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NATIONAL WATER QUALITY LABORATORY TECHNICAL MEMORANDUM 2000.06

1 October 2000

To: Distribution E

From: Gregory B. Mohrman, Chief
National Water Quality Laboratory

Subject: Elimination of Orthophosphate and Nitrate Analysis by Ion Chromatography

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Revision: None

Effective Date
of Change: N/A

Purpose

Orthophosphate by ion chromatography (IC), labcode 1262, and nitrate by IC (labcode 1261) will no longer be offered after September 30, 2000. Reasons for this change are the following: 1) better methods are available; 2) there are concerns about sample stability; and 3) these methods are low in demand (fewer than 250 tests per year).

The suggested replacements for orthophosphate are labcode (LC) 1974, which has the same laboratory reporting level (LRL) as the discontinued method (0.01 mg/L), or LC 1978, with an LRL of 0.001 mg/L. Labcodes 1974 and 1978 are also less expensive than LC 1262. An FCC bottle (125 mL, brown, polyethylene bottle) is required for either replacement method.

Customers who require low-level results for nitrate may still obtain them by requesting LC 1979 (nitrate-plus-nitrite) with an LRL of 0.005 mg/L and LC 1977 (nitrite) with an LRL of 0.001 mg/L, and then calculating the nitrate value. If low-level data are not required, customers are encouraged to use LC 1975 and LC 1973 where LC 1975 has an LRL of 0.05 mg/L. In the case of low-level methods, costs for the replacement labcodes are somewhat higher; however, customers who elect to use labcodes 1975 and 1973 will realize small savings. By grouping the labcodes as suggested the nitrate-plus-nitrite and nitrite will be analyzed simultaneously under identical analytical conditions, thus providing the best nitrate value. An FCC bottle is required for the replacement methods.

Labcodes 1261 and 1262 will be removed from existing schedules. Customers will need to decide which replacement option will best fit the data quality objectives of the project and add the replacement labcodes to each Analytical Services Request form. Customers may contact Steve Glodt (303-236-3721, srglodt) to update existing schedules with desired replacement labcodes.

Background

The IC method that is being eliminated uses a filtered, unchilled (FU bottle type) sample, but this bottle type has never had a test of stability for orthophosphate or nitrate. The replacement (colorimetric) method is performed on filtered, chilled (FCC bottle type) samples, and this sample type has a proven stability (see Patton and Gilroy, 1999).

In addition to providing improved results, the colorimetric methods for these tests will be less expensive for customers who require both orthophosphate and nitrate.

During FY 1999 only 146 requests for LC 1262 (orthophosphate) and 186 requests for LC 1261 (nitrate) were received. The number of requests for both of these tests has been declining each year.

Summary

After September 30, 2000, the NWQL will no longer analyze samples for orthophosphate or nitrate by ion chromatography. Improved methods are available, often at lower cost, and each year there have been fewer requests for the IC methods.

All of the suggested replacement methods require an FCC bottle, in which nutrients are stabilized by filtering and chilling.

Customers with concerns should contact Gary Cottrell (cottrell, 303-236-3490). Every effort will be made to minimize disruption during this transition.

Reference

Patton, C.J., and Gilroy, E.J., 1999, U.S. Geological Survey nutrient preservation experiment- Experimental design, statistical analysis, and interpretation of analytical results: U.S. Geological Survey Water-Resources Investigations Report 98-4118, 73 p.

For further information, please contact Gary Cottrell (COTTRELL) at (303) 236-3490.

Key Words: Orthophosphate, nitrate, ion chromatography, replacement, elimination, LC 1261, LC 1262