

## Emergency Response Teams

Firefighters and hazmat teams face numerous threats to life and health, some of which demand use of gas detectors to prevent over-exposure, but volunteer fire departments have limited budgets for maintenance and training on operation of these detectors. WatchGas instruments are particularly suited for such departments because of their simple operation and ease of maintenance in low-cost instruments that cover multiple gas detection needs.



WatchGas UNI Single Gas Detectors

## Fire Engine Teams

Firefighters battling a blaze are in danger, aside from the flames and collapsing structures, from poisoning by Carbon monoxide (CO) and lack of Oxygen (O<sub>2</sub>). UNI single-gas monitors detect Oxygen deficiency or toxic CO levels and tell the responders when it is necessary to don SCBA gear and when it is safe to take it off. In some instances firefighters are responding to a fire from combustible hydrocarbons such as a leaking gas pipeline propane tank, or liquid fuel source, or they need to enter a confined space that is not (yet) engulfed in flames. In such cases a POLI 4- or 5-gas confined space entry monitor is called for, which has sensors for CO/H<sub>2</sub>S/O<sub>2</sub>/LEL and optionally PID. LEL sensors detect flammable gases and vapors as they approach combustible concentrations, while PIDs measure many of the same combustible gases at much lower concentrations, thus giving an early warning of possible explosion.



POLI Smart Sensor

## Hazmat Teams

Hazardous Materials Response Teams need a variety of gas detectors in order to be able to handle a broad range of toxic chemical releases. PIDs like the NEO are useful in this regard because they are broad-band detectors that sense thousands of VOCs including paint thinners, fuels, alcohols, industrial solvents, dry cleaning fluids, etc. A limitation of PIDs is that they are not chemically-specific – that is, a response shows that something is there, but it does not tell you what it is.



WatchGas NEO  
Photo-ionization detector  
Benzene specific.

PIDs also do not respond to some inorganic toxic compounds like Chlorine (Cl<sub>2</sub>), Sulfur Dioxide (SO<sub>2</sub>), Hydrogen Cyanide (HCN) and Hydrochloric Acid (HCl). For such compounds the UNI and POLI series instruments provide chemically-specific sensors for over 15 different toxic compounds, the largest selection in the gas detection industry. These sensors include Carbon Monoxide (CO), Hydrogen Sulfide (H<sub>2</sub>S), Ammonia (NH<sub>3</sub>), Chlorine (Cl<sub>2</sub>), Chlorine dioxide (ClO<sub>2</sub>), ozone (O<sub>3</sub>), Hydrogen Cyanide (HCN), Hydrogen Chloride (HCl), Hydrogen Fluoride (HF), Nitric Oxide (NO), Nitrogen Dioxide (NO<sub>2</sub>), Sulfur Dioxide (SO<sub>2</sub>), Phosphine (PH<sub>3</sub>), Methyl Mercaptan, and Ethylene Oxide (ETO). Thus, a combination of PID for VOCs and range of electrochemical sensors for specific toxics covers most hazmat detection needs. A POLI multi-gas meter handles all these measurement options in a single instrument.



### POLI 5-Gas Options

The POLI has 4 sensor slots, but can measure 5 gases by using combination sensors. Currently available is the CO/H<sub>2</sub>S combination sensor, and coming soon is a H<sub>2</sub>S/SO<sub>2</sub> combination sensor often used at refineries.

### POLI Allows Quick Sensor Change-Out

Because Hazmat teams may not know which chemicals they need to detect until they arrive at the scene, they often must change out sensors on-site. The POLI uses smart sensors that retain calibration information. Therefore one can switch by simply opening the instrument cover and inserting a different sensor, without needing to re-calibrate or carry along calibration gases and regulators. In addition, the POLI recognizes the sensor type so there is no confusion about (or need for training on) proper sensor location. And the display automatically adjusts the sensor ID without the need for the user to re-program the instrument. A few gas sensors including HCl and ethylene oxide take several hours to equilibrate before use, because these sensors use a bias voltage. WatchGas small sensor conditioning box keeps them stored pre-equilibrated to the bias and ready for immediate use on-site.

### Continuous Monitors for Hot Zone Delineation

Another purpose of continuous monitors in outdoor hazmat response is perimeter delineation.

For example, if a tanker truck is overturned, a PID or a single-gas toxic monitor can be used to determine how close workers can come to the spill location before requiring a facemask or full personal protective equipment.

### EMTs/Confined Space Entry

Emergency Medical Personnel are often present in gas-related emergencies. A common example is CO poisoning from poorly-maintained indoor heating devices, which becomes more frequent during the winter months. Having a CO sensor on hand for real-time measurements can help locate the toxic gas source to eliminate it. Another example is when a worker is found unconscious after entering a vat or tank without suspecting low oxygen or toxic vapors. It is not uncommon to find that a second worker attempts to rescue the fallen co-worker and is also overcome. A confined space entry monitor should be lowered into the vessel before any rescue workers enter.

