June 27, 2001

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To: Water Resources Discipline

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 Wastewater Compounds by the National Water Quality Laboratory

The Office of Water Quality (OWQ) has approved a new Water Quality Analytical Method for the determination of wastewater compounds in filtered water developed by the National Water Quality Laboratory (NWQL). This new method is designed to replace or augment several NWQL sample preparation methods that use separatory funnel or continuous liquid-liquid extraction. It uses solid-phase extraction for sample preparation and capillary-column gas chromatography /mass spectrometry for determination of 63 compounds and 4 nonionic detergent metabolites. Of these 67 analytes, 23 have known or suspected endocrine-disrupting potential. The new method number is O-1433-01 and can be requested through the NWQL as Schedule 1433.

Preliminary method reporting limits ranged from 0.5 to 2 ug/L for most analytes, with some sterols, hormones, and multicomponent detergent metabolites as high as 5 ug/L. Most analytes were determined with greater than 60 percent recovery and less than 25 percent relative standard deviation (RSD). However 15 analytes are currently reported with the "E" data qualifier because recovery was less than 60 percent, RSD was greater than 25 percent, or because the only available standards were from technical mixtures.

Data users are cautioned that analyte concentrations reported from this method are for filtered water only and may greatly underestimate the total amount of some analytes present in whole water samples, particularly for those low-solubility analytes that strongly sorb to suspended material. For analytes that are more water soluble and which may not sorb to suspended material, concentrations determined using this method have been shown to agree with methods using liquid-liquid extraction and whole water samples.

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 Wastewater Compounds by Polystyrene-Divinylbenzene Solid-Phase Extraction and Capillary-Column Gas Chromatography/Mass Spectrometry, by Steven D. Zaugg, Steven G. Smith, Michael P. Schroeder, Larry B. Barber, and Mark R. Burkhardt. 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 . (Note added 6/28/01: Link broken. Delete first Pubs/)

The complete list of parent pesticides and degradates will be available through the NWQL web site http://wwwnwql.cr.usgs.gov/USGS on July 16, 2001. Please click on STARLIMS Catalog and request Schedule 1433. Note: This announcement approves this method, but NWQL needs until July 16, 2001 to establish Schedule 1433 in the Catalog.

If you have questions about the new analytical method, or would like a copy of the report, when it is available, please contact Mark Burkhardt (mrburk@usgs.gov, (303) 236-3250) or Steve Zaugg (sdzaugg@usgs.gov ,(303) 236-3269) at the NWQL.

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