively small amounts can affect the body.

### **SYMPTOMS OF CO POISONING**

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CO enters the body through breathing. CO poisoning can be confused with flu symptoms, food poisoning and other illnesses. Some symptoms include shortness of breath, nausea, dizziness, light headedness or headaches. High levels of CO can be fatal, causing death within minutes.

The concentration of CO, measured in parts per million (**ppm**) is a determining factor in the symptoms for an average, healthy adult.

- 50 ppm: No adverse effects with 8 hours of exposure.
- 200 ppm: Mild headache after 2-3 hours of exposure.
- 400 ppm: Headache and nausea after 1-2 hours of exposure.
- 800 ppm: Headache, nausea, and dizziness after 45 minutes; collapse and unconsciousness after 1 hour of exposure.
- 1,000 ppm: Loss of consciousness after 1 hour of exposure.
- 1,600 ppm: Headache, nausea, and dizziness after 20 minutes of exposure.

Source: [NFPA's Fire Protection Handbook](#), 20th Edition



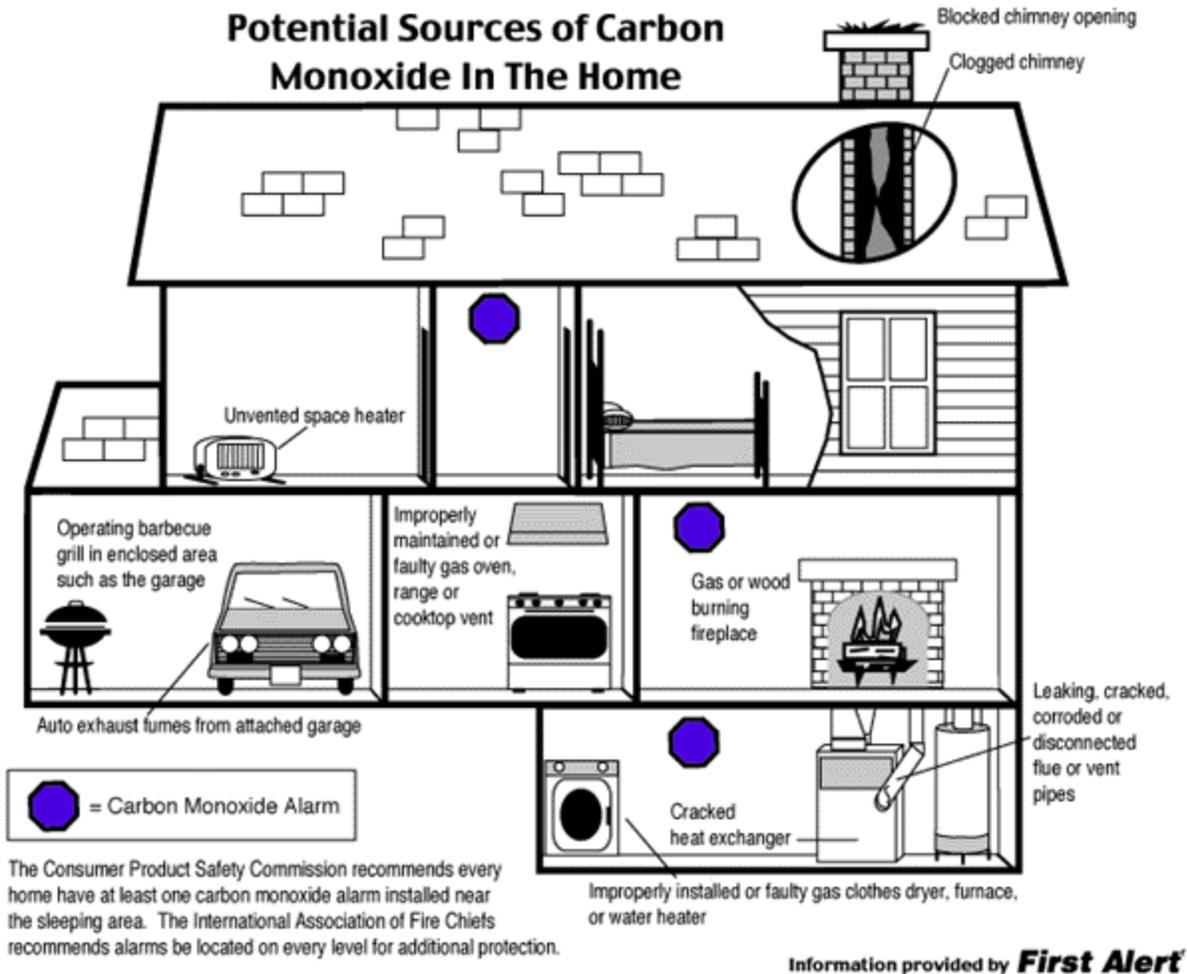
So the big question is, how can you protect yourself from potential CO problems? The answer is to install CO detectors. These detectors are available at most hardware stores and come in varieties that plug directly into a wall outlet to models that incorporate CO sensors into smoke alarms.

Install the units according to manufacturer's directions, paying attention to two items in particular: expiration dates and approval of sensors by independent testing facilities. Usually, sensors expire within 5 to 7 years, so noting when the sensor was manufactured and noting when they are in need of replacement are important. Sensors that are expired may not function properly or alarm when they should.

Where the unit is manufactured and who has approved the unit for commercial sale is important as well. A **UL listing** or **CE listing**, for example, are independent testing facilities that ensure the product design adheres to applicable specifications dictated by oversight committees in the United States. Sensors not bearing labels of recognized testing facilities may be made of substandard components, and may not be built to specifications that will ensure your safety.

Installation should be to manufactures instructions. Be sure to note suggested locations and height installation. In general, units should be placed in a central location outside sleeping areas and on each level of the home. Be sure to understand there are options for interconnected alarms, where when one alarm sounds it activates alarms in all the other connected units where CO levels may not be detectable. This ensures you are able to hear an audible alarm anywhere in your home. Independent units will activate when CO levels are detected, but will not communicate with other sensors in your home to activate alarms in all rooms.

The following diagram will give you a brief idea of some of the possible sources of CO in your home. Consider these sources when considering placement of detectors.



It is a good practice to test your units once a month by following the instructions provided on or with the unit. You will want to read the instructions to understand what a “trouble” alarm is and what a “CO alarm” is. Just as a smoke detector beeps when the batteries are low, so too does a CO detector. Should you hear a trouble alarm, check the batteries. If it continues to alarm, dial 911.

If the CO alarm sounds, you should exit to a fresh air location immediately. Be aware you should fully exit the building and not remain in garages or other attached portions of the house, separate your self from the possible high levels of CO. Be sure all individuals are accounted for outside of your home, and dial 911 from a **safe fresh air location**. Do not go back into the home until the fire department has cleared you to do so.

Often, during the heavy snowfalls in the winter, high CO problems can be traced back to blocked exhaust vents or pipes. During a snowfall, you should be vigilant about walking around your house and ensuring all vents are cleared of snow. Blocked vents are a common occurrence during winter months.

Should you have any further questions, you may always contact the fire department for more information. Another source of good information is the National Fire Protection Agency web site at [www.nfpa.org](http://www.nfpa.org) where you can search for many kinds of safety tips in your home.