# PID - Photo Ionization Detector

- *Responds to molecules with carbon double bonds and aromatics*
- *Sensitive (down to 10ppb) and nondestructive*
- *Mandated in several EPA Methods*
- *Extremely long lamp life!*

Use of the Photo Ionization Detector is mandated in several EPA methods (8021, TO-14, etc.) because of its sensitivity and selectivity. Detection limits for aromatics are in the low picogram (ppb) range. Because it is nondestructive, the PID is often run in series with other detectors—typically the FID/DELCD combination detector—for multiple chromatograms from a single injection. The PID is also able to run on air carrier, which can be useful in situations where no gas is available, or for stream monitoring applications where no column is used to separate compounds.
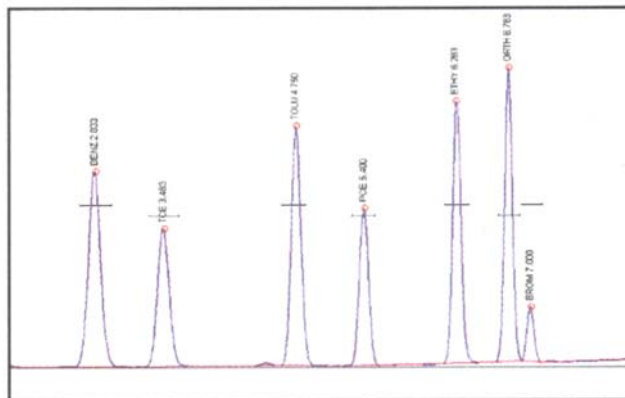
This PID chromatogram shows a separation of a 100ppm BTEX plus sample using a 0.53, 15 meter capillary column and helium carrier gas.

Unlike other PID designs, the lamp on the SRI PID can be easily removed, without tools, for periodic cleaning of the lamp window to avoid interference from column bleed build-up. Lamps can last years on the SRI PID because only the lamp window is heated, not the entire body of the lamp.

The SRI design uses the industry standard 10.6eV PID lamp in a spring-loaded mount, which allows the lamp to be removed, cleaned and reinstalled in seconds without tools.
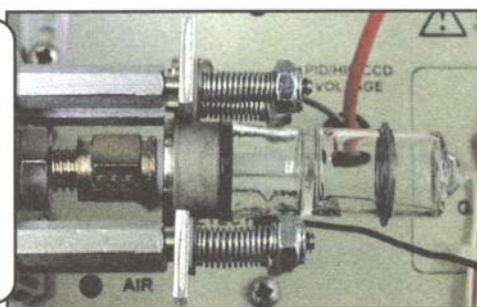
The SRI PID consists of an industry standard UV lamp mounted on a thermostatted, low-volume, flow-through cell. The temperature is adjustable from ambient to 250°C. The 10.6 electron volt UV lamp emits energy at a wavelength of 120 nanometers, which is sufficient to ionize most aromatics (benzene, toluene, xylene, etc.) and many other molecules (H_2S, hexane, ethanol) whose ionization potential is below 10.6eV. Methanol and water, for instance, have ionization potentials greater than 10.6eV and do not respond on the PID.

8690-0040	PID detector