**Responding to Residential Carbon Monoxide Incidents Model Policy**

*This model program is intended for general information purposes only. It should not be construed as legal advice or legal opinion regarding any specific or factual situation. Always follow your organization’s policies and procedures as presented by your manager or supervisor.*

**Purpose**:

Insert name of agency establishes this policy to guide the actions of the Incident Command at carbon monoxide alarms or reports.

**Scope:**

This policy applies to all full-time, part-time, volunteer, and other persons acting as a responder to carbon monoxide incidents in residences.

**Chemical Properties of Carbon Monoxide:**

Specific Gravity: 0.967 – slightly lighter than air.

Short-term Exposure Limit (STEL): 200 ppm for 15 minutes

Permissible Exposure Limit (PEL): 50 ppm averaged over 8 hours

Recommended Exposure Limit (REL): 35 ppm averaged over 10 hours

Threshold Limit Value (TLV): 25 ppm averaged over 8 hours; STEL 400 ppm for 15 minutes

Immediately Dangerous to Life & Health (IDLH): 1,200 ppm

Flammable Limits: 12.5% - 74.2% by volume in air.

**Procedures:**

*FD rep should verify Dispatch procedure when receiving calls reporting a carbon monoxide incident. It should verify that dispatchers ask about symptoms of occupants or pets. The FD rep should verify that dispatchers advise caller to evacuate the house and not to ventilate residence.*

Dispatch

If Dispatch reports symptomatic persons or pets, an appropriate medical response and the following department/company apparatus will be dispatched in emergency mode:

1. Insert 1st due apparatus; describe gas monitoring equipment on board
2. Insert 2nd due apparatus; describe gas monitoring equipment on board

If no symptoms of carbon monoxide overexposure among occupants or pets are reported, the following department/company apparatus will be dispatched in **non-emergency** **mode** (no lights or siren):

1. Insert 1st due apparatus; describe gas monitoring equipment on board
2. Insert 2nd due apparatus: describe gas monitoring equipment on board

Initial Actions and Investigation

Provide medical assistance to overexposed persons or pets. Evaluate the need for an Advance Life Support response.

Do not ventilate the residence(s).

Establish Incident Command. The Incident Commander or their designee shall start the completion of the **Carbon Monoxide Evaluation and Response Activity Report**

Firefighters who enter the residence shall wear SCBA during initial evaluation. The cylinder shall be turned on, but the SCBA mask may not be worn until an atmosphere concentration of CO at 35 ppm or higher is encountered. **All members shall use SCBA in any atmosphere that is in excess of 35 ppm of CO.**

Turn on and calibrate the insert carbon monoxide or 4-gas meter. Take carbon monoxide readings in the following order:

1. First reading shall be taken outside, at least 10 feet away from the structure and any known source of CO such as vehicle exhausts, etc. This reading shall be recorded.
2. Second reading should be taken just inside the structure.
3. Monitor CO Detector while walking through the residence(s), checking all suspicious areas.
4. Record readings on **Carbon Monoxide Evaluation and Response Activity Report**

An attempt should be made to find the source of the CO.

1. Turn the thermostat up to get furnace to start operating.

If called to a check a specific room, go to that room and check air register. Explain to resident that all rooms would get same readings from ductwork if the furnace is the source.

1. Turn hot water tank heat setting up so hot water tank will begin operating. After checking for CO, return to original setting. You may have to turn on hot water in sink to get tank to begin heating.
2. If a gas appliance is suspected as the cause of elevated CO level, shut the gas off to the appliance, ventilate the area and recheck. Any time gas is shut off, the insert name of local gas company shall be notified.
3. In multi-family dwellings, if the source of CO cannot be found in the original reporting occupancy, attempt to check surrounding occupancies.

Actions Following Investigation Results:

If the difference between any inside reading and the outside reading is less than 9 ppm:

1. Advise the occupant that the instruments have detected a level of CO that is not ordinarily considered dangerous to healthy adults.
2. Advise the occupant of symptoms of CO poisoning. Advise the occupant to call 911 if symptoms present themselves or the CO detector reactivates. Early warning signs of CO poisoning are headaches, nausea, dizziness, shortness of breath and confusion.

If the inside reading is greater than 9 ppm, but less than 35 ppm:

1. Advise the occupant that the instrument has detected a level that is above normal and may be dangerous.
2. Attempt to find and turn off the source of CO. Under NO circumstances should repairs to gas appliances be attempted by insert name of agency personnel.
3. Ventilate the area until CO readings are less than 9 ppm above the outside reading.
4. Assist the occupant with attempting to reset the detector if operating instructions are available.
5. Advise the occupants off your actions and that they may reoccupy the premises at their discretion.

If the inside reading is greater than 35 ppm:

1. Advise the occupant that the instrument detected a dangerous level of CO.
2. Advise the occupant to leave the premises immediately.
3. Attempt to find and eliminate the source of CO.
4. The insert name of local Gas Company and emergency phone number shall be requested anytime the CO level is above normal and a gas appliance is suspected. If circumstances allow, the IC may assist the occupant with contacting other service companies such as their propane or heating oil companies, or appliance repair services.
5. Do not allow occupant re-entry until the source of CO has been found and eliminated and CO level is below 35 ppm.

Under all circumstances, advise the occupant to check the CO alarm according to manufacturer’s recommendations and to call 911 if the alarm reactivates or if symptoms become present.

* Never indicate that the detector may have malfunctioned.
* Never guarantee the safety of the premises.
* Never use gas powered fans to ventilate. Use electric PPV or natural ventilation by opening multiple windows

The Incident Commander shall complete the **Carbon Monoxide Occupant Notice of Findings** form in duplicate. IC shall review the information on the form with the occupant(s) and leave one completed form with a representative of the occupancy. The second copy of the form shall be included with the NFIRS report.

Complete the **Carbon Monoxide Evaluation and Response Activity Report** and include with NFIRS report.

**Carbon Monoxide Investigation and Response Activity Report**

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Resident Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Carbon Monoxide Meter Results:

Meter ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Operator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exterior carbon monoxide reading: \_\_\_\_\_\_\_ ppm

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Area** | **Level / Description** | **Initial reading (ppm)** | **Follow-up #1 (ppm)****Time:** | **Follow-up #2 (ppm)****Time:** |
| At entrance |  |  |  |  |
| Attached garage |  |  |  |  |
| Furnace room |  |  |  |  |
| Utility room |  |  |  |  |
| Basement |  |  |  |  |
| Kitchen |  |  |  |  |
| Living room |  |  |  |  |
| Dining room |  |  |  |  |
| Den/Family rm. |  |  |  |  |
| Bedroom 1 |  |  |  |  |
| Bedroom 2 |  |  |  |  |
| Bedroom 3 |  |  |  |  |
| Bathroom 1 |  |  |  |  |
| Bathroom 2 |  |  |  |  |
| other |  |  |  |  |
| other |  |  |  |  |

Actions taken: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Carbon Monoxide Fact Sheet**

Carbon monoxide (CO) is a highly toxic, colorless, odorless, and flammable gas produced by incomplete combustion. It binds to hemoglobin in the blood, preventing oxygen transport. While in its pure form, CO is odorless and colorless, other gases of combustion that do have an odor often accompany it.

The vapor density of CO is 0.97, slightly lighter than air, so it tends to rise and is easily dispersed. Finding the reason for the CO alarm can be time-consuming and difficult, particularly if the elevated CO levels are the result of a transient condition such as down drafting from an exhaust flue, or if the resident ventilated the residence before the fire department’s arrival.

Potential sources of CO include: automobiles; motorcycles; trucks; golf carts; RV's; 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; and any other equipment or appliance that burns fuel.

Signs and symptoms of acute CO overexposure can include

|  |  |  |
| --- | --- | --- |
| * Headache
 | * Dizziness
 | * Nausea or vomiting
 |
| * Weakness
 | * Shortness of breath
 | * Confusion
 |
| * Blurred vision
 | * Sleepiness
 | * Loss of consciousness
 |

Residential CO alarms use a sensor (electrochemical, metal oxide, or biomimetic) to detect the level of CO in the environment. A microprocessor collects the sensor's data, analyzes it, and sounds the alarm if CO concentrations become dangerous. Detectors will have different alarms, high-concentration alarm, and low-battery, malfunction, and error and warning signals. Manufacturers' product literature provides information on each model’s alarms and signals.

**Insert Name of Agency**

**Carbon Monoxide (CO) Occupant Notice of Findings**

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_ Time: \_\_\_\_\_\_\_\_\_\_\_

The Insert Name of Agencyresponded to investigate a possible carbon monoxide problem at the above address and CARBON MONOXIDE 🞏 was / 🞏 was not detected by our instruments. If we did not detect CO, this does not mean this was a false alarm. If we did detect CO, our instruments found the highest level of Carbon Monoxide to be \_\_\_\_\_\_\_\_\_\_\_\_ ppm. (parts per million) in the following location(s)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Carbon Monoxide (CO) is an odorless, colorless, and tasteless gas that is deadly. It is a by-product of combustion produced by furnaces, stoves, hot water heaters, motor vehicles, etc. The symptoms of CO poisoning are similar to that of the flu and may include headache, fatigue, nausea or vomiting, shortness of breath, confusion, blurred vision, loss of consciousness and death. Since the source may be transient in nature, the source may not always be detectable. Carbon monoxide affects individuals differently depending upon the size and medical history of the occupant(s). Therefore, families with young children, or members with medical conditions, or aged individuals should take extra precautions in the event that carbon monoxide is detected.

**Readings below 9 ppm:** Our instruments did not detect ELEVATED levels at this time. However, this does not mean that higher levels did not exist prior to our arrival or that higher levels will not accumulate after our departure. Check your carbon monoxide detector per manufacturer’s recommendations. Replace or reset detector as directed by manufacturer’s specifications. Do not hesitate to call 911 again should you have another activation of your CO detector.

**Readings more than 9 ppm but less than 100 ppm:** Our instruments may have detected potentially dangerous levels of carbon monoxide. If we feel these levels are unsafe, we may recommend that you leave this building until repairs are made and your detector is replaced or reset according to manufacturer’s specifications.

*Note: 35 ppm is the maximum allowable concentration for continuous exposure in any 8-hour period as per the Occupational Safety and Health Administration (OSHA). NJNG and/or EMS may also be notified to respond.*

**Readings of 100 ppm or more:** We have detected a potentially lethal level of carbon monoxide in your home. You are hereby ordered to leave your building IMMEDIATELY. It is not safe until repairs are made and your detector is replaced or reset according to manufacturer’s specifications. NJNG and EMS will be notified to respond.

Incident Commander: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Policy Review and Update Record**

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| **Date** | **Reviewed by** | **Updated / changed information** |
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