



Hanford Occupational Health Services

# Carbon Monoxide

Poisoning  
Symptoms  
Treatment  
Prevention

Goal

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# Enhance recognition of carbon monoxide poisoning

- ◆ Describe CO poisoning
- ◆ How CO poisoning happens
- ◆ Signs & symptoms of CO poisoning
- ◆ Treatment of CO poisoning

- ◆ Anyone, but particularly
  - People with chronic heart disease, anemia, or respiratory illness
  - Those over 75 years old (Death rate highest among that group)
  - Pregnant Women

- ◆ During high risk activities such as working in enclosed garages with generators or power tools, or at a guard station with high volumes of traffic
- ◆ Age range is 25-44 years old

- ◆ Motor Vehicles
- ◆ Fires
- ◆ Boats, power washers and other  
gas-powered tools
- ◆ Forklifts

- ◆ 27 incidents of CO poisoning resulting in 78 non-fatal cases and 10 deaths
- ◆ Nearly all caused by gasoline-powered generators
- ◆ Most occurred within the first week after a hurricane

# How CO poisoning happens

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- ◆ CO enters through the lungs where it binds to the hemoglobin in the blood
- ◆ Reduces the blood's oxygen carrying capacity
- ◆ Binds to the iron sites on the red blood cell with an affinity 200-250 times that of oxygen

# Symptoms of CO Poisoning

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- ◆ Headache
- ◆ Dizziness
- ◆ Confusion, slowed thought processing
- ◆ Fatigue
- ◆ Nausea/vomiting
- ◆ Altered mental status
- ◆ No fever

- ◆ Neurological disorders may include confusion, irritability, ataxia, seizures, and loss of consciousness
- ◆ Cardiovascular disorders
- ◆ Respiratory disorders

# % of Carboxyhemoglobin (COHb) in Blood



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- 0-10% - may be no symptoms
- 10-20% - tightening across forehead or headache, dilation of blood vessels
- 20-30% - throbbing headache, nausea, vomiting, fatigue and irritability
- 30-40% - dizziness, fatigue and weakness
- 40-50% - confusion, risk of collapsing, pulse & respiration increasing
- 50-60% - respiratory failure, collapse, convulsions or seizures, comatose state
- 60-70% - respiratory failure, comatose, may be fatal
- >70% - comatose, becoming rapidly fatal

## **Normal COHb:**

**2% - Non-smokers**

**>9% - Smokers**

- Evacuate the area
- Ventilate environment
- Determine and eliminate the source
- Administer 100% oxygen
- Continue until patient is symptom-free, about 4-5 hours for most

# Treatment of Severe CO poisoning



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- ◆ ~6% of CO poisoning patients
- ◆ Hyperbaric Oxygen therapy for those when:
  - COHb is >25-35%
  - Evidence of cardiac problems
  - Unconsciousness
  - Neurological Impairment
  - Pregnant Women

- Install a CO alarm
- Have all gas, oil or coal burning appliances serviced yearly
- Allow for appropriate venting of gas appliances in the home, cabin or camper
- Chimneys should be cleaned every year