

## In this issue . . .

Lab contributes to National Methods Index

Perfect score for waste inspection

Reanalysis request form

Seminar schedule

Chinese delegation tours Lab

Collaboration with Louisiana District

New publications

Electronic ASR under development

Client survey coming soon

Water Data Flows to the Web

Mailbox set up to handle inquiries

## Lab contributing to National Environmental Methods Index

All U.S. Geological Survey analytical methods are being added to the National Environmental Methods Index (NEMI). By late February, the National Water Quality Laboratory had scanned, converted to Portable Document Format (PDF), and added 142 USGS methods to the NEMI data base.

These 142 methods represent only the beginning of a project to place all Laboratory methods in the NEMI data base. The NEMI workgroup intends to release the methods to the public in June 2002. Periodic releases with additional methods are planned, including field and biological methods.

The purpose of NEMI is to provide a mechanism to compare and contrast the performance and cost of analytical methods for environmental monitoring. NEMI was developed under the direction of the Methods and Data Comparability Board, a partnership of water-quality experts from Federal agencies, States, tribes, municipalities, industry, and private organizations.

The Methods Board is chartered under the National Water Quality Monitoring Council, whose mission is to coordinate and provide guidance on implementing the voluntary, integrated, nationwide monitoring strategy.



**HELPING TO SET UP NATIONAL INDEX**—Meg Fleming, USGS NEMI coordinator in the Chief's office, at work on a project to add NWQL methods to the National Environmental Methods Index (NEMI).

The objective of the NWQL project is to convert all USGS methods into electronic format, create a list of all methods, and place them in the NEMI data base so as to provide national access through the Internet. They will also be placed on a USGS Web page.

---

NWQL passes test with flying colors—  
A clean bill of health from State

The Colorado Department of Public Health and the Environment (CDPHE) inspected the National Water Quality Laboratory January 16, and found the Laboratory to be in full compliance with all Colorado Hazardous Waste Regulations.

The CDPHE inspectors examined NWQL's satellite accumulation areas, the 90-day storage area, emergency plans, training records, and other documents. Inspectors found the NWQL to be much improved over the last inspection conducted when the Lab was on Ward Road. No deficiencies were noted.

"In all my years within safety, I've NEVER seen a report without a violation of some kind, so consider what the NWQL did as quite an accomplishment!" said Bill Miller, bureau safety manager, in a letter of congratulations.

NWQL Chief Greg Mohrman, in a statement to employees and contractor staff, said he was "extremely gratified" about passing the Resource Conservation and Recovery Act hazardous waste inspection. He thanked all personnel for their excellent work and the outstanding results. "To me it shows true teamwork and an attitude for environmental stewardship and responsibility," said Mohrman. It demonstrates that we are "doing the right thing with the waste that we generate."

## NWQL seminar schedule

Richard L. Reynolds, USGS Research Geologist, Earth Surface Processes Team  
January 16, 2002

“Dust—Past, Present, and Future”

Overview of USGS research on dust generation, dust transport pathways, atmospheric transport of toxic metals and microbes.

E.M. Thurman, USGS Hydrologist,  
Kansas District Office  
March 6, 2002

“Pathways of Diazinon Degradation in Tap Water”

The chlorination and hydrolysis pathways for the degradation of diazinon were determined by kinetic experiments with identification by ion-trap LC/MS/MS.

---

## CONSULTING THE ORACLE

### Reanalysis request form provides useful Web service

The Laboratory’s USGS Web site titled “District Rerun Request Form” provides a useful service that customers appreciate, according to Thomas Bushly, NWQL computer engineer. The form is meant to be used only for reanalysis of inorganic and carbon samples.

The data base uses Oracle with a Web interface and can be accessed through the Laboratory’s USGS Home Page at URL <http://www.nwql.cr.usgs.gov/USGS>. Click on “Services” in the left-hand column and then use the hot button titled “District Rerun Request Form” near the bottom of the right-hand column.

Customers can submit the request in either Netscape or Internet Explorer. The application uses station, date, time, WATSTORE (Water Data Storage and Retrieval System) code, method character, remark, value and medium code to process the reanalysis request. Entry in these fields is mandatory and the required information can be obtained from the Watlist entries. (Watlist is the report that is produced when the District processes lab data into the National Water Information System data base.) If mandatory fields do not have entries, users will receive an error message on the screen.

---

**CHINESE DELEGATES TOUR LAB**—A delegation from the Yangtze Valley Water Resources Protection Bureau in the People’s Republic of China visited the NWQL March 11 for a briefing by Chief Greg Mohrman and a tour of the Laboratory. From left are Peng Shenghua, senior engineer; Peng Biao, division chief, professor, and senior engineer; and Weng Lida, director general, professor, and senior engineer. The delegation, following a stopover at the U.S. Geological Survey Headquarters in Reston, flew from Denver to California March 12 to visit the District Office in Sacramento.



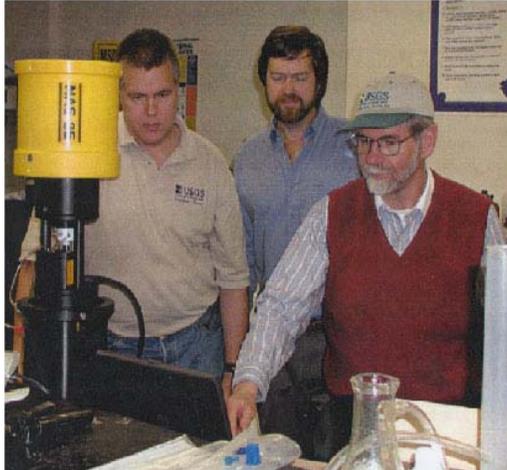
---

## Patton, Rogerson collaborate with Louisiana District New field analyzer measures nutrients

Chemists Peter Rogerson (USGS Office of Water Quality) and Charles Patton (NWQL Methods R&D Program) have worked with hydrologists Dennis Demcheck and Stanley Skrobialowski in the Louisiana District for the past 15 months to evaluate and develop methods for measuring near real-time nitrate concentrations in the Atchafalaya River.

This collaboration is driven by a need to measure nitrate from the Atchafalaya, which is thought to contribute substantially to seasonal episodes of hypoxia in the Gulf of Mexico. Hypoxia, a depletion of dissolved oxygen from coastal waters that can lead to stress or even death of bottom-living and bottom-feeding marine organisms, increasingly threatens highly productive fisheries along the Louisiana and Texas coasts of the Gulf of Mexico.

As explained by Goolsby and Battaglin (2000), freshwater from the Atchafalaya and Mississippi Rivers provide two elements that promote hypoxia: (1) large volumes of freshwater that help to stratify the Gulf of Mexico, and (2) large quantities of nitrate that promote algal growth.



**PORTABLE NUTRIENT ANALYZER—**Hydrologists Stanley Skrobialowski (from left) and Dennis Demcheck, at the Louisiana District Office in Baton Rouge, discuss the NAS-2E nutrient analyzer with Peter Rogerson, senior chemist with the Office of Water Quality. Rogerson and Charles Patton, NWQL research chemist, are collaborating with the Louisiana District to develop methods for measuring near real-time nitrate concentrations.

A commercially available, self-contained nitrate analyzer (W.S. Envirotech NAS-2E), which is capable of unattended operation for several weeks under ambient conditions, was chosen for this work. The NAS-2E can achieve high precision and accuracy with low detection limits because its principle of operation—reduction of nitrate to nitrite followed by colorimetric reaction and detection—is the same as that used by continuous-flow, bench-top analyzers used to measure nitrate at the NWQL.

Chemical methodologies provided by the vendor were not optimized for freshwater regimes because the NAS-2E analyzer was developed for seawater analysis.

Rogerson and Patton studied the mixing characteristics of the NAS-2E analyzer, optimized reaction conditions for freshwater analysis, and also developed an improved and more reliable cadmium reactor, which is crucial to the analyzer's long-term performance. In February, they traveled to Baton Rouge to transfer this technology to the Louisiana District.

During this visit, they demonstrated linearity and performance of methods that they developed at the NWQL for the NAS-2E analyzer and worked closely with Skrobialowski, Demcheck, and Charles (Kevin) Labbe, who will be responsible for operation and maintenance of the new analyzer. A key part of the Atchafalaya deployment involves near real-time telemetry of results, an area in which Louisiana District personnel are expert, having already developed telemetry systems to support their extensive real-time streamflow data networks.

Rogerson and Patton look forward to continuing this collaboration with the Louisiana District and report that similar opportunities for collaboration with the Illinois, New Jersey, Texas, and Oregon Districts are being explored.

---

Goolsby, D.A., and Battaglin, W.A., 2000, Nitrogen in the Mississippi Basin—Estimating sources and predicting flux to the Gulf of Mexico: U.S. Geological Survey Fact Sheet 135-00, 6 p.



**WORKSHOP BREAK—**Timothy Miller (left), chief-to-be of the newly merged National Water-Quality Assessment Program and the Office of Water Quality, chats with Jim Eychaner, Western Region Water-Quality Specialist, during a break in the District Water-Quality Workshops in Denver. The workshops were held December 4–6 and January 29–31.

## Edward Zayhowski dies

Edward J. Zayhowski, chief of the Plasma Unit, passed away February 19, following a long bout with cancer. A funeral mass was held February 23. Anyone wishing to send their condolences may use the following address: The Zayhowski Family (Mary Ellen, Nicole, and Courtney) 10527 Quail Ct., Westminster, CO 80221.

Ed worked at the NWQL for about 25 years after transferring from the USGS laboratory in Albany, New York.

---

## New publications (NWQL authors in boldface)

### **METHOD REPORT**

**Zaugg, S.D., Smith, S.G., Schroeder, M.P.,** Barber, L.B., and **Burkhardt, M.R.**, 2002, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of wastewater compounds by polystyrene-divinylbenzene solid-phase extraction and capillary-column gas chromatography/mass spectrometry: U.S. Geological Survey Water-Resources Investigations Report 01-4186, 37 p.

### **JOURNAL ARTICLES**

**Ferrer, Imma, and Furlong, E.T.**, 2002, Accelerated solvent extraction followed by on-line solid-phase extraction coupled to ion trap LC/MS/MS for analysis of benzalkonium chloride in sediment samples: *Analytical Chemistry*, v. 74, no. 6, p. 1275-1280.

Kolpin, D.W., **Furlong, E.T.**, Meyer, M.T., Thurman, E.M., **Zaugg, S.D.**, Barber, L.B., and Buxton, H.T., 2002, Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999-2000—A national reconnaissance: *Environmental Science & Technology*, v. 36, no. 6, p. 1202–1211.

**Patton, C.J.**, Fischer, A.E., Campbell, W.H., and Campbell, E.R., 2002, Corn leaf nitrate reductase—A nontoxic alternative to cadmium for photometric nitrate determinations in water samples by air-segmented continuous-flow analysis: *Environmental Science & Technology*, v. 36, no. 4, p. 729–735.

---

## Electronic ASR under development

The Office of Water Quality and the Water Resources Discipline have provided funding to the National Water Quality Laboratory (NWQL) to develop an electronic Analytical Services Request (eASR) prototype.

Currently (2002) a paper Analytical Services Request (ASR) form is included with the sample shipment and then checked and keyed into the Laboratory Information Management System (LIMS) on arrival at the lab. This can be a source of error and delay if all information is not available for the samples or if information is misread and entered with errors into the system.

Often, data already have been entered into an electronic form for use with the National Water Information System (NWIS). Using a single point of entry for both NWIS and the LIMS could reduce or eliminate common errors.

The NWQL is working with Frank Crenshaw (Colorado District, Grand Junction Subdistrict Office) to implement and test procedures for the Personal Computer Field Form (PCFF) software. Data are formatted and the file transferred to the NWQL via the Internet file upload function. The software at the NWQL performs the same checks that are used at sample login.

Immediate feedback is given to the field personnel so that they can catch any errors. Acceptable data are stored in a data-base table and referenced with a unique number. The PCFF software can print a completed paper ASR to be included with the shipment that has the unique number as a barcode. When the samples arrive at the NWQL, the barcode is read to pull up the stored entry. This system is currently in the preliminary testing phase.

Once the system is fully functional, there are many more opportunities for enhancements that can benefit the NWQL and the field personnel. Individuals who would like to be involved with the test or would like to interface the NWQL software to their own data-collection and entry programs should contact Gary Cottrell (cottrell@usgs.gov).

● Sandy Turner

**DATA RETRIEVAL**—James Lewis, NWQL chemist, demonstrates the features of the new Laboratory Information Management System for water-quality specialists who toured the Laboratory during their workshops in December and January in Denver. From left to right are Clint Lietz, Florida District; Celeste Journey (partially hidden), South Carolina District; Robert Broshears, Central Region; Lewis, at computer; and Frank Rinella III, Oregon District.



---

## Client survey coming soon

The NWQL is preparing a client survey to gather information from its USGS customers on lab products, services, customer service, and performance. Watch for an E-mail announcement (Rapi-Note from Business Development Team), and then please take the time to participate. We welcome your opinions and ideas.

---

## Water data flows to the Web

### USGS site consolidates information from 48 databases nationwide

It may be water under the bridge, but it doesn't have to be forgotten. The U.S. Geological Survey possesses historical information about water —stream flows, well levels, pH amounts and more — dating back more than 100 years. But the information was stored in 48 National Water Information System databases and access was limited.

A new Web site, however, provides a single point of access to all of that data as well as real-time information about water in all 50 states, the District of Columbia and Puerto Rico. The site, called NWISWeb ([water.usgs.gov/nwis](http://water.usgs.gov/nwis)), gives water managers, scientists, engineers, emergency managers, recreational water users and others a place to find surface and ground-water information collected in the past or still being collected.

"We have created a nationally seamless view of these 48 data-bases," said David Briar, a Montana-based USGS hydrologist who helped develop NWISWeb. "This is the first real attempt to put a Web interface on our water database."

USGS, charged with collecting Earth science information and supplying it to the public, began offering water data on the Web in 1995. However, that site was limited to stream-flow information — historical information and, later, current data transmitted by satellite from some 7,570 monitoring sites along streams. Other state-specific sites sprang up as well.

In 1998, USGS developers began designing a system that would display water information from all 48 databases, plus data such as precipitation and temperature. They also wanted to include information about more varieties of water bodies, such as lakes, wells and springs. NWISWeb is the result.

"I think it helps the American public see the vastness of the amount of data we have," said Susan Trapanese, chief of national Internet data systems for USGS. "People can see data much quicker than they could in the past and better find out what they really want."

About 1.5 million collection sites are represented on the Web site (see box), which contains the historical data and the current information from field workers and monitoring sites. Each of the 48 NWIS databases sends data to USGS headquarters in Reston, VA., where a central NWISWeb database server and Web server are housed.

Visitors to the Web site can use the information to evaluate water supplies and quality, forecast floods or droughts, help operate hydropower plants, navigate waterways or simply plan safe fishing, canoeing or rafting expeditions, according to USGS officials. Real-time water-level information helped some users respond when tropical storm Allison hit Texas in June, officials said.

The data quality was a major issue in developing the system, Briar said. Copies of the same data have been placed, and sometimes altered, throughout the 48 databases, resulting in incomplete or inaccurate datasets. The new system includes software to help local offices identify questionable data and prevent it from being included.

"We're trying to purge the data that we feel is highly questionable," Briar said. "Part of the process is to leave control of the data as close to where the data was collected as possible."

Although the site was intended to help the public access water data, USGS water officials have found it useful, too, Briar said. Previously, accessing an NWIS database from another state required getting authorization or a copy of the information, he said. Now USGS researchers can use NWISWeb.

"It's really freed up the way we do business internally," Briar said. "We're using the Web more and more to do our own internal work."

There are plans to develop a mapping utility for NWISWeb, Trapanese said. Currently, a user needs longitude and latitude coordinates or must know the county or the name of a specific body of water. A map interface would be easier to navigate, she said.

Briar also said tools will be added to help users better understand what they're viewing.

"We've just gotten the data out, and I see significant enhancements coming down the pike to better place this data in context and explain what it means," Briar said. "That's what we're really focusing on."

## A WELLSPRING OF DATA



The online version of the U.S. Geological Survey National Water Information System, NWISWeb, provides historical and current data from more than 1.5 million stations, including:

- 338,000 water-quality sites where samples are taken from rivers or aquifers.
- 21,200 past and present stream-flow sites.
- 7,570 real-time stream, lake, reservoir, groundwater and meteorological sites.
- 1.37 million wells.

*Reproduced with permission of Federal Computer Week, Copyright 6 August 2001, FCW Government Technology Group. All rights reserved.*



**DIAZINON DEGRADATION**—E.M. Thurman describes the degradation of diazinon in tap water during a seminar March 6. He said the chlorination and hydrolysis pathways for degradation varied dramatically and went on to suggest that diazoxon should not be an important degradate in tap water but rather the phenol might be more important.

## Mailbox set up to handle sample inquiries

A new mailbox has been established to send and receive inquiries regarding sample submittal, receipt, and login. It is similar to LabHelp and is being monitored by several employees in the Support Services Section.

The mailbox name is [lablogin@usgs.gov](mailto:lablogin@usgs.gov).

Customers should use this mailbox for the following inquiries:

- For immediate contact with the Login Unit concerning time-sensitive samples;
- To update information on an Analytical Services Request (ASR) form for samples shipped within the past 14 days;
- To add or delete lab codes or schedules; and
- To discard samples sent in error.

The NWQL, in turn, will use the new mailbox to communicate with the shipper or project chief on such issues as the omission of an ASR, use of invalid lab codes or schedules, broken or unchilled samples, improper packing, and the need for required documentation.

Be sure to use this new mailbox instead of LabHelp if you need direct contact with the Login Unit. For questions or comments, contact Will Lanier, supervisor, telephone 303-236-3710 or send E-mail to [wdlanier@usgs.gov](mailto:wdlanier@usgs.gov).



### **DUST FLUX PLAYS CRITICAL ROLE—**

Richard Reynolds makes a point in describing the 2 billion metric tons of eolian dust (windblown silt and clay) that is transported each year in the atmosphere. Dust not only affects climate today—as it has in the past—but plays important roles in ecosystem dynamics. He spoke at NWQL seminar January 16.

---

### **Newsletter Staff**

Jon Raese, Editor  
Diana Rime, Editorial Assistant

*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, Denver Federal Center, Denver, CO 80225-0046. For copies, call Diana Rime (303) 236-3502 or send e-mail request to [dcrime@usgs.gov](mailto:dcrime@usgs.gov).

The purpose of *Water Logs* is to improve communications on water-quality issues in the U.S. Geological Survey. The Newsletter is for administrative use only. It should not be quoted or cited as a publication. The use of trade, product, or firms names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Geological Survey. Visit the NWQL Home Page Web site at <http://www.nwql.cr.usgs.gov/USGS>.