May 21, 2003

To: Water Resources Discipline

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

Subject: Approval of a Water Quality Analytical Method for the Determination of Acetamide 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 Acetamide herbicides and their degradation products in filtered water. The method uses on-line solid-phase extraction followed by liquid chromatography/mass spectrometry with both positive and negative ionization, USGS method number O-2139-03. 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 Acetamide Herbicides and Their Degradation Products in Water Using On-Line Solid-Phase Extraction and Liquid Chromatography/Mass Spectrometry, by E. A. Lee and A. P. Strahan. U.S. Geological Survey OFR 03-XXX.

The 22 herbicides and degradation products are determined in calibration ranges from 0.05 to 2.0 ug/L. Method detection limits are between 0.004 and 0.05 ug/L. Mean recoveries of all analytes in buffered reagent water were between 90 and 118 percent, while recoveries of all but one analyte in ground and surface water were between 62 and 117 percent. The one exception was the secondary amide of Acetochlor/Metolachlor ESA which had recoveries between 40 and 48 percent. The Organic Geochemistry Research Group, Lawrence, KS, refers to this method as Analysis Code LCPD. The National Water Information System (NWIS) Parameter Codes and Method Codes for these analytes are:

Acetamide Herbicides and Degradates by USGS Method Number O-2139-03

Parameter Code	Method Code	Analyte Name
49260	X	Acetochlor, water, filtered, ug/L
61029	Y	Acetochlor ESA, water, filtered, ug/L
61030	Y	Acetochlor OXA (oxanilic acid), water, filtered, ug/L
62850	W	Acetochlor/Metolachlor 2nd amide ESA, water, filtered, ug/L
62847	W	Acetochlor SAA (sulfynilacetic acid), water, filtered, ug/L
46342	X	Alachlor, water, filtered, ug/L
50009	Y	Alachlor ESA (ethane sulfonic acid), water, filtered, ug/L
61031	Y	Alachlor OXA (oxanilic acid), water, filtered, ug/L
62849	W	Alachlor ESA 2nd amide , water, filtered, ug/L
62848	W	Alachlor SAA (sulfynilacetic acid), water, filtered, ug/L
61588	X	Dimethenamid, water, filtered, ug/L
61951	W	Dimethenamid ESA (ethane sulfonic acid), water, filtered, ug/L
62482	W	Dimethenamid OXA (oxanilic acid), water, filtered, ug/L
62481	X	Flufenacet, water, filtered, ug/L
61952	W	Flufenacet ESA (ethane sulfonic acid), water, filtered, ug/L
62483	W	Flufenacet OXA (oxanilic acid), water, filtered, Recoverable, ug/L
39415	X	Metolachlor, water, filtered, ug/L
61043	Y	Metolachlor ESA (ethane sulfonic acid), water, filtered, ug/L
61044	Y	Metolachlor OXA (oxanilic acid), water, filtered, ug/L
04024	X	Propachlor, water, filtered, ug/L
62766	W	Propachlor ESA (ethane sulfonic acid), water, filtered, ug/L
62767	W	Propachlor OXA (oxanilic acid), water, filtered, 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) (785) 832-3564. If you have questions about the method approval process, please contact Pete Rogerson (rogerson@usgs.gov) (303) 236-1836.