



POWERED BY 7710 INSURANCE COMPANY
WC Specialists for Emergency Services

Carbon Monoxide

THE "INVISIBLE KILLER"



7710 is the premiere provider of Workers' Compensation Insurance for Firefighters and EMS.
Built by first responders, for first responders.

Course Objectives

- Define carbon monoxide
- Describe possible sources
- Identify carbon monoxide poisoning signs and symptoms
- Understand who is at risk for poisoning
- Describe key prevention tips and available resources
- Recognize Poison Center Services



What Is Carbon Monoxide?

CO is a colorless, tasteless, odorless non-irritating gas produced when sources of carbon, such as fuels or wood are burned.

Because carbon monoxide is essentially invisible, it is known as the "invisible killer."



Carbon Monoxide VS Carbon Dioxide

Carbon Monoxide	Carbon Dioxide
A byproduct of burning fuels	Gas exhaled with normal breathing
A poison even at low doses	An asphyxiate and poisonous at high doses



Who Is At Risk?

EVERYONE is at risk, especially:

- People using alternate heat sources during power outages
- The elderly
- Unborn babies, infants
- Pets
- Individuals with chronic heart disease, anemia or respiratory problems



Who Is At Risk?

- Personnel at fire scenes (fire-fighters/rescue workers)
- Individuals working with combustion engines or combustible gases indoors
- Industrial workers at pulp mills, steel foundries and plants producing formaldehyde and coke



Is CO Poisoning Common?

- One of the leading causes of unintentional/accidental poisoning deaths in the United States
- Poisonings occur more often in the fall and winter months
- Accounts for approximately 50,000 emergency department visits each year in the U.S.



Sources

Burning fuels such as:

- Wood
- Oil
- Natural gas
- Gasoline
- Kerosene
- Propane
- Coal
- Diesel

Common sources of human exposure:

- Smoke inhalation from fires
- Automobile exhaust
- Faulty or poorly vented charcoal, kerosene or gas stoves
- To a lesser extent, cigarette smoke and methylene chloride (industrial uses)

Electrical appliances do not produce CO



Cold Weather Hazards

Insufficient ventilation

- Generators used inside during a power outage
- Gas or kerosene heater in room without proper ventilation
- Stoves or fireplaces that are improperly vented or blocked
- Exhaust flues or appliance ducts that are blocked or sealed shut
- Cars or trucks idling in a garage

Opening a door or window is not sufficient



Cold Weather Hazards

Poor function or worn parts

- Appliances and equipment
- Heating systems

Improper usage

- Using charcoal grills indoors
- Heating homes with gas ovens



Warm Weather Hazards

- Enclosed area (poor ventilation)
- Gas, kerosene, charcoal, propane or hibachi grills
- Gasoline-powered equipment (lawnmower, chainsaw, generator,) used in a home, garage or under a tarp
- Gas-fueled lanterns and stoves burned inside a tent, trailer, boat cabin without proper ventilation



Warm Weather Hazards

- Excessive inhalation of exhaust fumes
- Teak surfing or pulling a skier from a boat's diving platform
- Diving from or swimming near a houseboat platform
- Riding in the back of a pickup truck with a camper shell



How Does Carbon Monoxide Poisoning Occur?

- Enters the body through the lungs and is delivered to the blood
- Red blood cells pick up CO instead of oxygen
- Hemoglobin likes CO 250 times more than oxygen
- CO prevents the oxygen that is present from being readily released to and used properly by tissues



What Happens When We Don't Have Oxygen?

Can only live a few minutes without oxygen

- Vital organs such as the brain and heart need oxygen
- Brain damage
- Organ damage
- Possibly death



Toxic Events = Concentration x Exposure

Long-term exposure to low levels of CO

Short-term exposure to high levels of CO

Both types of exposure possess their own inherent DANGERS



Signs And Symptoms of CO Poisoning

Flu-like symptoms (without fever or runny nose) including:

- Headache
- Fatigue/sleepiness
- Shortness of breath
- Nausea
- Dizziness
- Confusion or disorientation

Young children, elderly and household pets are usually effected first



Failure To Detect Danger

- Often mistaken for the flu, food poisoning or other illnesses.
- Those sleeping or intoxicated can die before experiencing any symptoms.
- Prolonged exposure can lead to brain damage and death.
- Victims may become disoriented and unable to save themselves



CO Poisoning Prognosis

- Difficult to predict the long-term effects of CO poisoning/exposure
- Even with proper medical treatment some people can develop long-term brain damage.
- If pregnant, fetal complications or death may result.
- Some individuals appear to have no long-term affects.



Carbon Monoxide Alarm

Install a carbon monoxide alarm close to sleeping areas. For more protection:

- Install one in every bedroom
- Install one on every level of your home
- Never ignore a carbon monoxide alarm, IT COULD SAVE A LIFE!



Buying An Alarm

- Do not buy based on price.
- Purchase with Underwriters Laboratories (UL 2034) label.
- Contact Consumer Product Safety Commission (CPSC) for assistance.
- Follow manufacturer's instructions for placement, use and maintenance.



Maintaining Alarms

If battery powered:

- Check monthly
- Replace batteries every year or when batteries are low
- If electric, make sure there is battery backup in case of power outages.



Emergency – When the Alarm Sounds!

- Get fresh air right away
- Call 911 or your local fire department
- Call the local Poison Control Center
- Do not re-enter an affected home until CO is gone
- Fire department can determine when it is safe to re-enter a building



Fire Department / EMS's Role?

- Rescue victims
- Find source of CO
- Utilize special detectors that monitor small amounts of CO (parts per million/PPM) in the atmosphere at any given location.

If CO is detected:

- The source will be investigated and identified
- Next steps will be recommend.
- The area will be ventilated until CO levels are safe.



Prevention Tips

- Purchase CO alarms.
- Install and maintain according to manufacturer's instructions.
- If CO alarm goes off, evacuate home immediately and call 911.
- Know signs and symptoms of CO poisoning.
- Professionally install & annually inspect appliances & heating systems.
- Open the flue when using a fireplace.
- Make sure stove pipes and other vents are joined tightly without cracks or rust.



Prevention Tips Don'ts

- Never run a portable generator, gasoline-powered engines (such as mowers, snow-blowers, chainsaws) or burn charcoal in:
 - Crawlspace
 - Indoors
 - Garages
 - Basements
 - Closed in porch
 - Vehicle
 - Tent
 - Under windows
- Never leave a car, mower or other vehicle running in a garage, even with the door open.
- Do not heat a home with a gas oven.



Visual Warning Signs

- Streaks of carbon or soot around door of your fuel-burning appliance.
- A large amount of rusting on flue pipes or appliance jackets or vent pipes.
- Moisture on windows/walls of furnace doors.
- Flu-like symptoms that go away when you leave home and come back when you re-enter.



Visual Warning Signs - Fireplaces

- Discolored or damage bricks at top of chimney.
- Soot falling from fireplace.
- No draft in your chimney.



Network Types Of Calls

- Poison emergencies/exposures
- Poison related questions and information
- Medication identification
- Substance abuse and medication information
- Health care professional treatment consultation



Additional Resources

Environmental Protection Agency Information Clearinghouse (EPA)

Information on indoor air quality

1-800-438-4318

www.epa.gov/iaq/iaqinfo.html

Consumer Product Safety Commission (CPSC)

Information on CO poisoning prevention,
purchasing a CO alarm & report products or
product-related injuries

1-800-638-2772 (TTY 1-800-638-8270)

info@cpsc.gov



More Resources

Centers for Disease Control (CDC)

How to prevent poisoning from home appliances

www.cdc.gov/co/faqs.htm

National Institute for Occupational Safety Health (NIOSH)

Information about small engine hazards

www.cdc.gov/niosh/homepage.html

National Institute of Health and Library or Medicine (NLM)

General Information

nlm.nih.gov/medlineplus/print/carbonmonoxidepoisoning.html





Thank you.

PLEASE CONTACT US WITH ANY QUESTIONS.

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