



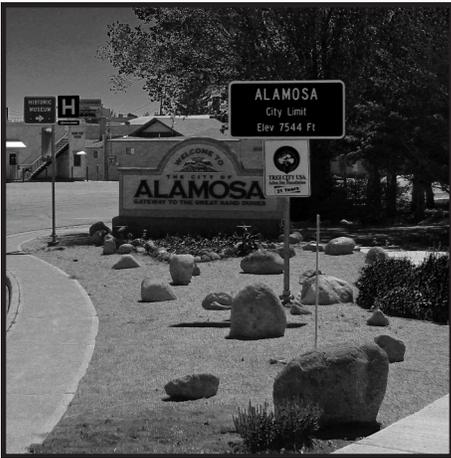
# TAP TALK H<sub>2</sub>O!

Division of Public Health • Winter 2014

Tapping Into Good Health

## When Good Groundwater Goes Bad

by Keith Harrison



When the topic of bacteria comes up in the Office of Drinking Water, we are usually talking about coliform bacteria such as total coliform or *E. coli*. However, other harmful bacteria may occur in drinking water. In 2008 in the small city of Alamosa, Colorado, 1,300 people were sickened by municipal drinking water. The outbreak lasted three weeks, and one person died. However, the culprit was not *E. coli*; it was *Salmonella*.

*Salmonella* is the seventh most common cause of outbreaks in public water

systems<sup>1</sup>. *Salmonella* causes an infection called salmonellosis. Most people infected with *Salmonella* develop diarrhea, fever, and abdominal cramps 12 to 72 hours after exposure. The illness usually lasts from four to seven days, and most people recover without treatment. A minority of people may need to be hospitalized due to severe diarrhea. *Salmonella* deaths due to drinking water are infrequent.

Waterborne illnesses or outbreaks caused by drinking water in the U.S. are uncommon. Many public water systems use chlorine disinfection, which is a very effective means of killing bacteria. However, not all public water systems disinfect their water. In Delaware, all surface water systems use disinfection, but many groundwater systems choose not to disinfect the drinking water. This makes sense, given bacteria do not live in groundwater aquifers. If bacteria are detected in a groundwater system, it is usually because the integrity of the water system was compromised.

The Alamosa public water system served over 8,900 people at the time of the outbreak. The infrastructure consisted of seven deep artesian wells, two elevated storage tanks, one ground-level storage tank, and approximately 50 miles of distribution lines. Water from the wells was not chlorinated prior to distribution. The city had a history of occasional total coliform detections, but no other unusual patterns of non-compliance with drinking water regulations.

Everything appeared normal on March 5, 2008 (all dates hereafter refer to the year 2008). Routine total coliform samples were collected on that day. The results were negative; however, the samples were collected at improper locations for the Total Coliform Rule. On March 6, the onset of salmonellosis symptoms appeared in the first case. By March 12, three cases were reported, and on March 17, the Colorado Department of Public Health and Environment (CDPHE) reported the outbreak to Colorado's Safe Drinking Water (SDW) program. The SDW had an Acute Team developed to respond to drinking water conditions that may pose an acute health risk to the public.

The SDW team instructed the city to collect total coliform samples on March 17. By March 18, there were 43 documented cases of salmonellosis. And on March 19, the results of the water samples from March 17 showed one positive result for total coliform bacteria, and two samples noted to be "turbid." Turbidity in drinking water is an indication that pathogens may be present. The CDPHE issued a bottled water advisory on March 19.

Following March 19, the outbreak response was fully implemented. The response included collecting more samples from the distribution system, chlorinating water towers, chlorinating a ground-level covered reservoir and distribution lines, and starting a flushing program. A number of water samples tested positive for *Salmonella* and the governor declared an emergency. The full response was a coordinated effort between many state agencies, including the National Guard.

By March 24, *Salmonella* was detected throughout the city's water system. The chlorination of the entire distribution system and storage started a few days earlier and was completed on April 2. Based on historical evidence from other notable *Salmonella* outbreaks where other cities had failed to control an outbreak when only chlorinating a part of the water system, state officials decided that the best response would be to chlorinate every part of the distribution system.

During the preliminary investigation, the SDW team focused on the ground-level reservoir, the Weber reservoir. The Weber reservoir was in a state of disrepair and deterioration with sediment over one foot deep in the bottom. The reservoir was a concrete structure, and it had a number of holes and cracks in it. In the final analysis, the Weber reservoir was thought to be the source of the contamination since birds were a known source for the *Salmonella* strain, and bird droppings were observed on the lid of the structure near the cracks. Investigators believed that the contamination may have come from as little as one or only a very few droppings.

At this time, drinking water chlorination is the most effective means of controlling pathogens in a large water system. The city of Alamosa had been granted a water chlorination waiver from the Colorado state drinking water program. In the best of situations, the city may have been able to provide safe drinking water indefinitely. Unfortunately, there were a number of minor defects and practices that led to the outbreak.

Much of the information presented in this article came from the following publication: Falco, Ron, P.E., & Williams, SI, P.E., Waterborne *Salmonella* Outbreak in Alamosa, Colorado, March and April 2008, Outbreak Identification, Response, and Investigation, Colorado Dept. of Health and Environment, Safe Drinking Water Program, Water Quality Control Division, November 2009.

<sup>1</sup>Centers for Disease Control and Prevention web page, [www.cdc.gov/healthywater/drinking/public/water\\_diseases.html](http://www.cdc.gov/healthywater/drinking/public/water_diseases.html)



**Know what's below.  
 Call before you dig.  
 IT'S THE LAW!**

Delaware Law requires anyone digging to give notice at least two full business days (not counting weekends or holidays), prior to the day they plan to start work. This law includes professional excavators as well as property and homeowner's contractors.

Call Miss Utility of Delmarva at 811 or 1-800-282-8555, or visit [www.missutilitydelmarva.com](http://www.missutilitydelmarva.com) any time of the day or night and follow these steps:

1. **WAIT** for the site to be marked with paint, flags or stakes by the utility line owners.
2. **RESPECT THE MARKS.**
3. **DIG WITH CARE.** This means hand digging within two feet on either side of any marked facility.

## The Administrator's Corner



by Ed Hallock,  
Program Administrator, Office of Drinking Water

I would like to begin this issue by noting that the U.S. Environmental Protection Agency (EPA) is celebrating the 40th anniversary of the Safe Drinking Water Act (SDWA). Safe drinking water is essential for healthy communities, and is central to virtually every aspect of our local and national economies. The EPA is commemorating this important milestone through a communication campaign that brings awareness to the importance of drinking water services throughout our nation. They are inviting you to be a part of this effort, and to share in the celebration of our collective accomplishments over the past 40 years. The EPA launched <http://www2.epa.gov/safedrinkingwater40> as the primary portal for information on SDWA anniversary activities. Thanks for all you do to ensure safe drinking water!

The Advisory Council for Certification of Public Water System Operators continues to work on implementing new regulations. There are two important changes. First, we now have a limited license which is available to operators of non-transient, non-community water systems. The Environmental Training Center (ETC) located at the Owens Campus of Delaware Technical Community College in Georgetown developed a short course for this license, and will hold the first classes February, 2015. The 16-hour course will be held on four nights, and is designed to prepare school, child care facility, and small non-transient, non-community water system employees to become certified as a State of Delaware water system operator at their facility. You can call the ETC at 302-855-5900 to learn more.

The second change is to the minimum number of continuing education hours required to renew your operator's license. Everyone must now obtain 20 hours of continuing education every two years. In addition, 10 of those hours must be directly related to process control. Look at the course descriptions when signing up for classes to ensure that you are taking classes that count towards your minimum 10 hours of process-related continuing education.

Finally, I want to mention that Allison Diggins, an Environmental Health Specialist II with the Office of Drinking Water, has taken a position with the Delaware Department of Natural Resources and Environmental Control (DNREC), Division of Water. Allison was responsible for the northern territory and our three surface water systems. While Allison was only with us for about a year and a half, she learned quickly and was able to help her water systems maintain compliance with our regulations. I want to wish her much success as she begins her new career at DNREC.

### Reminders/Notes

- Water system owners are required to notify the Office of Drinking Water (ODW) when making **any** changes to a water system. ODW must also be notified of any chemical overfeeds or unusual events.
- Under the Revised Total Coliform Rule, all public water systems (except non-transient non-community water systems) will be required to submit a new Sampling Plan.

## Capacity Development: An Introduction

by Keith Mensch,  
Capacity Development Program Manager

The Capacity Development Program was established in the 1996 Amendments to the Safe Drinking Water Act (SDWA). The purpose of Capacity Development is to ensure Public Water Supplies (PWSs) provide safe drinking water in a consistent and cost-effective manner by providing assistance with technological, managerial, and financial capacities.

A review of your water system is conducted triennially by the Capacity Development staff. This review includes a check of your sample results, sanitary surveys, complaint records, operator certification status, and compliance data. This analysis identifies potential areas of concern, and determines how we may best be of service to you.

After areas of concern are identified, a staff member will request a meeting to review the water system and a self-assessment questionnaire. Through this discussion, a determination is made about the type of assistance Capacity Development can offer your system. Capacity Development is a flexible program; we understand that each water system is unique and therefore, so are the resolutions.

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## Invalidating Lead and Copper Samples

by Katie Huegel

This year, multiple water systems invalidated one or two, or even an entire round of lead and copper tap water samples, and mostly for the same reason: they are sampling from a site that does not meet site selection criteria. Examples include frost-free taps and maintenance sinks with taps that are not used for prolonged periods. Costs the water systems extra time and money, and is entirely preventable.

Under existing regulations, the Office of Drinking Water (ODW) may only invalidate a lead and copper tap water sample if one of the following criteria is met:

- The laboratory establishes that improper sample analysis caused erroneous results.
- The state determines that the sample was taken from a site that did not meet the site selection criteria of this section.\*
- The sample container was damaged in transit.
- There is substantial reason to believe that the sample was subject to tampering.

Simply because a result comes back high is not enough reason to support the invalidation of that sample. This leads to the next point. As a water operator, you need to ensure that these samples are collected correctly. For instructions on how to properly collect a lead and copper tap water sample, visit:

[http://www2.epa.gov/sites/production/files/documents/LCR\\_Sample\\_Form.pdf](http://www2.epa.gov/sites/production/files/documents/LCR_Sample_Form.pdf).

For more information, or to review your water system's sample sites, please call ODW at 302-741-8630.

*\*This should be a cold water tap normally used for human consumption (i.e., bathroom or kitchen).*

# Consumer Confidence Report: Electronic Delivery of the CCR

by Keith Harrison

On Jan. 13, 2013, the U.S. Environmental Protection Agency (EPA) published a memorandum to clarify the Consumer Confidence Report (CCR) Rule associated with delivery of the CCR. While reviewing the CCR Rule, the EPA decided that the existing regulatory language allowed for electronic delivery of the CCR.

In Delaware, some community water systems started using electronic delivery in 2013 (for the 2012 CCR). Now, nearly two years since the clarification was issued, many water systems are using electronic delivery to distribute their CCR. Unfortunately, a number of systems opted to take advantage of this method of delivery without fully understanding the requirements. Actually, the requirements have not changed – the goal is to get a CCR into the hands of each consumer served by a community water system. It makes no difference if the CCR is a paper copy or an electronic copy, such as would be displayed on a tablet or computer.

These points outline how Delaware water systems are using electronic delivery, and what common pitfalls to avoid:

- All of the water systems in Delaware using the electronic delivery option posted the CCR on their web page. The CCR is most commonly posted on the web as a PDF file.
- Once the file is posted on the web page, the water system needs to notify the customers that the file is available for review. This is where some misunderstandings may occur.
- Formerly, CCRs were usually mailed with the water bill, or mailed separately. With electronic delivery, most water systems still send a mailing that includes notification of the exact web address or URL of the CCR.
- A common pitfall is to simply notify consumers that the CCR is posted on the town's or water system's web page. Instead, the web URL that is given to customers must be the exact URL that will take them directly to the CCR PDF file.
- The two methods of direct delivery most used are notification printed on each water bill, or notification printed on a separate slip or postcard mailed to each bill-paying customer.
- In addition to the mailed notification, water systems should try to reach non-bill paying customers such as posting the CCR at the local library and other public places.
- Lastly, the water system must have paper copies of the CCR available for those that ask for them.

There are a number of features to the electronic delivery distribution option for the CCR. If you are interested in using this option next year for your CCR, and need more information regarding your water system, call the Office of Drinking Water (ODW) at 302-741-8630.

The next CCR training is scheduled for April 9, 2015 in the ODW training room, 43 South DuPont Highway, Dover. The training will run from 9:00 a.m. – 11:00 a.m. Water operators will receive two non-process related CEUs.

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## New Sample Forms Coming!

With ODW preparing for the move to have sample results submitted electronically, we felt that it would be a good time to update our chemical and bacteriological forms. We are planning to roll out the new forms at the beginning of next year.

Once the new forms are ready to be used, we will start sending them to all the systems that collect their own samples. The new forms are similar to the old forms, except they have been rearranged a bit, and have been designed to be easier to fill out. Another big change is that the back of the form will contain additional information regarding the samples that will go to the Delaware Public Health Lab. We've added hold times and lab courier pickup times.

Once you receive these forms, feel free to contact ODW at 302-741-8630 if you have any questions.

## STAFF CONTACT

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## Approved Sampler/Tester (AST) Training

An approved sampler/tester is certified by Delaware Health and Social Services for conducting routine water sampling and water quality analyses. The approved sampler/tester works under the supervision of a fully licensed water operator. During training, the participant will learn about waterborne bacteria and the Total Coliform Rule that regulates bacteria in drinking water. They will also learn about other chemicals and compounds that may enter drinking water. The focus of the training is to help participants understand drinking water regulations in relation to public health.

### Training Locations

- Newark: Oxford Building  
256 Chapman Road (University Plaza)  
Newark, DE 19702
- Dover: Office of Drinking Water  
43 South DuPont Hwy (Edgehill Shopping Center)  
Dover, DE 19901
- Milford: Delaware Rural Water  
210 Vickers Drive, Milford, DE 19963

## Upcoming Approved Sampler/Tester Trainings (AST)

*Note that registration is required for all trainings, call 302-741-8630.*

### AST Basic

The Basic course is a three-hour training for those new to the AST program.

#### AST Basic, 9:00 a.m. - noon

January 8, 2015, Dover  
February 12, 2015, Dover  
March 12, 2015, Dover  
March 19, 2015, Milford  
March 20, 2015, Newark  
April 9, 2015, Dover  
May 14, 2015, Dover  
June 4, 2015, Dover  
June 18, 2015, Milford  
June 19, 2015, Newark  
July 9, 2015, Dover  
August 13, 2015, Dover  
September 10, 2015, Dover  
October 8, 2015, Dover  
October 15, 2015, Milford  
October 16, 2015, Newark  
November 12, 2015, Dover

### AST Refresher

The Refresher course is a one-hour course designed to reinforce your knowledge of bacteria, sampling and testing, public health, and chlorine residuals. **Bring your testing kit** if you have one.

#### AST Refresher, 9:00 a.m. – 10:00 a.m. (\*except where noted)

January 22, 2015, Dover  
February 26, 2015, Dover  
\*March 19, 2015, 8:00 a.m., Milford  
\*March 20, 2015, 8:15 a.m., Newark  
March 26, 2015, Dover  
April 23, 2015, Dover  
May 28, 2015, Dover  
\*June 18, 2015, 8:00 a.m., Milford  
\*June 19, 2015, 8:15 a.m., Newark  
June 25, 2015, Dover  
July 23, 2015, Dover  
August 27, 2015, Dover  
September 24, 2015, Dover  
\*October 15, 2015, 8:00 a.m., Milford  
\*October 16, 2015, 8:15 a.m., Newark  
October 22, 2015, Dover

### Other Training Opportunities

- CCR Training, April 8, 2015  
9:00 a.m. -11:00 a.m., Dover
- Revised Total Coliform Training, April 30, 2015  
9:00 a.m. - noon, Dover

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Office of Drinking Water  
Edgehill Shopping Center  
43 S. DuPont Hwy  
Dover, DE 19901  
35-05-505