

# Carbon monoxide: The invisible killer

Carbon monoxide (chemical abbreviation: CO) is a highly poisonous, colourless gas you can't smell or taste. You need a gas detector to warn you of the hazard. CO interferes with your body's ability to use oxygen, and can kill you.

## What are common sources?

- Engine exhaust. Gasoline, propane, and diesel engines all release CO.
- Fuel-fired heating devices.
- Some types of welding.

## Where can CO accumulate?

- In any enclosed or poorly-ventilated space where an engine is running, such as
  - basements or parts of buildings under construction
  - tarped-in areas of houses or buildings
  - garages or warehouses
  - areas you're heating with a fuel-fired heater
  - unventilated cabs or parked vehicles.
  - vehicles with faulty exhaust or muffler systems.

## What can I do?

1. Eliminate sources of CO, if possible.
2. Operate engines outdoors if possible. For example, welding machines and generators can be left outside while the leads run into the building.
3. Ensure adequate ventilation.
4. Have a written policy for controlling and monitoring CO in your health and safety program. Employers may be required to test the air for CO.

Refer to Ontario Regulation 833 or Part X of the Canada Occupational Health and Safety Regulations under the Canada Labour Code Part II for the requirements to control chemical hazards in the workplace.

## Vehicles and equipment outdoors

- Ensure that the air intake and fuel systems are working correctly.
- Inspect all vehicles and equipment regularly for such things as leaking exhaust connections or manifolds, as well as loose or broken floor boards, exhaust pipes, and mufflers.
- Don't leave a machine running.
- Never run a vehicle's engine in an enclosed space unless a ventilation or exhaust system is available and working properly.

## Operating equipment indoors

- Choose electric rather than fuel-powered equipment.
- Vent exhaust outside. Use exhaust hoses or fans.
- Make sure the area is well ventilated. Keep doors and windows open. Use fans to bring in fresh air.
- Never work alone in an area where CO can accumulate.
- Monitor CO levels continuously with a gas detector.
- Limit running time and don't let engines idle.
- If engines have been running in an enclosed area, allow time for a flow of fresh air into the area before entering.
- Use respiratory protection (it must be a supplied-air respirator) if your controls are inadequate.

## Heaters

When using a heater, ensure that it is in a well ventilated area. You should have a gas detector.

Choose an indirect-fired heater instead of a direct-fired heater when you want to heat an enclosed space. An indirect-fired heater vents combustion by-products outdoors while ducting heated air indoors. A direct-fired heater (such as an open-flame or closed-flame heater) releases combustion by-products into the heated area.

## Signs and symptoms of CO poisoning

- Shortage of breath on moderate exertion
- Headache
- Dizziness
- Fatigue or drowsiness
- Impaired vision

Continuing exposure leads to loss of consciousness and eventual death.

At the first indication of symptoms, get into fresh air. With severe exposure, seek immediate medical attention. CO accumulates in your body over time. Even short or light exposures can add up to deadly poisoning.

## More info

For a free online tutorial on CO, visit [www.ihsa.ca](http://www.ihsa.ca), go to the construction section, and click on "E-learning & videos". We also have articles and safety talk.

IHSA is also looking for volunteers for a working group to review sections of the Construction Regulation dealing with workplace ventilation and CO exposure. To find out more, contact Enzo Garritano at [egarritano@ihsa.ca](mailto:egarritano@ihsa.ca). 