

December 16, 2002

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 Triazine and Phenylurea Herbicides and degradation Products in Water

The Office of Water Quality (OWQ) has approved a new water-quality analytical method by the U.S. Geological Survey (USGS) Organic Geochemistry Research Group, Lawrence, Kansas for the determination of triazine and phenylurea herbicides and their degradation products in filtered water. The method uses solid-phase extraction followed by liquid chromatography/mass spectrometry, USGS method number O-2138-02. This water-quality analytical method 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 Phenylurea Herbicides and Their Degradation Products in Water Using Solid-Phase Extraction and Liquid Chromatography/Mass Spectrometry, by E. A. Lee, A. P. Strahan, and E. M. Thurman. U.S. Geological Survey OFR 02-436.

The 19 herbicides and degradation products are determined in calibration ranges from 0.05 to 2.0 ug/L for most triazines, except for deethylcyanazine and deethylcyanazine amide which are reported from 0.2 to 2.0 ug/L. The phenylurea herbicides and degradation products are also reported from 0.2 to 2.0 ug/L. Method detection limits are between 0.013 and 0.14 ug/L. Mean recoveries of the analytes in 3 different matrices at 2.0 ug/L were between 73 and 116 percent, while recoveries at 0.2 ug/L were between 76 and 140 percent. The Organic Geochemistry Research Group, Lawrence, KS, refers to this method as Analysis Code LCEA. The National Water Information System (NWIS) Parameter Codes and Method Codes for these analytes are:

Herbicides and Degradates by USGS Method Number O-2138-02

Parameter Code	Method Code	Analyte Name
39632	S	Atrazine, Water, Filtered, Recoverable, ug/L
04041	S	Cyanazine, Water, Filtered, Recoverable, ug/L
61745	S	Cyanazine acid, Water, Filtered, Recoverable, ug/L
61709	S	Cyanazine amide, Water, Filtered, Recoverable, ug/L
04040	S	Deethylatrazine, Water, Filtered, Recoverable, ug/L
61749	S	Deethylcyanazine, Water, Filtered, Recoverable, ug/L
61750	S	Deethylcyanazine acid, Water, Filtered, Recoverable, ug/L
61751	S	Deethylcyanazine amide, Water, Filtered, Recoverable, ug/L
04039	S	Deethyldeisopropylatrazine, Water, Filtered, Recoverable, ug/L
62676	S	Deethylhydroxyatrazine, Water, Filtered, Recoverable, ug/L
04038	S	Deisopropylatrazine, Water, Filtered, Recoverable, ug/L
62678	S	Deisopropylhydroxyatrazine, Water, Filtered, Recoverable, ug/L
61755	S	Demethylfluometuron, Water, Filtered, Recoverable, ug/L
50374	S	Diuron, Water, Filtered, Recoverable, ug/L
38811	S	Fluometuron, Water, Filtered, Recoverable, ug/L
50355	S	Hydroxyatrazine, Water, Filtered, Recoverable, ug/L
38478	S	Linuron, Water, Filtered, Recoverable, ug/L
38535	S	Propazine, Water, Filtered, Recoverable, ug/L
04035	S	Simazine, Water, Filtered, Recoverable, ug/L

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

If you would like a copy of the report when published, please contact Betty Scribner ([scribner@usgs.gov](mailto:scribner@usgs.gov)) (785) 832-3564. If you have questions about the method approval process, please contact Pete Rogerson ([rogerson@usgs.gov](mailto:rogerson@usgs.gov)) (303) 236-1836.