

The following article has been taken from: <http://www.nsc.org/library/facts/carbmono.htm>

Carbon Monoxide

What Is It?

Carbon monoxide (CO) is an odorless, colorless gas that interferes with the delivery of oxygen in the blood to the rest of the body. It is produced by the incomplete combustion of fuels.

What Are the Major Sources of CO? *Sample Chemical Equation* - $2CH_4 + 3O_2 \rightarrow 2CO + 4H_2O$

Carbon monoxide is produced as a result of incomplete burning of carbon-containing fuels including coal, wood, charcoal, natural gas, and fuel oil. It can be emitted by combustion sources such as un-vented kerosene and gas space heaters, furnaces, woodstoves, gas stoves, fireplaces and water heaters, automobile exhaust from attached garages, and tobacco smoke. Problems can arise as a result of improper installation, maintenance, or inadequate ventilation.

What Are the Health Effects?

Carbon monoxide interferes with the distribution of oxygen in the blood to the rest of the body. Depending on the amount inhaled, this gas can impede coordination, worsen cardiovascular conditions, and produce fatigue, headache, weakness, confusion, disorientation, nausea, and dizziness. Very high levels can cause death.

The symptoms are sometimes confused with the flu or food poisoning. Fetuses, infants, elderly, and people with heart and respiratory illnesses are particularly at high risk for the adverse health effects of carbon monoxide.

An estimated 300 people die each year as a result of carbon monoxide poisoning and thousands of others end up in hospital emergency rooms.

What Can Be Done to Prevent CO Poisoning?

- Ensure that appliances are properly adjusted and working to manufacturers' instructions and local building codes.
- Obtain annual inspections for heating system, chimneys, and flues and have them cleaned by a qualified technician.
- Open flues when fireplaces are in use.
- Use proper fuel in kerosene space heaters.
- Do not use ovens and gas ranges to heat your home.
- Do not burn charcoal inside a home, cabin, recreational vehicle, or camper.
- Make sure stoves and heaters are vented to the outside and that exhaust systems do not leak.
- Do not use un-vented gas or kerosene space heaters in enclosed spaces.
- Never leave a car or lawn mower engine running in a shed or garage, or in any enclosed space.
- Make sure your furnace has adequate intake of outside air.

What If I Have Carbon Monoxide Poisoning?

Don't ignore symptoms, especially if more than one person is feeling them. If you think you are suffering from carbon monoxide (CO) poisoning, you should

- Get fresh air immediately. Open doors and windows. Turn off combustion appliances and leave the house.
- Go to an emergency room. Be sure to tell the physician that you suspect CO poisoning.
- Be prepared to answer the following questions:

- Is anyone else in your household complaining of similar symptoms?
- Did everyone's symptoms appear about the same time?
- Are you using any fuel-burning appliances in the home?
- Has anyone inspected your appliances lately?
- Are you certain they are working properly?

What About Carbon Monoxide Detectors?

Carbon monoxide (CO) detectors can be used as a backup *but not as a replacement* for proper use and maintenance of your fuel-burning appliances. CO detector technology is still being developed and the detectors are not generally considered to be as reliable as the smoke detectors found in homes today. You should not choose a CO detector solely on the basis of cost; do some research on the different features available.

Carbon monoxide detectors should meet Underwriters Laboratories Inc. standards, have a long-term warranty, and be easily self-tested and reset to ensure proper functioning. For maximum effectiveness during sleeping hours, carbon monoxide detectors should be placed close to sleeping areas.

If your CO detector goes off, you should:

- Make sure it is the CO detector and not the smoke alarm.
- Check to see if any member of your household is experiencing symptoms.
- If they are, get them out of the house immediately and seek medical attention.

If no one is feeling symptoms, ventilate the home with fresh air and turn off all potential sources of CO. Have a qualified technician inspect your fuel-burning appliances and chimneys to make sure they are operating correctly.

The following real-life accounts of the effects of carbon-monoxide have been taken from:

<http://www.carbonmonoxidekills.com/true.htm>

Account #1

Today I received the dreaded phone call from our son's school. He apparently had passed out in class. When my husband and I reached the school, the paramedics had already performed their necessary tests and said that our son seemed fine. Still panic-stricken, we decided he should be seen by a doctor because this episode was just totally out of character. Our son has always been generally healthy.

At the hospital, the doctors checked blood levels (for certain things like anemia), motor skills and asked many questions. We just couldn't figure out why this normally healthy child fainted. He had been a little tired lately and had complained of an upset stomach, but with the many "bugs" going around we weren't overly concerned. Finally, the doctor stated that a specific nerve in our son's body had been stimulated. Thus, causing a quick decrease in his blood pressure which results in fainting. We were told that this was rather common. This, to us, still raised many questions. Something just wasn't right. You know your children.

It wasn't until on our way home from the hospital, it occurred to me that our other children had similar complaints. Our 10 year old had headaches, upset stomach, leg pain and was just plain tired (this kid is like Pikachu). Same goes for our daughter and our 6 year old son. The more I thought about it, the more I realized that my husband's and my headaches weren't just due to sinus problems. Nor were the upset stomachs just a "bug". Just then something told me to have the furnace checked.

Well, as suspected, the gas company found a leak. Our entire family was being slowly poisoned by carbon monoxide. We honestly feel like terrible parents for not figuring this out sooner, but we had no idea. There is no smell and our detector didn't detect anything. It would have been a matter of time before ...let's just be glad that it didn't happen. Thank God! It's amazing how a child's terrifying fainting spell lead this whole life-saving ordeal. We are a very fortunate family and have learned to take more serious precautions on the hazards that one can't see or smell. We strongly urge others to do the same. Sincerely, The
***** Family

Account #2

On Wednesday and Thursday (Jan 30&31 2002) Southeast Michigan experienced a severe ice and snow storms, over 84,000 homes had no power. My best friend was in the process of selling her home and her power was out, her basement was also flooded and an Inspector was coming and the house had to be in ship shape. It was Friday, Feb 2 and she called me to ask if I could loan her my generator and help her get the water cleaned up in the basement. She is my best friend, so of course, I was right there to help her out. We hooked up the generator in the garage; we placed it in the side door - leaving the door open for ventilation. We had been working in the basement for about 5 hours, when the power finally came on - we turned the generator off and turned the heat on. The CO detector had been disabled due to the power outage. We had been working in the crawl space of her basement, we were exhausted and light headed, but we had been working hard, and neither one of us was willing to say they were too tired or lightheaded to stop working - we are both very stubborn females! I was feeling sick to my stomach, light headed and when she spoke to me - it sounded like she was talking under water..... We were both laying on the cold, muddy cement floor and we heard the beeping start from the CO Detector - I believe that if that alarm had not gone off - the inspector would have found us both dead in the crawl space of her basement. As we got outside, we talked about what each other had been feeling - light headed, nauseated, distorted sound, heart palpitations, and feeling so very tired..... If the power had not come on and the CO alarm go off, I don't think either of us would have said a word, just kept working and maybe died there on the cold cement floor. Carbon Monoxide CAN kill you - but a CO Detector saved our lives.

Our mistake? When we set up the generator, we thought we were ventilated enough by having the side door open, but with a wind blowing the exhaust into the garage and the inside door open because of the extension cords, we nearly died from the exhaust. If you are going to use a generator - be sure that it is well ventilated and have a battery back up on your CO Detector. We never smelled a thing and it was almost too late for us.