

<b>TITLE</b> OPERATIONS MANUAL	<b>STANDARD</b> INSTRUCTION 02		<b>DEPARTMENT</b> FIRE
<b>SUBJECT</b> SPECIAL OPERATIONS: CARBON MONOXIDE DETECTION	<b>SECTION</b> 35	<b>PAGE</b> 1 of 3	<b>EFFECTIVE DATE</b> 01/09/2012

**I. PURPOSE**

This policy is intended to establish procedures and guidelines for Fire-Rescue personnel to utilize during incidents involving Carbon Monoxide (CO) Detectors.

**II. SCOPE**

This policy shall apply to all SDFD Personnel.

**III. AUTHORITY**

The Fire Chief in coordination with the Assistant Fire Chief of Operations and Deputy Chief Shift Commanders authorizes the information within this policy.

**IV. DEFINITIONS**

- A. 4- Gas Detector-Portable instrument for detecting the presence of: Oxygen (O<sub>2</sub>), Hydrogen Sulfide (H<sub>2</sub>S), Carbon Monoxide (CO), combustible gas and Lower Explosive Limits (LEL).
- B. Single gas Carbon Monoxide (CO) Detector-Portable instrument to identify, detect, and measure the presence of CO in the atmosphere.
- C. CO-Carbon monoxide, also called carbonous oxide, is a colorless, odorless, and tasteless gas that is slightly lighter than air. It can be toxic to humans and animals when encountered in higher concentrations.
- D. Hyperbaric-Hyperbaric oxygen therapy (HBOT) is the medical use of oxygen at a level higher than atmospheric pressure. The equipment required consists of a pressure chamber, which may be of rigid or flexible construction, and a means of delivering 100% oxygen.
- E. PPE- Personal Protective Equipment
- F. PPM- Parts per million

**V. POLICY**

A. Safety

- 1. Full PPE shall be worn until determined otherwise by the Incident Commander.
- 2. Personnel shall use SCBA in any atmosphere that exceeds 25 ppm of carbon monoxide.

B. Investigation Procedures

- 1. The Officer in charge will immediately make contact with the occupants and determine if anyone is complaining of symptoms characteristic of CO poisoning.
- 2. If ventilation has not been initiated prior to arrival, an attempt should be made to obtain an air sampling/detector reading prior to doing so to confirm the presence of CO. There shall not be any delay in patient care or transport.
- 3. If symptoms are present:
  - a. Request an ambulance and provide patient care.

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- b. Enter occupancy with proper PPE and ensure evacuation.
  - c. Investigate with CO detector or 4-Gas detector and ventilate as necessary.
  - d. Patients should be transported to a facility with a hyperbaric chamber per San Diego County Protocols.
  - e. Incident Commander should consider requesting Hazmat for consultation.
4. If occupants are asymptomatic:
- a. Conduct a thorough investigation of the occupancy using the CO detector or 4-Gas detector and explore any possible carbon monoxide sources. Ventilate as necessary.
  - b. Verify the type of alarm activation and attempt to determine the cause of the alarm.
- a. Signs and symptoms of CO poisoning
- a. Headache
  - b. Dizziness
  - c. Weakness
  - d. Nausea
  - e. Vomiting
  - f. Chest pain
  - g. Confusion
  - h. High levels of CO inhalation can cause loss of consciousness and death.
  - i. Unless suspected, CO poisoning can be difficult to diagnose because the symptoms mimic other illnesses.
  - j. People who are sleeping or intoxicated can die from CO poisoning before ever experiencing symptoms.
- C. Disposition Based on Findings
- 1. Less than 9 ppm:
    - a. The instruments did not detect elevated levels at this time.
    - b. Check the carbon monoxide detector per manufacturer's recommendations and trouble shoot any correctable issue, i.e. low battery, poor location or mechanical malfunction.
    - c. Attempt to reset detector. If occupant's detector continues to alarm but the SDFD detector does not, requesting a third detector or 4-Gas detector should be considered to determine which is accurate.
    - d. Inform the occupants to call again if detector reactivates.
  - 2. More than 9 ppm but less than 100 ppm
    - a. Advise occupants that there are potentially dangerous levels of carbon monoxide and ensure all occupants have evacuated.

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- b. If ventilation has not already been initiated, attempt to obtain a CO detector reading prior to doing so to confirm presence of gas and then ventilate as necessary.
  - c. If it is determined that an appliance is malfunctioning and producing CO, it shall be turned off, valve secured and SDG&E shall be notified.
  - d. If source is undetermined, shut off utilities and notify SDG&E.
  - e. Advise occupant(s) it is not safe to re-enter until repairs are made and a replacement detector/sensor module is installed.
  - f. If either the occupant's or SDFD's CO detector continues to alarm however the other one does not, a third CO detector or 4-Gas detector shall be requested at scene to help determine which reading is accurate.
  - g. Only when two detectors show less than 9 ppm shall the occupants be allowed to re-enter.
3. 100 ppm or Greater
- a. Advise occupants there is potentially lethal level of carbon monoxide present and ensure all occupants have evacuated.
  - b. Begin ventilation.
  - c. If it is determined that an appliance is malfunctioning and producing CO, turn the appliance off, secure the valve and notify SDG&E.
  - d. If source is undetermined, shut off utilities and notify SDG&E.
  - e. Advise occupant(s) it is not safe to re-enter until repairs are made and a replacement detector/sensor module is installed.
  - f. Request Hazmat to respond to the incident and be guided by their direction.
  - g. Occupants shall not be allowed to re-enter the structure without definitive air monitoring and clearance by the Hazmat Captain.