



Coffee Break Training - Fire Protection Series

Hazardous Materials: Carbon Monoxide Toxicity

No. FP-2012-8 February 21, 2012

Learning Objective: The student shall be able to identify common symptoms of carbon monoxide exposure.

When the hotel guest pulled the chair back from the desk, he was startled to see what appeared to be the improper placement of a smoke alarm beneath a desk. Further investigation revealed it was a carbon monoxide (CO) detector.

CO's specific gravity is 0.9657 (air = 1) so it is slightly more buoyant and mixes easily with room air, especially if the air is heated. Proper detector placement is essential to provide early notification.

According to the Federal Occupational Safety and Health Administration (OSHA), the maximum CO exposure in an 8-hour period is 35 parts per million (ppm). When one considers exposure with a victim's age and health, the potential consequences are alarming. CO poisoning is often confused with the flu-like symptoms of headache, nausea, and dizziness, so a CO exposure is easily masked.

The following table describes the potential symptoms, including death, from assorted levels of CO exposure. Remember that these are general numbers only, and may differ for individuals who are exposed.

CO Airborne Exposure Level (ppm)	Average Duration (minutes)	Typical Symptoms
100	120-180	Slight headache
400	60-120	Frontal headache
400	150-210	Widespread headache
800	45	Dizziness, nausea, seizure
1,600	20	Headache, dizziness, nausea
1,600	60-120	Death
3,200	5-10	Headache, dizziness, nausea
3,200	60	Death
6,400	1-2	Headache, dizziness, nausea
6,400	25-30	Death
12,800	1-3	Death



The location of this carbon monoxide detector acknowledges the specific gravity of the toxic gas.

See Coffee Break Training 2011-45 "Attention to Detail" for information on CO safety tips.



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