

In this issue....

Quality Systems relocating to building 95 1

NELAP accredits USGS methods 1

Ocala data archive operational at NWQL 2

Field-supply operation moved to NWQL 2

New instrument upgrades element determination 3

High bias for arsenic identified, corrected 3

Alert NWQL before shipping potentially hazardous samples 4

Lab news briefs 4

Frequently asked questions 5

The “Labhelp Oracle” answers questions about making changes to ASRs 7

New publications 7

Letters, faxes, and e-mail 8

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

Quality Systems relocating to building 95

Terry Schertz, chief of the Branch of Quality Systems (BQS), says “timelines have slipped, but the branch should be moving from building 53 to 95 next spring.” Building 95 also houses the National Water Quality Laboratory and a small contingent from the National Research Program.

Schertz said the NWQL will hire an architectural firm on contract to the General Services Administration to study the floor plan and laboratories on the second floor, north wing, for retrofitting the space this fall and over the winter.

The relocation is being driven by financial considerations because the space in building 95 is already paid for. Moreover, the NWQL has more space than it can use at the present time.

At presstime, Schertz said 14 people will be involved in the relocation: 12 from BQS and 2 from the Office of Water Quality, including Mark Nilles, program manager, and Pete Rogerson, senior chemist.

Moreover, Kenneth Stollenwerk, ground-water hydrologist in the Branch of Regional Research, is scheduled to move his lab soon from building 53 to a lab in building 95, currently occupied by the organic blind sample program. However, Stollenwerk will maintain an office in building 53.

NELAP accredits USGS methods

U.S. Geological Survey methods were accredited this summer by the National Environmental Laboratory Accreditation Program (NELAP). Accreditation was spelled out in documents from the New York State Department of Health (NYSDOH), which listed “Approved” status for 110 analytes in the “Environmental Analyses Non-potable Water” category. The NYSDOH is an approved NELAP Accrediting Authority.

The accredited analytical tests include routine methodologies for the typical surface-water and ground-water samples collected by USGS cooperative and national studies. The certificates presented to the NWQL have been posted on the public web page at <http://nwql.usgs.gov/Public/Performance/publicnycert2004.html>. District customers are encouraged to share this site with cooperators.

Meanwhile, the NWQL is seeking accreditation for additional analytical tests, and is hopeful that these methods and analytes will be approved by the end of the year.

The broad scope of analytical tests represented by this accreditation is a major accomplishment that the NWQL has been working toward for some time. Accreditation for our routine methods culminates a multiyear effort to document NWQL’s overall quality system according to the NELAP standards, two inspections of laboratory operations by NYSDOH audit teams, and successful participation in Performance Testing studies for the methods.

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It was not possible to obtain accreditation for NWQL's routine methods until NELAP was implemented. In the mid-1990s, the NWQL addressed accreditation issues by implementing U.S. Environmental Protection Agency (USEPA) drinking-water methods. The implementation of these methods was announced in NWQL Technical Memorandum 97-05. Although we performed these methods well and were certified to use them, District customers rarely submitted samples for the methods. Now that the NWQL is accredited for routine methodology, the USEPA drinking-water methods will be discontinued.

The combined effort and dedication of all NWQL employees made the accomplishment possible.

• TOM MALONEY

Field-supply operation moved to NWQL

The NWQL assumed full responsibility September 14 for the Ocala Water Quality Laboratory field-supply function. The name was subsequently changed to the National Field Supply Service to reflect the merging of both laboratory functions at one location.

The transition officially started in May. It was completed in a short time with assistance from the employees of Ocala, the Office of Water Quality, the Ohio District, and many NWQL personnel.

The NWQL generally will stock the same items previously supplied by Ocala, with the exception of items that were deleted on recommendations from Ocala and the Office of Water Quality. Items were not arbitrarily deleted until a consensus was reached, and it was determined that there was minimal impact on field-sampling operations. Items were deleted from the catalog because of low demand or if they were readily available from commercial sources at competitive

Ocala data archive operational at NWQL

The National Water Quality Laboratory announced the successful launch of the Ocala data archive on September 15 in Rapi-Note 04-022. This archive provides Ocala customers and all other USGS representatives with web access to the completed analytical results of all water samples submitted to Ocala over the last 5 years, as well as access to the supporting Ocala Quality Certificates and the Ocala Supply Catalog.

The Ocala data archive is located at URL <http://wwwnwql.cr.usgs.gov/cgi-bin-u/Ocala>.

The NWQL plans to provide online access to the archive for 1 year, then, contingent on its use, move the archive to an off-line status.

This effort is a success story for both laboratories and a testament to the professionalism of USGS employees, who, with little advance notice, established in late May a joint team to identify and implement the best procedure for capturing Ocala's digital information and making that information available upon closure of the Ocala Laboratory.

Working together in June, the team established a test environment at the NWQL on a compatible Ingres data-base server and validated the

procedures for transferring Ocala's data base to NWQL. In July, the joint team shifted its focus to modifying Ocala's web code so that NWQL could ensure the captured data would be served to Ocala's customers in the identical way they had been accessing it for years.

During late July and early August, the NWQL improved the performance of the data base so that data could be retrieved and downloaded within seconds or a few minutes for large-size data files. Following this last set of code modifications, the Information Technology staffs from Ocala and NWQL, with assistance of selected users from Ocala and the Office of Water Quality, conducted joint validation tests to ensure that the modified code and the updated data bases worked correctly.

In early September, Ocala provided the final data-base update, and, despite disruption from hurricanes, the joint team successfully completed the final round of testing on September 13, and the Ocala data archive was posted to the USGS Visible Web Page on September 14, 2004, with live operations starting the next day, September 15.

• JAMES STEVERSON

prices. Ocala's stock numbers were retained for ease of use by customers.

The NWQL and Ocala laboratories were given a daunting task to complete within a shortened closure-plan notice. This process was especially difficult because of the timed announcement coinciding with the start and height of the field-sampling season, and concluding at the year-end closeout. Employees from Ocala and the NWQL Support Services Section worked extremely hard, including many hours of overtime to ensure the transition went as smoothly as possible. Outstanding support from the NWQL

Administrative Office and the Central Region Procurement Office facilitated numerous emergency procurement actions in record time, thus contributing to a successful transition.

This transition was a challenge to all; teamwork prevailed without any major impacts to field-sampling operations. And finally, to our Ocala colleagues, who found the courage to continue after 30 years at their own peril to bring about a successful transition, we thank them for their contributions over the years.

• WILL LANIER

New instrument upgrades element determination

This summer, the National Water Quality Laboratory Metals Unit acquired a new inductively coupled plasma–mass spectrometer (ICP–MS). This new instrument supplements two other ICP–MS instruments by providing collision-reaction cell technology, aiding in the determination of elements that have polyatomic interferences.

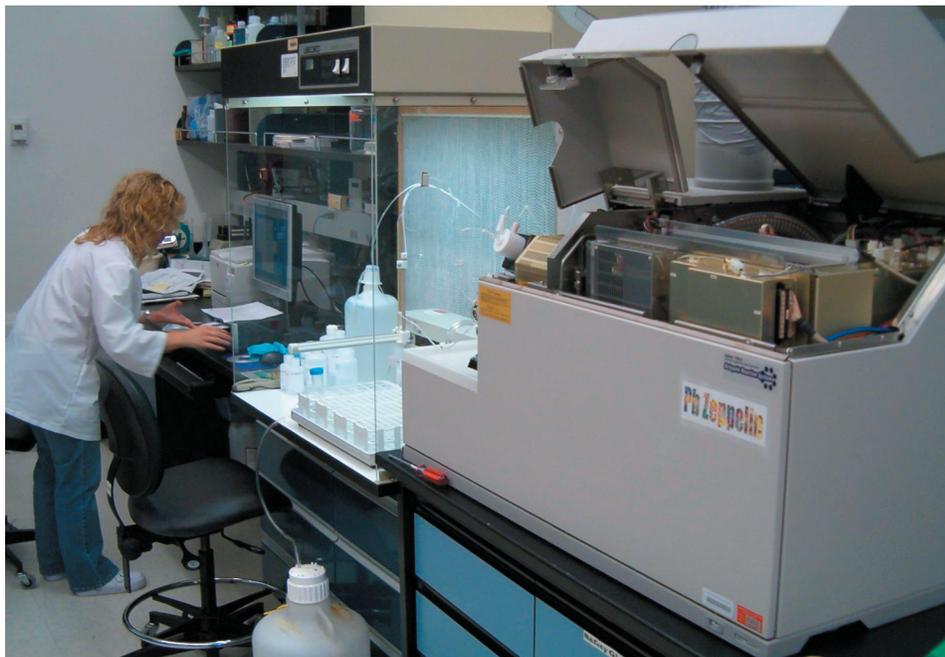
For example, the most abundant isotope for chromium has a mass of 52, which is affected by a polyatomic interference associated with carbon and argon. Samples containing inorganic and organic carbon substances provide a source of carbon that combines with argon in the plasma to form a carbon-argon ion that cannot be resolved from the chromium-52 ion.

The collision cell and octapole mass filter reduce the kinetic energy of the interfering polyatomic ion through collisions with helium atoms. The octapole will sweep away the debris, allowing chromium ions to pass through unscathed for determination.

Additionally, the instrument and software are designed to interface easily with gas and liquid chromatographic instruments to improve elemental and speciation methods with enhanced performance.

Leslie Kanagy and John Garbarino will lead the training and method development, as well as demonstrate capability to ensure data of the highest quality. After review by the NWQL and Office of Water Quality, the new instrument will go into service in about a year. Once in service, older graphite furnace–atomic absorption (GF–AA) analytical technology will be retired. The new technology will provide better performance at a lower cost compared to GF–AA.

• JEFF PRITT



LAB SETUP—The Agilent 7500 CE ICP–MS, nicknamed Pb (Lead) Zeppelin, system with autosampler in a class 100 laminar flow hood. The laminar flow hood is used routinely on trace element instrumentation to reduce contamination.



TWEAKING THE INSTRUMENT—Chemist Leslie Kanagy handles final assembly on the plasma torch module for the new Agilent 7500 CE ICP–MS system.

High bias for arsenic identified, corrected

A new check sample has been introduced at the NWQL that should catch a bias problem for arsenic determined by inductively coupled plasma–mass spectrometry (ICP–MS). The high bias was detected in sample results from May 18 to June 16, 2004, for lab code 2503. Because the bias was caught quickly, all samples for this period were reanalyzed, and updated results were posted to overwrite the previous, biased results.

The Branch of Quality Systems had noticed a shift in arsenic results at the NWQL. Research by Lab staff indi-

cated a problem with ICP–MS software on the instrument. The problem involved an algorithm used to correct for bromide interference. The software was reloaded and arsenic results for the method quickly met the specifications.

NWQL Chief Greg Mohrman was grateful that the “BQS saw an anomaly and notified us quickly.” Mohrman said he was pleased that the new check sample will identify the error before it happens again, because “it is better that we have the processes and procedures in place to catch problems first.”

Lab news briefs

Donna Damrau, supervisor of the physical properties unit, received the Award of Merit from ASTM (American Society for Testing and Materials) this summer in Philadelphia. Damrau was cited for outstanding contributions to Committee D19 on Water through standardization of test methods for the analysis of inorganic constituents, management of interlaboratory studies related to the analysis of major constituents, leadership in the development of membership participation, and service to the committee. The highest award accorded by ASTM makes Donna a Fellow in the Society.

* * *

Ed Furlong and **Colleen Rostad**, research chemists, arranged a free webcast August 25 at the NWQL in collaboration with Tennessee Technological University and the American Chemical Society (ACS) on the “Environmental Aspects of Pharmaceuticals and Personal-Care Products.” Furlong was one of five speakers presenting research data from a remote site for a live broadcast at the ACS National

Meeting in Philadelphia. He presented analytical results for samples of sediment, soil, and biosolids.

* * *

Effective October 1, 2004, the NWQL is eliminating the option of analyzing samples for molybdenum using the graphite furnace–atomic absorption spectrophotometry (GF–AAS) methods. Lab codes for whole water and filtered water will no longer be offered. The suggested replacement methods use inductively coupled plasma–mass spectrometry (ICP–MS) instruments that provide a lower laboratory reporting level (0.4 µg/L for filtered water; 0.2 µg/L for whole water) at less cost compared to GF–AAS. For more information, see Rapi-Note 04-020. For questions or concerns, contact labhelp@usgs.gov.

* * *

Terry F. Bidleman, Meteorological Service of Canada, Egbert, Ontario, presented a seminar July 21 entitled “Contemporary Sources of Chlorinated Pesticides in North American Air.” Although banned for decades in the United States and Canada, organo-

chlorine pesticides (OCPs) continue to be detected in ambient air and precipitation on regional and continental scales. Bidleman concludes that OCPs are being transported from countries where they are still used or volatilizing from local and regional soils. Bill Foreman arranged the seminar.

* * *

Data produced by the NWQL for the National Water-Quality Assessment Program (NAWQA) were used to prepare an article June 23 in The Salt Lake Tribune regarding contaminants in a northern Utah watershed. The USGS work discovered atrazine, prometon, and diazinon in the watershed. The article can be retrieved at URL <http://166.70.44.66/2004/Jun/06232004/utah/178177.asp>.

* * *

Ed Furlong, **Mark Sandstrom**, and **Mark Burkhardt** attended the 9th Symposium on Chemistry and Fate of Modern Pesticides, August 16–19, in Vail, Colo. All three presented talks or posters. Furlong also was conference co-chair.

* * *

The NWQL is now supplying the bacteria kits, buffer solutions, and dilution blanks previously provided by the Ocala Water Quality Research Laboratory. See Rapi-Note 04-021 for details at URL <http://www.nwql.cr.usgs.gov/USGS/rapi-note/04-021.html>. The NWQL appreciates the Ohio District office for its work in helping to provide quality control for the bacteriological testing kits. Orders may be placed using the One-Stop Shopping website at <http://1stop.usgs.gov>.

* * *

Members of the **Geoscience Information Consortium (GIC)**, led by Greg Allord, USGS chief, Cartography and Publishing Program, toured the NWQL August 3 in connection with their annual meeting. USGS hosted the international meeting at the Denver Federal Center. The GIC promotes

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Alert NWQL before shipping potentially hazardous samples

Be sure to notify the NWQL in advance before shipping potentially hazardous samples. Proper labeling and notification are essential for personnel safety and to minimize costs and delays (U.S. Geological Survey National Water Quality Laboratory Technical Memorandum No. 02-04, 2002; also see Rapi-Note 04-016 at URL <http://www.nwql.cr.usgs.gov/USGS/rapi-note/04-016.html>).

Customers are requested to place a strip of yellow tape completely around the cooler (see inset photo). To notify the NWQL that samples are en route, send an e-mail to lablogin@usgs.gov



and copy labhelp@usgs.gov. Also enter the type of hazard and the level of concern on the Analytical Services Request form in the “Hazard” section. See the technical memo for details.

U.S. Geological Survey, 2002, Requirements for the proper shipping of samples to the National Water Quality Laboratory: National Water Quality Laboratory Technical Memorandum No. 02-04, accessed August 30, 2004, at URL http://mwql.usgs.gov/Public/tech_memos/nwql.02-04.html.

the exchange of information among Geological Surveys related to the use and management of geoscience information systems in support of the earth sciences.

Meeting and course calendar, 2004

- **October 13–15**, 4th International Conference on Pharmaceuticals and Endocrine Disrupting Chemicals in Water, Minneapolis
- **October 17–21**, American Institute of Hydrology, 2004 Annual Conference, Las Vegas
- **October 26–27**, Toxicology: Principles and Applications, American Chemical Society, Philadelphia
- **October 28–29**, Chemical Mechanisms in Toxicology, American Chemical Society, Philadelphia
- **October 31–November 4**, ASA-CSSA-SSSA International Annual Meetings with the Canadian Society of Soil Science, Seattle
- **November 7–10**, Geological Society of America, Annual Meeting, Denver
- **November 14–18**, Society of Environmental Toxicology and Chemistry (SETAC), Annual Meeting, Portland, Ore.



BLEEDING HEART—Helen Wharry, Safety, Health, and Environmental Compliance Office, squeezes a heart recently while donating blood to the Bonfils Blood Center during its monthly drive at the Denver Federal Center. Wharry said that she has now donated 2 gallons to Bonfils, but just a pint at a time.

Frequently asked questions

New analytical method for organochlorine pesticides and polychlorinated biphenyls (PCBs) in bed material and suspended sediment.

Most organochlorine (OC) pesticides and polychlorinated biphenyls (PCBs) have low solubilities in water; thus these organic contaminants are typically associated with soil, and suspended and bottom sediments in hydrologic environments with measurable organic carbon.

How did this method evolve?

The new method is based largely on USGS method O-5129-95, originally developed for the National Water Quality Assessment (NAWQA) Program. The method includes adaptations of parts of U.S. Environmental Protection Agency method 3620C (Florisil cleanup).

What does the new method offer?

It uses Soxhlet extraction, gel permeation chromatography, and adsorption chromatography for sample preparation, with analysis by dual-capillary column gas chromatography with electron-capture detection (ECD) of 19 pesticides and three PCB Aroclor mixtures.

What are the features of the new method?

The method includes a Florisil cleanup step for fraction-2 extracts to minimize interferences that would compromise the performance of the gas chromatography columns used to quantify the selected OCs in this method. The preparation protocol gives cleaner extracts, increasing signal-to-noise ratios and improving method detection limits compared to the earlier method.

The new method reports PCBs as Aroclor-equivalent concentrations at the request of the NAWQA Reconstructed Trends Project. PCBs eluting in the Aroclor 1242-region of the gas chromatogram are classified. The concentration is reported as Aroclor

1016/1242 to minimize misclassification of these two Aroclors in environmental and quality-assurance samples.

What are the reporting levels?

Interim reporting levels in bottom material range from about 0.4 to about 3 micrograms per kilogram ($\mu\text{g}/\text{kg}$) for the 18 single-constituent OC pesticides, 200 $\mu\text{g}/\text{kg}$ for technical toxaphene, and between 4 and 5 $\mu\text{g}/\text{kg}$ for the PCB Aroclor mixtures, for a 25-gram (g) dry-weight sample.

For suspended sediment, concentrations are based upon the mass per unit volume of water filtered (micrograms per liter, $\mu\text{g}/\text{L}$). Reporting levels are between 0.06 and 0.5 nanogram per liter (ng/L) for the single-constituent pesticides, 30 ng/L for technical toxaphene, and 0.6 to 0.7 ng/L for the PCB Aroclor mixtures, assuming a 63-L sample of filtered water.

Most compounds were analyzed with acceptable bias and precision, but *p,p'*-methoxychlor showed high bias attributable to an interferent in the spike solution. In addition, toxaphene is hard to identify and quantify, especially in weathered samples. Results for these two analytes will be routinely reported with an 'E' data qualifier to reflect bias and precision that is not as good as that achieved for other method analytes.

PCBs and toxaphene are complex mixtures that include many compounds that create many peaks in the ECD chromatogram. For example, there are peaks in Aroclor 1254 and/or 1260 that may interfere with *p,p'*-DDE when concentrations of PCBs are high. High concentrations of *p,p'*-DDE may, in turn, interfere with the analysis of PCBs. In such situations, results for these analytes may be reported with an 'E' data qualifier or raised reporting level.

What are the new method numbers, and laboratory and parameter codes?

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The USGS method numbers are O-5504-03 for bed material and O-7504-03 for suspended sediment.

The parameter and method codes, a list of the analytes, reporting levels, units, and sampling containers used for bed material and suspended sediment are available on the NWQL USGS-visible web site at http://www.nwql.cr.usgs.gov/USGS/USGS_gen.html. Select LIMS Catalog (upper right corner).

Select a search category, such as schedule number, and enter the number to retrieve information about the schedule. The NWQL schedule numbers are 5504 for bed material and 7504 for suspended sediment.

What procedures are required for shipping samples to the NWQL?

Samples are collected into either 500- or 1,000-milliliter widemouth glass jars that have been precleaned by baking at 450°C for at least 2 hours. Lids must be lined with polytetrafluoroethylene (PTFE), a type of Teflon®. Sufficient water must be decanted to allow space in the jars for expansion during freezing.

Ship samples on ice by overnight carrier to the NWQL as soon as possible after collection. Freeze samples that cannot be shipped immediately after collection.

May any District use the new methods?

Yes. The Office of Water Quality approved the new water quality analytical methods for the determination of OC and PCBs in bed material and suspended sediment on 17 October 2003 for all projects and programs.

How do I obtain a copy of the new methods?

A copy of the report by Noriega and others (2004) may be downloaded from the NWQL USGS-Visible web site (<http://www.nwql.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.

Reference

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.

- MARY NORIEGA, DUANE WYDOSKI, WILLIAM FOREMAN, and ALLISON BRIGHAM

Analytical Options and Interpretation of Results for Improperly Preserved Nutrient Samples

The NWQL occasionally receives nutrient samples that have been improperly preserved. The following FAQs answer several of the concerns that NWQL's customers might have in dealing with the resulting data.

Can the NWQL quantify the magnitude of the analytical error that might result because a WCA bottle was not acidified?

Figures and supporting text (Patton and Gilroy, 1999, p. 46–52) suggest that total phosphorus concentrations in chilled, unacidified, whole-water splits are statistically equivalent to splits amended at collection sites with sulfuric acid (H_2SO_4 , 1 mL of 4.5 M H_2SO_4 per 120-mL sample as prescribed in the USGS OWQ field manual) for about 1 month.

Figures and supporting text (Patton and Gilroy, 1999, p. 37–45) suggest that after about 1 week of storage, total Kjeldahl nitrogen in chilled, unacidified, whole-water splits from three of 15 sites in the study significantly decreased compared to splits that were amended in the field with H_2SO_4 (1 mL of 4.5 M H_2SO_4 per 120-mL sample as prescribed in the USGS OWQ field manual).

Biological metabolism of ammonium was assumed to be the cause of

the observed decrease in total Kjeldahl nitrogen concentrations in the unacidified samples.

What differences might be expected in data for dissolved nutrient analyses performed on FCC samples in relation to FCA samples?

Patton and Gilroy (1999) observed the following results when samples were filtered in the field and chilled during shipment and storage:

- Concentrations of ammonium and nitrate + nitrite were statistically equivalent for FCC and FCA bottle types;
- Nitrite was unstable in acidified samples and was not accurately determined in acidified (FCA) samples; and
- Orthophosphate (actually soluble reactive phosphorus or SRP to most non-USGS scientists) generally is not determined in acidified samples because of the possibility that condensed phosphates—usually inorganic phosphorus polyacids and esters—might be converted to orthophosphate during storage.

Interestingly, Patton and Gilroy (1999) found no evidence for increased SRP concentrations from polyphosphate hydrolysis in FCA splits. The authors considered the ban of these ubiquitous phosphorus compounds in household cleaning products by legislation in the 1970s to be a possible explanation for this observation.

Reference

Patton, C.J., and Gilroy, E.J., 1999, U.S. Geological Survey nutrient preservation experiment—Experimental design, statistical analysis, and interpretation of analytical results: U.S. Geological Survey Water-Resources Investigations Report 98-4118, 73 p.

For further information:

Charles J. Patton, Research Chemist
U.S. Geological Survey
Telephone: (303) 236-3956
e-mail: cjpatton@usgs.gov

The “Labhelp Oracle” answers questions about making changes to ASRs

Q How do I make additions or changes to information submitted on an ASR form? I goofed and put the wrong lab-codes on my ASR. I know NWIS won't accept the data, and my local data-base administrator will kill me if she gets another rejected results file from me.

A If the sample is within 2 weeks of login, you have a couple choices to have the NWQL fix the problem. If you received a daily login report by e-mail (because you are the water-quality specialist or District contact listed on the ASR), you can REPLY WITH HISTORY to LabLog-in, and ask that the changes be made. Or, if you don't have the daily login report, send an e-mail to lablogin@usgs.gov with the incorrect and the correct information. We will make the change for you.

If the sample is more than 2 weeks old, send an e-mail to labhelp@usgs.gov. Again, provide the incorrect and correct information. We will make the change for you. If results have already been sent, we will also reload the completed results, if you request it. We encourage customers to notify us about changes you make in your local NWIS data base, so we can make the

changes to our data base, also. That way, if the Lab needs to reload results in the future, you won't receive rejected results files.

• GLENDA BROWN

New publications

(NWQL authors in **boldface**)

REPORTS

Olson, M.C., Iverson, J.L., Furlong, E.T., and Schroeder, M.P., 2004, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of polycyclic aromatic hydrocarbon compounds in sediment by gas chromatography/mass spectrometry: U.S. Geological Survey Water-Resources Investigations Report 03-4318, 45 p.

JOURNAL ARTICLES

Barnes, K.K., Christenson, S.C., Kolpin, D.W., Focazio, M.J., **Furlong, E.T., Zaugg, S.D.**, Meyer, M.T., and Barber, L.B., 2004, Pharmaceuticals and other organic wastewater contaminants within a leachate plume downgradient of a municipal landfill:

Ground Water Monitoring and Remediation, v. 24, no. 2, p. 119–126.

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–electrospray ionization mass spectrometry: *Journal of Chromatography A*, v. 1041, p. 171–180.

Cordy, G.E., Duran, N.L., Bower, Herman, Rice, R.C., **Furlong, E.T., Zaugg, S.D.**, Meyer, M.T., Barber, L.B., and Kolpin, D.W., 2004, Do pharmaceuticals, pathogens, and other organic wastewater compounds persist when wastewater is used for recharge?: *Ground Water Monitoring and Remediation*, v. 24, no. 2, p. 58–69.

Focazio, M.J., Kolpin, D.W., **Furlong, E.T.**, 2004, Occurrence of human pharmaceuticals in water resources in the United States—A review, in Kummerer, K., ed., *Pharmaceuticals in the environment—Sources, fate, effects, and risks*: Berlin, Heidelberg, New York, Springer-Verlag, p. 91–106.

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NEW TECHNOLOGY—In August, Carl Zimmermann (from left), Kathy Wood (seated), and Carolyn Keefe (center) from the Nutrient Analytical Services Laboratory of the Chesapeake Biological Laboratory in Solomons, Maryland, spent several days at the NWQL with NWQL chemists Charles Patton, Colleen Gupta, and Jennifer Kryskalla (not shown). They discussed the pros and cons of using random-access batch clinical analyzers for routine nutrient determinations in environmental water samples. In June 2003, Patton and Kryskalla in the Methods R&D Program and Gupta in the Nutrients Unit began evaluating clinical robotic batch analyzers as more automated, lower maintenance alternatives to continuous flow analyzers. Patton says that although continuous flow analyzers have predominated automated colorimetric analysis in environmental laboratories since the 1960s, clinical laboratories switched to random-access batch analyzers in the mid-1980s with dramatic gains in automation and productivity. NWQL management is supporting the idea that successful integration of robotic batch analyzer technology into routine operations at the NWQL will result in an unprecedented level of automation for high-demand nutrient tests. This change, said Patton, will result in improved data quality and faster turnaround times for our customers compared to continuous flow analyzers.



Kolpin, D.W., Skopec, Mary, Meyer, M.T., **Furlong, E.T.**, and **Zaugg, S.D.**, 2004, Urban contribution of pharmaceuticals and other organic wastewater contaminants to streams during different flow conditions: *Science of the Total Environment*, v. 328, p. 119–130.

Lee, K.E., Barber, L.B., **Cahill, J.D.**, **Furlong E.T.**, Kolpin, D.W., Meyer, M.T., and **Zaugg, S.D.**, 2004, Presence and distribution of organic wastewater compounds in wastewater, surface, ground, and drinking waters, Minnesota, 2000–02: U.S. Geological Survey Scientific Investigations Report 2004–5138.

Stackelberg, P.E., **Furlong, E.T.**, Meyer, M.T., **Zaugg, S.D.**, Henderson, A.K., and Reissman, D.B., 2004, Persistence of pharmaceutical compounds and other organic wastewater contaminants in a conventional drinking-water-treatment plant: *Science of the Total Environment*, v. 329, p. 99–113.

John Kingston, 1949–04

John Kingston, 54, died June 9 at his home in Ely, Minnesota. He was recognized worldwide for his expertise in paleolimnology and diatom taxonomy.

Kingston was hired as an algal taxonomist at the USGS National Water Quality Laboratory in 1995 and worked at the Lab until 2001, when he became director of the Center for Water and the Environment, Natural Resources Research Institute, University of Minnesota at Duluth.

He is survived by his wife, Sarah, and children, O'Neill and Hudson Kingston of Ely.

Friends and colleagues are referred to an obituary by Eugene F. Stoermer, which is scheduled to appear in the November issue of the *Journal of Paleolimnology* at URL <http://www.umanitoba.ca/geoscience/paleolim/jopl.html>.

Letters, faxes, and e-mail

July 19, 2004
To: Greg Mohrman

I just finished a quick revision of the analytical cost spreadsheet for the NASQAN program for next year. If we sample on the same schedule as last year (which we probably won't do, but for comparison purposes, it works), the costs estimated at \$378,982 for 2004 will go to \$364,405 in 2005, for a savings of \$14,577. This is, of course, good news for the program but should also be a point of pride for the NWQL and show that the stabilization of prices that we have been seeking for so long is occurring. Just thought you would like to know.

Steve Sorenson
Assistant Chief
Office of Water Quality

To: Mark Sandstrom

Dennis Evans tells me that you're the person who knows all there is to know about spikes for organics and perhaps metals for water samples. Do you know if Severn Trent would require the same spikes as NWQL? We're looking at diesel range organics, gasoline range organics, pesticides, PCBs, SVOCs, and VOCs, as well as a range of metals. What spikes would make sense to add to one or more of our water samples? Are soil samples ever spiked?

John B. Czarnecki
USGS District Ground-Water
Specialist
Little Rock, Ark.

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LABHELP AT YOUR SERVICE—Customers calling labhelp@usgs.gov are likely to speak to one of these resident experts: Phil Grano (from left) and Patricia Alex, Support Services; Glenda Brown, David Macke, and Steve Glodt, Business Development Team. All incoming calls are channeled through the BDT group for appropriate responses and tracking. For example, questions dealing with log-in and shipping issues may be directed to Grano and Alex; queries about preferred methods and some reloads may be handled by Brown, Macke, or Glodt.

Reply to John Czarnecki

We've designed our spike mixtures and kit for the NWQL analytical methods, so they might not work for the Severn Trent lab. It depends on how well the concentration range and analyte lists overlap. Some of the NWQL spike mixtures have analytes in the broad classes you list, typically concentrations of about 0.1 µg/L. You can see what's available on the NWQL spike certification page <<http://www-nwql.cr.usgs.gov/USGS/spike/spike.html>>. In addition, Severn Trent routinely prepares laboratory reagent spikes, and probably laboratory matrix spikes upon request, so you might be able to have them do the matrix spike in the lab, or provide you with their spike mix (and instructions on how much to spike) if you want to prepare a field spike. You should try to work with the lab performing the analysis to get the spike mix in the appropriate concentration range. If you want to use our spike kit available from One-Stop Shopping, the amount spiked is 0.1 mL, so you could let Severn Trent know you need a spike mix appropriate for that amount.

The matrix spike provides information about how well the methods perform for your particular matrix. If you do the matrix spike in the field, you get additional information about possible degradation of compounds during shipping and holding. This is especially useful if your results are mostly nondetections because it helps you to know that if the compounds were in the sample, the method would have detected them. But this is not required for methods that use a field-preservation step, such as many VOCs and metals. For these, field-preserved samples of laboratory spikes are usually prepared. If any of your methods have procedures in which samples are not preserved, I would recommend field matrix spikes. Otherwise, have lab matrix spikes prepared.



QUALITY MANAGEMENT SYSTEM—Chemist Jim Lewis (left) and Tom Maloney, chief of the Quality Assurance Section, discuss QA issues in one of the labs.

Metals are more difficult to spike because the background concentrations need to be determined first to determine how much to spike, so these are usually done as laboratory matrix spikes. As I mentioned, because the samples are usually preserved in the field, a lab matrix spike would be appropriate.

Soils also are spiked, but generally in the lab because the concern for degradation is usually less than for water samples. But the same techniques can be used to prepare a field matrix spike for soils. Contact me if you have additional questions.

Mark Sandstrom
Research Chemist, NWQL



Industrial-strength photography...
...NWQL ductwork as art.

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Water Logs, the National Water Quality Laboratory Newsletter, is published quarterly by the National Water Quality Laboratory, U.S. Geological Survey, Box 25046, MS-407, Federal Center, Denver, CO 80225-0046. For copies, call Jon Raese 303-236-3464 or send e-mail request to jwraese@usgs.gov.

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