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U.S. GEOLOGICAL SURVEY

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NATIONAL WATER QUALITY LABORATORY TECHNICAL MEMORANDUM 2002.01

**Subject: Removal of Terbutylazine from Pesticide Analysis
by Gas Chromatography/Mass Spectrometry (Methods 2001 and 2010)**

25 April 2002

Effective Date

of Change: January 2, 2002

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Revision: None

Purpose

Effective the date of this technical memorandum, the National Water Quality Laboratory will no longer offer terbutylazine determination through schedule 2001, or its field-extracted counterpart, schedule 2010 (Zaugg and others, 1995). The recently approved schedule 2002/2011 can be used as an alternate analytical method for this compound.

Background

On June 30, 1999, the NWQL sent a memorandum entitled "Surrogate Terbutylazine Removal from Methods 2001/2010 and 1379" to the newsgroups *usgs.nawqa* and *usgs.water.quality* (Lindley, 1999). The memorandum described the laboratory's decision to remove the surrogate terbutylazine from schedules 2001/2010 (parameter codes 4022A and 4022B, respectively) and schedule 1379 (parameter code 4022C). Terbutylazine was removed as a surrogate primarily because two other analytes, simazine and atrazine, appeared to be present in detectable amounts in terbutylazine materials that had been received from various suppliers. In addition, environmental samples showed a positive bias in terbutylazine surrogate recoveries. This finding suggested that it was being applied as an herbicide in residential, commercial, or other situations; and therefore it was not suitable for use as a surrogate.

Terbutylazine remained in schedules 2001/2010 as an analyte from 1999 to 2002. Because no method validation study had been completed for terbutylazine as an analyte in these schedules, it was reported as a provisional analyte as follows:

1. When detected, with an "E" (estimated value) qualifier.
2. When not detected, as "M-DELETED".

Discussion

The NWQL included terbuthylazine in a new, complementary filtered water method – Schedule 2002/2011 – so there is no longer any need to report it provisionally in schedule 2001. Schedule 2002 is a fully validated analytical method (Sandstrom and others, 2001) for determination of terbuthylazine and more than 70 other pesticides and pesticide degradates. In schedule 2002, terbuthylazine has a laboratory reporting level (LRL) of 0.010 µg/L. With the implementation of schedule 2002, data from the analysis of terbuthylazine may be entered into the National Water Information System, ending the need to report it as a provisional analyte in schedules 2001/2010.

Effect on Data Base

Currently, only detections of terbuthylazine are stored in NWIS. Terbuthylazine nondetections that were sent from the NWQL as 'M-Deletes' are not stored in NWIS. Consequently, when analysis of terbuthylazine data in NWIS is done, it indicates a 100-percent detection rate. The inability to determine which samples were analyzed for terbuthylazine but did not have a detection is misleading and confusing to data users.

The NWQL will take advantage of the new capabilities of NWIS 4.1 that allows the storage of a 'null result' and reload the historic M-Deleted nondetections using the remark code "U" (material specifically analyzed for but not detected). This will allow data users to identify all samples that were analyzed for terbuthylazine, not just samples with detections. The reload is tentatively scheduled about May 1, 2002.

//signed//

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Keywords

Terbuthylazine, Schedule 2001, Schedule 2010, Schedule 2002, Schedule 2011, Analysis

Distribution: E

References

Lindley, C.E., 1999, "Surrogate Terbuthylazine Removal from Methods 2001/2010 and 1379", posted at the USGS newsgroups *usgs.water.quality* and *usgs.nawqa*, and URL http://www.nwql.cr.usgs.gov/USGS/WWW2001/memo_063099.html.

Sandstrom, M.W., Stoppel, M.E., Foreman, W.T., and Schroeder, M.P., 2001, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of moderate-use pesticides and selected degradates in water by C-18 solid-phase extraction and gas chromatography/mass spectrometry: U.S. Geological Survey Water-Resources Investigations Report 01-4098, 70 p.

Zaugg, S.D., Sandstrom, M.W., Smith, S.G., and Fehlberg, K.M., 1995, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of pesticides in water by C-18 solid-phase extraction and capillary-column gas chromatography/mass spectrometry with selected-ion monitoring: U.S. Geological Survey Open-File Report 95-181, 49 p.