

WESTERN RESERVE JOINT FIRE DISTRICT SOP FOR CARBON MONOXIDE RESPONSE

A. 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, portable heaters, clothes dryers, etc. can produce carbon monoxide. Due to a faulty appliance, blocked or improper venting or other unusual conditions, carbon monoxide may be vented into areas where people are present.

Carbon monoxide poisoning can produce symptoms of headaches, dizziness, weakness of limbs, confusion, nausea, unconsciousness, and fatigue.

The Occupational Safety and Health Administration (OSHA) has established a maximum safe working level of carbon monoxide at 35 parts per million over an 8 hour period in the general work place with a ceiling level of 200 ppm not to be exceeded anytime. The U.S. Environmental Protection Agency has established that residential levels are not to exceed 9 ppm over an 8 hour average.

B. Procedures

All personnel will familiarize the proper operation of the District's meters for carbon monoxide detection.

- Detector should be zeroed on station in lounge area (or fresh air) before response.

If an alarm is received that a CO detector has been activated, dispatch should determine if any symptoms are present with occupants in the home. If symptoms are present, advise occupants to exit the house and to make contact with the firefighters on arrival.

On the scene, the firefighter will again determine if anyone is exhibiting symptoms of possible carbon monoxide poisoning, and if so, immediately evacuate residents from premises. Request an EMS response, and begin investigative procedures.

The first arriving unit shall establish scene control.

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.
2. If it is smoke detector alarm:
 - a. Investigate the cause of the alarm;
 - b. Take the necessary action to mitigate the situation;

- c. Advise the dispatcher of the situation.
3. If it is a CO detector:
 - a. Determine if anyone is exhibiting any symptoms of carbon monoxide poisoning; if so, immediately evacuate and ventilate the premises;
 - b. Request necessary EMS response (if not on scene);
 - c. Begin investigating the cause.

If no one exhibits any symptoms of carbon monoxide poisoning, it will not be necessary to evacuate or ventilate the premises unless a level of over 9 ppm is detected by the meter.

Dominion East Ohio Gas will be called if over 9 ppm is indicated on the meter and there is a suspected natural gas appliance involved.

C. Recommendations to Occupant

1. Reading of 9 ppm or less

Inform occupant(s) that our instrument did not detect an elevated level of CO at this time.

Recommend to occupants to check their CO detector per manufacturer recommendations.

Attempt to reset detector.

2. Readings above 9 ppm but less than 100 ppm

Any reading above 9 ppm will be considered above a normal reading.

Occupants shall be informed that we have detected a potentially dangerous level of CO.

Recommend that all persons leave the premises and begin ventilation after locating the source.

If it is determined that an appliance is malfunctioning and thereby producing CO, it shall be shut down.

Once the premises have been reduced to a safe level of CO, the premises may be occupied - at the direction of the occupant.

Attempt will be made to reset the detector.

3. Readings of 100 ppm or greater

If a reading is 100 ppm or greater, inform the occupants that we have detected a potentially lethal level of CO.

Order the occupants to vacate the structure immediately.

If it is determined that an appliance is malfunctioning and thereby producing the CO, it shall be shut down.

Once the air in the premises has been reduced to a safe level of CO and the source has been identified and secured, the residence may be occupied - at the discretion of the occupant.

It will be the homeowner or occupant's responsibility in contacting a repair technician to fix any appliance (furnace, stove, water heater, etc.) that has contributed to a carbon monoxide build-up.

Any reading above 400 ppm in the residence shall dictate the immediate use of SCBA by the firefighter before he continues his investigation.

The incident commander shall request that the gas company respond to the scene if:

- a. A CO level of over 9 ppm is indicated on their meters;
- b. The responding company shuts off gas appliance;
- c. Someone is showing signs of being ill due to carbon monoxide;
- d. The incident commander feels a response by the gas company is needed.

D. Carbon Monoxide Facts

1. Danger Levels:

- IDLH (immediate danger to life hazard) is at 1500 ppm.
- TWA (time weighted average) is at 35 ppm (up to 10 hour work day during 40 hour work week)

2. Toxicology Levels from Sax Manual:

- 400-500 ppm for one hour with no appreciable affects.
- 600-700 ppm for one hour with barely appreciable affects.
- 1000-1200 ppm for one hour is dangerous.
- 4000 ppm and over is fatal in less than one hour.

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