REGIONAL STANDARD OPERATING PROCEDURES

Carbon Monoxide Emergencies

#: 105.07 REV: 04 /2015

SCOPE:

These guidelines contain response parameters for regional response to Carbon Monoxide (CO) emergencies.

PURPOSE:

To establish a standard and common procedure within the Sierra Vista region to respond to Carbon Monoxide incidents.

SAFETY:

Personnel do not always know what the situation is as they enter a building. A report of a sick person gives only a vague idea of their condition. Carbon Monoxide is extremely dangerous and responders must be alert to the possibility of CO at a residence reported to have multiple sick people. When in doubt, our safety is paramount, so exercise due caution where such concerns exist.

BACKGROUND:

Carbon monoxide is an odorless, colorless, and tasteless gas that is deadly. It is a non-irritating byproduct of the fuel burning process. CO has a vapor density of 0.97, which is slightly lighter than air; therefore the tendency of this product is to rise. CO has a flammable range from 125,000 ppm to 740,000 ppm. Entry crews shall be aware of this when metering the structure for CO.

While CO is often associated with fossil fuels, it is important to remember it also results from incomplete combustion of wood and charcoal. Many appliances such as furnaces, kitchen stoves, hot water heaters, automobiles, etc., can produce carbon monoxide. 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 since symptoms are similar to the flu and may include headache, nausea, dizziness, fatigue, confusion, and shortness of breath. Cardiac patients are highly susceptible to CO poisoning and may experience chest pain.

PROCEDURE:

Considering that the Occupational Safety and Health Administration (OSHA) has established a maximum safe working level for carbon monoxide at 35 parts per million (ppm) over an 8-hour period in the general work-place, and the U.S. Environmental Protection Agency (EPA) has established that residential levels are not to exceed 9 ppm over an 8-hour period, our policy shall require 100% SCBA use on fire scenes until all suppression and overhaul activities are complete, regardless of CO level.

On carbon monoxide responses, CO levels greater than 10 ppm shall require SCBA use.

Response Criteria

Carbon monoxide (still) alarms shall be dispatched as a Still Hazmat response.

If it is determined that an EMS situation has occurred, such as occupants are *symptomatic* or complaining of flu-like symptoms, the response shall be balanced to a greater assignment. Occupants shall be advised to vacate the premises immediately.

If a carbon monoxide detector is activated and occupants are *asymptomatic*, a routine response is indicated. Dispatch shall advise all occupants to evacuate the structure and close all doors when exiting.

Any carbon monoxide response requires fuel provider notification.

On-scene Procedure

1. Advise all occupants to evacuate the structure until the situation is mitigated. First arriving unit(s) shall establish scene control per incident command procedure as necessary.
2. Do not ventilate the structure until initial CO readings are obtained and isolating potential faulty equipment is achieved. The structure can be ventilated once this has been completed and readings documented. Firefighters should be aware of any pockets where increased levels of CO could be present even after ventilation. These areas

should be monitored and brought to safe levels prior to clearing the building for occupancy.

3. An interview of the occupants should take place outside of any suspected contaminated areas. Information to be gathered:
    a. Determine if alarm is from a smoke detector or carbon monoxide detector
        i. If from a smoke detector, investigate cause of alarm and take necessary action
        ii. If from a carbon monoxide detector, determine if occupants are symptomatic for CO exposure
            1. If *symptomatic* - anyone feeling ill currently or in the past week.
                a. Evacuate immediately and ventilate premises
                b. Request necessary EMS response
                c. Begin investigation procedure
            2. If *asymptomatic*
                a. No evacuation or ventilation will be necessary unless a level over 9 PPM over baseline is detected by a metering device
            3. Request an immediate response from fuel provider
4. Gather information from the occupant(s) regarding activities and what, if any, combustion appliances were being used.
    a. Where is the detector located?
    b. How long has the detector been alarming?
    c. Has the dwelling been ventilated? If so, how long?
    d. Was a car running in an attached building?
5. If contact cannot be made, check with a neighbor or look in windows. Attempt to obtain readings through keyholes, windows, weather stripping, etc. If forcible entry is necessary, or if entry is delayed for any reason, immediately request police assistance. Shut off the gas to the residence. Enter in full protective gear, including SCBA.

Preparing and Using the CO Meter

1. Follow manufacturer's instructions to calibrate the unit each time it is used
2. A CO monitor shall be zeroed in fresh air and accompany the crew making entry.
3. Depending on the manufacturer, a reading may require 90 seconds for the equipment to be accurate
4. If occupants are *symptomatic*, SCBA is required before entering. Any reading of 10 PPM or higher requires personnel to use SCBA to continue to work within the occupancy
5. If occupants are *asymptomatic*, SCBA may not be necessary
6. If CO detector records readings less than 9 PPM :
    a. Inform occupant that the department’s detection equipment did not detect an elevated CO level at this time
    b. Verify findings with fuel provider’s monitoring equipment
    c. Attempt to reset occupant’s detector
    d. Inform occupant that if the detector activates again to call 911
7. If CO detector records a level greater than 9 PPM, but less than 100 PPM:
    a. Verify with fuel provider’s equipment
    b. Inform occupant that any reading above 9 PPM is considered an abnormal reading and may be potentially dangerous

c. Recommend that all persons leave the premises and begin ventilation, unless fuel provider personnel advise that ventilation is not necessary
d. Do not attempt to adjust or repair any appliances
e. If a source appliance is identified, place a red tag on the appliance and advise the customer to contact a certified appliance technician
f. Allow fuel provider personnel to perform further investigation
g. Begin customer assistance process in finding shelter, if necessary

8. Readings greater than 100 PPM:
    a. Verify with fuel provider's equipment
    b. Inform occupants that any reading greater than 100 PPM is considered a potentially lethal environment
    c. Order all occupants to leave the premises and begin ventilation
    d. Shut off gas and electrical utilities to occupancy, unless fuel provider personnel are on scene and advise otherwise
    e. Allow fuel provider personnel to perform further investigation and hazard mitigation
    f. Begin customer assistance process in finding shelter, if necessary

Potential CO Sources

Any vehicle with a combustion engine; gasoline, propane, or diesel-fueled appliances; lawn mowers; power generators; furnaces; water heaters; clothes dryers; natural gas or propane refrigerators; ranges; ovens; space heaters; fireplaces; gas logs; wood and coal stoves; charcoal or gas grills; kerosene heaters; wood stoves; any other equipment that burns fuel.

Examine flues, vents, and chimneys for blockage by birds or other animal nests or debris. Note any loose or disconnected vent or chimney connections, any loose or missing furnace panels, and any debris or soot in the chimney. Advise occupants to have flues, vents, and chimneys professionally serviced if problems are indicated.

If there is an attached garage, were there any vehicles in the garage in the past 12 hours? Were there any vehicle engines running in the last 12 hrs?

Documentation

Crew members shall obtain all pertinent owners/occupants information for incident reporting. Information concerning the equipment involved (make, model, serial number) shall be documented. The metered CO levels shall be included in the incident report narrative. Patient care shall be documented in the appropriate patient care EMS forms.