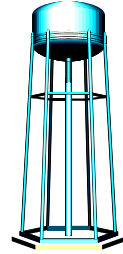




# THE WATER SPOUT



Nebraska Department of Health and Human Services  
Division of Public Health

Volume XXIII "SAFE DRINKING WATER IS WHAT WE SPOUT ABOUT" January 2010

## DHHS Public Health Environmental Lab Update

By Mary Boden, Lead Chemist

DHHS PHE Laboratory is not increasing fees this year. Over the last few years, postage, supplies, equipment maintenance and staffing costs have continued to significantly increase. We understand that, with the present economy, everyone must watch the bottom line. We continue to do everything possible to save where we can and still provide you with timely quality data.

The cost of sample kit(s) and the postage to mail the kit(s) to you is included in the cost of the test(s). Last year, the laboratory started charging for kits that are not returned to the lab, for kits that are cancelled by the client after they are received at the lab for testing, or kits that are rejected due to improper collection. You have at least 90 days after you receive a kit to return the kit to the lab. After that time, you will receive an invoice for the cost of the kit and the postage.

An upcoming change at the lab will be the availability of our SDWIS clients to enter our LIMS Web Portal and view your reports in real-time. We are working with the State to address their network security concerns. This is expected to become available sometime in March 2010. Along with this LIMS change is the option of receiving your reports via email or fax. If you are interested in this, please let our customer service staff know, and we will get this set up for you. Customer Service can be reached by calling (402) 471-3935 or by e-mail at: [lab@dhhs.ne.gov](mailto:lab@dhhs.ne.gov).

A reminder for those clients with zip codes starting with 691-, 692- and 693: The USPS made some route changes in the last quarter of 2009, causing delays in the samples being mailed from these zip codes. The USPS has worked with postmasters in the affected areas to make sure that those kits stamped "priority" make it on the McCook-Lincoln truck in the North Platte post office. Please

remember that priority mail is not a guaranteed next day delivery service, but the USPS will make every effort to deliver it overnight. You may want to contact the USPS or other overnight courier service prior to collecting your sample(s) to see when samples need to be taken to the service to make the truck. Samples can always be sent via USPS Express or some other overnight courier service.

If you intend to drop off bacti samples at the laboratory during non-business hours, please call the laboratory during business hours to notify us of your intent so that staff working in the appropriate area can be notified of the pending sample. Samples left in the drop box without prior notification may not be picked up by staff until the next business day.

Please be sure that you read all sample directions that you receive with your sample collection kits. Collection directions change and samples received incorrectly collected will need to be recollected. Recollecting samples increase your cost, and that makes more work for all of us.

### In This Issue

MIT Arsenic Research _____	pg. 2
Fluoride Recognition _____	pg. 3
Contact Information _____	pg. 3
Continuing Education _____	pg. 4
Water Operator Training _____	pg. 5

*The Water Spout* is published for public water systems and their operators by the Nebraska DHHS Division of Public Health, Drinking Water Program.

Website address:

<http://www.dhhs.ne.gov/enh/pwsindex.htm>

Main phone number: (402) 471-2541

**24-hour Emergency Phone:**

**(402) 499-6922**

## **MIT Research on Arsenic Contamination**

Researchers in MIT's Department of Civil and Environmental Engineering believe they have pinpointed a pathway by which arsenic may be contaminating the drinking water in Bangladesh, a phenomenon that has puzzled scientists, world health agencies and the Bangladeshi government for nearly 30 years. The research suggests that human alteration to the landscape, the construction of villages with ponds, and the adoption of irrigated agriculture are responsible for the current pattern of arsenic concentration underground. The findings also indicate that drinking-water wells drilled to a greater depth would likely provide clean water.

Bangladesh is the seventh most populous country in the world, and tens of millions of its citizens have been exposed to arsenic in their water over the past several decades. As many as 3,000 Bangladeshis die from arsenic-induced cancer each year. Today, approximately 2 million people in the country live with arsenic poisoning, which manifests as skin lesions and neurological disorders and causes cardiovascular and pulmonary diseases and cancer. Allan H. Smith, a professor of epidemiology at the University of California - Berkeley, calls it "the largest mass poisoning of a population in history."

This pervasive incidence of arsenic poisoning and its link to drinking water were first identified in the early 1980s. This was not long after the population began switching from surface water sources like rivers to groundwater from tube wells — part of a national effort to decrease the incidence of bacterial illnesses caused by contaminated drinking water. But most of the tube wells have been drilled to less than 100 feet, where they draw water directly from the arsenic-contaminated shallow aquifer. Scientists have struggled to understand how the arsenic, which is naturally occurring in the underground sediment of the Ganges Delta, is getting into the groundwater.

By 2002, a research team led by Charles Harvey, the Doherty Associate Professor of Civil and Environmental Engineering at MIT, had determined that microbial metabolism of organic carbon was mobilizing the arsenic off the soils and sediments, and that crop irrigation was almost certainly playing a role in the process. But the exact sources of the contaminated water have remained elusive, until now.

In a paper appearing online in *Nature Geoscience* (Nov. 15), Harvey, former graduate students Rebecca Neumann and Khandaker

Ashfaque and co-authors explain that ponds excavated for the purpose of providing soil to build up villages for flood protection are the source of the organic carbon that presently mobilizes the arsenic in their 6-square-mile test site. The carbon settles to the bottom of the ponds, then seeps underground where microbes metabolize it. This creates the chemical conditions that cause arsenic to dissolve off the sediments and soils and into the groundwater.

The researchers also found that in their test area, which is flooded by annual monsoons, the rice fields irrigated with arsenic-laden water actually serve to filter out much of the arsenic from the water system.

Neumann, now a postdoctoral associate at Harvard University, took seven trips and spent nearly a year doing fieldwork in Bangladesh, studying the hydrologic behavior and chemical nature of rice fields and ponds, and performing tests on rice field and pond waters to determine if the organic carbon in these water bodies would stimulate arsenic mobilization. She and Ashfaque developed an understanding of the surface and underground water flow patterns over a seven-year period, using natural tracers and a 3-D model to track rice field and pond water as it traveled into and through the subsurface.

"We extensively studied the water in about 50 irrigation wells, in 40 to 50 drinking water wells, and also in 80 monitoring wells including seven injection wells we created specifically for testing purposes," says Ashfaque, who spent two months a year in Bangladesh from 2001-2006 overseeing installation of the team's test wells, performing injection and pumping experiments, and testing the wells' water. He also developed the 3-D numerical model of the site's hydrogeological structure.

"When we compared the chemical signatures of the different water sources in our study area to the signatures of the aquifer water, we saw that water with high arsenic content originates from the human-built ponds, and water with lower arsenic content originates from the rice fields," says Neumann. "It's likely that these same processes are occurring at other sites, and it suggests that the problem could be alleviated by digging deeper drinking water wells below the influence of the ponds or by locating shallow drinking wells under rice fields." The researchers suggest that irrigation wells remain at the shallow level.

(Summarized from MIT News, November 16, 2009, By Denise Brehm, Civil and Environmental Engineering)

# REGULATORY UPDATE

## 2008 CDC Fluoride Recognition

There are now 65 public water systems in Nebraska that adjust the fluoride level in the water they deliver to their customers. Every year, the Centers for Disease Control (CDC) receives reports from the States regarding the public water systems that fluoridate. These reports are reviewed by CDC and, based on the results of the evaluations, CDC officially recognizes those PWS that do an exemplary job of adjusting the fluoride level and keeping the average within the optimum range (0.8 to 1.5 mg/L) for 12 consecutive months. For calendar year 2008, CDC has provided Certificates of Recognition to the State of Nebraska for 41 public water systems that fluoridate. Those systems are:

Village of Adams	City of Albion
Village of Allen	Village of Arlington
City of Auburn	City of Bassett
Beatrice State Dev. Center	City of Blair
City of Blue Hill	Cedar-Knox Rural Water Project
City of Columbus	Village of Emerson
City of Fairbury	City of Falls City
City of Fremont	City of Gering
City of Gordon	Village of Hallam
City of Hartington	City of Holdrege
City of Kearney	City of Laurel
City of Lincoln	City of Lyons
Metropolitan Utilities District of Omaha	
City of Nebraska City	City of Ogallala
City of Osmond	City of Papillion
Village of Pender	City of Plattsmouth
City of Red Cloud	City of Scribner
City of South Sioux City	City of Springfield
City of Syracuse	City of Tilden
Village of Valparaiso	Village of Wausa
City of Waverly	City of Wayne

The Nebraska Department of Health and Human Services Division of Public Health extends congratulations to the systems listed here, for their diligent efforts in maintaining fluoride at the optimum level for protection against tooth decay and protecting public health.

## **Final Report on Alamosa Salmonella Outbreak**

On November 18, 2009, the Colorado Department of Public Health and Environment released its final report regarding the Salmonella outbreak that struck Alamosa in 2008. The outbreak resulted in hundreds of people in the community becoming ill and had a significant economic impact on the city. By the time the outbreak subsided, there were 442 reported cases of illness, typically

involving vomiting and diarrhea. There was one death associated with the outbreak. Overall, state health experts estimate that up to 1,300 people may have been ill in the town of 8,900. For about three weeks during the outbreak, Alamosa residents were advised to drink bottled water or boil their water, and many businesses temporarily closed.

The health department's final report provides a comprehensive look at the disease outbreak, the response to the outbreak, and the conclusion of the 18-month investigation into how the city's drinking water became contaminated.

The 65-page report concludes that animal waste most likely contaminated a concrete in-ground water storage tank that had several holes and cracks. A water sample collected during the outbreak indicated that water in the tank contained bacteria. Additional site visits conducted in 2009 found animal footprints in the snow around the tank, and a photograph in July 2009 captured bird feces on a corner of the tank that was repaired at the time of the outbreak. While these observations were made in 2009, they likely are representative of the animal activity that could have contaminated the water supply in the tank in 2008.

Alamosa was granted a waiver from state requirements to disinfect its drinking water in 1974, so water being served to the public in Alamosa at the time of the outbreak was not chlorinated. The investigation showed that only a small quantity of bird or animal feces contamination may have led to the salmonella outbreak. This kind of outbreak may have been very difficult to prevent in a system that did not chlorinate its water.

The state is continuing its review of all public drinking water systems with disinfection waivers, and has withdrawn 72 of them since the Alamosa outbreak.

The report has been posted to the department's Web page at:  
<http://www.cdphe.state.co.us/wq/drinkingwater/AlamosaOutbreak.html>

(Colorado Department of Health and Environment news release; November 18, 2009)

## Change of Personnel or Contact Information

By Helen Donlan, Monitoring and Compliance

Periodically, a Water Operator retires or moves, a new Mayor or Board Chair is elected, the Municipal Clerk/Treasurer changes or new management facility serving drinking water to the public. If your Public Water (Continued on page 4)

## Grades I - IV and VI Continuing Education – 2010

**Please contact the appropriate organization at the phone number provided for further information regarding these scheduled training activities.**

Date	Location	Topic(s)	Hours Available for Grade					Contact	Phone
			I	II	III	IV	VI		
February 3	Norfolk	Water	3	3	3	3	0	DHHS	402-471-0523
February 9	Fremont	Water	TBA	TBA	TBA	TBA	TBA	LoNM/AWWA	402-476-2829
February 9	Ainsworth	Water	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
February 9	Nebraska City	Backflow	5	5	5	5	5	NeRWA	402-443-5216
February 10	Broken Bow	Water	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
February 10	Aurora	Water	TBA	TBA	TBA	TBA	TBA	LoNM/AWWA	402-476-2829
February 11	Norfolk	Backflow	5	5	5	5	5	NeRWA	402-443-5216
February 11	Beatrice	Water	TBA	TBA	TBA	TBA	TBA	LoNM/AWWA	402-476-2829
February 18	Grand Island	Backflow	3	3	3	3	5	CCC	1-877-222-0780
February 23	Hildreth	Water	5	5	5	5	0	MAP	308-528-1048
March 4	Papillion	Backflow	TBA	TBA	TBA	TBA	TBA	TBR	1-888-305-5292
March 10	Bayard	Water	TBA	TBA	TBA	TBA	TBA	LoNM/AWWA	402-476-2829
March 11	Kearney	Backflow	TBA	TBA	TBA	TBA	TBA	Reg. 12 ABPA	308-535-6740
March 11	Ogallala	Water	TBA	TBA	TBA	TBA	TBA	LoNM/AWWA	402-476-2829
March 16	Gretna	Water	5	5	5	5	0	CCC	1-877-222-0780
March 17	Kearney	Meter School	TBA	TBA	TBA	TBA	TBA	LoNM	402-476-2829
March 22-24	Columbus	Spring Conf.	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
March 29	North Platte	Water	3	3	3	3	0	DHHS	402-471-0523
April 1	Mahoney St. Park	Pipe Workshop	5.5	5.5	5.5	5.5	0	AWWA	402-441-8009
April 6	Sidney	Backflow	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
April 7	Crawford	Backflow	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
April 7	Columbus	Backflow	3	3	3	3	5	CCC	1-877-222-0780
April 8	Fremont	Water	5	5	5	5	0	DHHS	402-471-0523
April 13	Gering	Water	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
April 14	North Platte	Water	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
April 20	Lincoln	Backflow	TBA	TBA	TBA	TBA	TBA	E. Nebr. ABPA	402-981-7302
April 27	McCook	Water	TBA	TBA	TBA	TBA	TBA	LoNM/AWWA	402-476-2829
April 27	Bertrand	Water	5	5	5	5	0	MAP	308-528-1048
April 28	Alma	Water	TBA	TBA	TBA	TBA	TBA	LoNM/AWWA	402-476-2829
April 29	Burwell	Water	TBA	TBA	TBA	TBA	TBA	LoNM/AWWA	402-476-2829
May 4	Atkinson	Backflow	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
May 4	Cambridge	Water	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216
May 5	Valentine	Backflow	TBA	TBA	TBA	TBA	TBA	NeRWA	402-443-5216

AWWA – Nebraska Section American Water Works Association  
 CCC – Central Community College, Grand Island (When calling the 877 number, select extension #7527, or call 308/398-7527.)  
 DHHS – Nebraska Department of Health and Human Services, Division of Public Health  
 E. Nebr. ABPA – Eastern Nebraska Section of American Backflow Prevention Association  
 LoNM – League of Nebraska Municipalities, Lincoln  
 MAP – Midwest Assistance Program  
 NeRWA – Nebraska Rural Water Association, Wahoo  
 Reg. 12 ABPA – Region 12 of American Backflow Prevention Association (When calling this number, select extension 6.)  
 TBA – Hours not assigned at time of printing  
 TBR – Total Backflow Resources, Salix IA

**(Contact Information – continued from page 3)** System should experience a change such as those listed above, the department needs to be notified in order to make the corrections to our information data bases. Because this information becomes a public record, we must maintain signed documentation in our files justifying a change to the public record.

The easiest means of bringing any change in a public water system to our attention is by utilizing the Change of PWS Personnel Form. This form may be obtained by contacting the Office of Drinking Water and Environmental Health, Monitoring and Compliance program at, **402-471-2541, 402-471-2713 or by e-mail at: [helen.donlan@nebraska.gov](mailto:helen.donlan@nebraska.gov).**



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