How does Carbon Monoxide harm you?

Quite simply, carbon monoxide prevents oxygen from being used by your body. If harmful amounts of carbon monoxide is in the air you breathe it displaces the oxygen you also breathe in. This displacement of oxygen in your blood is poisonous and can cause heart stresses in compensation for the loss. CO can also harm your central nervous system. When carbon monoxide is inhaled into the lungs and bonds with hemoglobin in blood, it forms *Carboxyhemoglobin (COHb)*. This displacement of oxygen in the blood stream affects all major organs and muscles.

What are the symptoms of carbon monoxide poisoning?

Carbon monoxide poisoning mimics many common illnesses, such as the flu and food poisoning. The following is a list of common symptoms.

· headaches · loss of hearing · dizziness
· blurry vision · nausea · seizures
· respiratory failure · disorientation
· weakness · vomiting · cardiac arrest
· rapid heartbeat · painful discomfort
· loss of consciousness · coma

This list is not meant to serve as a diagnosis of carbon monoxide poisoning. It is meant to provide general information on poisoning symptoms.
Always check with your doctor.

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Carbon Monoxide Safety

COSA
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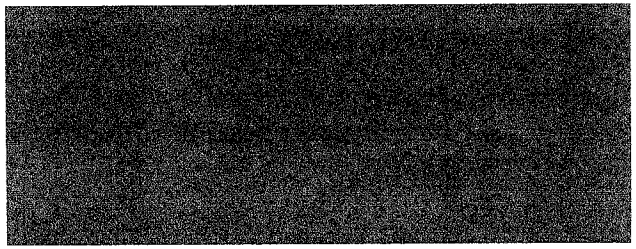
Poisoning from carbon monoxide (CO) can go undetected though a person might be experiencing symptoms everyday.

This booklet contains general information specific to the sources of carbon monoxide, how it is generated and how it gets to us.

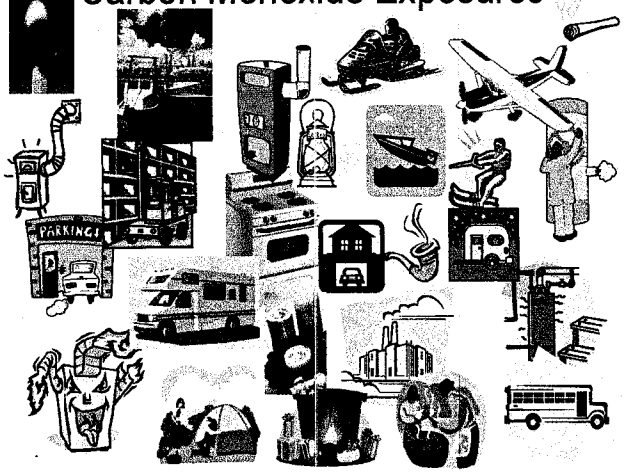
We are not all of equal health so it is vital we all have gainful knowledge about the health effects and the symptoms of CO poisoning.



You may be exposed to Carbon Monoxide when you leave your car, truck or van running in a garage; or, when you burn charcoal, alcohol or gasoline in an enclosed tent, camper or room. You may also be exposed to CO when there is cigar, cigarette or pipe tobacco smoke and brush or forest fires. Your home or building may contain malfunctioning oil, gas or wood furnaces, water heaters, space heaters, cooking systems or fireplaces that are already producing large amounts of CO. You may also be exposed to CO on a boat, on a bus, in a car, in a house, on a street, at a construction site, almost everywhere; be careful!

The misuse of gasoline powered electric generators is resulting in the death & injury to people at work and during power outages. Use them cautiously, safely and far away from buildings, campers & your air. Never use outdoor barbecue's inside. Never use gas or gasoline powered tools inside.

Carbon Monoxide Exposures



There are approximately 50,000 Emergency Room visits for CO poisoning in the USA annually. More and more states and communities are requiring carbon monoxide alarms in living quarters, including motels. The choice of alarms, detectors and monitors may be a matter of life or death.

Your awareness is a matter of life or death!

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What can I do to protect myself and my family?

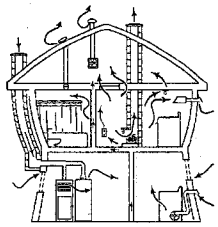
Use non-electrical space heaters only in well ventilated areas. It is highly recommended that unvented combustion systems be used with caution and with CO monitors and perhaps CO2 (carbon dioxide) monitors to ensure healthy air.

Don't start and leave running cars, generators, trucks, or other vehicles in an enclosed area. Keep generators far away from windows, doors and other entries into buildings. Every home should have at least one carbon monoxide detector that is more sensitive to the health needs of vulnerable populations. It is very important to know that CO Alarms Listed by the UL 2034 Standards may not be the best for some people of vulnerable health.

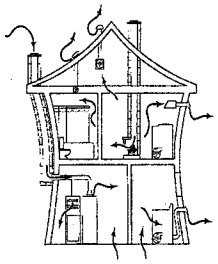
Have your furnace and other fuel burning appliances tested and inspected by a qualified professional once a year or before each heating season to each manufacturer's measurable standards found in the instructions. **You should receive a measurement report verifying what tests were taken and the results.**

Make sure your service professional tests each appliance using a testing instrument that can detect carbon monoxide or analyze the combustion gases.

Today's HVAC technician should also be able to measure building and duct pressures; this information may aid in the prevention of combustion system failure and CO generation. Don't wait until symptoms occur or until something breaks! **BE SAFE!**



Buildings operate like chimneys. Warmer, less dense air rises in the structure. Air leaks out of the holes near the top of the structure (exfiltration) and leaks into the holes near the bottom of the structure (infiltration). This driving force is sufficient to back-draft combustion equipment and distribute combustion gases.



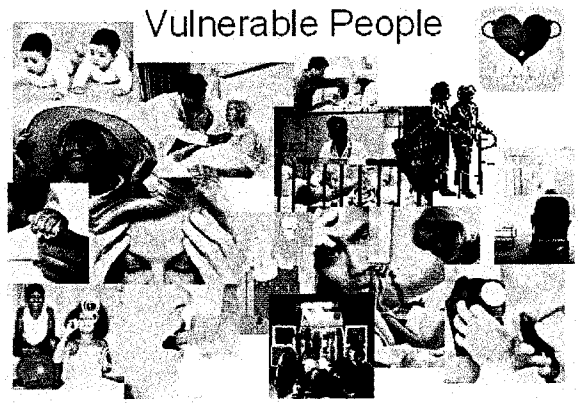
When exhaust fans (bathroom, kitchen, clothes dryer, attic fans) **operate** they may exceed some gas, oil or wood furnace or water heater's draft pressure and result in combustion gas dispersion and perhaps carbon monoxide exposures & poisoning inside the home or building. Have your home pressure tested when your appliances are tested.

Buildings Where CO May Be Found

Recognizing Symptoms of CO Poisoning

Every technician entering a building should recognize health symptoms associated with carbon monoxide exposures. Every technician entering a building should be aware that if they are not monitoring the CO levels, their own safety may be in jeopardy.

Every day of the year carbon monoxide news reports from around the world underline the prevalence and common occurrences of accidental poisonings. Often these deaths and illnesses could have been prevented if the people affected were more aware or better educated in the realities of this deadly gas.



It used to be that only a painful blood test could determine the presence of CO. However, non-invasive testing is quick, painless and accurate; ask your doctor.

How much CO is too much? Health effects can vary significantly due to age, sex, weight, overall state of health. CO is measured in Parts per Million or PPM; out of a million molecules of air, how many are carbon monoxide.

12,000 PPM	Death within 1 - 3 minutes
1,600 PPM	Nausea within 20 minutes, death within 1 hour
800 PPM	Nausea and convulsions - death within 2 hours
400 PPM	Frontal headaches within 1-2 hours; life threatening within 3 hours; UL 2034 alarms should sound within 15 minutes.
70 PPM	If CO at this level for 4 hours, UL 2034 alarm should be sounding.
50 PPM	Maximum average level for continuous exposure in an 8 hour workday per federal law.
10-35 PPM	Marginal - Small children, elderly, and those suffering respiratory or heart problems are cautioned if these are chronic exposure concentrations. May increase heart stresses.
9 PPM	This concentration is often measured around busy city streets & intersections.
1-9 PPM	It may be difficult to avoid those often occurring spikes in transient or chronic CO levels without life-style changes.

Who is at risk? Everyone is at risk of being poisoned by CO. However, individuals with existing health problems such as heart & lung disease and often times the elderly are especially vulnerable to lower levels. Infants, children and pregnant women are also at risk.

Health effects of carbon monoxide; Long-term Exposure The health effects of CO are related to the concentration and length of exposure. New studies indicate that chronic, low level exposure can have serious health consequences and may be misdiagnosed. **CO detectors & properly maintained combustion appliances can save lives!** Carbon monoxide (CO) detectors can help alert you to increased levels of carbon monoxide in your home, **but they are not foolproof and you're not always home! Who is responsible for the air you breathe?**

CALL A PROFESSIONAL! CALL A CO CERTIFIED TECHNICIAN!