DAYTON, OHIO REGIONAL HAZ-MAT RESPONSE TEAM

NEWSLETTER

February 2026

Gary Rettig, Coordinator
Cell phone with voicemail 937-901-5112, rettigg@earthlink.net

Please see the Training Section of This Newsletter for updates

Identification of Unknowns

Identification of unknown substances can be challenging for us in the field. The use of multi-gas meters and colorimetrics such as our "Bear-Paw" to assist us in identifying or ruling out specific families become routine. In addition to these detection resources, we may use specific instruments to identify or rule out the presence of specific hazards. An example might be using a radiation detector to rule out a radioactive isotope is present in a sample or a Photo Ionization Detector (PID) to rule out the presence of a volatile organic chemical. In addition to multi-gas detectors, colorimetrics, radiation detection, and PIDs we may have to advance to instrumentation that is designed to identify unknown solids, liquids, and gases.

I do not want to talk about unknown gas identification at this time because that instrument is what we will be training on this month. Dayton Regional Hazmat just took purchase of an unknown gas identifier that uses FTIR. This detector replaces a detector we have had for some time called the Gas ID. The ExplorIR is a much more user-friendly piece of equipment that has some additional features that will make identification in the field much better. What I would like to discuss is the two technologies we use for identification of unknown solids and liquids and the differences between the two.

FTIR and Raman

When we are faced with an unknown solid or liquid a material can be analyzed with either FTIR or Raman. Both FTIR and Raman spectroscopy instruments acquire a spectral fingerprint of an unknown substance and compare the collected fingerprint against a reference library.

FTIR and Raman spectroscopy measure the interaction of energy with the molecular bonds in a sample of an unknown material. FTIR measures how much light remains from the energy of the original light source after being passed through the substance. In comparison, Raman measures the energy that is scattered after being excited by a laser. For us the two technologies when used together, FTIR and Raman, spectroscopy provides a broader range of unknown substance identification.

Our Top Ten - *SOG at Routine Incidents* identifies the equipment and instrumentation we should use on routine incidents. This guideline lists the instruments or equipment we should be using in the field to assist in identification of the substance. The list is not necessarily in order, but it is important for us to remember that Raman uses a laser to produce the spectrum where-as FTIR is using Infrared. As such **we need to run our unknown sample on FTIR before we run it on Raman due to the ability of the Raman laser to be an ignition source** for energetic materials like explosives.

Feds Investigating NOx at two Explosives Plants

The U.S. Chemical Safety and Hazard Investigation Board is investigating incidents involving the release of hazardous nitrogen oxides gas at two facilities owned by the Austin Powder company in Ohio and Tennessee. The incidents occurred Nov. 24, 2024, at the U.S. Nitrogen facility in Midway, Tennessee, and June 11, 2025, at the **Red Diamond explosives manufacturing facility in McArthur, Ohio**.

Nitrogen oxides are highly hazardous chemicals capable of causing serious respiratory injuries and environmental harm. As more information on the cause and the issues related to the incidents are provided, I will keep all of you updated.

Training

I accidently put the wrong dates for the November training in last month's newsletter. Please make a note of the correct dates.

Training for this month is **February 9, 10, & 11 from 0800-1200hrs. Yes, we are starting at 0800hrs, that is not a typo. We will be at the Task Force Building at Dayton Fire Department Training Center.**

February 9, 10, & 11 – 0800 - 1200 hours
DFD TC @ Task Force Bldg
ExplorIR Initial Training from Manufacturer

March 23, 24, & 25 – 0900 - 1600 hours
DFD TC @ Task Force Bldg
Detection Equipment

April 13, 14, & 15 – 0900 - 1200 hours
Station 11
Calibration Station and Meter Maintenance

May 18, 19, & 20 – 0800 - 1600 hours
Location - TBD
MCLEPC Exercise Month

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