Carbon Monoxide Poisoning Prevention and Alarm Responses

Carbon Monoxide:

- Odorless, colorless, tasteless and toxic gas.
- Generated by combustion of fossil fuels.
- Inhibits oxygen-carrying capacity of blood.
- Flu-like illness from low level of exposure.
- Potentially lethal at high levels of exposure.
- Detectors needed to detect presence of carbon monoxide.
- Call 9-1-1 if your carbon monoxide detector activates.

What It Is and How You Could Be Exposed To Its Effect

Carbon Monoxide (CO), an odorless, colorless, and tasteless deadly gas can kill you before you are aware of its effects on you. Lower exposure levels can cause health problems and higher levels can be lethal. Carbon monoxide is a by-product of the combustion of fossil fuels. Fuel-fired (non-electric) appliances such as gas and oil furnaces, space heaters, clothes dryers, ranges, ovens, water heaters, charcoal grills, fireplaces and wood-burning stoves all produce CO. Fumes from automobile, lawn-mower and snow blower exhaust contain high levels of CO. Carbon monoxide is usually vented outside your home if appliances function properly and the home is vented correctly. Problems occur when cracks develop m tile neat exchanger of your furnace or vents and chimneys become blocked. Insulation sometimes can trap CO in your home. Lack of maintenance to appliances and associated equipment can also cause carbon monoxide to escape into your home. Corrosion and rust can cause holes in vent pipes and flues, allowing CO to leak inside the home.

Carbon Monoxide Health Effects and How to Recognize Them

Exposure to carbon monoxide may be difficult to diagnose and can cause health problems at all levels of exposure. Some people, such as pregnant women, infants, children, senior citizens and those with heart or lung problems may be more vulnerable than others. If breathed by persons, CO accumulates in the blood and forms a toxic compound known as carboxyhemoglobin. CO attaches itself to hemoglobin, which carries oxygen in the blood stream, and displaces the oxygen needed by body organs. Since CO may not be readily detected, it is important to be aware of the symptoms of CO poisoning. These symptoms are similar to the flu, and may include headache, nausea, fatigue, dizziness, confusion and irritability. Later stages of CO poisoning may cause vomiting, loss of consciousness and eventually brain damage and death. CO exposure effects are accumulative over periods of time. When the concentrations in your body reach certain levels, you become ill. As accumulations increases, the possibility of death also increases. Families who experience similar flu-like symptoms should seek medical care immediately.

Carbon Monoxide Sources in the Home

Forced air furnaces are frequently a source of carbon monoxide leaks, especially at furnace connections to flue pipes and systems that vent fumes to the outside of your home. Furnace filters and filtering systems can be blocked or dirty causing CO to back up inside the furnace. Forced air fans improperly installed or maintained cause CO to be blown back into your house instead of into the venting system. Cracks, holes, and metal fatigue in combustion chambers and heat exchangers allow CO to leak inside the home. Pilot lights and gas flames can be carbon monoxide sources.

A mostly yellow flame in gas-fired equipment is often a sign that fuel is not burning completely and higher levels of CO are being released. Oil furnaces with similar problems give off oily smelling fumes.

Remember, You Can't Smell Carbon Monoxide.
Bird nest blocked flue pipes and chimneys keep CO from venting properly. Appliances and equipment that use flammable and combustible fuels such as natural gas, oil, propane, wood, coal, or kerosene give off carbon monoxide inside the home of not correctly vented and maintained. Other appliances that may emit CO include water heaters, clothes dryers, kitchen ranges, ovens and cook tops, wood burning stoves and fireplaces, and gas refrigerators. Because charcoal and propane barbecue grills produce high levels or CO and are not vented, they should never be used inside a home. It is a good idea to keep a window slightly open, even in winter, so CO can escape to the outside and fresh air can be introduced into the home.

Carbon Monoxide Detectors: Types and How They Work
A number of different types and brands of CO detectors are on the market but they can be characterized by whether they operate on household current or batteries. House current detectors employ some type of solid-state sensor which purges itself and re-samples for CO on a periodic basis. This cycling detector must be connected to hard wiring to handle its increased power demand. Battery powered detectors use a passive sensor that reacts to prolonged exposure to carbon monoxide gas.

Regardless of how they work, all detectors should conform to minimum sensitivity and alarm standards. Do not purchase a CO detector that is not Underwriters Laboratory (UL) approved. Each type of detector has advantages and disadvantages. House current types need to be connected to electrical wiring. Batteries need to be periodically replaced. Some detectors last 5-10 years, others 2-3 years. Some will continually display CO levels while others will only alarm when set levels are reached. Some will reset once the CO problem is corrected, others require removal of the sensor pack.

How Many CO Detectors Are Needed and Where Should They Be Installed?
The Consumer Product Safety Commission recommends a detector on each floor of a residence. At least one detector should be placed on each sleeping floor. Additional detectors should be placed in the area of major fuel burning appliances such as a furnace, water heater, or wood stove. Generally, CO detectors should be installed high, near the ceiling, for effective use. They should not be placed within five feet of gas fueled appliances, wood stoves, cooking or bathing areas. Proper placement will ensure detector alarms will be heard in all sleeping areas.

Common Causes of Carbon Monoxide Detector Activations
Carbon monoxide detectors may alarm for many reasons most of which are preventable and few are actually life threatening situations. Proper placement if CO detectors and user education can minimize activations so that only the serious condition will cause an alarm. The following are some of the preventable situations:

- Inadequate fresh air venting of the home. (Install a fresh air makeup system.)
- Running gas powered equipment or automobiles in the home or garage. (Never run gas powered equipment inside the home.)
- Charcoal or gas grilling in the home. (Charcoal produces huge amounts of carbon monoxide. Never use grills inside the home.)
- Malfunctioning appliances or equipment. (Use periodic inspection and preventive maintenance.)
- Malfunctioning or overly sensitive detector. (Use only UL Approved alarms of latest revision [June 1995] of UL Standard 2034.

What You Should Do If Your CO Detector Alarms
First, remain calm. Most CO detectors activations are not life threatening. Ask if anyone feels ill, is anyone experiencing flu-like symptoms of headache, nausea, dizziness, fatigue, or drowsiness. If anyone answers yes to any symptom, **IMMEDIATELY EVACUATE THE PREMISES TO A SAFE PLACE AND CALL 9-1-1**. Do not take time to ventilate the home or shut off the furnace or other appliances. The best treatment for CO poisoning is fresh air. If no one is ill, you probably do not need to call 9-1-1. Turn off fuel burning appliances, ventilate the area with fresh air, and attempt to reset the detector. If the alarm will not reset, call a qualified heating and ventilating service contractor to inspect your system. If at any time during this process someone begins to feel ill with the symptoms described above, you should.....**"GET OUT, STAY OUT, and CALL 9-1-1"**

What Will Happen If You Call 9-1-1?
Public safety organizations recognize the dangers of carbon monoxide exposure and have developed emergency response policies and procedures to deal with CO incidents. The type of responses will vary somewhat by area but are basically the same.

The responding agency, usually a fire department and an emergency medical unit, will respond consistent with the information given to them when dispatched. If you have advised 9-1-1 that you or others may be ill, the response will usually be on an emergency basis. The fire department may conduct operations to locate the source of carbon monoxide gas using CO detection meters and take steps to eliminate the exposure. The premises may be ventilated to remove CO and instill fresh air.

Persons who complain of illness will be evaluated and treated as necessary by fire department or other emergency medical service personnel. Some persons will require transport to a hospital or other medical care facility for further care.

If there is no illness associated with your call to 9-1-1 reporting a CO detector activation, the fire department may respond in a non-emergency fashion (no lights or sirens). Operations to detect the presence of CO and locate the source would be the same as an emergency response. If the source of the CO exposure can be eliminated and the premises ventilated to acceptable standards of fresh air, you may be allowed to reoccupy your residence. You may be advised to have your heating contractor check your equipment.

Part of the investigation procedures conducted by the fire department may include history taking of your actions prior to the CO detector activation. His is not meant to pry into your privacy but may provide clues to determine the reason for the detector activation.