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WATER LOGS

National Water Quality Laboratory Newsletter

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In this issue....

U.S. Department of the Interior
U.S. Geological Survey

NWQL to take on work from Ocala Laboratory

The National Water Quality Laboratory is preparing to take on additional work with the scheduled closing of the Ocala Water Quality Laboratory (OWQL) in Florida. The OWQL is expected to close on or before September 30. A transition period is underway to ensure that all customer needs will be met.

Meanwhile, the NWQL is working with present OWQL customers to ensure that technical requirements are understood. Other considerations include providing specialized assistance to customers who may be unfamiliar with present NWQL web tools, points of contact, and billing processes.

The closure plan calls for archiving the OWQL data base in accordance with Federal laws for retaining records. The NWQL also has been asked to assimilate the OWQL electronic data files. Additional information regarding this operation and data accessibility will be distributed after plans have been completed.

Certain analyses may be discontinued or transferred to NWQL prior to July 31. The majority of analytical methods performed by the OWQL are available at the NWQL, except for some U.S. Environmental Protection Agency (USEPA) methods for which the Denver lab will substitute comparable USGS methods. A few methods will not be replicated.

Prior to September 17, the cut-off date for accepting supply orders at the OWQL, the NWQL will prepare to expand its field-supply operation to absorb OWQL customer needs. The One-Stop web tool operated by the Hydrologic Instrumentation Facility will remain intact but would redirect orders to the NWQL.

Questions regarding services should be directed as follows: for analytical services, contact Gary Cottrell (*cottrell@usgs.gov*), telephone 303-236-3490; Laboratory Information Management System (LIMS) data base, Jim Steverson (*jrstever@usgs.gov*), telephone 303-236-3704; and national field supplies, Will Lanier (*wdlanier@usgs.gov*), telephone 303-236-3710.

REPPERT

Chief hired to manage Analytical Services

David W. Reppert has been hired as a supervisory chemist to lead the Analytical Services Section at the National Water Quality Laboratory. He started June 1.

As chief, Reppert directs the core business and product element of the NWQL. He manages six supervisors that directly

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oversee the various analytical processes within the section, including organic and inorganic chemistry, radiochemistry, and a specialized biology group. Responsibilities include all aspects of policy and planning, as well as budgeting and procurement.

Reppert has 15 years of technical experience working in analytical laboratories, including 12 years as a manager. He was employed with Vulcan Chemicals from 1988 to 2004. His job experience at Vulcan included performance management, budgeting, customer relations, quality-assurance and quality-control practices, business development, computer applications, and implementation of ISO-9000 (International Organization for Standardization) standards on quality-management principles.

Reppert earned a B.S. degree in chemistry from the University of Oklahoma in 1987. He is a Viet Nam era veteran. He has been married to his wife Lynda for 28 years, and they have one son, Jason, who lives and works in New Orleans, La.

Meeting calendar, 2004

- **July 19–23**, USGS Field Water-Quality Methods for Ground Water and Surface Water, Federal Center, Denver, Colo.
- **August 1–5**, 46th Rocky Mountain Conference on Analytical Chemistry, Denver
- **August 16–19**, 9th Symposium on Chemistry and Fate of Modern Pesticides, Vail, Colo.
- **August 23–25**, USGS Water-Quality Field Methods Refresher, Federal Center, Denver
- **August 31–September 2**, National Water Quality Meeting and Forensic Hydrology Workshop, Annapolis, Md.
- **November 14–18**, Society of Environmental Toxicology and Chemistry (SETAC) Annual Meeting, Portland, Ore.

Laboratory pricing for fiscal year 2005

Prices for NWQL analyses for the upcoming fiscal year (FY) have been set and are available for use. The prices can be accessed by USGS employees in the NWQL Catalog at URL *http://nwql.cr.usgs.gov/usgs/catalog/index.cfm*. The new prices will be applied to all samples logged in at the NWQL on or after October 1.

Analytical prices for analyses performed at other USGS or contract laboratories, but logged in through the NWQL, will be addressed in separate announcements.

Overall, NWQL prices for FY05 will be slightly lower than the overall prices in FY04, but individual tests have increased or decreased based on the effort needed for each test. Average prices are lower in FY05 because of continuing efforts of NWQL to provide quality data as efficiently as possible, according to Greg Mohrman, Chief. “The NWQL will continue to look for ways to streamline processes, maximize efficiency, and fully use laboratory capacity to provide cost-effective, high-quality analytical services,” said Mohrman.

The FY05 prices are available to USGS customers at *http://nwql.cr.usgs.gov/usgs/pricelist/index.cfm* or on the Estimator page of the Catalog. Questions regarding the pricing structure for FY05 should be directed to Gary Cottrell at 303-236-3490 or to the NWQL LabHelp web site (*labhelp@usgs.gov*).

New publications

(NWQL authors listed in **boldface**)

Reports

Noriega, M.C., Wydoski, D.W., and **Foreman, W.T.**, 2004, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of organochlorine pesticides and polychlorinated biphenyls in bottom and suspended sediment by gas chromatography with electron-capture detection: U.S. Geological Survey Water-Resources Investigations Report 03-4293, 46 p.

Journal Articles

Cahill, J.D., Furlong, E.T., Burkhardt, M.R., Kolpin, D.W., and Anderson, L.G., 2004, Determination of pharmaceutical compounds in surface- and ground-water samples by solid-phase extraction and high-performance liquid chromatography with electrospray-ionization mass spectrometry: Journal of Chromatography A, v. 1041, nos. 1–2, p. 171–180.

For copies of these NWQL publications, contact Jon Raese by e-mail at *jwraese@usgs.gov* or by telephone (303-236-3464). NWQL publications are listed on the Web at URL *http://nwql.usgs.gov/Public/pubs-public.html*.

Waste not, want not

The NWQL cannot accept chemical waste from other offices and labs because the Laboratory is not a permitted treatment, storage, and disposal facility. Each lab, office, or cost center is responsible for disposing or recycling all hazardous materials and wastes from projects and programs. Keep chemical inventories within manageable levels. Purchasing chemicals in small lots may be the most effective way to reduce waste and associated expense. For example, keep in mind that organic field spikes expire 1 year after the certification date, therefore, purchasing large quantities is not a good idea. Districts should contact their Collateral Duty Environmental Program Coordinator for assistance.

Lab news briefs

Greg Mohrman, NWQL Chief, conducted a joint technical review of Israeli, Jordanian, and Palestinian water-quality laboratories June 6–11. He was assisted by Bill Shampine and Anna Lenox, International Water Resources Branch, and Dan Goode, USGS Tel Aviv, in cooperation with participating regional parties. The laboratory reviews are designed to emphasize the quality-assurance and quality-control aspects of the laboratory operation and to provide training in lab reviews. The work is supported by the U.S. Department of State as a U.S. contribution to the Middle East peace process. For more information, visit *http://www.exact-me.org*.

* * *

Chemist **Thomas J. Leiker**, National Water Quality Laboratory, was in Las Vegas, May 26–28, to assist in briefing a delegation about research in Lake Mead, including endocrine disruption in fish. U.S. Senators Harry Reid and John Ensign, from Nevada, and Bennett Raley, Assistant Secretary for Water and Science, were briefed by members of the U.S. Geological Survey, National Park Service, Bureau of Reclamation, U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service.

* * *

Leiker presented a seminar April 6 at the Denver Federal Center entitled "Lake Mead Studies: Emerging Contaminants and Their Potential Effects on Aquatic Biota." The talk was sponsored by the USGS National Research Program.

* * *

The new acting chief of the NWQL Methods Research and Development Program will be **John Garbarino**, who takes over the reins for a 6-month detail July 12 from acting chief **Ed Furlong**, who returns to his duties as a research chemist. Meanwhile, **Robert Green**, the program chief, is working as an Executive-in-Residence for the Office of Personnel Management at the OPM training center in Aurora, Colo. Green is on a 1-year tour of duty that could be renewed for an additional year.

* * *

Mark Burkhardt, chemist in Methods Research and Development (MR&D), was an invited speaker May 20 at the American Water Works Association (AWWA) Research Foundation, in Oakland, Calif.

* * *

Ed Furlong, acting chief of MR&D, attended the American Society for Mass Spectrometry 52nd Conference, May 21–27, in Nashville, Tenn.; he was also an invited speaker at the AWWA Annual Conference, June 14 and 15, in Orlando, Fla., where he spoke on organic wastewater contaminants in biosolids.

* * *

Mark Sandstrom, research chemist in MR&D, taught a USGS class June 7–9 on Water-Quality Field Methods Refresher at the Denver Federal Center and will serve again as an instructor for the same class August 23–25; he also taught Field Water-Quality Methods for Ground Water and Surface Water, June 19–23, at the Denver Federal Center. Sandstrom presents a paper on DEET at the 9th Symposium on Chemistry and the Fate of Modern Pesticides, August 16–19, in Vail, Colo.

* * *

Results of the New York State Department of Health (NYSDOH) nonpotable water study conducted this past winter show the NWQL was awarded an outstanding performance. Study results have been posted at URL *http://nwql.usgs.gov/Public/Performance/publicny0104.html*. The NWQL has now received accreditation for 103 constituents in addition to the 7 already approved for USGS methods.

* * *

The NWQL recently took part in the 2004 Branch of Quality Systems' Spring Performance Study by successfully determining 60 of 63 constituents. Complete results for the study are available at *http://bqs.usgs.gov/srs/SRS_Spr04/S04results.htm*.

SAMPLE PREPARATION— Bill Foreman, research chemist, prepares a NAWQA soil sample from the Agricultural Chemical Transport Study for processing by accelerated solvent extraction.

Update on NEMI data base

The NWQL continues to add new environmental methods to the web-searchable data base that helps scientists and managers monitoring water quality to compare data-collection methods and find the method that best fits their needs. The free, searchable clearinghouse of methods is called the National Environmental Methods Index (NEMI). It was developed by the Methods and Data Comparability Board with partners in the Federal, state, and private sectors. The USGS has added about 150 methods to the NEMI data base.

ANNIVERSARY SPEAKER— Director Charles G. "Chip" Groat addressed guests April 8 at the Center of the American West Seminar, University of Colorado in Boulder, as part of the U.S. Geological Survey's 125th anniversary celebration. Groat reviewed the history of the USGS, the accomplishments of the present, and the vibrant promise of the future. The distinguished history of one of the world's leading science organizations was lauded by Patricia N. Limerick, faculty director and chair of the board, Center of the American West, during her introductory remarks.

The "labhelp" oracle answers questions about duplicate results

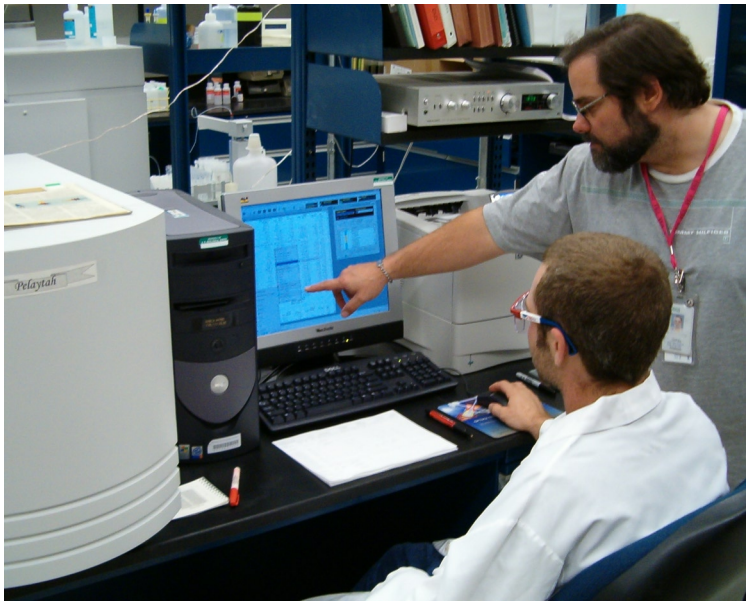
Q I received duplicate results for benzene and some other compounds. One set of complete results was sent electronically, but I received slightly different results by email. Why did this happen and which results should I use?

A You will receive more than one result when you have requested analysis for a constituent by more than one method. For example, benzene can be detected using Schedules 2020, 1380, 1378, or several others. If you request Schedule 2020 and 1380 for a single Station ID, Date, and Time, you will receive duplicate results. One result will arrive electronically on your WATLIST and one result by email.

When there are duplicate results, the NWQL sends the most preferred results electronically so that the data can be loaded to the National Water Information System (NWIS). All non-preferred results are sent by email. The customer can determine which result is most preferred by looking up the compound in the Catalog. If you search by parameter code (34030 for benzene), you will go directly to the Preference List. The higher the preference number, the more preferred the result—Schedule 2020 is most preferred for benzene with a 15. Alternately, you can search by schedule number, then find benzene in the analyte list and click the parameter code for benzene.

One way to receive both results on your WATLIST is to offset the times for each overlapping schedule on a separate Analytical Services Request form. Then you will receive all of your results electronically on your WATLIST. For answers to questions, please email *labhelp@usgs.gov*.

• Gary Cottrell



IMPROVED SAMPLE THROUGHPUT—Carl Harris, physical science technician in the Metals Unit, emphasizes a point for Zachary Lowry during a training session on the use of inductively coupled plasma–optical emission spectrometer.

Frequently asked questions

Analytical method for total (organic plus inorganic) mercury in filtered and unfiltered water eliminates the use of acid dichromate preservative and measures ambient mercury concentrations in natural water.

The ambient concentration for dissolved and whole-water recoverable (WWR) total mercury is generally at the parts-per-trillion level (nanograms-per-liter, ng/L) for natural-water samples. Mercury can bioaccumulate in living organisms at these concentrations.

Why was the original method for mercury updated? A U.S. Department of Transportation regulation on the shipment of natural-water samples preserved with acid dichromate requires packaging and shipment protocols that are expensive. In addition, it is costly to dispose of samples that contain high concentrations of chromium, a priority pollutant.

Several U.S. Environmental Protection Agency methods use hydrochloric acid (HCl) as a preservative. A water sample preserved with HCl passes all required corrosion tests and can be shipped without expensive packaging.

What forms of mercury are included in the method? Dissolved total mercury includes all oxidizable mercury species present in natural water that has been filtered through a 0.45-micrometer pore size capsule filter. WWR total mercury includes species of mercury that are dissolved and adsorbed to particulate matter in unfiltered natural water.

Mercury species can include elemental mercury, mercury (I), mercury (II) complexes, various alkyl- and phenyl-mercury compounds, and other forms of mercury.

What are the new method numbers, and laboratory and parameter codes? The USGS method numbers for total (organic plus inorganic) mercury by cold vapor atomic fluorescence (CVAF) are I-2464-01 (filtered water) and I-4464-01 (unfiltered water). The laboratory codes (LC) are 2707 (filtered water) and 2708 (unfiltered water). Parameter and method codes are 71890C (filtered water) and 71900D (unfiltered water).

Information is available on the NWQL USGS-visible web site at *http://wwwnwql.cr.usgs.gov/USGS/ USGS_gen.html*. Select LIMS Catalog (upper right corner). Select a search category, such as LC, and enter the number to retrieve information about the constituent.

What are the features of the new method? The new method replaces the cold vapor atomic absorption methods for filtered and whole-water in Fishman and Friedman (1989). The new method uses CVAF detection with HCl as the sample preservative. The sample digestion step uses bromine monochloride to oxidize both organic and inorganic forms of mercury. Oxidized mercury is subsequently reduced to elemental mercury for purge and detection by atomic fluorescence.

The most current long-term method detection limit for mercury (filtered water, LC 2707) is 0.009 micrograms per liter (µg/L) in FY03; for mercury (unfiltered water, LC 2708), 0.006 µg/L in FY02. The reporting levels for these constituents during the periods cited above are 0.018 and 0.011 µg/L, respectively.

Long-term average percent recoveries at 20, 45, and 75 ng/L in reagent water, filtered and unfiltered ground water, and filtered and unfiltered surface water range from 89 to 108, 96 to 103, and 94 to 98 percent, respectively.

What procedures are required for sample collection, preservation, and bottle type? Samples must be collected following either the procedures outlined for trace elements in Horowitz and others (1994) or for mercury in Olson and DeWild (1999). An equipment blank is required.

Bottle types are unchanged from the earlier method for both unfiltered [250 milliliters (mL) raw acidified mercury (RAM)] and filtered [250 mL filtered acidified mercury (FAM)] samples. About 200 mL of either filtered or unfiltered natural-water sample are stored in acid-washed and deionized-water-rinsed borosilicate-glass sample bottles with fluoropolymer-lined caps and preserved with 6N HCl to a pH less than 2. Prepackaged 6N HCl is available from One Stop Shopping at URL *http://1stop.usgs.gov*.

KJELDAHL GLASSWARE—Roy Brannan, supply technician, loads a dishwasher with Kjeldahl tubes for cleaning.

Ambient mercury concentrations in HCl-preserved samples are stable for at least 30 days. Nevertheless, samples should be shipped to the NWQL for analysis as quickly as possible.

May any District use the new methods? Yes. The Office of Water Quality approved the new water-quality analytical methods for the determination of organic plus inorganic mercury in filtered and unfiltered water on 03 April 2001 for all projects and programs.

How do I obtain a copy of the new methods? A copy of the report (Garbarino and Damrau, 2001) may be downloaded from the NWQL USGS-Visible website (*http://wwwnwql.cr.usgs.gov/USGS/pubs-only.html*), requested by E-mail to the NWQL Technical Editor (*jwraese@usgs.gov*) or *LabHelp@usgs.gov*, or calling 1-866-ASK-NWQL.

References

Fishman, M.J., and Friedman, L.C., eds., 1989, Methods for determination of inorganic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 5, Chap. A1, p. 289–291.

Garbarino, J.R., and Damrau, D.L., 2001, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of organic plus inorganic mercury in filtered and unfiltered natural water with cold vapor–atomic fluorescence spectrometry: U.S. Geological Survey

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Water-Resources Investigations Report 01-4132, 16 p.

Horowitz, A.J., Demas, C.R., Fitzgerald, K.K., Miller, T.L., and Rickert, D.A., 1994, U.S. Geological Survey protocol for the collection and processing of surface-water samples for the subsequent determination of inorganic constituents in natural water: U.S. Geological Survey Open-File Report 94-539, 57 p.

Olson, M.L., and DeWild, J.F., 1999, Low-level collection techniques and species-specific analytical method for mercury in water, sediment, and biota: U.S. Geological Survey Water-Resources Investigations Report 99-4018b, 11 p.

• JOHN GARBARINO, DONNA DAMRAU, and ALLISON BRIGHAM

SURRENDERING—Patrick Phillips, chief of the National Water-Quality Assessment (NAQWA) program for the Hudson River Basin in New York, makes a point during setup for a seminar April 7 entitled, "Drugs, Detergent, and DEET—Effects of Wastewater-Treatment Plant on Organic Wastewater Compounds." The analytical work for Phillips' project was handled at NWQL.

NWQL test

Kent Crawford, water-quality specialist, recently submitted a test on the NWQL to personnel in the Pennsylvania District. Kent reports that the responses were "underwhelming," but in the interests of serving our readers, we decided to pass along selected questions to keep the record straight. Good luck to our readers.

1. Overall performance ratings for the NWQL are
   a. Very good
   b. Very bad
   c. Not too good, not too bad

The answer is a, very good. The NWQL takes part in several laboratory evaluation programs. One of these is the Standard Reference Sample Program administered by the USGS Branch of Quality Systems. Results from this program are available from the March 2003 round of testing. The NWQL scored an overall laboratory rating of 3.3 out of a possible 4.0, with 4.0 being the highest score possible. See OFR 03-261, "Results of the U.S. Geological Survey's Analytical Evaluation Program for Standard Reference Samples Distributed in March 2003," for details.

2. The USGS NWQL is accredited by the National Environmental Laboratory Accreditation Conference (NELAC).
   a. True
   b. False

The answer is true. NELAC represents the standard nationally for certifying laboratory performance.

3. At the NWQL, pH and specific conductance are automatically performed on each sample processed by the lab.
   a. True
   b. False

False. The pH and specific conductance (SC) are determined if they are requested on a schedule. But if you have field values for pH and SC, you can save money by not having the lab do these tests again. The USGS considers the field value to be the "correct" value. So if there are both field and lab data for pH and SC, then the field value is the one that goes into the National Water Information System (NWIS). Take pH and SC off your schedules and save some money.

4. The cost to establish a custom schedule at the NWQL is
   a. $0 for each new custom schedule
   b. $50 for each new custom schedule
   c. $100 for each new custom schedule
   d. $200 for each new custom schedule

The answer is a. NWQL has a free consulting service, including setting up a custom schedule for projects. Use it.

5. For nitrogen and phosphorus analyses at the NWQL, you can request either Kjeldahl digestion or an alkaline persulfate digestion. What is the difference?

The major difference is that the alkaline persulfate method includes nitrite and nitrate in the results. The Kjeldahl method does not. Thus, if you want total nitrogen, using the alkaline persulfate method would give it to you directly. If using the Kjeldahl method, you would need to add NO_2 + NO_3. In a controlled test between the two methods, there was no difference in the results for phosphorus. The alkaline persulfate procedure is about 5 percent less expensive.

6. For samples submitted to the NWQL, what happens when the same compound is requested on two different schedules for one sample?
   a. The NWQL analyzes the sample on each schedule and reports two results. You pay for both.
   b. The NWQL analyzes the sample on the schedule that is least expensive and reports the result. You pay for one only.
   c. The NWQL calls you to ask which schedule you want to use for this compound.

The answer is a. Both schedules are used. You pay twice.

7. What is NEMI?
   a. Neutral eH Mode Indicator

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(NEMI): A guideline for analytical chemists to determine when the alkaline persulfate digestion process is complete.

b. Normal Endpoint for Metal Immersion (NEMI): A guideline for analytical chemists to determine when cadmium analysis is complete.

c. Nearly Every Mutated Idiot (NEMI): NWQL employees who have completed IT security training.

d. National Environmental Methods Index (NEMI): A web-searchable data base of environmental methods.

The answer is d, National Environmental Methods Index. This is an online, searchable reference for analytical methods. Check it out at *www.nemi.gov*.

8. What preservative is used for nutrient samples sent to the NWQL?
   a. None. Just chill the sample
   b. Concentrated sulfuric acid
   c. 1 mL of 4.5 N sulfuric acid
   d. Concentrated nitric acid

The answer is c.

9. Who is the Chief of the Business Development Team at the NWQL?
   a. Greg Mohrman
   b. Gary Cottrell
   c. Tom Maloney
   d. Carlos Arozarena

The answer is b, Gary Cottrell. His phone number is 303-236-3490 and his e-mail is *cottrell@usgs.gov*. Call him. Pester him. Get the answers you need. But don't tell him that the Colorado Rockies stink.

UNDER THE BIG TOP—
Students perform in the center ring while learning about Field Water-Quality Methods for Ground Water and Surface Water in April at the NWQL. The intensive 2-week course includes sample-collection and field-handling techniques, theory, methodology, and use of equipment.

Letters, faxes, and e-mail

Hello Bill [Foreman],

Recently a colleague from Environment Canada asked about detecting Vapam in ground water. 1,2 Dichloropropane was widely used and detected in ground water in an area near the US-Canadian border. Use of 1,2-DCP has been replaced by Vapam (metam-sodium) and they are interested in finding out if Vapam, or its degradation products, might be detectable in ground-water samples. They made arrangements with a researcher at UBC or Simon-Fraser to devise a method of analysis and analyze some samples. Thus far, there have been no detectable results. They are concerned about false negative results.

My colleague has been unable to find another lab in Canada that can detect any trace of the compound in ground-water samples. Environment Canada would like to know if the Survey has any experience with this compound and if our lab can analyze ground-water samples to determine if Vapam or degradation products are present. Additionally, if we don't have the analytical capability, do you know of any other lab that might be able to do this type of work?

I believe that when metam-sodium is applied, it reacts with water to release methyl dithiocarbamate, which is the actual toxic compound in the fumigant. Also, carbon disulfide may be a degradation product.

Any comments you might have would be appreciated. Thanks again.

Stephen E. Cox, USGS
1201 Pacific Avenue, Suite 600
Tacoma, WA 98402

Hi Steve,

Thanks for the inquiry. I've put out a query to others here asking if the NWQL has ever tried analyzing for metam-sodium (sodium salt of methyl dithiocarbamic acid; also called metham-sodium) directly or its active degradate methyl isothiocyanate (MITC). It's probably more relevant to look for MITC instead of metam because MITC is the active compound. Metam-sodium is applied to soil because it more slowly decom-

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poses, liberating the volatile MITC. I don't know of specific labs that do this analysis.

Below are some references that might be useful. [Excised by the editor to save space but available on request.]

William T. Foreman,
Research Chemist, NWQL

Stephen,

I analyzed for MITC as a custom analysis several years ago for the Tacoma district. I used our regular purge-and-trap method. We also have the capability to do heated purge and trap, so I may be able to get a lower reporting level now. I'll have to dig through my records to see what reporting level we were using when I last did the analysis.

Donna L. Rose, Chemist, NWQL

Steve,

We also analyzed MITC in water by solid-phase microextraction (SPME) as a custom project for the Puget Sound NAWQA around 1998. At the time, I think the SPME method detection limit (MDL) of 0.4 µg/L was slightly lower than the purge and trap MDL, so we used it for analysis of the ground-water samples. Perhaps heated purge would give better results now. Results were described in Inkpen and others (2000). We didn't detect MITC in any of the 20 ground-water samples analyzed, even though they were collected from areas where metam-sodium was used. MITC has a relatively short half-life (5–15 days), which might explain why it was not detected.

Inkpen, E.L., Tesoriero, A.J., Ebbert, J.C., Silva, S.R., and Sandstrom, M.W., 2000, Ground-water quality in regional, agricultural, and urban settings in the Puget Sound basin, Washington and British Columbia, 1996–1998: U.S. Geological Survey Water-Resources Investigations Report 00-4100, 66 p.

Mark W. Sandstrom,
Research Chemist, NWQL

Stephen,

The Severn-Trent Laboratory (STL) Mobile Laboratory can analyze for Vapam using U.S. Environmental Protection Agency method 630. This method converts all the dithiocarbamates to carbon disulfide and uses a colorimetric process to measure the carbon disulfide; it does not distinguish individual dithiocarbamate compounds. STL reports results as Ziram; the reporting level is 20 µg/L and the method detection limit is 5 µg/L. Please contact me if you need more information regarding this contract-lab analysis.

Richard L. Daddow,
USGS DODEC Program

PRESERVING CLEAN AIR— Chemist James Madsen is shown next to his Ridefinders van that he and other Denver Federal Center employees use to commute from the Colorado Springs vicinity. The program is a cooperative arrangement by State and municipal agencies. The six to nine riders in Madsen's vanpool commute 160 miles round trip. For $160 per person per month, they receive the use of the van, including gas, maintenance, and insurance. Riders share the driving. Objectives include helping to preserve air quality, conserve fuel, promote good health, and save wear on personal vehicles.

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