How much carbon monoxide (CO) is too much? If you are going to make laws about carbon monoxide alarms, please learn more about it!

Bob Dwyer, Director of Training; COSA (Carbon Monoxide Safety Association)
www.cosafety.org "Every day is a carbon monoxide safety day!"

The health effects can vary significantly due to age, sex, weight and overall state of health. **U.L. 2034 Listed alarms do not give enough protection from chronic harmful levels of carbon monoxide.** CO is measured in Parts per Million or PPM; out of a million molecules of air, how many are carbon monoxide. The times listed with the symptoms in the chart below are for healthy people unless otherwise stated.

12,000 PPM	Death within 1 – 3 minutes
1,600 PPM	Nausea within 20 minutes, death within 1 hour
800 PPM	Nausea and convulsions – death within 2 hours
400 PPM	Frontal headaches within 1-2 hours; life threatening within 3 hours; **UL 2034 alarms should sound within 4 and 15 minutes.**
200 PPM	NIOSH (National Institute for Occupational Safety & Health Administration) A worker will not be exposed to more than this amount.
150 PPM	**UL 2034 Listed alarms must respond within a range of 10 to 60 minutes if this concentration or higher is present.**
70 PPM	**If CO at this level for 60 minutes up to 4 hours, UL 2034 alarm should be sounding.**
50 PPM	Maximum average level for continuous exposure in an 8 hour workday per federal law, U.S. OSHA.
36-99 PPM	**Excessive levels with foreseeable health hazards. Suggest a medical alert and health consultation especially if levels displayed are chronic conditions. Advise use of air packs. Ventilation required and source discovery testing is recommended.**
35 PPM	8 hour exposure TWA (time weighted average); NIOSHA (National Institute of Occupational Safety and Health Administration) of the CDC (Center for Disease Control).
25–35 PPM	Levels where fire department personnel wear breathing apparatus. Fire Departments begin evacuation of buildings at these levels.
10–35 PPM	Marginal - Small children, elderly, and those suffering respiratory or heart problems are cautioned if these are chronic exposures concentrations. May increase heart stresses. **COSA (Carbon Monoxide Safety Association) approved alarms & monitors begin alarming no later than within these concentration levels.**
25 PPM	8 hour TWA limit; ACGIH (American Conference of Governmental Industrial Hygienists)
9 PPM	Average concentration often measured around busy city streets & intersections.
1 -9 PPM	**It may be difficult to avoid those often occurring spikes in transient or chronic CO levels without life-style changes.**

What are the symptoms of CO poisoning? Consult with your physician!

Carbon monoxide poisoning mimics many common illnesses, such as the flu and food poisoning. The following is a list of common symptoms.

· headaches	· loss of hearing	· loss of consciousness	· blurry vision	· cardiac arrest	· seizures
· disorientation	· respiratory failure	· weakness	· painful discomfort	· rapid heartbeat	· vomiting
· depression	· dizziness	·muscle aches & soreness	· memory disorders	· nausea	· coma

This list is not meant to serve as a diagnosis of carbon monoxide poisoning. It is meant to provide general information on poisoning symptoms. Oxidative stress causes a chain reaction in the body due to the interruption of oxygen intake and is most often not explored by the medical community though they may be presented with the symptoms many times every day. **Carbon monoxide poisoning** is best treated with supplemental oxygen or pressurized oxygen in a hyperbaric chamber where CO is forced out of the hemoglobin of the blood. The longer CO stays in the body, the more disruption in body functions and symptoms are likely. Carbon monoxide alarms can begin protection at levels that will protect more people more often; the current U.L. 2034 standard does not.

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