

## CARBON MONOXIDE HAZARDS AND RESPONSE

### Purpose:

Establishes a guideline for the fire districts' response to carbon monoxide (CO) incidents.

### General:

- A. 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, 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.
- B. Carbon monoxide poisoning may be difficult to diagnose. Its symptoms are similar to the flu, which may include headache, nausea, fatigue and dizzy spells.
- C. Why is there such a variance in the acceptable levels of CO? OSHA is concerned with the workplace. This agency expects that a worker will spend only eight hours on the job, exposed to the 50 PPM. When the worker leaves his/her job, he/she will no longer be exposed, and the CO will purge from his/her system. The EPA, on the other hand is concerned about extended exposure to ambient CO. Most people spend more time at home than they do at work. Unlike the worker, a child, the elderly, or anyone susceptible to CO cannot just leave their home and allow the gas to purge from their system. To compensate for this prolonged exposure, the EPA sets lower allowable limits than OSHA does.
- D. The utility company will not respond to all carbon monoxide (CO) investigations from the public. 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.

### Guidelines:

- A. PSCC shall attempt to verify if the detector that is sounding is a carbon monoxide detector.
  - 1. If it is a carbon monoxide detector:
    - a. Determine if any person at the scene is unconscious and/or semi-conscious resulting from symptoms of carbon monoxide poisoning. If yes, an engine and a squad shall be dispatched as an emergency response.

- b. Determine if any persons at the scene are exhibiting symptoms of carbon monoxide poisoning, but conscious. If yes, only an engine and squad shall be dispatched as an emergency response.
  - c. If persons at the scene are not exhibiting symptoms of carbon monoxide poisoning an engine only shall be dispatched non-emergency to conduct an investigation.
- B. Response to an occupancy where persons are presumed to be **unconscious and/or semi-conscious** from carbon monoxide poisoning.
  - 1. The CO detector shall be zeroed outside the premises in fresh air. A reading shall be taken just inside the doorway; no one is to enter the premises without an SCBA if a reading above 500 PPM is obtained.
  - 2. Personnel on scene shall attempt a rescue. In doing so as many doors and windows as possible must be opened within the occupancy.
  - 3. The victims should be removed from the premises immediately and taken to a nearby safe occupancy and/or placed in a waiting squad for treatment.
  - 4. Once the victims are removed from the occupancy an investigation into the source of the CO problem can begin.
  - 5. Refer to section C-3 through C-6 in conducting the investigation.
  - 6. Personnel on scene shall notify the squad of the highest CO level obtained from the occupancy; this information needs to be passed on to the hospital staff.
- C. Response to an occupancy where persons are exhibiting symptoms of carbon monoxide poisoning.
  - 1. The victims should be removed from the premises immediately and taken to a nearby safe occupancy or placed in a waiting squad for treatment.
  - 2. The CO detector shall be zeroed outside the premises in fresh air. A reading shall be taken just inside the doorway; no one is to enter the premises without an SCBA if a reading above 100 PPM is obtained.
  - 3. Initiate a survey of the premises to determine if there are any sustained amounts of carbon monoxide present. **Utilize the checklist in the case with the CO detector.**
  - 4. Adequate time must be allowed for the meter to sample air quality in each location (3-5 seconds) before moving on with sampling.
  - 5. If it is determined that an appliance is malfunctioning and thereby producing excessive CO:
    - a. It shall be shut down and the occupants informed to call a certified maintenance person for that type of appliance.
    - b. Anytime gas service needs to be shut off to the occupancy, the utility company shall be notified. FD personnel should not turn the gas service off.

6. If the source of the CO cannot be determined and the level is sustained above 9 PPM:
    - a. The utility company shall be notified to respond.
    - b. An attempt shall be made to recreate conditions prior to the CO detector activation. Allow 10-15 minutes for all fuel burning appliances to reach their proper operating temperatures.
  7. Should the occupants be transported to the ER, FD personnel on scene shall notify the squad of the highest CO level obtained from the occupancy, this information needs to be passed on to the hospital staff.
- D. Response to an occupancy where persons **are not** exhibiting symptoms of carbon monoxide poisoning.
1. Confirm that the occupants do not have signs and symptoms of CO poisoning.
  2. The CO detector shall be zeroed outside the premises in fresh air. A reading shall be taken just inside the doorway; no one is to enter the premises without an SCBA if a reading above 100 PPM is obtained.
  3. Initiate a survey of the premises to determine if there are any sustained amounts of carbon monoxide present. **Utilize the checklist in the case with the CO detector.**
  4. Adequate time must be allowed for the meter to sample air quality in each location (3-5) seconds before moving on with sampling.
  5. Sustained or varying readings of 8 PPM or less:
    - a. Inform the occupants that our instruments did not detect an abnormal elevated level of CO at this time.
    - b. Recommend that the occupants check their CO detector per manufacturer recommendations. Small amounts of CO over time will cause the detector to alarm. Have the occupants remove the detector from the occupancy to fresh air for about an hour. This process will sometimes “clean” the detector.
    - c. A CO detector tube should be left where the FD detects the presence of any amount of CO. The occupants should be informed how to read the tube, check it every hour or so, and call the FD if the tube reads any amount of CO.
    - d. Inform the occupants to call again should the CO detector alarm or they start to exhibit symptoms of CO poisoning.
  6. Sustained or varying readings of 9 PPM or more.
    - a. Any sustained reading of 9 PPM or more 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:

1. It shall be shut down and the occupants informed to call a certified maintenance person for that type of appliance.
  2. Anytime gas service needs to be shut off to the occupancy, the utility company shall be notified. FD personnel should not turn the gas service off.
  3. Once the premises have been ventilated and the CO level reduced to a safe level, the premises may be reoccupied at the discretion of the occupant.
- d. If the source of the CO cannot be determined:
1. The utility company shall be notified to respond.
  2. An attempt shall be made to recreate conditions prior to the CO detector activation. Allow 10-15 minutes for all fuel burning appliances to reach their proper operating temperatures.
  3. The occupants shall be informed of the action that has taken place and that the utility company has been requested to respond.

**Conclusion:**

The checklist from all carbon monoxide incidents must be attached to the incident report and filed in the appropriate location. All pertinent information regarding the incident shall be noted in the narrative section of the NFIRS report. As homes become more airtight carbon monoxide incidents will increase, all of these incidents shall be taken seriously and investigated to the fullest degree.