PID lamp is a 10.6eV lamp that misses some common clan lab chemicals such as Acetic Acid, Chloroform and Hydrogen Chloride that have ionization potentials higher than the 10.6 eV lamp. While higher eV lamps are available for PIDs, their high cost and extremely short life span generally rule out their use. In addition, a PID is a non-specific indicator that cannot differentiate the severity of threats and alarm accordingly. The PID only counts ions and while ammonia and phosphine ions appear similar to the PID, they have very different human toxicities.

Electrochemical (EC) Sensors

EC sensors are generally specific sensors to particular species of gas. In the clan lab application it is common to see ammonia (NH3) and phosphine (PH3) sensors fielded as part of multi-sensor detection products. These EC sensors are reasonably specific and are sensitive enough for TWA alarm limits. However, these EC sensors have a limited life of only about a year, they are expensive to purchase and require frequent calibrations with expensive and short lived calibration gases.

Colorimetric Tubes

Colorimetric or "Draeger" tubes are commonly used in clan lab response and investigations. But they are not continuous and not direct reading. So while a wide varied of colorimetric tubes are available to detect the gases and vapors present in clan labs, an operator must identify the potential presence of a particular chemical and then take the time to run a tube test. If a chemical isn't present at the beginning of an investigation a tube will miss it. If a chemical is vented during the investigation and a tube isn't used at that time to detect it, one will miss that potentially toxic event.

The benefit of continuous monitoring is that an operator doesn't have to stop and think about detection, it happens automatically and constantly providing protection from any changes in the environment.

An "Orthogonal" Solution

One of the meanings for orthogonal is the characteristic of being independent (relative to something else). In gas detection orthogonal has come to be used to characterize detectors that use multiple, non-redundant sensors to solve a detection problem. The Environics ChemPro100 is just such an orthogonal detector. While at its heart there is an aspirated Ion Mobility Spectroscopy (IMS) sensor, it uses this sensor with additional sensors and "fuzzy logic" to classify chemicals. The ChemPro100 has the ability to demonstrate warning for more threatening chemicals in the clan lab environment than any handheld detection technology. The ChemPro100 represents a systematic approach to monitoring the clan lab environment process for toxic gases and vapors. It has reduced logistics costs and maintenance requirements and much longer shelf-life relative to the currently fielded technologies.

References

- Chandler, David , Ph.D.;**Chemical Hazards of Clandestine Drug Laboratories,**
- Falkenthal, Greg; **"Clan Labs: A Modern Problem**," Fire Engineering, 9/97, pp 41-58
- Maslanski,Carol J.; Maslansky, Steven P; "Combustible Gas Indicators" in **Air Monitoring Instrumentation**, New York, Van Nostrand Reinhold, 1993
- Network Environmental Systems; **Clandestine Laboratory Operations and Safety Field Guide,** , Rancho Cordova, CA, 1997

Distributed by : AFC International Inc • DeMotte IN 46310
800.952.3293 8 219.987.6826 8 fax 219.987.6826
sales@afcintl.com, www.afcintl.com