



The Boiler ROOM

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Carbon monoxide dangers

Use the proper tools to stay safe in the boiler room.

The school electrician entered the boiler room one morning to diagnose the electrical problem for one wing of the school. A short while later, the school principal asked the secretary to check on the progress of the electrician. When she opened the door to the boiler room, she saw the electrician passed out on the floor.

Rather than rushing to the fallen man, she sprinted to the office and called 911. The first responders tested the space and found highly elevated levels of carbon monoxide.

They evacuated the man and rushed him to the hospital. The man survived thanks to the quick thinking of the secretary and the first responders.

I was asked to visit this boiler room a few weeks later to ascertain the cause of the accident. The source of the incident was two-fold. The first cause was the flue for the boilers was improperly installed and allowed flue gases to vent inside the boiler room. The second cause was the boilers were not maintained properly and the fuel-to-air



A typical plug-in carbon monoxide detector.

CO CONCENTRATION IN AIR	INHALATION TIME AND SYMPTOMS
9 ppm	ASHRAE maximum allowable concentration for short exposure in a living area.
50 ppm	Maximum allowable concentration for continuous exposure in any 8-hour period.
200 ppm	Headache, tiredness, dizziness and nausea after 2 to 3 hours.
400 ppm	Frontal headache within 1 to 2 hours and life threatening after 3 hours. Maximum allowable amount (air-free) in flue gases.
800 ppm	Dizziness, nausea and convulsions within 45 minutes. Unconsciousness within 2 hours. Death within 2 to 3 hours.
1,600 ppm	Headache, dizziness and nausea within 20 minutes. Death within 1 hour.
3,200 ppm	Headache, dizziness and nausea within 5 to 10 minutes. Death within 30 minutes.
6,400 ppm	Headache, dizziness and nausea within 1 to 2 minutes. Death within 10 to 15 minutes.
12,800 ppm	Death within 1 to 3 minutes.

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