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Comparison of Xenon vs. Deuterium Sources

Cerex offers two DOAS system configurations which utilize alternate UV Source configurations.

The spectral curves produced by each source can be seen in the chart below.

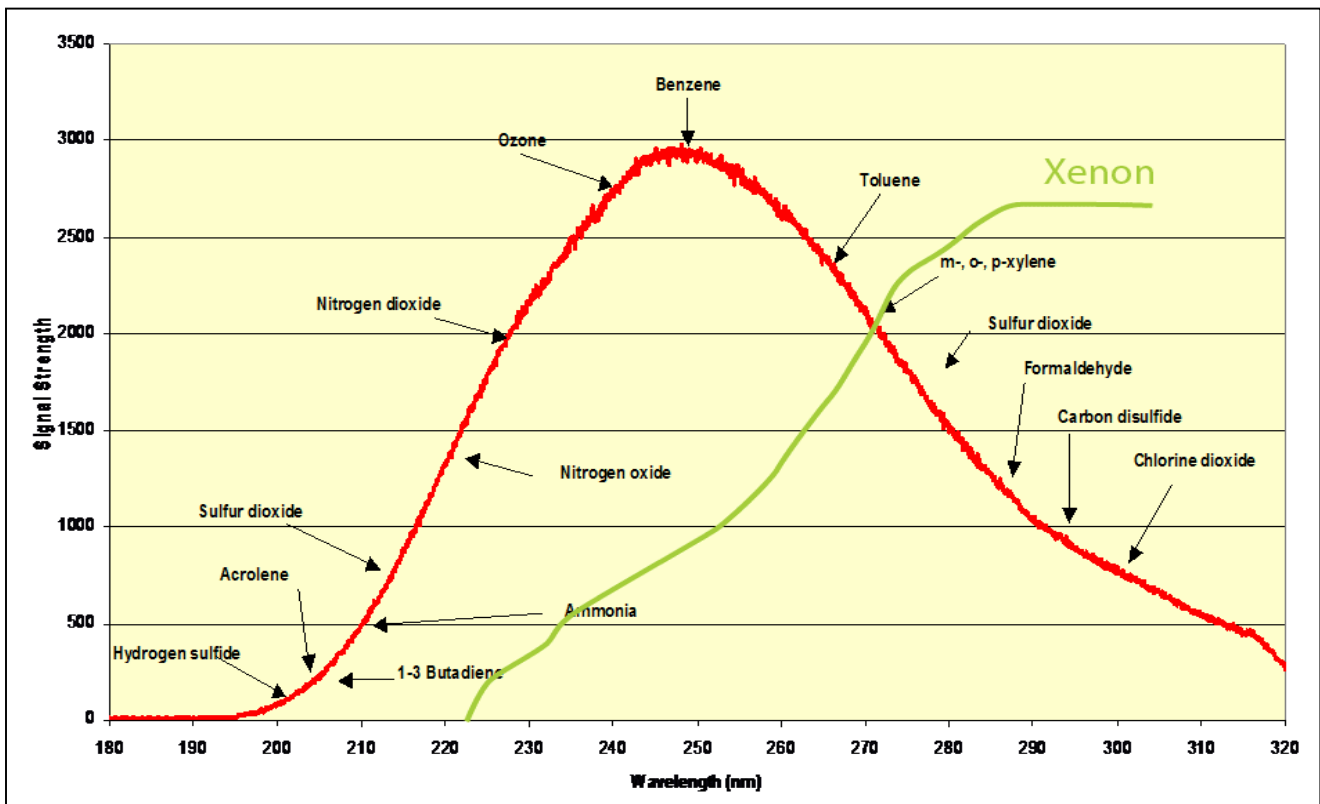
Deuterium has a larger deep-uv component, while the Xenon has a larger visible component.

Each source has a unique list of benefits and limitations.

The discussion below will help the end-user select the best choice for a particular application.

Some customers have purchased both types for the added flexibility.

Cerex is currently the only manufacturer to offer the Deuterium Source technology in an open-path monitor configuration. The added capabilities that this option offers are unique to the Cerex system.



Deuterium Option

- 35Watt Lamp – limits the maximum path to 300 meters.
- More difficult to visually align than the xenon – this is because the light emitted is lower in visible light. The beam appears as a dim purple or violet color. Very intense in the deeper wavelengths, so eye protection is still required when viewing the beam directly.
- Detects the most number of compounds because energy is available in the “deep uv”. Deep-uv compounds include H₂S, NH₃, Butadiene, Ammonia, Acrolein.
- Ambient Oxygen begins to absorb also at around 200nm and deeper. Therefore, the longer the path, the more oxygen begins to interfere. Eventually, with longer paths, oxygen blocks the available energy for analysis. Cerex recommends that paths of <150 meters be used for H₂S, Acrolein or Ammonia monitoring.
- Lamp is durable and ships well in-place.
- 2000 hour minimum lamp life
- Lower power consumption makes this more suitable for battery operation.

Xenon Option

- 100 Watt Lamp – enables much longer paths in excess of 1000 meters
- Intense visible light – eye protection required. Easier to align at longer distances due to the high visible component of light
- Lower available deep-uv component, therefore the Deep-uv subset of compounds can not be detected.
- UV Lamp is more fragile than the D₂...extra care is required for transport to insure the lamp is not damaged. Lamp is shipped separately packaged. Installation is easy and takes only minutes.
- 2000 hour minimum lamp life
- Higher power means less operating time when operating from battery power.
- Alignment is much more forgiving due to higher intensity beam. Better long term stability.