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NATIONAL WATER QUALITY LABORATORY TECHNICAL MEMORANDUM 2000.07

1 October 2000

To: Distribution E

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

Subject: Elimination of Lead Analysis by Inductively Coupled Plasma-Optical
Emission Spectrometry

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Revision: None

Effective Date
of Change: October 1, 2000

Purpose

The National Water Quality Laboratory (NWQL) will no longer offer lead (Pb) determinations by Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES). This change applies to both filtered and whole-water recoverable (WWR) lab codes (LC 646 and LC 2360, respectively). Customers may elect to request Pb determinations by the Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) technique for filtered (LC 1792) or WWR (LC 2380) samples. Alternatively, Graphite Furnace-Atomic Absorption Spectrophotometry (GF-AAS) may be used for filtered (LC 1560) and WWR (LC 1561) Pb determinations. Customers should note that on October 1, 2000, all schedules containing LC 646 (Test ID 01049C) and 2360 (Test ID 01051H) will be swapped to the ICP-MS lab codes for lead determinations, LC 1792 (Test ID 01049G) and LC 2380 (Test ID 01051I), respectively, unless specified otherwise by the schedule owner.

Background

The elimination of Pb determination by ICP-OES is based on concerns about the usability of the data, particularly in light of the established Laboratory Reporting Levels (LRL) of 100 micrograms per liter (ug/L) for filtered lead and 130 ug/L for WWR lead. The majority of results are reported as

"less-than" or as "estimated values" because of the high LRL. The majority of measurable environmental concentrations of Pb are less than 100 ug/L so that data produced by using the ICP-OES technique are not particularly helpful or informative. In addition, a decision was made by the Branch of Quality Systems (BQS) to discontinue the blind sample quality-assurance assessment of dissolved lead by ICP because BQS does not have standard reference materials with most probable values greater than 100 ug/L. Additionally, the BQS has not monitored WWR lead for the same reason.

Changes to present Schedules: Effective October 1, 2000, all schedules that request ICP-OES filtered Pb (LC 646) or WWR Pb (LC 2360) determinations will be automatically swapped to ICP-MS LCs 1792 and 2380, respectively. Schedule owners who want GF-AAS methods instead of the ICP-MS methods need to contact Steve Glodt at (303) 236-3721, srglodt@usgs.gov.

Keywords: Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), lead, filtered, Whole-Water Recoverable (WWR)