LiquID™

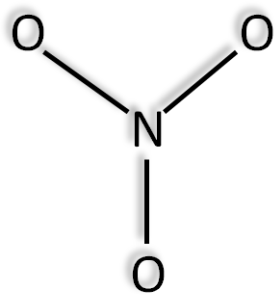
How It Works

Nitrate + Nitrite

Monitoring with the LiquID™ Station

Measuring Nitrate

Nitrate (NO_3^-) is a key parameter of interest for both wastewater treatment operations and for environmental monitoring of drinking water sources. In addition, water systems utilizing chloramines to maintain a disinfection residual need to monitor for nitrification in their distribution systems.

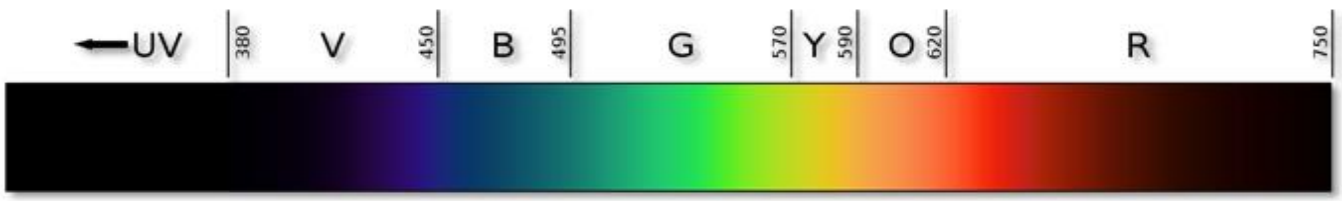


While nitrate is important in water and wastewater treatment, the lab methods for analyzing nitrate are notoriously tricky. As a result, nitrate information is usually gathered in periodic grab samples with a low frequency, and the opportunity for active management of nitrate issues is limited. To meet this need, a new generation of optical UV-nitrate sensors is emerging. These instruments detect nitrate by measuring the absorption of UV light by the nitrogen-oxygen bonds of the nitrate (above) and nitrite molecules. They also collect other spectral readings, to provide correction factors for absorption at the nitrate/nitrite UV frequency by dissolved organics or solid particles.

The LiquID Station utilizes UV-nitrate detection capability, but with additional advancements for added reliability and sensitivity. LiquID collects a range of measurements on a cycle, about every two minutes, across the light spectrum, including at the frequency for nitrate and nitrite detection. But compared to other instruments, LiquID operates far deeper in the UV range, utilizing more high energy light frequencies and getting better resolution of interference. The result is an instrument with high sensitivity as well as reliability of matrix correction, with **combined nitrate+nitrite detection sensitivity below 0.05 parts per million**.

About LiquID™

The LiquID Station from ZAPS Technologies (pictured below) is an innovative, optical instrument for continuous water quality monitoring. The automated online instrument analyzes a continuous flow-through stream from a pressurized water sample line using multi-spectral light and software algorithms, and uses no reagents nor produces any waste other than the original sample (which is returned or wasted as appropriate). With this method LiquID is capable of monitoring a wide range of water quality parameters in a number of different industry applications, including those relevant to municipal water and wastewater treatment, water reuse systems and industrial process control.



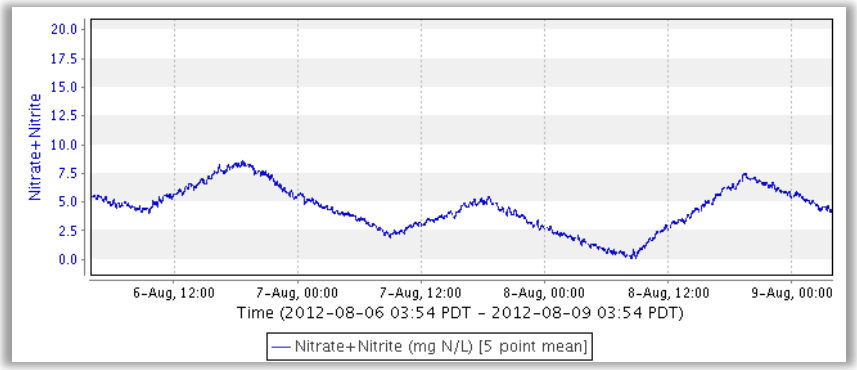
ZAPS TECHNOLOGIES

LiquID™

How It Works

Effective in Different Matrixes

The LiquID Station is a robust, ruggedized instrument, designed for monitoring in indoor or outdoor environments and matrixes ranging from ultrapure waters to natural ground or surface waters to wastewater. With broad spectrum, high-energy UV detection and intelligent on-board analytics, the LiquID Station provides UV nitrate monitoring with a higher sensitivity and in environments where many instruments fail.



The graph to the right is a screen capture of a 3-day data plot on the ZAPS LiquID web user interface (WUI), with readings collected about every two minutes. Notice the high repeatability and stability of the readings. LiquID captures readings on a server, and plots of historical data are available with a few clicks. This graph shows combined nitrate+nitrite readings at the final effluent point of a municipal wastewater treatment plant. At this plant, LiquID Stations are also position to collect multi-parameter readings, including nitrate, at the primary effluent and raw influent points.

Value of Real-Time Nitrate Monitoring

In environmental monitoring and water treatment applications, nitrate is an important indicator of water quality. High nitrate levels indicate high levels of agricultural fertilizer runoff, and can even impact human health. Nitrate is also an essential nutrient for algal blooms, so high nitrate levels in rivers and estuaries indicates potential bloom risk.

In wastewater treatment applications, nitrate and nitrite are steps in the ammonia removal pathway. The real-time measurements of nitrate and other key parameters (such as algal pigments in water treatment applications and ammonia in wastewater applications) provide treatment plant operators with a better understanding of their system, and in some cases, opportunities for advanced process control. Contact ZAPS to learn how LiquID nitrate monitoring will benefit your application.

Contact ZAPS
For More Information

www.zapstechnologies.com
Phone: (866) 390-9387
Email: info@zapstechnologies.com

ZAPS TECHNOLOGIES

Total Organic Carbon