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| ***REPLACE WITH YOUR MASTHEAD*** |
| **VFIS logo black JPG** | **SOG Title:** |
| **SOG Number:** |
| **Original Date:** | **Revision Date:** |
| **ABC Fire Department General Operating Guideline** |

**Carbon Monoxide Alarms**

***This is a sample of a standard operating guideline (SOG) on this topic. You should review the content, modify as appropriate for your organization, have it reviewed by your leadership team and if appropriate your legal counsel. Once adopted, make sure the SOG is communicated to members, implemented and performance monitored for effective implementation.***

**Purpose:**

The purpose of this standard is to ensure consistency in response, investigation, action and reporting of carbon monoxide alarms. As in all standards, it is the intent to provide sufficient guidelines. However, caution must be exercised to assure proper and effective investigation of all potential sources of carbon monoxide.

**Definitions:**

Carbon Monoxide (CO) is an odorless and colorless gas. CO is a common by product of incomplete combustion of any organic material. CO is a major toxic component in cases of smoke inhalation, CO causes poisoning by interfering with the binding of oxygen with the hemoglobin in the bloodstream, myoglobin in the heart and muscle tissue throughout the body. CO is a toxic substance and is highly combustible gas that burns rapidly.

**Procedure:**

Upon arrival, the first officer/unit shall attempt to determine if the alarm activation is valid through the following methods:

* Discussion with occupants
* Entry into the structure only after donning full protective clothing including SCBA and monitoring interior atmosphere with appropriate atmosphere monitoring devices (CO Detector)

EMS should be notified and dispatchedimmediately if occupants show any signs/symptoms of Carbon Monoxide exposure:

* Disorientation
* Dizziness
* Nausea
* Vomiting
* Facial discoloration (redness)
* Difficulty breathing
* Any exposure to carbon monoxide

If it suspected that the activation is valid the following sources of Carbon Monoxide should be investigated:

* Furnace and chimney flue
* Stoves
* Appliances that use flammable fossil fuels
	+ Natural gas
	+ Propane
	+ Oil
	+ Kerosene
* Faulty space heaters
* Fireplaces
* Indoor operation of grills/cooking appliances
* Seepage from other sources
	+ Garage
	+ Storage closets/sheds
	+ Adjacent structures
* Reverse drafting due to changes in air temperature or pressure

If the problem involves a utility, the proper agency should be contacted and requested to respond immediately.

The fire company will not attempt any repairs or alterations to any appliance or other device. The fire company will advise the occupant only.

Fire Company actions shall be limited to:

* Evacuation and securing the structure involved
* Ventilation of structure
* Monitoring conditions within structure and the environment
* Assisting public utilities where requested
* CO checklist shall accompany all investigations

Using the CO Detector:

* After activating the detector, zero the device in fresh air (reading between 0 ppm and 1 ppm) follow the manufacturers recommendations.
* Beginning at the lowest level, preferably near the heating system to begin a survey of the structure, moving from the lowest floor to the highest. Concentrate on air ducts and returns.
* IF ANY READING OF 35 PPM OR GREATER IS RECORDED, DON AIR MASKS IMMEDIATELY BEFORE CONTINUING THE SURVEY.

FOR READINGS OF 9 PPM OR LESS:

* Inform occupants that our detection equipment did not detect an elevated level of CO at this time (do not indicate that there is or was not elevated levels of CO).
* Recommend occupants check their CO detector per manufacturer and reset detector (under no circumstances will we reset a household detector)
* Inform occupants that once detector is reset to call the fire department again if it reactivates

FOR READINGS BETWEEN 9 PPM AND 100 PPM:

* ANY READING ABOVE 9 PPM SHALL BE CONSIDERED ABOVE NORMAL (refer to SCBA protocol above)
* Inform occupants that our detection equipment has registered a dangerous level of CO
* Recommend that all occupants leave the premises and begin to ventilate the structure
* If an appliance is determined to be malfunctioning, turn it off if this can be done in a safe manner and advise the homeowner to contact the appropriate utility/service company
* If the CO readings can be stabilized below 9 ppm, then the structure can be reoccupied AT THE DISCRECTION OF THE OWNER
* (Stabilized is defined as readings below 9 ppm in an enclosed structure for a minimum of 20 minutes after ventilation is completed)
* Refer to #'s 2 and 3 in procedures below 9 ppm.

FOR READINGS ABOVE 100 PPM:

* ANY READING ABOVE I00 PPM SHALL BE CONSIDERED POTENTIALLY LETHAL (refer to SCBA protocol)
* ORDER THE OCCUPANTS TO EVACUATE IMMEDIATELY
* contact the utility company and inform them of the air monitoring findings
* begin ventilation
* If utility company does not respond and the CO levels can be stabilized below ppm limit, then the structure can be reoccupied AT THE DISCRETION OF THE OWNER
* If the utility company responds, then upon arrival inform them of our findings and tum the incident over to the utility company representative
* Make preparations for a potential flash fire of the CO gas.

TERMINATION

* Prior to termination, the following should be performed:
	+ Review actions taken with the occupant
	+ Inform occupant of monitoring levels at arrival and during and after performing operations
	+ Inform of possible likely source(s)
	+ Inform of actions taken to return premise to acceptable conditions
	+ Advise the occupant to have all appliances services as a precaution if not completed recently

***This is a sample guideline furnished to you by VFIS. Your organization should review this guideline and make the necessary modifications to meet your organization’s needs. The intent of this guideline is to assist you in reducing exposure to the risk of injury, harm or damage to personnel, property and the general public. For additional information on this topic, contact your VFIS Risk Control representative.***

**References:**

King of Prussia (PA) Volunteer Fire Company SOG Carbon Monoxide Alarms

**CHECKLIST FOR CARBON MONOXIDE**

Location of Incident \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date

Headache [ ]  Yes [ ]  No

Fatigue [ ]  Yes [ ]  No

Nausea [ ]  Yes [ ]  No

Dizziness [ ]  Yes [ ]  No

Confusion [ ]  Yes [ ]  No

Are any of the members of the household feeling ill? [ ]  Yes [ ]  No

Do you feel better when away from the house? [ ]  Yes [ ]  No

Since the detectors when off, have you?

Shut off carbon monoxide sources? [ ]  Yes [ ]  No

Which ones?

Let in fresh air? [ ]  Yes [ ]  No

If yes, how and for how long?

PPM acceptable [ ]  Yes [ ]  No Reading \_\_\_\_\_\_\_\_\_\_\_ ppm

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| **Checklist** |  | **ppm** |
| Chimney | Clogged flue/blocked opening | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Fireplace | Gas/wood | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Portable Heater | Emissions | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Gas Refrigerator |  | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Kitchen Stove |  | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Cook Top Vent |  | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Gas Dryer |  | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Water Heater | Chimney pipe | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Furnace | Gas/oil: flue/chimney | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Barbecue Grill | In enclosed area | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Car Garage | Car started or running recently | \_\_\_\_\_\_\_\_\_\_\_\_ |
| Operating Fireplace | Possible downdraft | \_\_\_\_\_\_\_\_\_\_\_\_ |

CARBON MONOXIDE DETECTOR:

Make\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Model\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Serial #

Office Completing Checklist