August 23, 1999

To: E

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 Triazine and Chloroacetanilide Herbicides in Water by Solid-Phase Extraction and Capillary-Column Gas Chromatography-Mass Spectrometry with Selected Ion Monitoring

The Office of Water Quality (OWQ) has approved a new water-quality analytical method by the U.S. Geological Survey (USGS) Organic Chemistry Research Group, Lawrence, Kansas for the determination of triazine and chloroacetanilide herbicides in water by solid-phase extraction and capillary-column gas chromatography-mass spectrometry with selected ion monitoring. This water-quality analytical methods approval follows the technical procedure specified in OWQ Tech Memo 98.05. The Open File Report (OFR) is entitled:

> Methods of Analysis by the U.S. Geological Survey Organic Geochemistry Research Group - Determination of Triazine and Chloroacetanilide Herbicides in Water by Solid-Phase Extraction and Capillary-Column Gas Chromatography-Mass Spectrometry with Selected Ion Monitoring, by L. R. Zimmerman and E. M. Thurman. U.S. Geological Survey OFR 98-634.

This method determines 16 selected herbicides and degradation products in samples of filtered water. An aliquot of the filtered sample is pumped through a C-18 extraction cartridge to adsorb the analytes, which are subsequently eluted using ethyl acetate. The analytes are separated, identified, and quantified using capillary-column gas chromatography-mass spectrometry. Mean recoveries for all analytes in reagent water were 96.8 percent. Method detection limits for all analytes were between 0.03 and 0.05 micrograms per liter (ug/L). The method reporting limit is 0.05 ug/L for all analytes.

The following list of National Water Information System (NWIS) Parameter Codes and Method Codes have been established for water concentration data from this method:

Parameter Code	Method Code	Analyte Name

49260	T	Acetochlor, water, filtered, recoverable, ug/L
46342	T	Alachlor, water, dissolved, recoverable, ug/L
38401	T	Ametryn, water, dissolved, recoverable, ug/L
39632	T	Atrazine, water, dissolved, recoverable, ug/L
04041	T	Cyanazine, water, dissolved, recoverable, ug/L
61709	T	Cyanazine-amide, water, filtered, recoverable, ug/L
04040	T	Deethyl Atrazine, water, dissolved, recoverable, ug/L
04038	T	Deisopropyl Atrazine, water, dissolved, recoverable, ug/L
39415	T	Metolachlor, water, dissolved, recoverable, ug/L
82630	T	Metribuzin, water, dissolved, recoverable, ug/L
04037	T	Prometon, water, dissolved, recoverable, ug/L
04036	T	Prometryn, water, dissolved, recoverable, ug/L
04024	T	Propachlor, water, dissolved, recoverable, ug/L
38535	T	Propazine, water, dissolved, recoverable, ug/L
04035	T	Simazine, water, dissolved, recoverable, ug/L
38888	T	Terbutryn, water, dissolved, recoverable, ug/L

The fixed value for the analyzing agency (parameter code 00028) is: 82013 (District Research Water-Quality lab, Lawrence, KS.)

Because the USGS Organic Chemistry Research Group, Lawrence, Kansas (a.k.a. District Research Water-Quality Lab, Lawrence, KS) is producing water quality data for many compounds in addition to those listed in this approval memo, a method code of 'U' was established to identify results from this lab for methods that are not yet approved. This will allow investigators to distinguish data from approved versus unapproved methods. According to Office of Water Quality Technical Memorandum 98.05, data from approved methods can be made available to the public in data bases, and can be used in data reports. Data from unapproved methods can be used in interpretive reports and journal articles with an explanation of their data quality and methodology.

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