AQUA TALK

Colorado Department of Public Health and Environment

Volume 2 Issue 3

July 2008

A newsletter from the Drinking Water Program of the Water Quality Control Division

The Division wants to help you become a leader in providing safe drinking water!

This issue is aimed at providing you with new ways to become a leader in your field, such as preparing for emergencies, learning about new regulations, recruiting new certified operators and more.

Remember, effective leaders lead by example!

INSIDE THIS ISSUE

What's the least known program at the Water Quality Control Division?

by Mary Messec Smith

Arguably, it's the Security and Emergency Preparedness Program. Initiated in response to the Bioterrorism Act of 2002, its original purpose was to help public water systems prepare vulnerability assessments (VAs) and emergency response plans (ERPs). As years passed, it morphed into a more holistic planning program.

Although the focus of the program has changed from counter-terrorism to all-hazards preparedness, we still encourage systems to revisit and update their existing VAs and ERPs. When he was General of the Army, Dwight D. Eisenhower stated that "plans are useless, but planning is indispensible." In an emergency, the plan on your shelf may have little value except to provide contact information. The process of planning, on the other hand, familiarizes you with the type of thinking and adaptation you'll need during an emergency. Hopefully, it will also ensure that the contact list in your plan is actually up to date!

A major focus of the program over the last two years has been the establishment of Colorado's Water/Wastewater Agency Response Network, or CoWARN. Though funded by the security program, the premise behind CoWARN is that utilities are in a better position to help each other than any government entity. This "utilities helping utilities" concept was demonstrated earlier this year during the Alamosa *Salmonella* outbreak when CoWARN activated to assist the flushing and disinfection of the utility's entire distribution system. Ken Pollock (Denver Water) and Bobby Oligo (Aurora Water) worked tirelessly alongside Water Quality Control Division staff in our emergency operations center to coordinate resources, while Fred Sanchez (Denver Water) directed crews from several water systems onsite in Alamosa. The volunteers are too numerous to list in this article, but the result of their efforts was an unparalleled response that could not have been achieved by the state or the city of Alamosa alone.

This year, the program has offered classes in both disaster management and business continuity planning, and we hope to offer these again in upcoming months. We also offer operator training units for completion, during 2008, of FEMA's ICS-100 and IS-700 NIMS courses. Finally, we are developing a program to assist up to 20 small systems over the next 12 months in preparing VAs and ERPs for their individual utilities.

To learn more about the offerings of the Security and Emergency Preparedness Program, visit these websites:

- Security & Emergency Preparedness
- CoWARN

Message from the Drinking Water Program Manager

It is that time of year again when we send out fee invoices to all public water systems.

The Drinking Water Program protects the health of citizens and visitors by ensuring that safe drinking water is provided by Colorado's public water systems. In addition, the Drinking Water Program provides compliance and technical assistance to public water system owners and operators by helping them understand and meet the requirements of Colorado's Primary Drinking Water Regulations. Most of the funding for this important program comes from the federal government. The Colorado Legislature also authorizes general tax funds for this program. A portion of our funding also comes from fees applied directly to public water systems. You may recall that public water system fees were first instituted in 2003 in response to the state's fiscal crisis at that time, and that those fees expired in 2005. The fees were re-established in 2007, but at levels that are approximately 38 percent less than what they were prior to July 1, 2005. The annual fee varies according to system type, source of water and population served and is established in the legislation (§25-1.5-209, C. R. S.).

Your invoice identifies the system type, source of water and population served for your water system pursuant to information maintained by the Water Quality Control Division. If you believe that your system has been billed incorrectly based on this information, please contact us for information on updating your system's inventory data.

I thank you for your consideration and timely remittance and appreciate your support for our program.

Ron Falco, P.E.,
Drinking Water Program Manager

Sincerely,

The Groundwater Rule

by Bryan Pickle

The Environmental Protection Agency promulgated the Groundwater Rule in November 2006. The requirements of this rule become effective on December 1, 2009, and apply to all public water systems that use groundwater except for public water systems that combine all of their groundwater with surface water or with groundwater under the direct influence of surface water prior to treatment. The primary purpose of the rule is to provide for increased protection against microbial pathogens in public water systems that use groundwater sources.

The Groundwater Rule establishes a risk-targeted approach to identify groundwater systems susceptible to fecal contamination and requires corrective action to correct significant deficiencies and source water fecal contamination in public groundwater systems. A central objective of the rule is to identify groundwater sources that are at higher risk of fecal contamination and then help those systems that must take corrective action to protect public health. This risk identification strategy includes

- groundwater source monitoring to detect fecal contamination at targeted groundwater systems that do not provide 4-log treatment of viruses;
- a flexible program for identifying higher risk systems through existing total coliform monitoring and division determinations; and
- regular groundwater system sanitary surveys to check for significant deficiencies in eight key operational areas.

Specifically, groundwater systems that do not provide 4-log inactivation of viruses will be subject to triggered source water monitoring in the event of a routine distribution system total coliform positive (TC+) sample. Samples from all wells being used at the time of the TC+ sample must be collected within 24 hours of notification from the division and must be analyzed for at least one fecal indicator organism (E. coli, coliphage or enterococci). If source water samples are fecal indicator positive, five additional source water samples must be collected at the groundwater sources that tested positive for the fecal indicator organism(s).

If any of the five additional samples are fecal indicator positive, division-approved corrective actions must be taken. At the discretion of the division, corrective actions may be required after the initial fecal indicator positive source water sample.

As a complement to the triggered source water monitoring provision, the division has the option of requiring groundwater systems to conduct assessment source water monitoring. The division may require a groundwater system to conduct assessment source water monitoring as needed. The division may use Hydrogeologic Sensitivity Assessments and Total Coliform Rule/triggered source water monitoring results, along with other information to identify higher-risk systems for assessment source water monitoring. For assessment source water monitoring, the division most likely will require that groundwater systems take 12 monthly source water samples and test them for at least one fecal indicator organism. Corrective action for systems performing assessment source water monitoring will be determined by the division.

In addition to the source water monitoring requirements of the Groundwater Rule, there will be increased sanitary survey requirements for groundwater systems. Specifically, the division will conduct surveys every three years for community water systems, and every five years for all non-community water systems and community water systems that meet certain performance criteria. If a significant deficiency is identified as a result of a sanitary survey, the system must take corrective action. If the system does not complete corrective action within 120 days of receiving notification from the division, or is not in compliance with a division-approved corrective action plan and schedule, the system will be in violation.

Questions about the Groundwater Rule should be directed to Bryan Pickle, Groundwater Rule manager, at 303-692-3527.

100 Years of Chlorine Disinfection

by Bret Icenogle

A senior water engineer once said to me that the world has experienced two major human population spikes. The first population spike came once the human race started cooking its meat; the second spike came with the widespread practice of drinking water filtration and chlorine disinfection. While this may be conjecture, literature suggests that the addition of chlorine disinfection to drinking water filtration may be one of most significant public health advancements in recent history.

In 1908, a mere 100 years ago, Chicago and New Jersey City were the first U.S. cities to use chlorine disinfection to supplement drinking water filtration based on the work of Harriet Chick, a British scientist who developed the relationship between germ kill and disinfectant contact time, also known as Chick's Law of Disinfection. By 1918, more than 1,000 U.S. cities had adopted chlorine as a daily disinfectant for treating drinking water supplies. The widespread use of chlorine disinfection in the United States during the early 20th century has since been linked to the near eradication of waterborne diseases such as typhoid fever and cholera. In fact, some studies estimate that mortality declined by 40 percent and life expectancy rose from 47 to 63 years in urban areas between 1908 and 1940.

While Abel Wolman and Linn Enslow later improved upon Chick's Law in 1920 (Chick-Watson Equation) and developed a more controlled method of chlorination for drinking water, Chick's Law of Disinfection still remains the basis for applying chlorine disinfection today.

Chick-Watson Equation

$$\ln\left[\frac{N}{N_0}\right] = -k\,C\,t$$

Where:

N_0 = initial number of organisms

N = number of organisms at time t

C = concentration of disinfectant (mg/L)

t = contact time (min)

k= coefficient of specific lethality

Long Term Enhanced Surface Water Treatment Rule (LT2) and Stage 2 Early Implementation Activities

by Julie Conroy

With the early implementation activities for the Long Term Enhanced Surface Water Treatment Rule and Stage 2 rule well under way, many systems are approaching some critical deadlines. Many systems are approaching the end of their early implementation monitoring requirements while others are just beginning them in the near future. A few reminders for systems approaching the key date of October 1, 2008:

Schedule 1 systems completing their Initial Distribution System Evaluations and *Cryptosporidium* monitoring

- Begin gathering all monitoring results from disinfection byproducts and *cryptosporidium* sampling.
- Begin work on preparing the initial distribution system evaluations report, which should give recommendations to the division for compliance monitoring due January 1, 2009.
- Begin work on preparing bin classification submission due April 1, 2009.

Schedule 3 systems beginning their Initial Distribution System Evaluations

- Make initial distribution system evaluation report plan readily available. Keep it near your monitoring plan so you can't forget to sample!
- Have sample bottles available. Check with your lab for these.
- Hold onto your sample results to be submitted with your initial distribution system evaluation report.

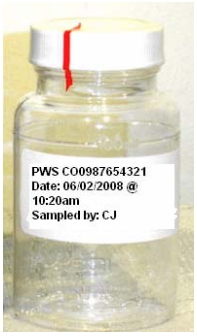
Schedule 4 systems beginning their *E. coli* or *Cryptosporidium* monitoring

- Make source water monitoring plan readily available. Keep it near your monitoring plan so you can't forget to sample!
- Have sample bottles available. Check with your lab for these.
- Ensure that your lab is prepared to submit your sample results using the data collection and tracking system.

Not sure if you are prepared for these events? Please do not hesitate to contact Julie Conroy at 303-692-3405. I am here to help!

Total Coliform Sampling Hints

by Cristin Jones

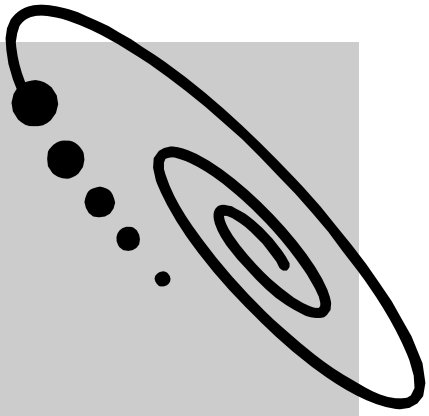


- For smaller systems, sample **early** in the week or month, so you don't run into hold time or lab issues. (Especially helpful if analyses come back total coliform positive.)
- Have extra bottles on hand and rotate through them, just in case.
- Try not to use an outside spigot; you just never know who's been there.
- Use a good tap, not a swing arm faucet.
- Be certain to remove any attachments to the spigot-hose or faucet aerator.
- Wear a fresh pair of gloves to sample.
- If using an outside tap, try not to sample on days of inclement weather.
- Do not set down or touch the inside of the cap while sampling.
- Make sure to disinfect the spigot and flush for several (3) minutes prior to sampling.
- Never over- or under-fill sample bottles; usually stop at the neck of the bottle.

WHEN IN DOUBT, THROW IT OUT!

- If you suspect something went wrong, just resample. It's easier and less expensive in the end to get another sample.
- Verify that the laboratory forms are filled out correctly: PWS number, type of sample, date, etc.
- Samples of water, where the water is not consumed, need to be marked as "special purpose."
- For seasonal systems, mark pre-opening samples as "special purpose" and "pre-opening" in notes.
- Make sure to use a certified laboratory. Check the lab http://www.cdphe.state.co.us/lr/Certification/SDWLIST.pdf.

To provide you with another option for your analytical needs, the Colorado Department of Public Health and Environment Laboratory Services Division has recently received full certification for all regulated drinking water contaminants. This new capability allows for the determination of all inorganic and organic compounds by EPA standards in one location, at prices similar to that available at other analytical laboratories. Please call 303-692-3048 if you have any questions related to the analysis of drinking water samples, or if you have any other analytical needs.



Colorado Drinking Water Excellence Program News

by Dean Vlachos

The Colorado Drinking Water Excellence Program would like to thank the city of Golden and Ute Water Conservancy District water treatment plants for recently hosting two new advanced training workshops in performance evaluation, process control and optimization. About 140 operators representing 60 public water systems attended the four sessions consisting of interactive, hands-on training. Water Quality Control Division personnel will be contacting the participants in the near future to see how the training has been applied to improve treatment plant performance. The Excellence Program plans to repeat these workshops at other host water treatment plants as well as offer other new training opportunities; please visit the division's website for more information.

The Colorado Drinking Water Program will be conducting a Performance Based Training series for surface water systems beginning in July 2008. In general, performance based training facilitates development of key skills at public water systems to further optimize technical, managerial and financial capabilities for protection from microbial pathogens. A small group of public water systems (i.e., six to eight) will be selected to participate in performance based training through five one-day training sessions over a 12- to 15-month period (both at the treatment plants and in the classroom). The series will follow a framework based on the Area Wide Optimization Program developed by the US Environmental Protection Agency (EPA) and implemented nationally. Further information on performance based training utilized for Area Wide Optimization Program can be found at http://www.asdwa.org/index.cfm?fuseaction=Page.viewPage&pageId=484&grandparentID=473&parentID=481. If you are a community surface water system that may be interested in participating in the training series, please contact Dean Vlachos, excellence program lead, at 303-692-3513.

CoWARN

by Mary Messec Smith

CoWARN, Colorado's Water/ Wastewater Agency Response Network, is a utility-driven network of utilities united by a single mutual aid agreement for the purpose of providing the specialized skills and resources needed by utilities during emergencies. Although officially operational for less than a year, CoWARN was battle-tested during the Alamosa *Salmonella* outbreak earlier this year, and, thanks to the supporting utilities, it worked effectively. Being able to tap the vast resources of many utilities was an important component of the onsite response.

CoWARN Mission

To support and promote statewide emergency preparedness, disaster response, and mutual assistance matters for public and private water and wastewater utilities for natural and human-caused events

CoWARN membership is free, and members are never under any obligation to commit their resources during an event. For more information go to www.cowarn.org.

Navigating the Drinking Water Program's Website

by Sharon Williams

The latest drinking water regulations...status of your design review...training opportunities... financial assistance information... All this and more is at your fingertips at the Drinking Water Program's website located at http://www.cdphe.state.co.us/wq/drinkingwater/index.html.

On the main program website, you can always find the latest version of the regulations and important announcements about upcoming events, awards, rulemakings and program news. Make this page one of your favorites so you can easily find the regulations when you need them, and so you can stay up to date on what is happening with drinking water in Colorado.

Use the links on the menus on the left side of the main website to find more detailed information about the program and different ways we are here to help you be successful in your role in providing safe drinking water. Are you interested in getting help with compliance, source water protection, operator certification or plans and specifications reviews? Click to find information and contacts for these topics and many more.

On the right side of the main page, you can find important phone numbers for Colorado's 24-hour Environmental Release and Incident Reporting line and EPA's Safe Drinking Water Hotline. The menu on this side also can direct you to Quick Links to publications and fact sheets.

Still can't find what you're looking for? We invite you to visit the link from the main website to "Drinking Water Program: Services and Organization" to learn more about how the program is structured, and where you can go for the kind of information or assistance you need. You can also find our website search function or send us an e-mail by clicking links from the main page.

So, next time you're online, check out the Drinking Water Program's website and bookmark us so you can check back often. Thanks for visiting us on the Web!

- The Drinking Water Program's homepage Web address is www.cdphe.state.co.us/wq/drinkingwater/index.html
- TRAINING OPPORTUNITIES! Please visit the division's website at www.cdphe.state.co.us/wq/drinkingwater/Training.html
- To access Aqua Talk online www.cdphe.state.co.us/wq/drinkingwater/QuickLinks.html
- To access the district engineer county listing www.cdphe.state.co.us/wq/engineering/pdf/ESDElist.pdf
- To access the contact list for drinking water rules www.cdphe.state.co.us/wq/drinkingwater/pdf/CADM_Contact_List.pdf

Facility Operator Program News

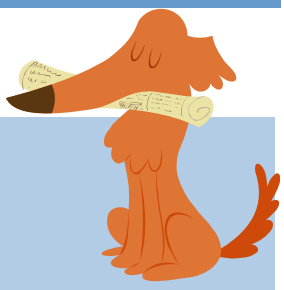
Certified Operator Recruitment

Certified, well-trained and experienced water and wastewater plant operators are invaluable and fundamental to the provision of safe drinking water and the protection of our groundwater, rivers, lakes and streams. However, it is expected that up to 50 percent of the current certified operators are going to retire within the next 10 years. With such a large number of operators leaving the water quality management work force, it's imperative that work is done now to recruit and educate potential operators.

Fortunately there are many easy and inexpensive ways to do just that. Visit your local elementary, middle and high schools and colleges: distribute information about job opportunities; and talk with the students and counselors. You can generate interest by talking about the many important and interesting aspects of your job.

Another good way to generate interest is to encourage student tours at your plant when time and operations allow. Getting your community involved by educating its young people not only may create potential future certified operators; it also welcomes the people that you serve to better inform them of your operations. A better understanding of water sources, treatment, distribution and collection may help when future upgrade costs or water charges are incurred.

There may be many future operators just waiting to be introduced to the field who simply are unaware of this career option. Your experience and the time you share will be greatly appreciated by both the people looking to become certified as operators in the future and the communities they will potentially serve!

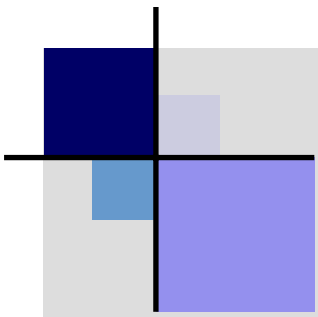


Certification Renewals

Please check the renewal date on your certification! Renewal must be completed with the appropriate number of training units, a complete application and an application fee **BY THE RENEWAL DATE.** If you think that you may not be able to complete your renewal by the expiration date, please call the Facility Operator Program to request a bridge letter.

Exam Information

Upcoming collection/distribution and small system certification exam dates and locations will be available on the Operator Certification Program Office's website on or around July 10. The exam application deadline for the fall/winter exam cycle is August 15, 2008. Late applications will not be accepted!



Contacts for the WQCD Facility Operator Program

Betsy Beaver
303-692-3503

Lori Billeisen
303-692-3510

Ask Aqua Man

Dear Aqua Man,

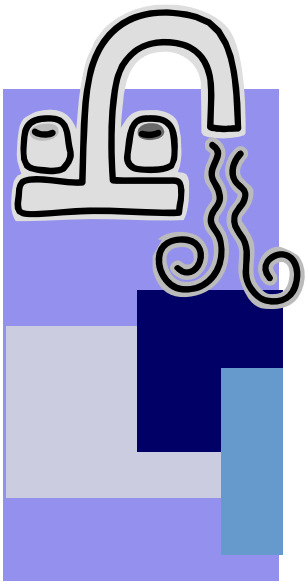
I recently took a class for the renewal of my water treatment certification that was worth 0.7 (7 hours) training units (TUs). I also have a distribution certification that is up for renewal. The training units are credited to both water treatment and water distribution. So may I use the 0.7 TUs for both renewals or for just one or the other? And if I use these TUs for this renewal are they no longer available to me for renewals at a later date?

- Abby Normally

Dear Abby Normally,

You may use the 0.7 training units for both water treatment and distribution certification renewal provided that the contact hours are appropriate for the type of certificate being renewed and are for two separate certifications. However, you may not use the same material twice toward the renewal of a single certification (Regulation 100, pg 41, 100.14.1). As an example, you attend a 7-hour class to renew your water treatment certification and the course offers 0.5 TUs in water treatment and 0.7 TUs in water distribution. For the water treatment certification renewal, you may count a total of 0.7 TUs for the class: 0.5 TUs may be allowed toward the primary requirement in water treatment and 0.2 TUs of the approved credit for water distribution may be applied as an "outside the field" credit toward your distribution certification (Regulation 100, pg 41, 100.14.1). For complete information regarding training units, renewals and education requirements for your certifications, you may download a copy of Regulation 100, Water and Wastewater Facility Operators Certification Requirements, 5 CCR 1003-2 from http://www.cdphe.state.co.us/op/ocb/index.html. If you do not have Internet access, you may call the Water Quality Control Division's Facility Operator Program at 303-692-3510 to request a copy.

If you have any questions for Aqua Man, please send them to comments.wqcd@state.co.us. Enter "Drinking Water Newsletter" as the subject.



Coming Down the Pipe... News Alerts for the Drinking Water Community

- Lead and Copper Monitoring – Systems on reduced monitoring schedules (annual or every three years) need to remember to collect samples during the period from June to September. If you have questions, call Lauren Worley at 303-692-3547.
- Beginning July 1, Compliance Assurance Data Management will be notifying systems that have a Volatile Organic Compound (VOC) above the trigger level to monitor/report quarterly *the entire VOC suite, not only the VOCs that were detected.* This is a change from the previous procedure, where only the compound(s) detected needed to be monitored. Laboratories run the entire suite on each sample anyway, so analytical cost won't change (although some labs may charge more for reporting additional analytes). This change makes data management more efficient and accurate. If you have questions, call Lauren Worley at 303-692-3547.
- Upcoming Bag and Cartridge Filtration Survey!

  The division is planning to conduct a survey of public water systems which utilize bag and cartridge technology. The division will be sending out notification and details about the survey directly to public water systems that use bag and/or cartridge filters in July/August. If your public water system uses bag and/or cartridge filters and you have not been contacted by the end of August please check the Drinking Water Program homepage (http://www.cdphe.state.co.us/wq/drinkingwater/index.html) for a link to the survey or call 303-692-3500. Watch for more survey details on the main Drinking Water Program homepage in July/August. Thanks for participating!

Board and Manager Training for Small Community Public Water Systems

Topics include understanding board responsibilities and liabilities, understanding the regulations, financial management and much, much more. See the Colorado Drinking Water website (www.cdphe.state.co.us/wq/drinkingwater/Training.html) or the Rural Community Assistance Corporation website (www.rcac.org) under Training and Events.

* July 15, 2008 - Steamboat Springs
* July 17, 2008 - Grand Junction
* July 29, 2008 - Alamosa

AQUA TALK

is a quarterly newsletter published by the Drinking Water Program, Water Quality Control Division, Colorado Department of Public Health and Environment

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Purpose - to communicate division drinking water-related issues to stakeholders in a fun and informative format

Colorado Department of Public Health and Environment

Drinking Water Program

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WQCD DRINKING WATER PROG - 2030