

## FO&M/EHS #10K

### Carbon Monoxide Monitoring SOP

**Purpose:** To establish the procedures used by FO&M when responding to potential carbon monoxide gas incidents. Carbon monoxide generation may occur and potentially be found in any building on campus. Commonly CO detectors are triggered by the firing of generators. Carbon monoxide may be present anytime an internal combustion motor or the burning of fossil fuels is present. FO&M will use the Fluke CO-220 for CO detection.

**Scope:** This procedure applies to all College owned and privately owned affiliated buildings and properties.

#### **Responsibilities:**

- A. Supervisors must ensure adherence to the work procedures outlined in this SOP. Have the meter calibrated on a yearly basis by an authorized repair center.
- B. Employees must follow the SOP when responding to potential CO incidents and initiate response procedures or repairs based on the incident at hand. Ensure that the Fluke CO-220 monitor is present and operational for use at all times.
- C. EHS will review the SOP and update as needed.

#### **Procedure:**

1. FO&M will respond to a report of a CO alarm in activation by using the Fluke CO-220 CO meter.
2. Upon arriving on scene, the CO meter will be started in fresh air prior to entering the suspect space to establish a baseline reading. (see "Establishing a Baseline" below)
3. The meter will perform a self-test of the sensor and battery upon start up.
4. Enter the space and monitor for CO using the table below indicating action levels and actions to be taken.
5. Record all CO readings on the attached form.

## Operating Procedures

### **Turning the Meter On**

1. To turn the Meter on, press the green button.
2. The Meter beeps twice, and then performs a self-test.
3. During the self-test, the display counts down from "10" to "0", while the Meter emits a series of 2 beeps followed by a pause.
4. If the Meter passes the self-test, the Meter begins monitoring, which is indicated by a beep every two seconds, and shows a reading on the display.

### **Self-Test**

The Meter tests the sensor and the battery each time it is turned on and continuously monitors the battery. If the battery is low, "M" appears on the LCD.

If battery power is below the level required to power the Meter, or if the sensor fails, the Meter emits a series of five beeps, followed by a long pause, and another series of five beeps. The Meter then turns itself off.

Replace the battery. If after replacing the battery, the alarm condition persists, the sensor may have failed.

### **Establishing a Baseline**

1. Before testing for CO, establish a baseline against which the Meter compares other environments.
2. Do this by turning on the Meter while in fresh air. If the Meter detects between 0-3 PPM of CO, the beeper sounds and the Meter establishes a new baseline.
3. If the Meter detects more than 3 PPM, it does not establish a new baseline, but starts taking CO measurements.

### Action Levels – ppm(parts per million)

Reading	Status	Action to be taken
0-9 ppm	Normal	None
10-35 ppm	Elevated	<ol style="list-style-type: none"> <li>1. Ventilate space.</li> <li>2. People may remain inside.</li> <li>3. Take CO reading every hour.</li> <li>4. *Contact FO&amp;M + ORL administrator on call*</li> </ol>
35-100 ppm	High	<ol style="list-style-type: none"> <li>1. Evacuate BUILDING by pulling fire alarm.</li> <li>2. Check for signs of CO poisoning. (<i>See symptoms below</i>)</li> <li>3. Seek medical attention if needed.</li> <li>4. Ventilate space and turn off combustion appliances. (MAXIMUM OF 15 MINUTES IN SPACE.)</li> <li>5. Take a CO reading every hour until CO level drops to 35ppm or less. At 35ppm or less the building may be occupied. (<i>Residence halls which house a generator will be monitored every 15 minutes</i>)</li> <li>6. *Contact FO&amp;M + ORL administrator on call*</li> </ol>
100-200 ppm	Dangerous	<ol style="list-style-type: none"> <li>1. Evacuate BUILDING by pulling fire alarm.</li> <li>2. Check occupants for signs of CO poisoning. (<i>See symptoms below</i>)</li> <li>3. Seek medical attention if needed.</li> <li>4. Ventilate space and turn off combustion appliances if possible (MAXIMUM OF 15 MINUTES IN SPACE.)</li> <li>5. Take a CO reading every hour until CO level drops to 35ppm or less. At 35ppm or less the building may be occupied. (<i>Residence halls which house a generator will be monitored every 15 minutes</i>)</li> <li>6. *Contact FO&amp;M + ORL administrator on call*</li> </ol>

Greater than 200 ppm	Extremely dangerous	<ol style="list-style-type: none"> <li>1. Evacuate BUILDING by pulling fire alarm.</li> <li>2. Check for signs of CO poisoning. (<i>See symptoms below</i>)</li> <li>3. All occupants must have medical attention.</li> <li>4. DO NOT RE-ENTER BUILDING UNTIL LEVEL DROPS BELOW 100 PPM.</li> <li>5. Ventilate space from OUTSIDE the structure and turn off combustion appliances if possible.</li> <li>6. Take a CO reading every hour until CO level drops to 35ppm or less. At 35ppm or less the building may be occupied. (<i>Residence halls which house a generator will be monitored every 15 minutes</i>)</li> <li>7. *Contact FO&amp;M and ORL administrator on call*</li> </ol>
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### CO Poisoning Symptoms

**\*Reminder – CO is odorless, colorless and tasteless\***

Low levels of CO exposure:

- Shortness of breath
- Mild nausea
- Mild headaches

Moderate levels of CO exposure:

- Headaches
- Dizziness
- Nausea
- Light-headedness
- Weakness
- Chest pain
- Confusion

High levels of CO exposure:

- Unconsciousness
- Vomiting
- Convulsions
- Death

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Jason Angell, Fire and Life Safety Manager

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Frank Roberts, Director of Operations FO&M

October 5, 2010

**CO Measurement Form**

Record CO levels throughout the building with Fluke CO-220 meter. Take measurements in the center of each room. Draw a diagram of the building on the back of this form as needed.

**Incident location:** \_\_\_\_\_

**Date and time:** \_\_\_\_\_

Location	CO Measurement in PPM
Outdoors (Baseline)	
Entrance (Doorway)	

Indicate actions taken based on observed CO levels:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

Additional comments/follow up needed:

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\_\_\_\_\_  
FO&M Representative (*print and sign*) Date

\_\_\_\_\_  
Supervisor (*print and sign*) Date