

Carbon Monoxide

How can I be exposed to carbon monoxide at work?

The burning of fuel produces carbon monoxide. The fuel is often gasoline, diesel, or propane used in engines. Poorly maintained engines can be less efficient and produce more carbon monoxide. Carbon monoxide is also produced when other materials such as wood or coal are burned. Some work processes, like welding, produce carbon monoxide. When carbon monoxide is produced in an enclosed space or where there is poor ventilation, it can build up to dangerous levels. The problem can be worse in the winter when doors and windows are closed.

Why is carbon monoxide dangerous?

Carbon monoxide is an odourless, colourless, tasteless gas. You can't tell if it is there. It can build up quickly to deadly levels in confined spaces, sheds, tanks, and small or closed rooms. Carbon monoxide can also build up in large spaces like parking garages and warehouses if the ventilation is poor.

If you are working hard or have heart disease, some symptoms of carbon monoxide poisoning will occur sooner and at lower levels.

How can breathing carbon monoxide make me sick?

Carbon monoxide interferes with the blood's ability to carry oxygen. Without oxygen your body can not work properly. The lack of oxygen especially affects your heart and brain. The first symptom is usually a throbbing headache. If you continue to be exposed to carbon monoxide

or are exposed to higher levels, you may have symptoms such as dizziness, confusion, nausea, fainting and weakness. These symptoms may make it more difficult to perform your job safely. You may not recognize the symptoms as carbon monoxide poisoning but just have a general sense of not feeling well.

Very high exposure can cause increased and irregular heartbeats, unconsciousness and death. Permanent brain damage may occur following high exposure

How can long-term exposures to carbon monoxide affect my health?

Some workers, who typically have long term exposures to carbon monoxide have been studied. The studies showed that there is an increase in cardiovascular (heart and blood system) problems among these workers. Carbon monoxide exposure can also make some heart diseases, like angina worse.

What can be done to prevent carbon monoxide poisoning in my workplace?

The best approach is prevention. Ask your Workplace Health and Safety Committee or Representative to investigate your concern about carbon monoxide exposures. The investigation can include finding out

- which workplace processes or equipment can give off carbon monoxide
- if coworkers have early carbon monoxide poisoning signs

- the level of carbon monoxide in the air
- the best way to prevent overexposure to carbon monoxide

Fighting carbon monoxide on the job

Last winter a warehouse worker asked his Joint Workplace Health and Safety Committee to investigate an ongoing health problem. Since the fall he had been suffering from headaches at work that went away in the evening. While he did not drive a forklift, they were frequently used in his work area.

The Committee called the OHC to assess the problem and recommend solutions. Carbon monoxide levels were found to be too high. The carbon monoxide was coming from poorly maintained forklifts and delivery vehicles that were backed up to the loading dock and left their engines running. The warehouse had been cut off from the plant's general ventilation when it was remodeled the previous spring. This problem had not been noticed immediately because the warehouse doors were always left open during the summer.

Changes were made in the warehouse area. Proper ventilation was installed and now all forklifts are on a regular maintenance testing schedule. Deliveries will only be accepted if motors are turned off. The company is planning to buy electric forklifts in the future. Best of all, workers no longer have headaches.

Training is needed for all workers on the causes carbon monoxide poisoning, safe work practices, and what to do if someone gets sick or if there is an emergency.

There are many different ways to eliminate or reduce exposure to carbon monoxide in the workplace. The best way will depend on the work processes and equipment in your work place. Some examples are

- use a different process that does not give off carbon monoxide
- use local exhaust ventilation to remove carbon monoxide where it is produced, before it gets into the workplace air
- make sure that there is enough ventilation to remove carbon monoxide even when doors and windows are shut in the winter
- make sure that all internal combustion engines (gasoline, propane and diesel) are properly tuned and maintained
- use electric powered equipment (such as forklifts) indoors
- make sure that delivery vehicles do not leave motors running at loading docks or near building air intakes
- install a carbon monoxide alarm and test it regularly

What should I do if someone is seriously impaired or unconscious from breathing carbon monoxide?

- do not attempt a rescue unless you have the proper training and proper personal protective equipment (i.e., self-contained breathing apparatus) - you could easily pass out
- activate the emergency response procedures for your workplace or call

the emergency number (911 or rural emergency number)

- barricade area and evacuate workers
- call Manitoba Workplace Safety and Health at 945-3556 or for federally regulated workplaces, Labour Programs at 983-6375

What should I do if a worker has early symptoms of carbon monoxide poisoning?

- stop any equipment or process that could generate carbon monoxide
- promptly tell your supervisor and the person in your workplace responsible for investigating health and safety problems (ie, Safety Officer, Health and Safety Representative, Joint Workplace Health and Safety Committee member) that you are concerned about possible carbon monoxide poisoning
- restart work and equipment after the problem has been fixed or it is determined that there is not a health hazard

Is there anything else I should know about exposure to carbon monoxide?

Exposure to methylene chloride (a solvent and paint-stripper) and cigarette smoke also result in carbon monoxide in the blood. Exposure to carbon monoxide and methylene chloride at the same time can cause very serious health problems. Once methylene chloride is in the body, it is converted to carbon monoxide. Carbon monoxide from both sources react with the blood and prevent the uptake of oxygen. Both exposures must be accounted for when determining the hazard to a worker's health.

Smoking also increases the amount of carbon monoxide in your blood. The combination of smoking and workplace carbon monoxide exposure can increase the chances of both short and long term health problems.

There is a blood test that measures the amount of the carbon monoxide in your blood. Arrangements for the test need to be made in advance, because the blood sample should be taken just after exposure stops. Smokers will have a higher amount in the blood than non-smokers. This test can provide information about a worker's carbon monoxide exposure but is not a substitute for a complete workplace evaluation.

If you need more information contact the

MFL Occupational Health Centre
102-275 Broadway
Winnipeg, Manitoba R3C 4M6
Phone: (204) 949-0811
Fax: (204) 956-0848
Toll Free: 1-888-843-1229
(Manitoba only)
Email: mflohc@mflohc.mb.ca
Website: www.mflohc.mb.ca

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