

HOW CAN POISONING BE PREVENTED IN THE WORKPLACE?



SUGGESTIONS FOR EMPLOYERS

1. Install an effective ventilation system that will remove carbon monoxide from work areas.
2. Maintain equipment and appliances that can produce carbon monoxide in good working order to promote their safe operation and to reduce CO formation.
3. Consider switching from gasoline-powered equipment to equipment powered by electricity, batteries, or compressed air if it can be used safely.
4. Provide approved respirators for emergency use. Regular respirators (negative pressure) will not work in this atmosphere. If necessary, provide an independent air supply to workers.
5. Install carbon monoxide monitors with audible alarms or test air regularly in areas where carbon monoxide may be present, including confined spaces.
6. Provide preplacement and periodic medical examinations for workers who may be exposed to carbon monoxide. If possible, transfer affected workers to other jobs
7. Instruct workers in the hazards of carbon monoxide and train them in the proper use of respirators.

SUGGESTIONS FOR WORKERS

1. Report any situation to your employer that might cause carbon monoxide to accumulate.
2. Be alert to ventilation problems—especially in enclosed areas where gases of burning fuels may be released.
3. Report complaints early. Don't overexert yourself if you suspect carbon monoxide poisoning and leave the contaminated area.
4. Tell your doctor that you may have been exposed to carbon monoxide if you get sick.

Think carefully about your smoking habits. Tobacco, when burned, releases carbon monoxide which reduces the oxygen carrying ability of the blood, even before any industrial exposure is added.

LEVELS OF CONCERN

CO LEVELS:	EFFECTS
12,800 PPM	Death within 1 to 3 minutes.*
1,600 PPM	Nausea within 20 minutes; death with in 1 hour.*
800 PPM	Nausea and convulsions, death within 2 hours.*
400 PPM	Frontal headaches 1 to 2 hours: life threatening after 3 hours.*
50 PPM	Maximum concentration for continuous exposure in any 8 hour period.
9 PPM	Maximum acceptable level of CO in a living space.

*Effects can vary significantly based on age, sex, weight and overall state of health.

EXPOSURE LIMITS

The current Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) for carbon monoxide is 50 parts per million (ppm) of air (55 milligrams per cubic meter (mg/m³)) as an 8 hour time weighed average (TWA) concentration.

The National Institute for Occupational Safety and Health (NIOSH) has established a recommended exposure limit (REL) for carbon monoxide of 35 ppm (40 mg/m³)) as a 8 hour TWA and 200 ppm (229 mg/m³)) as a ceiling [NIOSH 1992]

The American Conference of Governmental Industrial Hygienist (ACGIH) has assigned carbon monoxide a threshold limit value (TLV) of 25 ppm (29 mg/m³)) as a TWA for a normal 8 hour workday and a 40 hour workweek [ACGIH 1994, p. 15]

*Rational of Limits

The NIOSH limit is based upon the risk of cardiovascular effects [NIOSH]

The ACGIH limit is based upon the risk of elevated carboxyhemoglobin levels [ACGIH 1991, p. 229]