

## **Carbon Monoxide Response**

**Objective:** This establishes a guideline for responding to carbon monoxide (CO) incidents.

### **Section I. GENERAL**

Carbon monoxide is an odorless, tasteless, colorless gas that is deadly. It is a by-product of a fuel burning process. Many appliances such as furnaces, kitchen stoves, hot water heaters, automobiles, etc. can produce carbon monoxide. Unlike natural gas and propane, there is no added odor to the gas that would help indicate its presence. When a faulty or unusual condition exists, carbon monoxide may be vented into areas where people are present.

Carbon monoxide poisoning may be difficult to diagnose. Its symptoms are similar to the flu, which may include headache, nausea, fatigue and dizzy spells (SEE APPENDIX A).

The Occupational Safety and Health Administration have established a maximum safe working level for carbon monoxide at 35 parts per million (PPM) over an 8 hour period in the general workplace. The US Environmental Protection Agency has established that residential levels are not to exceed 9 PPM over an 8 hour average.

The gas company will not respond to all carbon monoxide (CO) investigations. They will respond only if the initial call received by them indicates that someone is ill or if the fire department requests that they respond to the scene.

### **Section II. GUIDELINES**

- A.** The first arriving fire unit shall establish scene control as per Incident Command Procedure.
  - 1.** Verify that the alarm is coming from a smoke detector or a carbon monoxide detector. Determine the cause of the alarm, i.e. true alarm, low battery indication, poor location of device, etc.
    - a)** If it is a smoke detector alarm:
      - 1) Investigate the cause of the alarm.
      - 2) Take the necessary action to mitigate the situation.
      - 3) Advise dispatch of situation.
    - b)** If it is a CO detector:
      - 1) Determine if anyone is exhibiting any symptoms of carbon monoxide poisoning (SEE APPENDIX A); if so, immediately evacuate the residents.
      - 2) Request necessary EMS response.
      - 3) Begin investigation of the cause.

- c) If no one exhibits any symptoms of carbon monoxide poisoning, it is not necessary to evacuate the premises at this time.
- d) The incident commander may request that the gas company respond if it is a gas supplied building and if:
  - 1) A sustained CO level of 9 PPM or greater is indicated on the multi-gas meter.
  - 2) The responding fire unit shuts off a gas appliance.
  - 3) Someone is showing signs of being ill due to carbon monoxide.
  - 4) The incident commander feels a response by the gas company is needed.

**B. Carbon Monoxide Investigations (Guidelines)**

- 1. Zero the multi-gas meter in fresh air outside the premises. Press "on" button and allow for meter to warm-up. The meter is ready when the display scans through sensors O<sub>2</sub>, CO, and GS. The reading for "CO" is in parts per million (PPM).
- 2. Initiate a survey of the premises to determine if there are any sustained amounts of carbon monoxide present. **Utilize checklist.**

**a) Initial Survey**

- 1) Conduct survey of every room on each level including attics, basements, cellars, storage spaces, and attached garages.
- 2) Adequate time must be allowed for meter to sample air quality in each location (3 - 5 seconds) before moving on with sampling.
- 3) Closer air sampling is required around fuel burning appliances, flues, and chimneys.
- 4) If a source of CO is identified, take appropriate action and continue survey.
- 5) Once initial building survey has been completed, continue with secondary survey.

**b) Secondary Survey**

- 1) Cease ventilation if not already done so.
- 2) Try to recreate conditions prior to CO detector activation.
- 3) Activate all fuel burning appliances and reevaluate CO levels after appliances reach proper operating temperatures (approx. 10 - 15 minutes).
- 4) Reevaluate every room on each level with closer sampling around fuel burning appliances, flues, and chimneys.

3. **An initial sustained reading of 25 PPM or greater requires an immediate evacuation of all occupants.**
4. **All interior firefighters shall use SCBA in any atmosphere that is in excess of 35 PPM of CO.**
5. **Sustained or varying Readings of 8 PPM or less:**
  - a) Inform the occupants that our instrument did not detect an abnormal elevated level of CO at this time.
  - b) Recommend occupants to check their CO detector per manufacturer recommendations.
  - c) Attempt to reset detector.
  - d) Inform occupants that if it activates again, call 911.
6. **Sustained Readings of 9 PPM or more but less than 100 PPM:**
  - a) Any sustained reading of 9 PPM or greater shall be considered an above normal reading.
  - b) Occupants shall be informed that we have detected a potentially dangerous level of CO.
  - c) If it is determined that an appliance is malfunctioning and thereby producing excessive CO, it shall be shut down.
  - d) Once the premise has been reduced to a safe level of CO, the premises may be reoccupied at the discretion of the occupant.
  - e) Attempt shall be made to reset the detector.
  - f) Inform occupants that if it activates again, call 911.
  - g) The occupants shall be informed of the action that has taken place and that the gas company has been requested to respond (if applicable).
6. **Sustained Readings of 100 PPM or greater:**
  - a) Any sustained reading of 100 PPM or greater - inform the occupants that we have detected a potentially lethal level of CO.
  - b) **Order the occupants to leave the premises immediately.**
  - c) If it is determined that an appliance is malfunctioning and thereby producing excessive CO, it shall be shut down.
  - d) Once the premise has been reduced to a safe level of CO, the premises may be reoccupied at the discretion of the occupant.
  - e) Attempt shall be made to reset the detector
  - f) Inform occupants that if it activates again, call 911.
  - g) The occupants shall be informed of the action that has taken place and that the gas company has been requested to respond (if applicable).

**CARBON MONOXIDE INVESTIGATION  
CHECKLIST**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Address: \_\_\_\_\_ Telephone #: \_\_\_\_\_

CO METER READING ON ENTRY _____ PPM      ACCEPTABLE?      YES    NO
8 PPM or less - Acceptable    35 PPM and above - SCBA

**CARBON MONOXIDE EFFECTS**

Are any members of the household feeling ill?      YES    NO

Headache	YES	NO
Fatigue	YES	NO
Nausea	YES	NO
Dizziness	YES	NO
Confusion	YES	NO

Dispatch EMS?    YES    NO

Do you feel better when away from the house?    YES    NO

**OCCUPANT'S ACTIONS**

Since the detector's alarm went off, what have you done? -

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Shut-off carbon monoxide sources?      YES    NO

If yes, which ones?

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Let in fresh air?      YES    NO

If yes, how and for how long?

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CO SAMPLING SURVEY

	<u>CHECKLIST</u>	<u>LOCATION</u>	<u>PPM</u>
Kitchen Stove:	.....	_____	_____
Cook Top Vent:	.....	_____	_____
Barbecue Grill:	In enclosed area	_____	_____
Furnace:	Gas/Oil; flue/chimney pipe	_____	_____
Water Heater:	Chimney pipe	_____	_____
Gas Dryer:	.....	_____	_____
Chimney:	Clogged flue, blocked opening	_____	_____
Fireplace:	Gas or Wood	_____	_____
Operating Fireplace:	Possible downdraft	_____	_____
Car Garage:	Car started or running recently	_____	_____
Portable Heater:	Emissions	_____	_____
Other:	_____	_____	_____

**Carbon Monoxide Detector:**

**MAKE:** \_\_\_\_\_ **MODEL:** \_\_\_\_\_ **SERIAL#:** \_\_\_\_\_

Location of CO Detector(s): \_\_\_\_\_

Sensor Module Checked?    YES    NO                      Module Saturated?    YES    NO

GAS COMPANY NOTIFIED?	YES    NO	Time: _____
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Description: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Firefighter Completing Sampling: \_\_\_\_\_ Date: \_\_\_\_\_

Officer in Charge : \_\_\_\_\_ Date: \_\_\_\_\_