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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

Lab Chief Mohrman named "Outstanding Colorado Public Administrator"

U.S. Geological Survey (USGS) scientist Gregory B. Mohrman has been honored as this year's Outstanding Colorado Public Administrator. He received the 2005 Leo C. Riethmayer Outstanding Public Administrator Award from Pi Alpha Alpha, the Honor Society for Public Affairs and Administration, at the University of Colorado at Denver. He was presented the award during a banquet held jointly by Pi Alpha Alpha and the Graduate School of Public Affairs at CU Denver May 6.

Mohrman is the chief of the USGS National Water Quality Laboratory (NWQL) in Denver. He earned the award for his high ethical standards and his vision and dedication to continually improve the NWQL.

"Greg Mohrman strives for excellence in all he does," said USGS Regional Director Tom Casadevall. "Under his leadership at the USGS NWQL, he has reduced operating expenses, improved customer service, and enhanced quality control, ensuring that customers receive timely, accurate chemical analyses of water samples, at the least possible cost."

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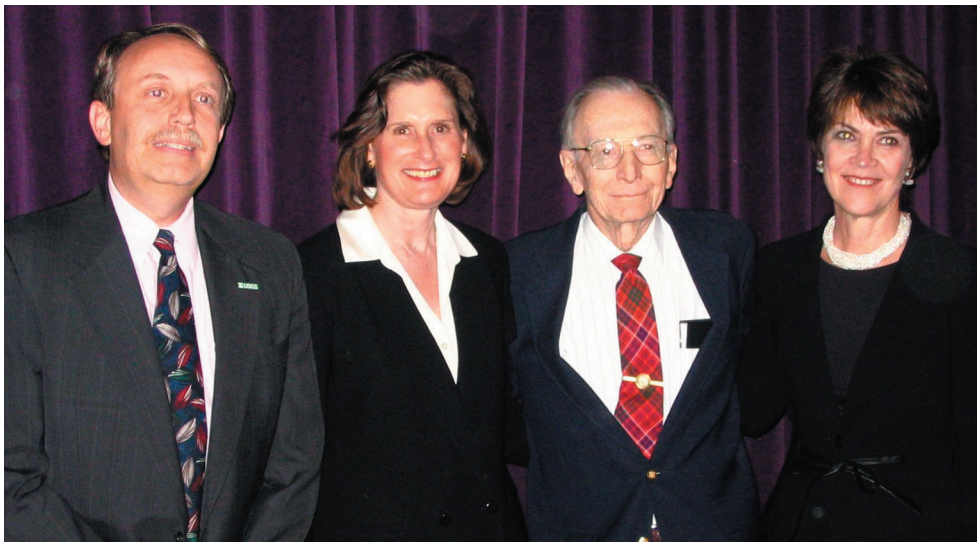


OUTSTANDING LEADERSHIP—The Leo C. Riethmayer Outstanding Public Administrator Award was presented May 6 to Greg Mohrman (left), NWQL chief. Taking part in the presentation were Dr. Elizabeth "Betsy" Hoffman, president of the three-campus, more than 52,000-student University of Colorado System; Leo C. Riethmayer, professor-emeritus of the University of Colorado; and Dr. Kathleen Beatty, professor and dean of the Graduate School of Public Affairs, University of Colorado at Denver. (*photo by Bob Green*)

At the NWQL, Mohrman supports water-quality projects across the country. In Colorado, NWQL researchers were key contributors to a report entitled "Wastewater Chemicals in Colorado's Streams and Groundwater" that was completed in January 2005. This project, done in conjunction with the USGS Colorado Water Science Center, examines how and where such chemicals as insecticides, caffeine, detergents, fire retardants, fragrances, household cleaners, and steroids are getting in Colorado's streams and wells. For more, see *http://water.usgs.gov/pubs/fs/2004/3127/*.

"The outstanding leadership Mohrman has provided to the USGS NWQL is essential for work like the Colorado water-quality study to be carried out," Casadevall added.

The USGS NWQL is a full-service laboratory that specializes in environmental analytical chemistry and is capable of testing thousands of water samples for minute quantities of organic and inorganic compounds. For more information, see *http://nwql.usgs.gov*.

Before serving as the chief of the NWQL, Mohrman held several positions with the U.S. Army at Rocky Mountain Arsenal, Colo., and Aberdeen Proving Ground, Md., including executive director, Commander's Representative, and division chief for the Laboratory Support Division. He began his career at Rocky Mountain Arsenal as a bench chemist shortly after graduation from the University of Northern Colorado, where he received a B.A. degree in chemistry in 1978.

The Leo C. Riethmayer Outstanding Public Administrator Award is given to a federal, state, or local government administrator who has demonstrated high ethical standards and exemplary administrative ability. The award honors Leo C. Riethmayer, professor-emeritus of the University of Colorado. The award is given annually by Pi Alpha Alpha and the Graduate School of Public Affairs at the University of Colorado at Denver. Mohrman has been a public administrator for more than 25 years. He is the first Federal employee to win the Riethmayer Award in nearly 20 years.

• HEATHER FRIESEN

NWQL billing report changes, order tracking, reflected on customer reports

The NWQL's Administrative Office reports a major change in the "Supply and Shipping Charges for Lab Month 20055 for User Code," beginning with May 2005.

A new column reflecting the One-Stop order number has been added to the weekly and monthly reports. The One-Stop order number associated with the item(s) that were ordered and filled by the NWQL's National Field Supply Service (NFSS) is now reflected in this column. If the supply item line does not contain a One-Stop order number, then the item was manually entered or adjusted.

Research related to items purchased and user identification can now be tracked at the cost-center level in One-Stop. This change will enable the project and administrative staffs to research questions related to One-Stop orders. Errors related to project account number charges can be resolved with an internal service voucher.

A file with instructions outlining two options for tracking orders through the One-Stop system can be found at *http://wwwnwql.cr.usgs.gov/USGS/NWQL_1Stop_Order_Instructions.pdf*. (From NWQL Rapi-Note #05-012.)

Analytical prices available for upcoming fiscal year

NWQL prices for fiscal year 2006 have been finalized for U.S. Geological Survey customers and can be accessed in the Catalog at ***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, 2005.

In preparing the pricing, the NWQL management reviews and reevaluates every individual analysis to accurately reflect the level of effort and associated costs for producing data. Also considered is the sample loading from the previous fiscal year and any firm projections from customers.

Where efficiencies have been gained, prices have been reduced despite the fact of escalating labor costs. In other examples, the price per analysis has been increased because of rising costs for production or possibly a decreased demand, which reduces analytical efficiency.

Analytical prices for analyses performed at other USGS or contract laboratories for work logged in through the NWQL are being addressed in separate notices. The fiscal year 2006 prices are available at ***http://nwql.cr.usgs.gov/usgs/pricelist/index.cfm*** or on the Estimator page of the Catalog.

Questions regarding the pricing structure for FY06 should be directed to Gary Cottrell, at (303) 236-3490 or to the NWQL Lab-Help web site (***labhelp@usgs.gov***).

Construction started for moving the Branch of Quality Systems

Construction is underway at the National Water Quality Laboratory in building 95 to remodel the facility for sharing available space with the Branch of Quality Systems (BQS) and the Office of Water Quality at the Denver Federal Center.

About 15 employees are expected to relocate to building 95 in August—12 from the BQS and 3 from the Office of Water Quality. In addition, Kenneth Stollenwerk, a ground-water hydrologist in the Branch of Regional Research, has moved his lab to building 95. He joins 9 other USGS employees with the National Research Program already housed in building 95. Plans call for all relocations to be completed by the end of the present fiscal year, September 30.

The construction contract was awarded by the General Services Administration (GSA) in May, following completion of architectural and engineering design. The remodeling started June 3 and is scheduled to be completed by July 31.

The NWQL cleared the way for construction to begin by moving 45 employees in May to offices and cubicles throughout the building, thus freeing up half of the second floor of the north wing for the use of BQS. In addition, Laboratory personnel are maintaining a tight analytical schedule for samples so as not to allow construction work to interfere with the busy summer sampling season.

Meanwhile, Darrell Liles, the Radiation Safety Officer for the USGS, decommissioned two rooms in the north wing that were used for radiochemical analysis. Liles followed the procedure outlined in the Multi-Agency Radiation Survey and Site Investigation Manual. The decommissioning report was completed and approved by the USGS Radiation Safety Committee.

The relocation is being driven by financial considerations because the building space was underused and already paid for. The costs will be quickly recovered through the efficient use of space in the building and operational improvements. The BQS and NWQL have worked closely together over the past year to plan for the most efficient use of the available space while ensuring no compromises to the missions of the two organizations.

A new model for disseminating scientific information

The current system of scientific publication does not well serve the needs of the constituency that is dependent on it for the dissemination of the results of scientific research. This constituency consists of practicing scientists and physicians, libraries, teachers, students, and interested members of the general public.

The scientific publishers, with some notable exceptions, have been more interested in maximizing profits and controlling distribution than in satisfying the needs of the consumers of scientific information. This problem has arisen because scientific publishing is basically a noncompetitive undertaking. Each publisher provides access to a unique set of scientific reports. If a consumer wants to gain access to the reports in a given scientific journal, he or she has no choice but to pay the price demanded by the publisher. If the consumer does not directly pay the price by subscribing to the journal or paying the publisher for a download, then he or she pays indirectly through the subscription fees paid by his or her library.

Before the advent of the Internet, one had very little choice but to rely on traditional publishers for the dissemination of scientific information. It is now possible, however, to devise new publication models that will provide much more rapid publication than traditional ones do at greatly reduced costs. One such model is the learned community open access publication model. This model will also provide more rigorous evaluation of publications than the current peer-review system.

The learned community publication model is designed to provide free access to all scientific research. Each learned community would be a self-governing entity consisting of scientists of common interest linked to a community server by software developed by the Open Archives Initiative (OAI); the OAI software allows one to automatically harvest new submissions from a group server.

The learned community publishing system would allow authors to expose their manuscripts to the community for critical evaluation. This critical evaluation system would be more stringent than an ordinary review system, because the entire community would have the opportunity to evaluate submitted manuscripts. After the comment period for a manuscript closes, the author(s) would be given the opportunity to revise the manuscript and re-post it. The re-posted document would be assigned a digital object identifier (DOI) so that it could be readily retrieved from multiple archive sites (for example, libraries).

• Robert Wershaw

New publications

(NWQL authors in **boldface**)

ARTICLES

Battaglin, W.A., Kolpin, D.W., Scribner, E.A., Kuivila, K.M, and **Sandstrom, M.W.,** 2005, Glyphosate, other herbicides, and transformation products in Midwestern streams, 2002: Journal of the American Water Resources Association, April 2005, p. 323–332.

Burkhardt, M.R., ReVello, R.C., Smith, S.G., and Zaugg, S.D., 2005, Pressurized liquid extraction using water/isopropanol coupled with solid-phase extraction cleanup for industrial and anthropogenic waste-indicator compounds in sediment: Analytica Chimica Acta, no. 534, p. 89–100.

Sandstrom, M.W., Kolpin, D.W., Thurman, E.M., and **Zaugg, S.D.,** 2005, Widespread detection of N,N-diethyl-m-toluamide in U.S. streams—Comparison with concentrations of pesticides, personal care products, and other organic wastewater compounds: Environmental Toxicology and Chemistry, v. 24, no. 5, p. 1029–1034.

Seiler, R.L., Stollenwerk, K.G., and **Garbarino, J.R.,** 2005, Factors controlling tungsten concentrations in ground water, Carson Desert, Nevada: Applied Geochemistry, v. 20, p. 423–441.

Jeff Boring, Big Thompson Watershed Project, visited the NWQL May 25 for a tour of the labs and a briefing by Greg Mohrman.

AWARDS FOR LEADERSHIP—NWQL chemists (left to right) Mary Olson (Physical Properties), Leslie Kanagy (Metals), and Gretchen Jorgensen (student trainee in Quality Assurance) recently received Leading from Any Chair Awards. Mary and Leslie were recognized for their enthusiasm and communication skills in organizing and planning the relocation of 45 employees in May to free up space for the Branch of Quality Systems and the Office of Water Quality. Gretchen was cited for her initiative in managing and collaborating on several Quality Assurance programs, including Blind Blank, Long-Term Method Detection Level, and the Bias and Precision project.

Customers to benefit by new collision/reaction cell ICP–MS method; graphite furnace being phased out by October 2005

Development work is proceeding on the new collision/reaction cell inductively coupled plasma—mass spectrometer (cICP–MS). Analytical Services and the Methods Research and Development Program have been working together since last winter to validate methods using this instrument for determining trace elements currently analyzed by graphite furnace atomic absorption (GFAA) spectrometry.

Tests have shown that interferences previously associated with the determination of arsenic and chromium using old ICP–MS technology are substantially reduced or eliminated using the collision/reaction cell, thereby making it possible to replace GFAA methods. Furthermore, the determination of other elements affected by interferences using older ICP–MS instrumentation also has been improved.

The design of the cICP–MS software has eliminated the cumbersome operation of collecting and processing arsenic speciation chromatographic data by using one computer platform instead of two. A report describing the new methods will be published in the USGS series Techniques and Methods. Methods that include the analysis of filtered water samples and whole water, biota, and solid digestates will be described in the new report. After the report is approved, the Laboratory will transfer all remaining GFAA determinations to cICP–MS. The scheduled date for this transition is October 2005.

Customers who still have project requirements for using GFAA methods can continue to request custom GFAA analyses by using the project proposal system. However, customers are encouraged to review the trace-element portion of their schedules and work with the Business Development Team at the NWQL to modify their schedules. Customers using cICP–MS for the determination of arsenic and chromium will benefit from detection levels that are a factor of ten lower than GFAA and at considerably lower analytical cost.

• JEFF PRITT AND JOHN GARBARINO

Rush-sample request available for customers

A new standard operating procedure (SOP) for rushing samples through analysis has been implemented at the U.S. Geological Survey National Water Quality Laboratory.

Although the request for rush samples still requires a custom proposal, the NWQL has put in place some procedures and templates that standardize the process for customers and for NWQL personnel. The rush sample SOP can be downloaded (pdf file) from URL *http://wwwnwql.cr.usgs.gov/USGS/sop/sops.html*. Because the rush-sample procedure is labor-intensive, customers will be charged a premium rate over the regular analytical cost for the schedule or lab code. This cost will vary depending on the lab codes or lab schedules requested.

For customers to ensure that their samples are handled as rush samples, there are a few things to remember:

- Make sure you have a specific rush-sample custom proposal in place before samples are collected and ready for analysis; this means communication with the Business Development Team well ahead of any sampling.
- Contact the lab when the samples are ready for shipment to alert us to their pending arrival.
- Samples must be shipped in a cooler clearly marked with the words "**RUSH SAMPLES**".
- Analytical Services Request (ASR) forms must be clearly marked in the comments section as **Rush Samples** and the word "**RUSH**" should be written at the top of the ASR.
- Samples must have the word "**RUSH**" on the bottle(s), preferably on a separate label.
- If possible, ship rush samples to arrive early in the workweek. Samples arriving on the last day of the workweek (typically a Friday) can be logged in on that day but will not be available for analysis until the following week.
- A request for lab specific conductance will delay analysis by an additional day; if this delay is critical, provide a field conductance and delete the lab conductance from the ASR. Many schedules call in a lab conductance, so be sure to verify if your schedules include lab specific conductance.

The term "RUSH" now has a specific meaning at the NWQL, so words like "rush" or "expedite" should not be put onto an ASR unless the sample is part of a true rush-sample request. Although regular and rush samples can be shipped in the same cooler, all analytical requests on a rush ASR will be elevated to rush status and billed accordingly.

To take advantage of the rush-sample process, contact the Business Development Team for pricing and to arrange a custom proposal.

• MARY CAST

VISITING SCIENTIST—James Peaches, a visiting scientist from Malawi, in south-central Africa, received training in water quality and pollution control at the U.S. Geological Survey National Water Quality Laboratory from March 28 to June 16. He was mentored by Gary Cottrell, supervisor of the Business Development Team. Peaches' training goals included developing skills related to water sampling, testing, interpreting and reporting, and water-resources management. Peaches is the chief water chemist for the Malawi Ministry of Water Development. His visit is sponsored by the Ware Fellowship Program, which is funded by a grant from the International Water and Sanitation Fellowship Program.

The fellowship program is administered by the Denver International Program, a local nonprofit that arranges visas, training programs, and homestays for international professionals.

Enhanced pesticide methods available

The NWQL began offering two enhanced versions of Schedule 2003 [National Water Quality Assessment Program (NAWQA), Agricultural Chemical Transport, Urban Land-Use Gradient; Selected, Filtered Pesticides and Degradates] in May 2005. Schedule 2032 includes seven rice pesticides in addition to the Schedule 2003 analytes. Schedule 2033 includes 20 additional compounds that were selected by NAWQA from Schedules 2001 and 2002, based on pesticide use, frequency of detection, and analyte method performance.

These new schedules will enable customers to obtain the determination of additional analytes, while avoiding the expense of requesting a separate analysis. The price differentials for Schedules 2032 and 2033, compared to Schedule 2003, are about $40 and $70, respectively. Prices for these schedules are available for fiscal years 2005 and 2006. For further information, access the NWQL Catalog at *http://nwql.cr.usgs.gov/usgs/catalog/index.cfm* (URL available to U.S. Geological Survey customers only).

Alternative products urged for mosquito repellents containing DEET

BY MARK W. SANDSTROM

The Centers for Disease Control (CDC) has released updated guidelines for mosquito repellents, and added two new repellents that offer long-lasting protection similar to DEET (N, N-diethyl-*m*-toluamide), <*http://www.cdc.gov/ncidod/dvbid/westnile/RepellentUpdates.htm*>. The new repellents contain either 1-(1-methylpropoxycarbonyl)-2-(2-hydroxyethyl)piperidine (picaridin; KBR 3023; bayrepel) or p-menthane-3,8-diol derived from lemon eucalyptus. These updated guidelines are important for water-quality studies because DEET is an analyte in National Water Quality Laboratory (NWQL) schedule 1433 and lab code 8033.

DEET also can cause interference, leading to raised reporting levels for some analytes in other methods if present at high concentrations. Although DEET is detected frequently in streams (Sandstrom and others, 2005), it has recently been identified in field blanks, especially when DEET is used by field personnel collecting and processing samples.

Avoidance of DEET and use of alternative mosquito repellents might improve the reliability of analytical results for DEET by reducing the potential for contamination during sample collection and processing. One of the alternatives, Repel Lemon Eucalyptus, which contains the active ingredient p-menthane-3, 8-diol, was tested during a study to determine potential for contamination during sample processing, and it was found to have no adverse effects on samples analyzed by schedule 1433.

Repellents containing DEET are used to provide protection from biting flies, mosquitoes and other small insects. Its use is suggested for prevention of infection of West-Nile virus from mosquito bites. Because of the broad use in the general U.S. population, it is also found in U.S. streams with other personal-care products that are introduced through wastewater-treatment systems (Sandstrom and others, 2005). However, it is also detected in about 40 percent of field blanks collected for the National Water-Quality Assessment program's Source Water-Quality Assessment (James Kingsbury, U.S. Geological Survey, written commun., 2005).

A study was conducted in 2004 to examine whether use of repellents containing DEET by field personnel during sample collection and processing could result in contaminated, and thus biased, results. The study was

Alternative repellents might improve analytical results….

conducted during the ground-water exercise of the Field Water Quality Methods training course (QW1028) at the NWQL during the spring of 2004. All sample-collection procedures were followed as described in the National Field Manual (Wilde and others, 1999). Samples were collected on May 4 without DEET and May 6 with DEET to prevent any cross-contamination possibilities of DEET being left on the sample tables or processing chambers that were used by the next collectors. A follow-up study was conducted a few weeks later to evaluate contamination from the repellent containing p-menthane-3, 8-diol.

Following the field activities on May 4, the pump, lines, and filter assemblies were all cleaned with 0.1-percent Liquinox, tap water rinse, distilled water rinse, methanol rinse followed by a pesticide-grade blank water rinse. The four student teams (at four demonstration tables) collected samples for schedule 1433 without using any repellent or anything containing DEET. All four samples were collected from the same well (GSA 167). Samples were filtered inside a processing chamber (see photo, p. 7) to prevent atmospheric contamination (Wilde and others, 1999).

On May 6, the equipment was cleaned again, and student teams collected samples for schedule 1433 while wearing DEET products. DEET-containing products were applied about 30 minutes before collection of the schedule1433 samples. Students at two tables wore Deep Woods OFF with DEET, an aerosol-type spray containing 30-percent DEET, and students at two tables used Ultrathon, a lotion type repellent with 31-percent DEET. The student designated "clean hands" wore the DEET product at each table; at table C, both students wore the DEET product. All students wore nitrile gloves and took care to avoid direct contact of the sample or equipment with their exposed skin.

The aforementioned procedures were repeated at a subsequent class on July 27, except that four student teams wore the repellent Repel Lemon Eucalyptus containing the active ingredient p-menthane-3, 8-diol.

Results of the study are listed in tables 1 and 2 on the following page.

Discussion

The concentrations of DEET in samples collected by students who applied DEET are about a factor of 5 times greater than the median concentration of DEET (0.05 µg/L) in surface-water samples collected during the Toxics Program Reconnaissance Study in 2000 (Sandstrom and others, 2005). These results seem surprising, given that there is limited exposure of the sample to the collector during processing. Also, the concentrations are much higher than typically reported in schedule 1433 field blanks. In a study conducted in Boulder Creek,

Results seem surprising given limited exposure…

Colorado, DEET was detected about 10 times lower in a field blank, but all field personnel were wearing DEET. However, unlike the training-class experiment, processing chambers were not used. The use of processing chambers is designed to prevent contamination from the atmosphere, but in this case might have magnified the potential for contamination because DEET is trapped inside the sample chamber as it evaporates from the skin.

There was a low concentration detection of DEET reported in a sample processed by a team not wearing any repellent during the second experiment in July (table 2). This might be residue from equipment used during the previous class. There were no interferences or raised reporting levels in samples processed by students wearing the Repel Lemon Eucalyptus repellent.

Incidentally, no caffeine or any other personal-care products in schedule1433 were detected in any of the samples. Caffeine and other personal-care products were used by students because we gave no instructions about avoiding these other chemicals. This suggests that DEET is unique in its potential for contamination because it is applied to the skin, and that guidelines in the National Field Manual (Wilde and others, 1999) might be sufficient for all the analytes except DEET.

In conclusion, the use of insect repellents containing DEET should be avoided when collecting samples for schedules 1433 and lab code 8033. Alternative repellents, containing picaradin and p-menthane-3, 8-diol, have been recommended by the CDC because they appear to offer similar long-lasting protection from mosquitoes. The repellent containing p-menthane-3, 8-diol was tested and shown to cause no interferences or bias in samples analyzed by schedule 1433 at the NWQL.

Chemical Abstracts Registry Numbers: picaridin or bayrepel or KBR 3023, 119515-38-7; DEET, 134-62-3; p-menthane-3, 8-diol, 42822-86-6.

Table 1. Concentrations of DEET in well GSA 167; samples collected May 4 and 6, 2004.

[<, less than]

		DEET concentration, in micrograms per liter			
Day	Repellent used	Team 1	Team 2	Team 3	Team 4
May 4	None	<0.5	<0.5	<0.5	<0.5
May 6	DEET	0.23	0.32	0.22	0.29

Table 2. Concentrations of DEET in well GSA 167; samples collected July 27, 2004.

[<, less than; E, estimated remark code]

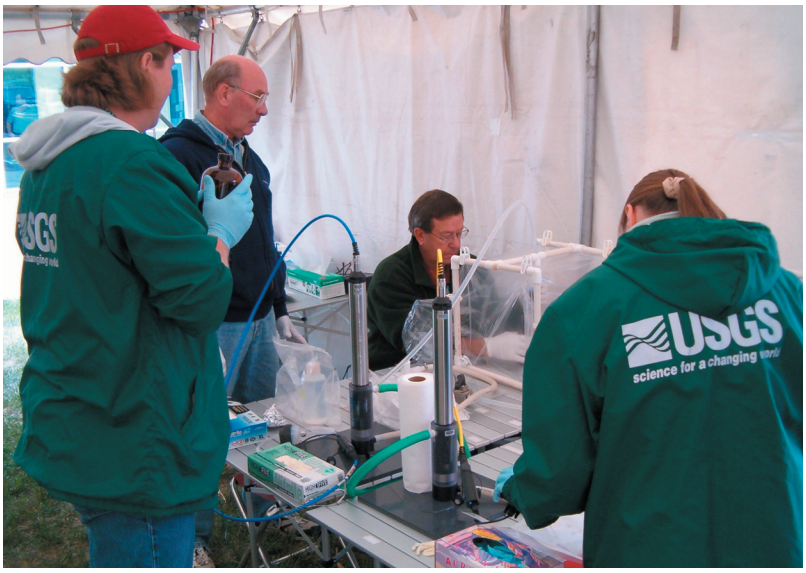
		DEET concentration, in micrograms per liter		
Day	Repellent used	Team 1	Team 2	Team 3
July 27	None	<0.5	<0.5	E0.08
July 29	p-menthane-3, 8-diol	<0.5	<0.5	<0.5

References

Fradin, M.S., and Day, J.F., 2002, Comparative efficacy of insect repellents against mosquito bites: *New England Journal of Medicine*, v. 347, no. 1, p. 13–18.

Sandstrom, M.W., Kolpin, D.W., Zaugg, S.D., and Thurman, E.M., 2005, Widespread detection of N, N-, diethyl-*m*-toluamide in U.S. streams: Comparison with concentrations of pesticides, personal care products, and other organic wastewater compounds: *Environmental Toxicology and Chemistry*, v. 24, no. 5, p. 1029–1034.

Wilde, F.D., Radke, D.B., Gibs, J., and Iwatsubo, R.T., eds., 1999, National field manual for the collection of water-quality data: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A1.



WATER-QUALITY METHODS—Students collect and filter ground-water samples during Field Water-Quality Methods training course May 25 in Denver. Participants shown (left to right): Tim Oden, instructor, Texas Water Science Center; Vince Walczyk, Nebraska Water Science Center; Charles Heavener, Arkansas Water Science Center; and Jennifer Flynn, Colorado Water Science Center. The ground-water exercise of the training course is held adjacent to the National Water Quality Laboratory. Note the processing chamber being used by Heavener.

Seminars listed

- **April 12**, Charles Patton, USGS NWQL research chemist; "Adapting Marine *in situ* Photometric Nutrient Analyzers for Freshwater Applications."
- **April 14**, Daniel Salvito, manager, Environmental Program, Research Institute for Fragrance Materials; "Fragrances in the Environment."
- **May 20**, Ralph Seiler, USGS hydrologist, Northern Nevada Hydrologic Studies Section, Carson City; "Water Quality at a Childhood Leukemia Cluster, Fallon, Nevada."
- **June 9**, Tracy Yager, USGS hydrologist, Colorado Water Science Center; "Summary of Biosolids' Applications Near Deer Trail, Colorado, 1999–2003, and Next Steps for 2005–2010."

Tom Leiker (left), USGS NWQL chemist, greets Daniel Salvito, April 14, following the seminar on fragrances in the environment.

NWQL method for determining pesticides updated in Technical Memo

Technical Memorandum 2005.03 was issued February 3rd to address changes and variability in recoveries of some pesticides and their degradation products in NWQL method 2060. The technical memo quantifies the changes, provides guidance on interpreting the data, gives information on the measures taken to correct the method performance, and provides documentation to support each. Sample data affected are from July 31, 2002, through December 2004.

The Information Technology staff is developing and testing the programming code needed to create the reload files for the National Water Information System. It is anticipated that the files will be reloaded by the end of July with appropriate result qualifiers, remark codes, and comments. A Rapi-Note announcing the availability of the reload files and instructions for applying the reload will be distributed.

For additional information, refer to the technical memorandum at http://nwql.usgs.gov/Public/tech_memos/nwql.2005-03.html on the NWQL USGS visible web page. Specific information on the qualifiers, remark codes, and comments that will be used for each compound can be found in table 4 of the memo.

Survey collaborates with Pakistan for improving water quality, data collection

The U.S. Geological Survey (USGS) is collaborating with the Pakistan Council of Research in Water Resources (PCRWR) on several water initiatives designed to improve water quality and the overall understanding of water issues in Pakistan.

A major part of this project is helping to refine the design and implementation of a systematic national water-quality data-collection program complete with laboratory operations and a national data base. Critical water-quality concerns include areas of high arsenic and biological contamination from sewage. Additionally, the PCRWR is planning to begin testing for other compounds, such as pesticides, fuels, and volatile organics.

Over the next 3 years, scientists from Pakistan will visit the NWQL to observe our facilities, staffing, training, equipment, field-supply system, and other operations. This project will provide the PCRWR with assistance in developing new analytical and database capabilities, as well as provide peer review for other processes, such as quality control, facilities growth, and methods development.

Two delegates from the PCRWR will visit the NWQL in July to assess where the NWQL will be able to assist their effort. NWQL personnel also have visited Pakistan to determine current conditions and capacities. With plans to build more than 100 small, local laboratories over the next 3 years and to load sample data from each lab into a national data base, the PCRWR will be very busy, and suggestions from the USGS can help to make this expansion more efficient.

The project is jointly funded by the U.S. Department of State, U.S. Aid, and the Government of Pakistan. The project leader is Ingrid Verstraeten, USGS International Water Resources.

To date the visits have been fruitful and the interactions with our Pakistani colleagues have been enjoyable. We look forward to helping them with this sizable effort.

• GARY COTTRELL

Lab replaces aging instrument for determining total organic carbon

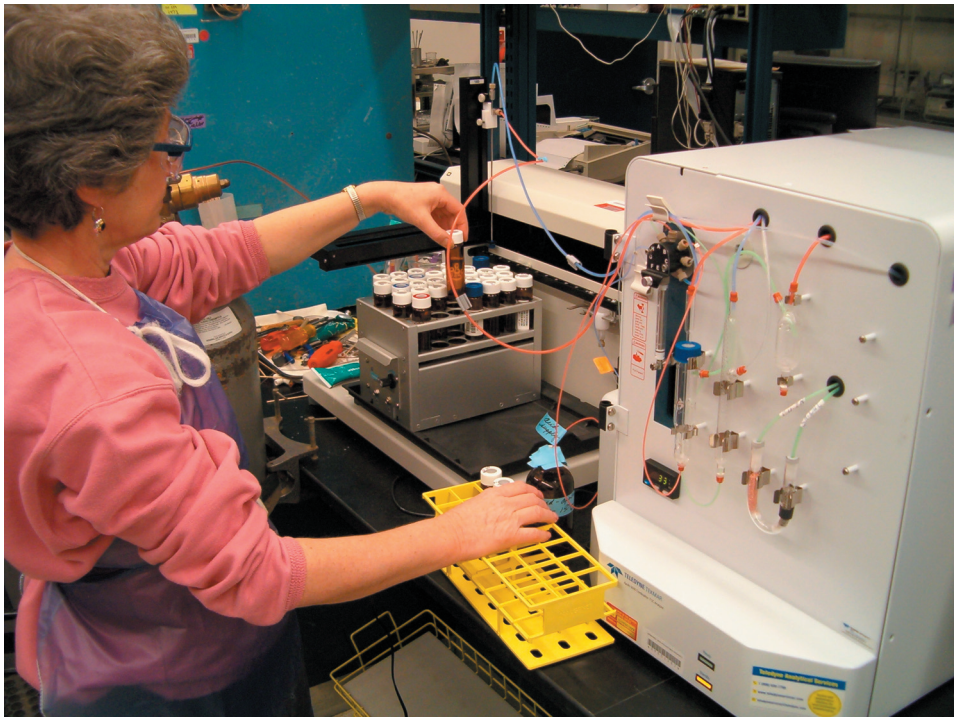
It took 31 years, but why replace an analytical instrument that was dependable and seldom failed? The answer: Parts are no longer available. Well, the time has come to retire the Oceanography International 524 (OI) used to determine total organic carbon (TOC) and replace it with a Teledyne Tekmar Apollo 9000 model with an Atlas system.

The Atlas allows the sample to bypass the 8-port valve so that particulates do not clog it. The entire sample—water and particulates—enters the combustion chamber for analysis.

The Apollo 9000 TOC uses catalytic combustion with nondispersive infrared detection to provide low detection limits. An STS 8000 TOC autosampler has been coupled to the new instrument to provide high sample throughput. The old OI methodology was a 3-day process involving many hours of preparing the samples, as well as manually injecting them into the instrument. There is no sample preparation with the new Apollo 9000 TOC Analyzer, and the autosampler can be loaded and walked away from.

Another useful upgrade involves the process for injecting a sample into the combustion chamber. The Apollo 9000 is equipped with a unique valveless injection system for analyzing samples with high particulates. Besides injecting the sample without values, the Atlas system uses a self-cleaning technology that minimizes carryover and the need for maintenance.

The Apollo 9000 will be used for applications requiring particulate analysis, such as wastewater and industrial effluents. Compounds that are difficult to oxidize, such as proteins and particulates with high chloride content, are supposed to be well suited for the $31,000 instrument.



MONITORING ORGANIC CARBON—Mary Alice Carey, physical science technician in the Physical Properties Unit, calibrates a new Teledyne Tekmar Apollo 9000 total organic carbon (TOC) analyzer and loads samples into the autosampler. The instrument will be used for particulate analysis of wastewater and industrial effluents.

MUSEUM ARTIFACT—The 31-year-old total organic carbon analyzer (Oceanography International 524) is still in working condition. However, parts are no longer available if the system should fail, so the NWQL decided to replace the analyzer.

NEWS BRIEFS

Cyanide analysis was discontinued at the NWQL effective May 4. Customers are asked to submit cyanide analysis requests directly to Severn Trent Laboratories (STL) in Denver through the current USGS contract. Water Science Centers need to contact Richard Daddow, USGS Office of Ground Water, before sending samples to STL. Daddow can be contacted at 303-236-5050, ext. 309, or by e-mail at rldaddow@usgs.gov.

The NWQL provided a 3-hour customer service training class to 46 employees on April 28. The training company Padgett Thompson provided the instructor and instructional materials. The attendees were from all areas of the Laboratory. After the training, the employees were complimentary about the class material and the instructor's presentation. Several people mentioned that the class time was too short.

New filters available for pesticide samples

Smaller diameter filters that can be used in filtering samples for pesticides and other organic compounds have been added to the National Field Supply Service (NFSS) catalog. These filters are suitable for ground-water or surface-water samples with low suspended-solids content. However, they will clog and require frequent changes if used for surface-water samples, which typically have high suspended-solids content.

The filters are used with 47-mm diameter Teflon-PFA filter holders, as described in the National Field Manual (Lane and others, 2003, p. 80), and are available from SKC for $80 [*http://www.skcshopping.com/SearchResults.asp?Search=225-1712*] or other vendors (Cole-Parmer; Jensen Inert).

The filters are made of glass fiber, GF/F grade (0.7 micrometer nominal pore size), 25-mm diameter, baked at 450 degrees Celsius for 2 hours, and wrapped in aluminum foil. The new NFSS item is Q355FLD, FILTER, GF/F, 47MM, baked @ 450°C. Price per package of 25 filters is $24.39.

Reference

Lane, S.L., Flanagan, Sarah, Wilde, F.D., Sandstrom, M.W., Fitzgerald, K.K., and Radtke, D.B., 2003, Sample processing: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A2, accessed June 6, 2005, at *http://pubs.water.usgs.gov/twri9A2/*

RIVER NETWORK—Steve Dickens (left) and Geoff Dates, coordinator, River Network, visited the National Water Quality Laboratory May 25 for a briefing and tour by Greg Mohrman. River Network is a national nonprofit organization that offers consulting, publications, training, and small grants to help people raise money, build organizations, and monitor and protect rivers and watersheds.

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