

# Carbon Monoxide

**The Silent Killer**

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# CO – The Silent Killer

- ❑ When temperatures cool, the danger from carbon monoxide gas rises
- ❑ Odourless, colourless and tasteless
- ❑ By-product of incomplete combustion and combustion without proper ventilation
- ❑ Levels can quickly build up and knock you out fast
- ❑ It is a sly and silent killer





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# CO – The Silent Killer

- By-product of incomplete combustion of fuel such as; natural gas, propane, heating oil, kerosene, coal, charcoal, gasoline, wood, or other bio-fuels
  - Can occur in any device that depends on burning a fuel for energy or heat
  - Examples of fuel burning devices: home furnace, space heater, decorative fireplace, woodstove, kitchen stove or grill, gas/charcoal barbeque, hot water heater automobile or lawnmower
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# CO – The Silent Killer

- ❑ Carbon Monoxide is the leading cause of poisoning deaths in North America
- ❑ People will often think that it can not happen to them
- ❑ Can occur in older drafty houses or newer sealed ones
- ❑ Can be caused by new or old furnaces





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# Ontario Facts

- In 2003, 9 people were seriously injured and 4 died from Carbon Monoxide poisoning
  - From 1999 to 2003, at least 17 people died
  - From 1998 to 2001, over 47,000 Carbon Monoxide incidence were investigated with a vast majority not being serious cases
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# CO in Natural and Artificial Environments

**Composition of dry atmosphere by volume - ppmv: parts per million by volume**

<b>Concentration</b>	<b>Source</b>
0.1 ppmv	Natural atmosphere level
0.5 - 5 ppmv	Average level in homes
5 - 15 ppmv	Near-properly adjusted gas stoves in homes, modern vehicle exhaust emissions
17 ppmv	Atmosphere of Venus
100 - 200 ppmv	Exhaust from automobiles in the Mexico City central area in 1975
700 ppmv	Atmosphere of Mars
5,000 ppmv	Exhaust from a home wood fire
7,000 ppmv	Undiluted warm car exhaust without a catalytic converter



# What do the levels of ppm mean to an average adult

PPM CO in air	Percent CO in Air	Symptoms experienced by healthy adults
Less than 35 ppm	0.0035%	no effect in healthy adults
100 ppm	0.01%	slight headache, fatigue, shortness of breath, errors in judgment
200 ppm	0.02%	headache, fatigue, nausea, dizziness
400 ppm	0.04%	severe headache, fatigue, nausea, dizziness, confusion, can be life-threatening after 3 hours of exposure
800 ppm	0.08%	headache, confusion, collapse, death if exposure prolonged
1500 ppm	0.15%	headache, dizziness, nausea, convulsions, collapse, death within 1 hour
3000 ppm	0.30%	Death within 30 minutes
6000 ppm	0.60%	Death within 10-15 minutes
12,000 ppm	1.20%	nearly instant death



# CO Detectors

- Simplest way to detect the presence of carbon monoxide
- Only 40% of homes have one
- About 25% check their batteries regularly
- Install near heating systems and sleeping areas
- Some may not provide adequate warning if CO increases to very high levels
- Could be at risk for low level poisoning and experience symptoms before alarm sounds



# CO can be created quickly

- Vehicles left running in a garage, a portable generator near an open window or in a garage, an outdoor gas barbecue used indoors, a grill or kerosene heater not properly vented or a fireplace chimney that has not been cleaned may all create unsafe levels of CO





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# Varied causes of CO alarms

- Appliances not properly vented
  - Use of gas cookers for heating
  - Portable space heaters
  - Charcoal use
  - Heat exchanger failures
  - Vent failures or vehicle running inside attached garage
  - Any of these and more can cause a detector to set off the alarm
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# Factors for CO alarms

- ❑ Opening a window can change the pressure in the combustion zone and the reading on the CO detector will update to reflect that change
  - ❑ Wind forces, exhaust fans and the furnace blower are all more powerful and can reverse the flow in the vents
  - ❑ These can be intermittent problems easily overlooked
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# CO detector vs. Smoke Alarm

- ❑ The devices each sound different
  - ❑ Important to know the difference between the two sounds
  - ❑ Educate everyone in the household about the two different devices and the sounds they make
  - ❑ Consult the owners manual for each ones characteristics of the audible sounds
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# CO Detector vs. Smoke Alarm

- CO alarm consists of 4 very quick beeps followed by a 5 second pause and the pattern is repeated
  - Smoke alarm signal consists of 3 beeps and a 1.5 second pause and the pattern is repeated
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# Who needs a CO detector

- Any residential building that contains at least one fuel-burning appliance, fireplace or an attached garage require the installation of a CO Detector
  - Even if you do not have any fuel-burning appliance it is recommended that you still install a Carbon monoxide detector.
  - CO can creep in from a open window from a neighbor running a vehicle outside or cooking with a Barbeque
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# Examples of Residential buildings

- Houses (detached, semi-detached, attached), rental apartments/condominiums, group homes, hostels, social housing, student residences/dormitories, retirement homes, camps for housing workers, clubs, hotels, recreational camps, shelters
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# Maintenance and Testing

- ❑ CO detectors should be replaced within the timeframe indicated in the manufacturer's instructions and/or on the label front
  - ❑ Annual testing is required and after each battery replacement
  - ❑ In addition, landlords must inspect after each tenant moves out before a new one takes over
  - ❑ Easily tested by activating the test feature available on all models
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# Maintenance

- A CO Detector is not a substitute for proper use and regular maintenance and inspection of all potential sources of carbon monoxide





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# Why is it so deadly

citizens and people with heart and lung problems are at greater risk

- Pregnant women, young children, senior citizens and people with heart and lung problems are at greater risk

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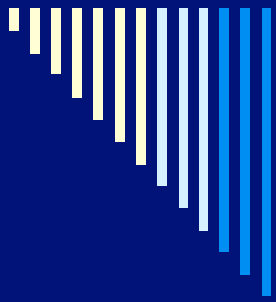
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# Carbon Monoxide Reminder

effects for the rest of your life.

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# Question Period

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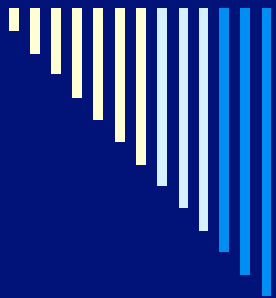


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# Thank you

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