

Standard Operating Guidelines

Guideline 503.0 Carbon Monoxide(CO) Incidents



Purpose:

Carbon Monoxide (CO) is an odorless, tasteless, colorless gas by product of most combustion reactions. Many appliances such as furnaces, kitchen stoves, hot water heaters, automobiles, etc. can produce Carbon Monoxide (CO). When a faulty or unusual condition exists, Carbon Monoxide (CO) may be vented into areas where people are present. Carbon Monoxide (CO) is also produced from metabolism of methylene chloride, and agent found in paint strippers.

Carbon Monoxide (CO) is the most common cause of poisoning deaths worldwide. Classic symptoms include headache, altered mental status, shortness of breath, and nausea or vomiting. However, symptoms are often vague and frequently resemble other medical conditions such as viral illness, gastroenteritis, migraine, and acute coronary syndrome. CO screening should be performed on all occupants of buildings with suspected CO or CO alarm activations. However, any symptomatic patient should receive further medical evaluation.

This Standard Operating Guideline will give the responders guidance in dealing with incidents involving Carbon Monoxide (CO).

Guideline:

The Occupational Safety and Health Administration has established a maximum safe working level for Carbon Monoxide (CO) 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 Ohio Gas Company will not respond to all Carbon Monoxide (CO) investigations. They will respond if the initial call is received by them or if the fire department requests that they respond to the scene. The gas company may initiate the call to the fire department and be on the scene already. LP gas supply companies will not generally respond to Carbon Monoxide (CO) calls, as most do not have meters. Most plumbing and heating service companies also do not have meters and will not respond to Carbon Monoxide (CO) calls.

Upon arrival at the scene:

1. Verify that the alarm is coming from a smoke detector or a Carbon Monoxide (CO) detector. Determine the cause of the alarm, i.e. true alarm, low battery indication, poor location of devices, etc.
 - a. If it is a smoke detector alarm:
 - i. Investigate the cause of the alarm.
 - ii. Take the necessary action to mitigate the situation.

Standard Operating Guidelines

Guideline 503.0 Carbon Monoxide(CO) Incidents



- iii. Advise the dispatcher of the situation.
 - b. If it is a Carbon Monoxide (CO) detector:
 - i. Determine if anyone is exhibiting any symptoms of Carbon Monoxide (CO) poisoning: if so, immediately evacuate and ventilate the premises.
 2. Request necessary E.M.S. response.
 3. Begin investigation of cause.
 - a. If no one exhibits any symptoms of Carbon Monoxide (CO) poisoning, it is not necessary to evacuate or ventilate the premises unless a Level of 9 PPM is detected.
 - b. The officer of the crew shall request that the gas company respond to the scene if:
 - i. if the location is served by natural gas
 - ii. Carbon Monoxide (CO) level of 9 PPM is indicated on their meter.
 - iii. There is a need to shut off gas appliances.
 - iv. Someone is showing signs of being ill due to Carbon Monoxide (CO).
 - v. The officer of the crew feels a response by the gas company is needed.

Conducting Carbon Monoxide (CO) Investigations

1. Zero the meter in fresh air and comply with all other start up procedures as recommended by the manufacturer of the metering equipment.
2. Initiate a survey of the premises to determine if there are any amounts of Carbon Monoxide (CO) present at or above 9 PPM.
 - a. If responding to a location where occupants are unconscious, SCBA shall be worn upon entry.
 - b. Screen all building occupants for CO symptoms and measure SpO₂% (See item 7 for additional reference).
 - i. Suspect CO exposure if multiple patients > 3% (non smokers) or > 8% (smokers)
 - ii. Occupants closes to CO source will have higher SpO₂% (relay this information to interior personnel)
 - c. Treat any symptomatic patient(s) with high flow oxygen regardless of SpO₂ reading and contact EMS.
3. Readings of less than 9 PPM:
 - a. Inform the occupants that our instrument did not detect an elevated level of Carbon Monoxide (CO) at this time.

Standard Operating Guidelines

Guideline 503.0 Carbon Monoxide(CO) Incidents



- b. Recommend occupants check their Carbon Monoxide (CO) detector per manufacturer recommendations.
 - c. Attempt to reset detector.
 - d. Inform occupants that if it activates again, call 9-1-1.
4. Readings of more than 9 PPM but less than 100 PPM:
- a. Any reading above 9 PPM shall be considered an above normal reading.
 - a. Occupants shall be informed that we have detected a potentially dangerous level of Carbon Monoxide (CO).
 - b. Request that all persons leave the premises and begin ventilation.
 - i. If Carbon Monoxide (CO) level is 35 PPM or greater all personnel working in the area shall don and use SCBA, until Carbon Monoxide (CO) levels are below 35 PPM.
 - c. If it is determined that an appliance is malfunctioning it shall be shut down. A Red Tag shall be filled out and attached to appliance.
 - d. Once the premises has been reduced to a safe level, the premises may be occupied at the discretion of the occupant.
 - e. An attempt shall be made to reset the detector.
 - f. Inform occupants that if it activates again, call 9-1-1.
 - g. The occupants shall be informed of the action that has taken place and that the gas company has been requested to respond if served by a gas company.
5. Readings of 100 PPM or Greater:
- a. Any reading of 100 PPM or greater - inform the occupants that we have detected a potentially lethal level of Carbon Monoxide (CO).
 - b. Order the occupants to leave the premises immediately.
 - i. If it is determined that an appliance is malfunctioning it shall be shut down. A Red Tag shall be filled out and attached to appliance.
 - c. Once the premises has been reduced to a safe level, the premises may be occupied at the discretion of the occupant.
6. If readings are over 9 PPM and it is a rental property, get name, address and telephone number of owner. Make attempt to contact owner and advise them of the problem.
7. The following information is included for reference by responding personnel

Standard Operating Guidelines

Guideline 503.0 Carbon Monoxide(CO) Incidents



Initial Carbon Monoxide (CO) assessment parameters:

0 – 5%	Considered normal in non-smokers. When >3% with symptoms, considers high flow oxygen and evaluate environment for Carbon Monoxide (CO) sources. Consider measuring others in same room /office/vehicle as patient. In absence of symptoms, no further medical evaluation of SpO2 is needed.
5 – 10%	Considered normal in smokers, abnormal in non-smokers. If symptoms are present, consider high flow oxygen and inquire if others are ill. Contact EMS.
11 – 15%	Abnormal in any patient. Assess for symptoms, consider high flow oxygen. Contact EMS. Evaluate environment for Carbon Monoxide (CO) sources.
>15%	Significantly abnormal in any patient. Administer high flow oxygen, assess for symptoms, contact EMS. Evaluate environment for Carbon Monoxide (CO) sources.

Carbon Monoxide (CO) reassessment parameters:

0 – 5%	If symptoms persist, recommend transport regardless of SpO2 readings. Contact EMS. If symptoms resolve, no further medical evaluation of SpO2 is needed.
5 – 10%	If symptoms persist, recommend transport regardless of SPO2 readings. Contact EMS. If symptoms resolve and SpO2 remains >5% in any patient recommend further medical evaluation. Non-smokers should be encouraged to have their home/work environment evaluated for Carbon Monoxide (CO).