

	ROFR Section: 1400		TFCA Best Practices: 10.02	
	Effective: 3/2011	Revision: 5/2016	Fire Chief: 	

CARBON MONOXIDE

PURPOSE

1. To establish a procedure for response to carbon monoxide (CO) incidents.
2. To establish a systematic and logical procedure that will enable us to check all possible sources; to identify and eliminate the possible source; to determine if a danger level exists; to advise occupants of findings and to advise occupants of the need to exit/evaluate the occupancy if necessary.

GENERAL

Carbon monoxide is an odorless, colorless, tasteless non-irritating gas that is deadly. It is a byproduct of a fuel-burning process that has resulted in incomplete combustion. Many appliances (such as furnaces, kitchen stoves/ranges, water heaters, etc., including vehicles) can produce carbon monoxide and, when faulty or unusual conditions exist, carbon monoxide gas may be vented into areas where people are present.

It enters the body by respiration and is transferred via the lungs by bonding with blood hemoglobin that reduces the body's ability to carry oxygen to vital organs. Carbon monoxide poisoning may be difficult to diagnose. Its symptoms mimic the flu, which may include headache, nausea, fatigue and dizzy spells, and more seriously, seizures and unconsciousness.

OSHA

The Occupational Safety and Health Administration (OSHA) has established a maximum safe working level for CO at **35 ppm** (parts per million) over an 8-hour period in the general workplace. The U.S. Environmental Protection Agency (EPA) has established that residential levels are not to exceed **9 ppm** over an 8-hour period. Any levels above these are considered harmful.

The Fire Department is responsible only for investigating a reported carbon monoxide problem or a detector sounding, to attempt to identify and locate possible sources and clear the emergency, which may require shutting off gas at the appliance or the meter (whichever is necessary) or eliminating the hazards by other means of alternatives available. **WE ARE NOT THERE TO REPAIR THE PROBLEM!** We are to render emergency medical care (if applicable), to advise the occupants of our findings, to issue a NOTICE OF FINDING form, and to assist occupants in exiting the structure, if necessary.

DISPATCH/COMMUNICATIONS OPERATORS

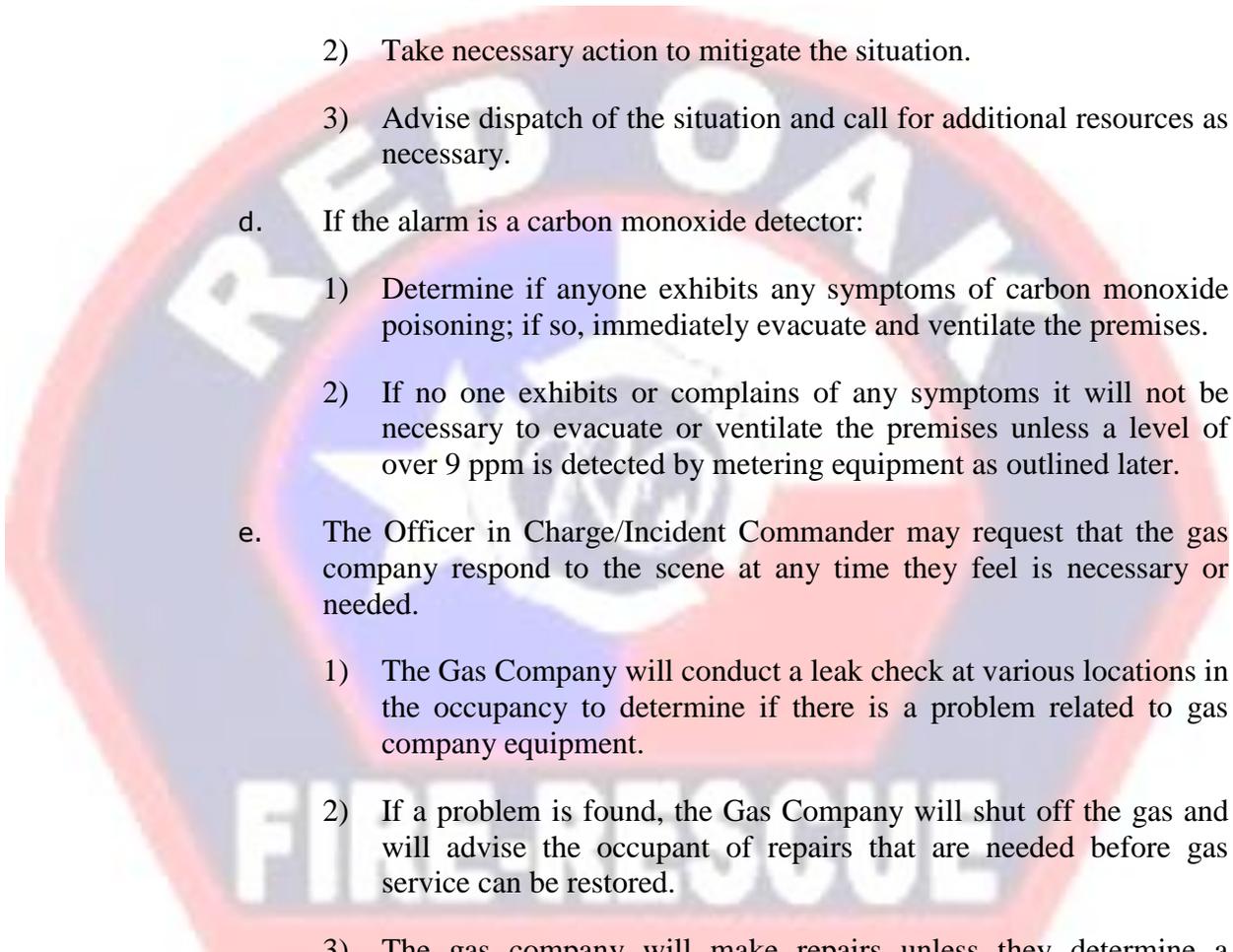
Dispatchers are to attempt to determine whether anyone is symptomatic or feeling ill. Again, symptoms of carbon monoxide poisoning include flu-like symptoms, headaches, dizziness, light-headedness, nausea, seizures, and unconsciousness. Complaints of not feeling well or feeling different than usual qualify as being symptomatic.

If anyone is symptomatic, dispatch a Med Unit and Engine informing fire personnel of such an occurrence, that an alarm is sounding and persons are complaining of carbon monoxide symptoms.

If an alarm only is sounding, advise occupants they should exit the premises to a safe place. Dispatch fire personnel accordingly, advising that only a detector is sounding and that no complaints of illness are present. An Engine Company.

ENGINE COMPANY AND EMS

1. The primary concern is the safety of our personnel and citizens.
2. The first priority after arrival of personnel is to determine if there are any illnesses related to the incident. If there are complaints or suspected complaints reported or found after arrival, a Med Unit will be requested and initial care of the injured/ill begun prior to any investigation for carbon monoxide.
3. Once medical aid is provided to victims according to established EMS protocol, the Engine Company will proceed according to the following guidelines:

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- a. Establish scene control as per incident command procedures.
 - b. Verify if the alarm is coming from a carbon monoxide detector or a smoke detector. The cause of the alarm may be determined to be a true alarm, low battery indication, poor location of device, etc., and should be repeated to dispatch as soon as possible in the form of updating the size-up report as related to the Incident Command structuring.
 - c. If the alarm is determined to be a smoke detector:
 - 1) Investigate the cause of the alarm.
 - 2) Take necessary action to mitigate the situation.
 - 3) Advise dispatch of the situation and call for additional resources as necessary.
 - d. If the alarm is a carbon monoxide detector:
 - 1) Determine if anyone exhibits any symptoms of carbon monoxide poisoning; if so, immediately evacuate and ventilate the premises.
 - 2) If no one exhibits or complains of any symptoms it will not be necessary to evacuate or ventilate the premises unless a level of over 9 ppm is detected by metering equipment as outlined later.
 - e. The Officer in Charge/Incident Commander may request that the gas company respond to the scene at any time they feel is necessary or needed.
 - 1) The Gas Company will conduct a leak check at various locations in the occupancy to determine if there is a problem related to gas company equipment.
 - 2) If a problem is found, the Gas Company will shut off the gas and will advise the occupant of repairs that are needed before gas service can be restored.
 - 3) The gas company will make repairs unless they determine a problem exists on their equipment only (gas meter or backward to the service line).

CARBON MONOXIDE INVESTIGATIONS (PROCEDURES)

1. All personnel shall make complete use of personal protective equipment (PPE) and SCBAs in any atmosphere that is in excess of 35 ppm in any occupancy unless the Officer in Charge or Incident Commander deems the equipment necessary at lesser concentrations.
2. Zero the meter/monitoring device in fresh air and complete all other start-up procedures as per manufacturer's instructions of the device being used.

3. Initiate a survey of the premises to determine if there are any amounts above OSHA standards (35 ppm for business occupancy) or EPA standards (9 PPM). Remember to take initial reading just inside the entry point (i.e., front door, back door, garage entry, etc.).
4. Proceed with the search and survey of the occupancy in a systematic procedure similar to searching for a victim in a fire situation (enter a room to the left or right and follow the search pattern moving room to room), checking each room in progression to avoid missing any area. Include all closets and storage areas.
5. Readings of 9 ppm or less:
 - a. Inform the occupants that our instruments did not detect an elevated level at this time but a concentration was noted and where it was found.
 - b. Recommend occupants to check their CO detector per manufacturer's recommendations.
 - c. Attempt to reset the detector.
 - d. Inform occupants that if it activates again, CALL 911.
6. Readings of more than 9 ppm but less than 50 ppm:
 - a. Any reading above 9 ppm will be considered an abnormal reading.
 - b. Occupants shall be informed that we have detected a potentially dangerous level of CO.
 - c. Recommend that all persons leave the premises and we shall begin ventilation procedures and continue checking for possible sources. Try not to ventilate any unchecked area. It may be necessary to hold ventilation for a short time to prevent ventilating an unchecked area.
 - d. If it is determined that an appliance is malfunctioning and thereby producing CO, it shall be shut down by whatever means necessary.
 - e. Once the CO has been reduced to a safer level for the occupancy, the premises may be reoccupied — at the discretion of the occupant.
 - f. An attempt shall be made to reset the detector.
 - g. Inform the occupant that if the alarm activates again call 911.
 - h. The occupant shall be informed of the action that has taken place and be issued a completed NOTICE OF FINDINGS form, and that repairs need to be made and the appliance retested by a repair service to ensure safe operation.
 - i. If a source for CO cannot be located, occupants shall be informed of the situation and advised to contact various repair services as may be needed to conduct specific testing of appliances and equipment in order to locate and make needed repairs.
7. Readings of 50 ppm or greater:
 - a. With any readings of 50 ppm or greater, inform the occupants that we have detected a potentially lethal level of CO.
 - b. Advise the occupants that they should evacuate the premises immediately and we will begin ventilation procedures.

RECOMMEND: ONCE THE CARBON MONOXIDE LEVEL HAS BEEN REDUCED TO A SAFER LEVEL FOR THE OCCUPANT, THE PREMISES MAY BE OCCUPIED AT DISCRETION, BUT DUE TO THE LETHAL LEVELS THAT OCCURRED, THEY SHOULD CONSIDER NOT RETURNING UNTIL SOURCE PROBLEM HAS BEEN REPAIRED.

- c. If it is determined that an appliance is malfunctioning and thereby producing CO, it shall be shut down by whatever means necessary.
- d. Once the CO has been reduced to a safer level for the occupancy, the premises may be occupied — at the discretion of the occupant
- e. An attempt shall be made to reset the detector.
- f. Inform the occupant that if the detector activates again to call 911.
- g. The occupant shall be informed of the action that has taken place and be issued a completed NOTICE OF FINDINGS form and that repairs need to be made and the appliance retested by a repair service to ensure safe operation.
- h. Remind the residents that potentially lethal levels of CO were found in the property and that your actions only reduced the existing level of CO gas. Also, be sure the resident understands that the source of the CO was or was not determined and that the malfunction was not corrected
- i. . If a source for CO cannot be located, immediately notify the Gas Company and have all gas shut off to the premises. Once gas service has been shut off, it cannot be turned on for service until the source can be located and repaired by qualified technicians.

F. MONITORING EQUIPMENT

- 1. All devices should be maintained per manufacturers' specs. It is recommended that all monitors be calibrated by a certified technician at least quarterly or as the manufacturer recommends.
- 2. Monitoring equipment shall be included in all daily equipment checks.
- 3. All personnel should receive periodic training on the use and care of the monitoring equipment.
- 4. Monitoring equipment is to be carried on the first out engine and stored in its proper container or self-storage charging unit when not in use.

