



Tips for Using Gas Detectors in Cold Weather

Dave Wagner | December 3, 2019

With colder weather on the horizon, you may have concerns about how well your [portable gas detectors](#) will function when winter puts its death grip on the thermometer. While some instruments are rated as low as -40 degrees, the low temperature rating for continuous operation of most portable gas monitors is -20 degrees Celsius. Even so, most instruments may be used at lower temperatures for short periods. Sensor response will certainly change as the temperatures get colder, but more sophisticated gas monitors typically use “temperature compensation” to keep gas readings within +/-15% of the actual concentrations.

Here are some tips to help you get a warm feeling when using gas detectors in cold weather.

1. Less than 20 minutes: no need to stabilize. When you walk outside, you feel the cold instantly. However, it will take a while for your gas monitor to reach equilibrium with the ambient temperature. The temperature compensation will typically track with the internal temperature of the monitor. If you will be using the monitor for 20 minutes or less, you don't need to allow it to stabilize and adjust to the outdoor temperature before using it. Turn it on, take your readings, and get back inside where it's warm.

2. More than 20 minutes: stabilize. If you will be using your monitor outside for more than 20 minutes, let it stabilize at the ambient temperature for 15 – 20 minutes before use, and then turn it on and zero the sensors in fresh air.

3. Store in a humid area. The cold winter climate can be extremely dry, especially in the Northern Plains, Northwest Canada, and Alaska. The dry climate impacts the performance of some electrochemical sensors even more than cold temperatures. To prevent the aqueous electrolytes from drying out, store and charge your instruments in a humidified area. Keeping the ambient relative humidity at 40-50% will go a long way toward maintaining the sensitivity of your sensors and will keep them working longer.

4. Bump test frequently if monitor lags.

The response of the instrument may appear sluggish at temperatures below -20C. The display may dim and even go blank if it freezes. If this happens, your gas monitor will likely still detect gas and will still alarm. If you must use it this way, you should [bump test it before each use](#) to make sure it responds, and you should get the instrument warmed up as soon as possible.



5. Check for a frozen oxygen sensor. The electrochemical sensors in your instrument typically have an aqueous electrolyte, and in some cases, may freeze as temperatures drop below -20C for an extended period. The oxygen sensor will normally be the first to freeze. When frozen, the sensors will not be able to produce a reliable reading, but functionality should return once they warm up and thaw out.

6. Be ready to charge more frequently. Battery run time may be reduced in cold temperatures. Below -20C, run time may be reduced by 50% or more.

7. Keep monitor warm until you need it. Keeping your gas monitor close to your body will keep it as warm as possible. If you are using the monitor for remote sampling, keeping it inside your coat as long as possible will help keep it warm and functioning longer.

A good rule of thumb for using gas detectors in cold weather is that if you can stand to be out working in the cold, so can your gas monitor. If it's too cold for you, it's probably too cold for the instrument.

Baby it's cold outside, so until the milder temperatures of spring return, work safe, and try to keep warm.

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