

# Carbon Monoxide (CO)- Calibration Gas

Author: ChéAna Morgan

## Carbon Monoxide (CO)

Known as the "silent-killer" and causing roughly 500 deaths per year, Carbon Monoxide is one of the most common industrial hazards. It is a highly toxic, odorless, colorless, tasteless, and poisonous gas that can have deadly consequences when exposure occurs. CO is mostly harmful due to the fact that it displaces oxygen in your blood which then deprives other essential organs such as your heart and brain of necessary oxygen. Excessive amounts of Carbon Monoxide can overtake a person without any warning leading to unconsciousness and suffocation. Typically CO becomes a danger at levels of 100ppm and above. Workplace exposures are limited to less than 50ppm over an 8 hour time span. Tolerance levels of Carbon Monoxide exposure differ from person to person, but precautions should be taken despite this. CO is produced industrially for utilization in the manufacture both organic and inorganic chemical products and is most commonly known for presence in the exhaust gases of internal-combustion engines.



## Also Known As..

Carbonous Oxide
Carbonyl
Flue Gas
Monoxide

## Health Effects at Different Levels of Exposure to Carbon Monoxide

Exposure to Carbon Monoxide can cause a number of different symptoms similar to less threatening ailments such as food poisoning or the flu. This makes it extremely important to know and understand the signs of potential exposure along with your exposure risks when working in confined spaces. Symptoms such as headaches, blurred vision, dizziness, chest pain and disorientation that occur on a regular basis could indicate that you are being exposed to low levels of carbon monoxide over a long period of time. Exposure at very high levels can cause death within minutes. Irreversible neurological effects are possible if Hypoxia (severe oxygen deficiency) occurs from acute carbon monoxide poisoning. Ultimately, the most accurate way to determine exposure is with a CO gas detector. If at any point you feel as though you may have been exposed to Carbon Monoxide if possible move to fresh air immediately.

Level of CO	Health Effects, and Other Information
0 PPM	Normal, fresh air.

9 PPM	Maximum recommended indoor CO level (ASHRAE).
10-24 PPM	Possible health effects with long-term exposure.
25 PPM	Max TWA Exposure for 8 hour work-day (ACGIH).
50 PPM	Maximum permissible exposure in workplace (OSHA).
100 PPM	Slight headache after 1-2 hours.
125 PPM	
200 PPM	Dizziness, nausea, fatigue, headache after 2-3 hours of exposure.
400 PPM	Headache and nausea after 1-2 hours of exposure. Life threatening in 3 hours.
800 PPM	Headache, nausea, and dizziness after 45 minutes; collapse and unconsciousness after 1 hour of exposure. Death within 2-3 hours.
1000 PPM	Loss of consciousness after 1 hour of exposure.
1600 PPM	Headache, nausea, and dizziness after 20 minutes of exposure. Death within 1-2 hours.
3200 PPM	Headache, nausea, and dizziness after 5-10 minutes; collapse and unconsciousness after 30 minutes of exposure. Death within 1 hour.
6400 PPM	Death within 30 minutes.
12,800 PPM	Immediate physiological effects, unconsciousness. Death within 1-3 minutes of exposure.

## Is Carbon Monoxide Reactive or Non-Reactive?

There are no known possibilities of Hazardous reactions for Carbon Monoxide therefore it is classified as a non-reactive gas. When contact occurs with oxidizing agents such as chlorine and aluminum there is an increased risk of fire and/or explosion.

## The Importance of Carbon Monoxide Detection Systems

Working in confined spaces increases your risk of Carbon Monoxide exposure and it is impossible to detect without the use of proper monitoring equipment. Safety considerations are necessary to ensure the health and safety of anyone who runs the risk of exposure to any dangerous gas emissions, which is especially true for confined space workers. Confined spaces often appear to be harmless, but invisible gases such as Carbon Monoxide (CO) displaces oxygen and without oxygen a worker could be dead in 4 minutes. Utilizing a multigas detector before and during entering a confined space could mean the difference of life or death. Choosing the appropriate sensor configuration (Electrochemical or Wet Chem toxic sensor for chemicals such as Carbon Monoxide) will allow you to detect hazardous gases accurately and in a timely manner. Portable gas detectors are available from an abundance of different manufacturers.

Exposure period	WES	Measurement
8 hours	25 ppm	average exposure over 8 hours
1 hour	50 ppm	average exposure over 1 hour
30 minutes	100 ppm	average exposure over 30 minutes
15 minutes	200 ppm	average exposure over 15 minutes
Ceiling (instant)	400 ppm	ceiling (instant) reading

WES\* Workplace Exposure Standard

## Safety Precautions: Handling & Storage

It is extremely important to educate yourself on the proper handling and storage procedures of Carbon Monoxide calibration gas cylinders, as the gas is highly toxic and can reach deadly exposure limits within minutes. Having the proper detection devices in place is just the first step. When Cylinders are being stored there are certain steps that can be taken to minimize risk and potentially save your life.

- Read Hazard Labels and follow storage instructions that are included with the gas cylinder
- Working conditions should not allow exposure to corrosion, flames, sparks and other sources of ignition
- Store cylinders vertically and restrain them with a chain or bracket
- Keep cylinders away from heat sources
- Never use compressed gas cylinders for any purpose other than its intended use
- Keep storage area well ventilated at all times
- Full and empty cylinders should be kept separately
- Never Roll cylinders along the ground

## Carbon Monoxide Gas Cylinder Sizes

Egas Depot offers a wide range of [Carbon Monoxide Calibration Gases](#). With 13 different liter sizes and over 20 different options for your ppm/LEL requirements available to you, we are a one-stop shop for all of your field calibration needs.