

# Carbon Dioxide (CO<sub>2</sub>) Monitor Lending Program for Indoor Air Quality

**BORROW ONE TODAY!**

Reach out to:  
healthy.environments@vch.ca  
if you are interested in  
borrowing a CO<sub>2</sub> monitor  
for 7 days.

## WHAT DO CO<sub>2</sub> MONITORS MEASURE?

CO<sub>2</sub> monitors can help to assess ventilation by providing real-time measurements of CO<sub>2</sub> in the air. Some devices also log data, and may provide other measurements such as temperature and humidity.



## WHAT ARE THE BENEFITS OF MONITORING CO<sub>2</sub>?

Most people spend the majority of their time indoors, including home, school, and work. In an indoor setting, it is natural to find CO<sub>2</sub> in the air, and **lower levels are not a concern**.

However, when a space has poor ventilation and indoor CO<sub>2</sub> increases, people may be at an increased risk of:

- Tiredness
- Headache
- Eye irritation
- Sore or dry throat
- Difficulty concentrating
- Dizziness
- Stuffy, congested or runny nose, sneezing, coughing and rhinitis

These effects may not be from CO<sub>2</sub> exposure, but from poor indoor air quality in general.

**Crowded and inadequately ventilated spaces are more likely to have high CO<sub>2</sub> levels.**

## HOW DO I INSTALL THE MONITOR, AND WHERE SHOULD I PLACE IT?

Place the monitor at a height of about 1-2 metres (3-6 feet), away from windows and air supply vents, and if possible, at least about 2 metres (6 feet) away from people, fuel-burning appliances, and open flames. You may choose to monitor for several days to learn about patterns in your space, and some devices have apps to support this.

## WHERE DOES INDOOR CO<sub>2</sub> COME FROM?

When we breathe out, we release CO<sub>2</sub> into the air. CO<sub>2</sub> that is found in the indoor environment is mainly from breathing, but can also come from cigarette smoking and fuel-burning appliances.



CO<sub>2</sub> is odourless, colourless, and non-flammable. The best way to know how much CO<sub>2</sub> is in the air is to measure it with a CO<sub>2</sub> monitor.

## CO<sub>2</sub> AS AN INDICATOR OF VENTILATION

Poorly ventilated spaces, without enough fresh outside air moving in, can allow for indoor air pollutants (such as CO<sub>2</sub>, volatile organic compounds (VOCs), mould, and smoke) to build up and potentially impact health.

# HOW TO INTERPRET INDOOR CO<sub>2</sub> LEVELS



Health Canada has set **1000 parts per million (ppm)** as an indoor long-term exposure limit, based on a 24-hour average. It is normal and expected to see changes in CO<sub>2</sub> levels throughout the day. **Ideally, indoor CO<sub>2</sub> levels should be below 1000 ppm, and as close to outdoor levels as feasible (300 - 500 ppm).** Severe acute health effects are not expected at CO<sub>2</sub> levels below 5000 ppm.

**We recommend using the monitor consistently for a period of time (e.g. 7 days) to determine trends and causes for CO<sub>2</sub> level changes, and take action where necessary and possible to improve ventilation.**

**While CO<sub>2</sub> monitors do not directly measure the risk of infectious disease transmission in a space, good ventilation can reduce the risk of infections transmitted through the air.**

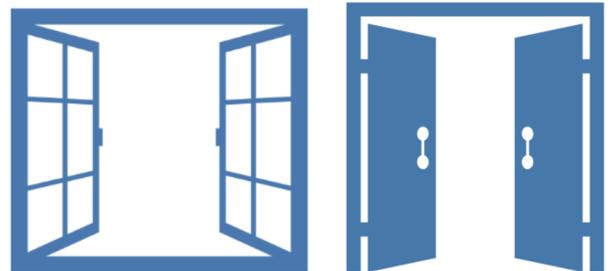
## HOW TO IMPROVE VENTILATION AND AIR QUALITY IN A SPACE?

**If your monitor is showing high levels of CO<sub>2</sub>, consider the following actions to increase ventilation or control the sources of contaminants:**

- Open windows or doors. Increase the amount of outdoor air being drawn in (keeping in mind outdoor air quality)
- Maintain, repair, and/or upgrade your Heating, Ventilation and Air-Conditioning (HVAC) system
  - Set the mechanical ventilation system to a higher setting or let it run longer
  - Make sure air is distributed evenly throughout the building using the HVAC fan or a separate fan or air supply
- Use portable air cleaners with HEPA filters, which can reduce indoor air contaminants including smoke and aerosols containing bacteria or viruses
- Ensure fuel-burning appliances are properly vented
- Not smoking indoors
- Use a range hood exhaust fan with outside venting when cooking
- Fix moisture problems and control humidity levels
- Choose low VOC carpets, furniture, paint, and cleaning products

**Generally, indoor air quality can be improved by:**

- Controlling and eliminating sources of air pollutants
- Ensuring good ventilation
- Cleaning the air (typically by filtering)



**It is also important to consider outdoor air quality and reduce entry of outdoor air pollutants when necessary. This is especially crucial during wildfire smoke events.**