



DAYTON, OHIO REGIONAL HAZ-MAT RESPONSE TEAM NEWSLETTER

May 2026

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**Please see the Training Section of
This Newsletter for updates and
attached Training Flyer**

Metering for Combustible Gases

Last month we discussed the use of multi-gas meters for monitoring in an unknown environment. The intent was to enhance the knowledge you already have on these meters and to expand upon that knowledge base. This month I would like to discuss just one of the sensors in our multi-gas meters and some misconceptions about what it is really doing. The sensor I am referring to is the LEL Sensor and the misconception is that it is reading the Lower Explosive Limit of all combustible gases the same.

If you recall we talked about our LEL sensor being of importance to us from the standpoint of PPE selection. The identification of a combustible gas in the environment will drive us to choose structure gear over chemical protective clothing (e.g. plastic suits). We also talked about the alarm level of a multi-gas meter being 10% of the LEL of the calibration gas. So for us, the calibration gas used to calibrate our specific instrument is important information to know when we are monitoring.

Calibration Gas and the LEL Sensor

To be clear, LEL Sensors do not know whether they are detecting pentane, methane, or propane but only recognize that one or more combustible gases are in the atmosphere. This is why calibration is so important. Calibration ensures that the sensor is performing as intended based on a set measurement standard.

Once an instrument is calibrated with a particular gas the LEL values displayed are assuming all gases encountered in the environment are that one specific gas. If a sensor is calibrated to pentane and the sensor detects methane, the instrument will display values assuming it is truly pentane.

In order to have a more accurate reading Correlation Factors are used to translate the readings from the units of the calibration gas to the units of a second desired gas.

Correlation factors are numerical multipliers used to correct sensor readings based on specific gas calibrations. They allow instruments to translate readings from the gas being detected to the gas used for calibration. An example of this would be Pentane (calibration gas) to Propane (detected gas in residence) or Methane (calibration gas) to Propane (detected gas in residence).

Keep in mind, correlation factors are never perfect. Recognizing this fact and having a set procedure when a combustible gas is detected is key. When investigating for a combustible gas and a value is displayed on the LEL sensor we should be acutely aware of the value and watch for rise in that value being sure to use 10% of the LEL as the "Turnback" value. As this rise occurs, we identify where that rise occurred and where in the location it increases to attempt to find the source of the leak. All changes in our sensors should be conveyed to Command. Any rise in LEL should be investigated to ensure a combustible gas is not further expanding and looking to find an ignition source, and it will if left unchecked.

Calibration and the Brand of Detector

We must keep in mind that the two brands of detectors we have for our Team use different calibration gases. Industrial Scientific uses Pentane and our MultiRae uses Methane. If using both instruments simultaneously we will see different readings for the same gas detected in the field. What that means is that if we detect natural gas in a home with our MutliRae it will be more accurate than the Ventis MX4 because the MutliRae's are calibrated with Methane which is a 1 to 1 reading for 10% of the LEL. If we detect natural gas with our Industrial Scientific MX4 or MX5's we will see a lower number because they are calibrated with Pentane.

I feel like this can get a bit confusing but bottom line is, if you get a reading on your LEL sensor don't ignore it. Keep looking for the source and understand that the meters can have different readings.

Once again, the best way to keep yourself safe on any investigation is to wear your Structural Firefighting Gear, SCBA, and trust your instruments when they start to provide you with information. Alarms are designed to alert you but if you are paying close attention to your meter, you will catch things before they become dangerous.

Training – See Attached Flyer

Training for this month is **May 5, 6, & 7** – 0900 - 1230 hours (with Lunch provided) – Railroad Response with Norfolk Southern.

Norfolk Southern Railway

1436 E Monument Ave. Dayton, OH

May 5, 6, & 7 – 0900 - 1230 hours

1436 E Monument Ave Dayton

Railroad Response with Norfolk Southern

June 15, 16, & 17 – 0900 - 1200 hours

DFD TC @ Task Force Bldg

Decon Review

July 13, 14, & 15 – 0900 - 1200 hours

DFD TC @ Task Force Bldg

Anhydrous Ammonia with David Binder

August 17, 18, & 19 – 0900 - 1200 hours

Location - TBD

GCLEPC Exercise Month

September 14, 15, & 16 - 0900-1600 hours

DFD TC @ Task Force Bldg

Railroad with Jon Simpson

October 5, 6, & 7 – 0900 - 1200 hours

DFD TC @ Task Force Bldg

Top Ten Scenarios

November 16, 17, & 18—0900-1200 hours

Location - TBD

Walk-Through of Facility

December - No Training