

April 30, 2001

To: Water Resources Division

From: Peter F. Rogerson, Senior Chemist
Office of Water Quality

For: LeRoy Schroder, Chief
Branch of Quality Systems

Subject: Approval of a Water Quality Analytical Method for the Determination of Mercury in Filtered and Unfiltered Water

The Office of Water Quality (OWQ) has approved a new Water Quality Analytical Method for the determination of organic plus inorganic mercury in both filtered and unfiltered water developed by the National Water Quality Laboratory (NWQL). This new method replaces the cold vapor atomic absorption methods for filtered and whole water in Fishman and Friedman, 1989. The new method uses cold vapor atomic fluorescence detection with hydrochloric acid as the sample preservative. There is a sample digestion step using bromine monochloride to oxidize both organic and inorganic forms of mercury. The oxidized mercury is subsequently reduced to elemental mercury for purge and fluorescence detection. Until a long-term method detection limit can be determined which includes commonly used field supplies, the method reporting limit is set to 0.010 ug/L for both filtered and unfiltered determinations. The NWQL bottle type remains unchanged for both filtered (FAM) and unfiltered (RAM) samples, and the price of the new method is the same as the price of the old method for this year.

<u>Constituent:</u>	<u>Lab Code</u>	<u>Parameter/Method Code</u>
Mercury, water filtered, organic + Inorganic, ug/L	2707	71890C
Mercury, water unfiltered, organic + inorganic, ug/L	2708	71900D

This method approval process follows the technical procedure specified in OWQ Tech Memo 98.05, except that this method is described in a Water Resources Investigations Report instead of an Open File Report. The method performance is described in:

Methods of Analysis by the U.S. Geological Survey National Water Quality laboratory – Determination of Organic and Inorganic Mercury in Filtered and Unfiltered Natural Water with Cold Vapor-Atomic Fluorescence Spectrometry, by John R. Garbarino and Donna L. Damrau. U.S. Geological Survey Water

Resources Investigations Report 01-XXXX (number to be assigned upon Director's approval).

When approved by the Director, the report will be made available through the NWQL web site at: <http://wwwnwql.cr.usgs.gov/USGS/Pubs/pubs.html> .

Information about the new method is available through the NWQL web site <http://wwwnwql.cr.usgs.gov/USGS> . Please click on SPiN and request mercury under the Constituent category, or the above Lab or Parameter codes. In addition, there is a frequently asked questions address for the new mercury method at <http://wwwnwql.cr.usgs.gov/USGS/HgFAQ.html>.

If you have questions about the new analytical method or would like a copy of the report, when it is available, please contact Donna Damrau (dldamrau@usgs.gov) (303) 236-3183 or John Garbarino (jrgarb@usgs.gov) (303) 236-3945) at the NWQL.

If you have questions about the method approval process, please contact Pete Rogerson (rogerson@usgs.gov, (303) 236-1836).

Reference:

Fishman and Friedman, 1989. Methods for Determination of Inorganic Substances in Water and Fluvial Sediment. Techniques of Water-Resources Investigations of the U.S. Geological Survey, Book 5, Chapter A1, PP 289-291.