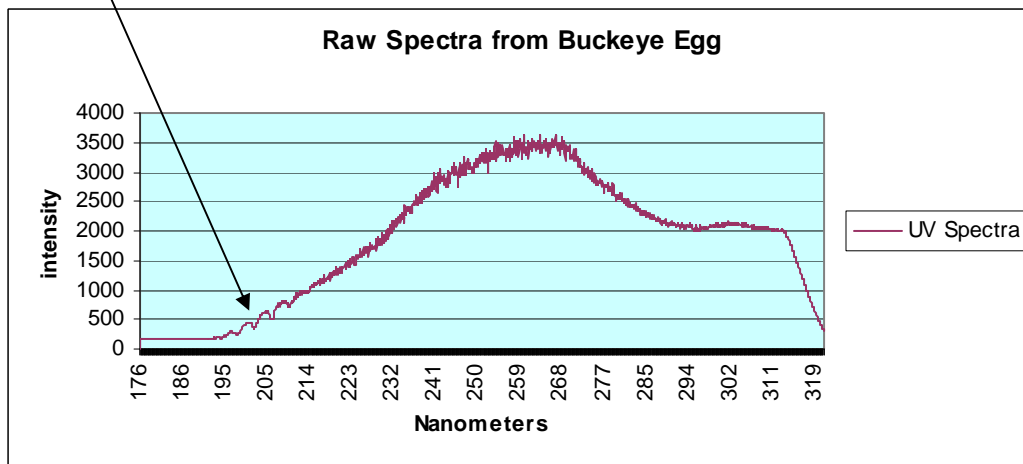




Principles of UV Absorbance

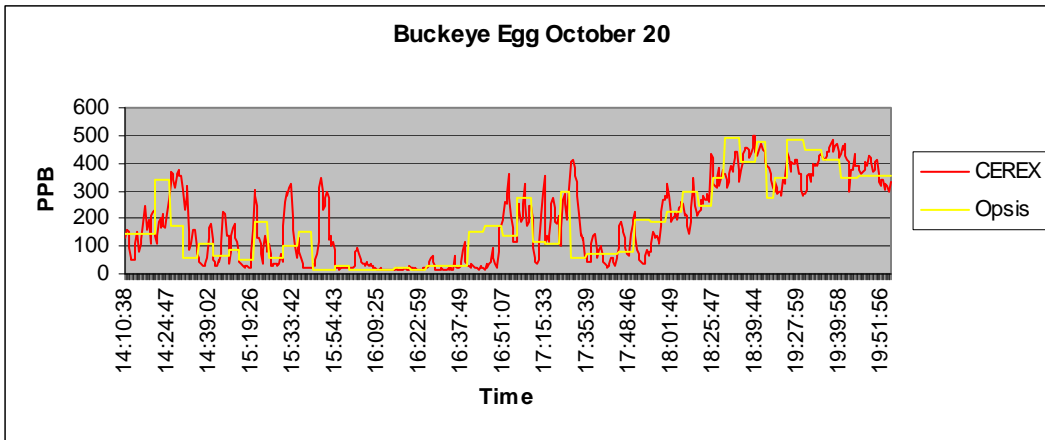
The heart of the CEREX UV open-path monitoring system is based on charge capacitor diode array (CCD) technology. The fundamentals of the system's operation are simple. First, ultra-violet light is generated from some type of source, usually either a deuterium or xenon lamp. The light is collected and concentrated using standard telescope optics. The concentrated light then passes through an input lens into the spectrometer via a fiber optic coupling. Once inside the spectrometer, the light is broken out into its various wavelengths by sending it through a holographic grating. The light then hits the CCD array which in turn charges the capacitor. The capacitors are discharged at a sample rate set by the user and the light signal at each light frequency is proportional to the total charge of each capacitor. Finally, a graphical representation of the UV spectra is produced by measuring the electrical charge of each capacitor at each given wavelength (signal intensity vs. wavelength).

Ammonia Peaks



The beauty of the CEREX UV open-path air monitor lies in its size, simplicity of design and ease of use. These three factors enable the system to have the flexibility to meet many different monitoring applications. For example the system has been operated using both a deuterium and xenon sources. Deuterium sources have a lower noise and higher UV spectral component than traditional xenon lamps. The systems have also been operated at both long (850meters, with xenon) and short path lengths (10meters).

The graph below shows some typical situations where the system detected, quantified and displayed ambient gas concentrations on a real-time basis.



UVSentry monitors the air at a CAFO for ammonia. Although the Opsi and UVSentry track very closely, the faster system response of the UVSentry affords a much more detailed look at what is really going on, with greater chance of catching dynamic concentrated plumes. This may allow for quicker response time – hence reducing health concerns in the local environment.