

## **New Standard Test Method to Assess Water Safety**

**Thermo Fisher Scientific and the ASTM develop ion chromatography-based method for the simultaneous determination of nitrogen and phosphorous levels in water**

### **Dateline:**

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SUNNYVALE, Calif.--Researchers investigating nutrient runoff, water quality and wastewater treatment operators can now benefit from a new American Society for Testing and Materials (ASTM) standard that utilizes the powerful separation capabilities of ion chromatography for the simultaneous determination of total nitrogen and phosphorous concentrations.

Developed in conjunction with the ASTM, the “D8001 Test Method for Determination of Total Nitrogen, Total Kjeldahl Nitrogen by Calculation, and Total Phosphorus in Water and Waste Water by Ion Chromatography” allows users to concurrently monitor total nitrogen (organic nitrogen, ammonia, nitrate and nitrite) as nitrate and total phosphorus as orthophosphate in unfiltered water samples.

“Thermo Fisher’s method provides a single, reliable instrumental method for the determination of the target analytes in water, in place of traditional multiple and complex wet chemical methods, with the opportunity for accumulative errors,” said Robert Joyce, chairman of the ASTM International Subcommittee D19.06. “We expect the method should deliver labor savings, as well as improved sensitivity and accuracy.”

Currently, laboratories use two methods to determine total kjeldahl nitrogen (TKN) and total phosphate. The new test method can be incorporated into existing ion chromatography protocols with the addition of a single sample digestion and analysis step to determine total nitrogen and total phosphate simultaneously. By comparing digested and undigested samples using this method, the tedious TKN digestion method can be eliminated—ultimately saving time, disposal costs of acidic reagents and reducing some of the known false positives from TKN that occur with the use of acidic reagents.

“Excess amounts of essential nutrients such as nitrogen and phosphorous can cause algal blooms, leading to the generation of toxic microcystins,” said Richard Jack, senior director, Environmental and Industrial marketing, Chromatography and Mass Spectrometry, Thermo Fisher Scientific and ASTM member. “With this new method, scientists should be able to identify excess nutrients in waterways from water treatment and agricultural runoffs.”

The new method involves a simple two-step process, sample digestion and analysis. During the digestion step, a water sample is digested with alkaline persulfate, which results in oxidation of nitrogen compounds to nitrate and hydrolysis of phosphorus to orthophosphate. Following this, the sample can be analyzed using an ion chromatography platform, such as the Thermo Scientific Dionex Integriion HPIC system coupled with the Thermo Scientific Chromeleon Chromatography Data System (CDS) software, to produce accurate and reproducible determination of nutrients at high throughputs.

This new method is available through the ASTM website [here](#).

About Thermo Fisher Scientific

“*With this new method, scientists should be able to identify excess nutrients in waterways from water treatment and agricultural runoffs.*”

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