



Five good reasons to use a Photo Ionization Detectors (PID) for Arson investigation

The fire service has been using advanced gas and vapor detection instrumentation to help them pin point and identify hazardous toxic chemicals. Hazmat teams can now deploy a wide array of detectors and devices to help them make critical decisions. Over these last five years we have seen new technologies that make this task easier than ever before. This gives us the ability to stretch these new technologies into other five service related applications. One application that is starting to look at this new technology is arson investigation, specifically the use of PIDs. PIDs have some great qualities that make them a very useful tool for the arson investigator.

1. PIDs are one of the fastest gas and vapor detection methods available in a portable device. The PID uses a detector, (sensor) and a ultra violet light source (lamp) to ionize and detect gases and vapors quickly. The instrument pulls in a sample via a pump and the UV light ionizes the gas/vapor. Once the sample is ionized the sensor detects the amount of current change and the microprocessor of the instrument correlates the amount in ppm or ppb units. This process takes place very quickly. The speed of response is about to 3-10 seconds to 90% of true concentration, (T90). The quickness of this detector makes it perfect for the arson investigator who is walking around collecting evidence and needs to pick up clues. Basically the PID can keep up with the pace of the arson investigators walk, aiding him to find a target compound and establish burn patterns.
2. PIDs are very sensitive to commonly used accelerants. PIDs were first developed for environmental remediation companies for the detection of fuel compounds, specifically gasoline contamination. Gasoline is composed of aromatic compounds such as benzene, ethyl benzene and xylene, etc. and they respond very well on the PID sensor. Other common fuels that are used for arson are kerosene, lighter fluid and diesel. These can also be detected with a PID.
3. PIDs are not compound specific and will detect hundreds of gases and vapors that are ionized by the UV light. This makes the PID a general detector and can be used for a variety of chemicals that might be encountered at a arson scene.
4. PIDs are a non-destructive detection method. As soon as the air sample is ionized and a chemical is detected or not, the sample leaves the instrument the way it came in. The ionization process is only temporary. This means that once the PID instrument detects a target gas/vapor chemical, a sample of that air can be collected from the exit port and sent to a lab for verification and identification. This is a very important step because the lab can confirm the chemical via gas chromatography and give the arson investigator the identification of the exact accelerant used.
5. PIDs reduce the amount and cost of lab samples sent to the lab for analysis. The PID gives you a confirmation that a chemical is in the sample prior to sending it in. This reduces the number of zero result samples.