

Fire Department of North Versailles

Carbon Monoxide Poisoning Information

According to the National Safety Council, "An estimated 300 people die each year as a result of carbon monoxide poisoning, and thousands of others end up in hospital emergency rooms."^[1] The dangerous effects of carbon monoxide can affect anyone. When carbon monoxide is breathed into the body it inhibits the blood's ability to carry oxygen by attaching itself to red blood cells within the bloodstream, thus causing carbon monoxide poisoning. The following information is provided as a brief overview to educate the public about carbon monoxide poisoning and is for informational purposes only.

What is Carbon Monoxide?

Carbon monoxide, abbreviated as CO, is a poisonous, colorless, and odorless gas that is produced from the incomplete burning of carbon-containing fuels such as natural gas, charcoal, gasoline, and wood.

Common sources of Carbon Monoxide

Sources of carbon monoxide can include, but are not limited to the following:

- Furnace & Water Heaters
- Fire Places
- Gas Stoves
- Automobiles
- Portable Generators
- Gas / Kerosene Space Heaters
- Lawn Mowers, etc.
- Charcoal Grills
- Tobacco Smoke

CO poisonings generally occur in enclosed and semi-enclosed environments; however, they can also occur in open-air environments, such as on a motor boat or ski boat. According to a Centers for Disease Control and Prevention report, entitled 'Carbon-Monoxide Poisoning Resulting from Exposure to Ski-Boat Exhaust --- Georgia, June 2002,' two related CO poisoning cases were describe that involved two children who were participating in recreational activities on a ski boat. One case involved a 2-year-old girl that had climbed over the back of the boat, and she was laying on a swim platform in a prone position. Within less than a minute she had become unconscious and unresponsive. The girl was transported to a hospital, treated for carbon monoxide poisoning, and released the next day.^[2]

Symptoms of Carbon Monoxide Poisoning

There are various symptoms associated with CO poisoning, but they may be confused with other illnesses such as the flu. Common symptoms include:

- headache
- dizziness
- weakness
- nausea
- vomiting
- confusion

The Mayo Clinic states that a dull headache is the most common early symptom of carbon monoxide poisoning. In addition, some individuals are more susceptible to carbon monoxide poisoning: unborn babies, infants, and people who have chronic heart disease, anemia or respiratory problems.^[3]

The following table, from the National Fire Protection Association, shows the symptoms of CO exposure based on time and concentration of exposure measured in ppm (parts per million).

Table 1

CO Concentration	Symptoms
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.

NOTE: Table 1 continues onto next page.

Table 1 (Cont'd)

CO Concentration	Symptoms
3,200 ppm	- Headache, nausea, and dizziness after 5-10 minutes; collapse and unconsciousness after 30 minutes of exposure.
6,400 ppm	- Headache and dizziness after 1-2 minutes; unconsciousness and danger of death after 10-15 minutes of exposure.
12,800 ppm	- Immediate physiological effects, unconsciousness and danger of death after 1-3 minutes of exposure.

Note: The following table applies to average, healthy adults, and may not be accurate for everyone due to age and health differences.

Source: NFPA.org Carbon Monoxide Fact Sheet.^[4]

Carbon Monoxide Poisoning Prevention Guidelines

- Have appliances, such as heating systems, chimneys, and fire places inspected and serviced annually by a trained and certified professional.
- Purchase and install CO detectors that are listed by an independent testing laboratory, such as Underwriters Laboratories, INC. (UL). Follow the manufacturer's instructions for proper installation and use. Also refer to the manufacturer's manual for proper maintenance care, such as testing the detector, battery replacement, and CO detector replacement information.

CO detectors can be purchased at most retail stores such as Wal-Mart or Home Depot.

Remember: CO detectors are not a substitution for proper installation, use, and maintenance of appliances that are potential sources of carbon monoxide.

- Do not use a gas oven or dryer to heat your home.
- Do not leave a vehicle running inside a garage – even if the garage door is opened.
- Do not use a charcoal grill inside your home, garage, fire place.
- Do not use portable generators or gas-powered equipment in enclosed or semi-enclosed areas, or near open windows.

What to do if your carbon monoxide detector sounds?

- Move to fresh air immediately. (especially if someone is experiencing any of the above symptoms.)
- Call your local emergency number or dial 911.
- Report to the emergency dispatcher of anyone experiencing symptoms.
- Remain at the fresh air location until emergency personnel say that it is O.K. to re-enter the home.
- CO detectors usually have an audible trouble signal sound. If the trouble signal sounds, then refer to the manufacturer's manual for possible causes, such as low batteries or other a malfunction.

References

1. National Safety Council. (2004). Carbon Monoxide. Retrieved 7/10/2007 from <http://www.nsc.org/library/facts/carbmono.htm>
2. Centers for Disease Control and Prevention. (2002). Carbon-Monoxide Poisoning Resulting from Exposure to Ski-Boat Exhaust --- Georgia, June 2002. *Morbidity and Mortality Weekly Report*, 51(37), 829 – 830. Retrieved 7/10/2007 from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5137a3.htm>
3. Mayo Clinic. (2006). Carbon Monoxide Poisoning. Retrieved 7/10/2007 from <http://www.mayoclinic.com/health/carbon-monoxide/DS00648>
4. National Fire Protection Association. (2007). Carbon Monoxide. Retrieved 12/31/2007 from <http://www.nfpa.org/displayContent.asp?categoryID=280>