



DAYTON, OHIO REGIONAL HAZ-MAT RESPONSE TEAM NEWSLETTER

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Direct Reading Instrumentation

OSHA defines a Direct Reading Instrument as one capable of detecting and measuring gases and vapors suspended in air in a real-time measurement. For us that would refer to our gas meters which could be in a four to six gas configuration or a single gas (i.e. our single gas CO meters commonly found on EMS Bags). These instruments are designed to alert responders of the threat early enough to keep them from entering farther into the contaminated atmosphere and to assist with the determination of proper PPE.

There are two issues to consider with these instruments. First is delay in sensor response. All sensors take time to receive the sample, process it and then provide a response. For us that means **slow down** when you are investigating. Some detectors take two, three or even more seconds to give you a response. So, actuality “Real-Time” means “close to real-time”.

Second issue to consider is, there is **NO** “One Meter” for all products found. OSHA requires an employer to monitor the air quality if a chance exists for; low or high oxygen conditions, the presence of flammable vapors, or the presence of a toxin. This is typically preformed by our four, five, and six gas meters. However no one meter can identify the presence of all types of hazardous atmospheres.

Four, Five, and Six Gas Meters

These meters are designed to give you quick, easy, and somewhat reliable information in a short period of time. They normally read the following:

- **Oxygen** - measured as percent in air
- **Flammable vapors** – measured as percent of the LEL
- **Toxins** - measured in parts per million - ppm

When using a four or five gas meter, remember the combustible gas detection assembly may be an ignition source in areas that contain greater than 21% oxygen. These “oxygen enriched” environments can be very dangerous. This is where materials will burn faster and hotter than normal. Accurate predictions are not possible in this type of atmosphere.

Oxygen Deficient Atmospheres

An Oxygen Deficient Atmosphere is defined as Oxygen of less than 19.5% in air. Additionally, air containing less than 10% oxygen does not allow for accurate combustibility readings.

Combustible Gas Indicators

The CGI portion of most meters reads how close you are to the Lower Explosive Limit (LEL). The reading in the window is the percent of the LEL. If your meter is in alarm at 10% of the LEL, you are approaching the explosive environment and should identify

where it is so that decisions can be made as to how to mitigate the problem.

Toxins

These sensors are for specific toxic vapors. If you are dealing with a product different than what is in your meter, you must use a different method of detection. Common sensors found in our meters are: Carbon Monoxide, Hydrogen Sulfide, Ammonia, Chlorine, & Hydrogen Cyanide but there are a number of other sensors that can be placed in them based on need.

Calibration

Each and every meter has a requirement for calibration. Calibration on your meters should be done according to manufacturer recommendations. Failure to do this may affect the accuracy of the meter. Lastly, performing a bump test before each use is always helpful.

Training

Training for this month is **April 15, 16, & 17 at 0900 - 1200hrs at the Task Force Building at Dayton Fire Department Training Center.**

We will be performing an inventory of equipment on Hazmat 1 and 2 in anticipation of the arrival of our new Hazmat 1. This inventory will include taking pictures of and listing where equipment is located and identifying pieces of equipment that get used only occasionally and can be forgotten.

2024 Training Dates

May – 13-14-15 – LEPC Exer

June – 10-11-12 – Hazmat IQ

July – 15-16-17 - Scenarios

August – 12-13-14 – GCLEPC Exer

September – 16-17-18 – Railroad

October – 21-22-23 – 52nd Civil Support Team Sampling for the LRN

November – 18-19-20 – OEPA

December - No training