AQUA TALK

Colorado Department of Public Health and Environment

Volume 5 Issue 3—Corrected

Summer 2011

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

Full color version available at http://www.cdphe.state.co.us/wq/drinkingwater

INSIDE THIS ISSUE

Lead and Copper Corrosion Control and Compliance

by Rick Koplitz, Compliance Assurance Unit Manager

Water quality sampling parameter questions have surfaced at recent Water Utility Council meetings. To address these questions and concerns, the Water Quality Control Division provides the following explanations regarding determination of compliance with water quality parameters related to lead and copper corrosion control and compliance.

- National Primary Drinking Water Regulations for Lead and Copper: Short-Term Regulatory Revisions and Clarifications were published in the *Federal Register* on October 10, 2007.
- Optimal water quality parameter ranges (OWQP) or minimums are set by the state after a system has collected water quality parameter (WQP) samples during two consecutive six-month monitoring periods following the installation of corrosion control treatment.
- OWQPs are measured to determine whether a system is operating its corrosion control treatment at a level that most effectively minimizes the lead and copper concentrations at users' taps.
- The original Lead and Copper Rule (LCR) compliance approach created a significant disincentive for sampling WQPs more frequently than required. The more frequently measurements are taken, the greater the potential some results will be outside the OWQP ranges or below the OWQP minimums set by the state.
- Under the original rule, any sample (or the average of an original and a confirmation sample) falling outside the range or below the minimum could result in a violation. Systems that collected samples more frequently than the minimum requirement had a greater potential for not meeting their OWQP levels and to be in violation.
- New terminology introduced:
  - Daily value: Daily values are calculated for each WQP at each sampling location. The procedure for determining the daily value is based on the sampling frequency for that WQP and sampling point.
  - Excursion: An excursion is any "daily value" for a WQP that is below the minimum value or outside the range of OWQPs set by the state. The

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Message from the Safe Drinking Water Program Manager

Importance of Design Review

by Ron Falco, Safe Drinking Water Program Manager

Article 1.11 in the *Colorado Primary Drinking Water Regulations* specifies that waterworks construction projects need prior department approval. This means that construction must not begin until obtaining final approval from our engineering section. If you have any question about whether a planned activity at your water system requires prior approval, please contact the engineering section for guidance.

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

We know the design review process can seem time consuming and difficult, but it is very important. Every year, the engineering section reviews nearly 200 projects worth hundreds of millions of dollars. Most proposed designs require some modification prior to receiving approval. This means that many projects, if constructed as originally designed, would have one or more problems that could potentially lead to a public health risk. Of course it makes much more sense to address these issues prior to construction, rather than after the fact. We have run into situations where substantial modifications to already-constructed infrastructure are required.

A water system that constructs without approval violates Article 1.11, but also puts itself at risk to incur major costs to correct deficiencies detected after the fact. We do evaluate whether unapproved construction has taken place during routine sanitary surveys, and if identified, this will be listed as a violation that requires corrective action. The department also has authority to issue enforcement actions and penalties in these situations. I feel it is appropriate to penalize a water system that purposefully tries to avoid the cost of preparing an adequate design. Failing to receive approval prior to construction consumes additional department resources and offers an economic advantage to systems that attempt to circumvent the regulations.

During the design review process, stay in touch with the design review engineer to determine the scheduling that can be accomplished for this review. The design review engineer will provide written comments if there are any issues with the design. It helps the design review process to respond in a timely fashion. Additionally, it may be advantageous to schedule a meeting regarding the project and design review process.

We also realize that the *State of Colorado Design Criteria for Potable Water Systems* have not been updated since 1997. We intend to launch an update/revision effort in 2012 and we will seek stakeholder input on the criteria, and the design review process. Look for future announcements regarding this process this winter.

By working together through project design reviews, we meet our common goal of protecting public health by ensuring that people always have safe drinking water.

Prevention of Distribution Chlorine Sampling and Test Errors

by Paul Kim, District Engineer

Once drinking water is disinfected to meet public health standards, the residual disinfectant level in the distribution system must be maintained as a final barrier in protecting against disease outbreak. Maintaining a residual disinfectant prevents microbial regrowth and protects the distribution system against contamination.

Even under normal conditions, residual disinfectants degrade based on demand and water age. Operators must manage disinfectant levels on a frequent and ongoing basis to protect consumers. Therefore, all systems are required to maintain a 0.2 mg/L residual disinfectant at the entry point to the distribution system, and provide a detectable residual disinfectant throughout the distribution system. A detectable chlorine residual is considered at or above the detection limit of an approved method or testing equipment.

To ensure the detectable chlorine concentrations are accurately reported, operators should be aware of the following common errors encountered when collecting and analyzing distribution chlorine samples.

Sampling Errors:

Improper Flushing - If sampling from a tap, let the water flow for at least five minutes to ensure a representative sample.

Incorrect Sample Bottles - Do not use plastic containers because plastic can react with and consume chlorine. Glass sample containers should be thoroughly cleaned, and rinsed with demineralized or distilled water. For best results, dedicate a set of sample cells to each test (free and total).

Sample Bottle Conditions - Keep the sample containers clean and scratch-free. Replace discolored or damaged containers.

Holding Times - Analyze samples for chlorine immediately after collection. Chlorine residual samples cannot be stored or transported. Please note that distribution system residual chlorine samples must be taken at the same location and time as the bacteriological sample.

Operators receive hands on sampling and testing experience at a facility operator training in Dolores, Colorado.

Testing Errors:

Expired Reagents – Examine all chemical reagents prior to testing. In addition, please review the reagent doses to correspond to the proper sample size.

Sample Preparation - Operators should review the method's sample preparation practices to prevent inaccurate chlorine concentration levels. For example, when the colorimetric method utilized with pocket colorimeters is used in the field, the sample should be filled to the appropriate volume for the designated test, the sample container should be wiped of excess liquid and fingerprints, and properly inserted into the meter (i.e., the diamond marker on the container must face the keyboard).

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Lead and Copper Corrosion Control and Compliance

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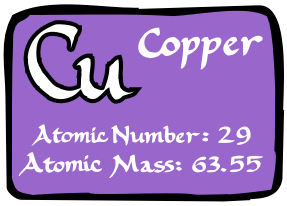
duration of an excursion is the number of days that elapse starting with the day the excursion first occurs, until the day the daily value is within the OWQP range or above the OWQP minimum for that WQP. These dates are based on the date the system ***collected*** the sample, not the date the system received the sample results.

- How to determine the duration of the excursion:
- For each location
  - Count the first day the sample is outside the OWQP range or minimum.
  - Stop counting days when a sample result from the **same** location meets the range or minimum. Don't count the day the sample is in compliance.
  - Repeat for additional periods out of compliance.
- Add together all locations.
- To remain in compliance a system cannot be outside the OWQP ranges or below the OWQP minimum for more than a total of nine days during a six-month period [see the *Colorado Primary Drinking Water Regulations* (CPDWR) §8.6(g)]. The nine days need not be consecutive.
- An unresolved excursion from a previous monitoring period may count in the next six-month monitoring period. If the system does not collect a sample that is in compliance before the end of the six-month period, the excursion continues into the next period.
- If a system is out of compliance it must:
  - Report the excursion to the state within 48 hours of determining the noncompliance [see CPDWR §1.6(b)].
  - Return to standard monitoring for lead and copper tap and WQP tap monitoring if the system was on a reduced monitoring schedule [see CPDWR §8.2(d)(4)(vi)(B) and 8.3 (e)(4)].♦

Rick Koplitz,
Compliance Assurance Unit Manager



Compliance Assurance asks: Did You Know…?

by Melissa McClain, Environmental Protection Specialist

The following are random, quick facts intended to provide general information from the Compliance Assurance Section of the Water Quality Control Division:

- If you use hauled water, compliance assurance office must be notified.
- If someone hauls water to you, it needs to be delivered by an approved hauler.
- If you haul water to yourself, your truck needs to be approved and listed in the inventory section of your monitoring plan.
- Speaking of monitoring plans, everyone must have one! Templates are available at: http://www.cdphe.state.co.us/wq/drinkingwater/PublicWaterSystemReportingForms.html
- It is imperative that you notify us of any inventory changes or updates to your contact information.
- The Water Quality Control Division must have latitude and longitude data for all water sources from each public water system. All community and non-transient non-community systems must submit latitude and longitude data for their treatment plants as well. This information can be obtained using Google Earth or a GPS unit.
- Each month, the compliance assurance section sends out an email as a reminder for important sampling events. If you would like to be added to the list, please contact Mike Sherry at 303-692-3325.
- If you collect a sample and find out there may have been an error, you must obtain invalidation approval from us before collecting a replacement sample.
- Summer is here and that means it is time to sample for lead and copper as well as disinfection byproducts (if applicable for your system). If you are on an annual or three-year schedule for lead and copper, please be sure you collect your samples between the months of June – September. If you are on an annual schedule for disinfection byproducts, make sure you collect your sample in the month of August.
- Monitoring for total coliform is very important. If you fail to collect this monthly or quarterly sample, this may result in up to three violations. The first violation is for the failure to monitor for total coliform, the second and third violations are for failing to collect a disinfectant residual in order to comply with both the minimum and maximum residual disinfectant requirements.

Note: The above points are intended to provide general information only and are not meant to cover nuances of regulatory requirements or special circumstances pertaining to your system.

New Partnership Results in Distribution Systems Training Center

by Sharon I. Williams, Capacity Building Unit Manager

The Safe Drinking Water Program is partnering with Red Rocks Community College (CC) to design and construct a new training facility for the drinking water community.

Colorado water distribution operators can learn skills to provide safe and reliable drinking water distribution. Based on data analysis, this is a high priority training need.

The facility will be located at the Red Rocks Community College Environmental Training Center. It will include three hands-on exterior training labs designed for hands-on learning exercises. These are:

- An above-ground vault with door and viewing windows for training on operating and maintaining typical piping configurations.
- An above-ground piping array with various materials for practicing assembly, tapping, and pipe inspection techniques.
- A below-ground piping network designed to intentionally leak for learning skills in leak detection and water conservation.

This project was kicked off in July 2009 and is being completed in phases. The design phase is complete and construction is scheduled for summer 2011. Final project completion is scheduled for December 2011. Look for news on progress in future issues of Aqua Talk!

Hands on training enhances operator learning experiences.

About the Project Partners

- The Capacity Building Unit (CBU) of the Safe Drinking Water Program is managing the grant funding for this project. The purpose of CBU is to provide training, technical assistance, and management support services to public water systems so they can strengthen their ability to supply safe drinking water to the public. The CBU team administers specialty grants from USEPA to support training of public water system personnel across the state.
- Red Rocks CC is one of many performance partners we team with to provide training and technical assistance services statewide. Their Water Quality Management Department has been growing in size for several years. They offer both credit and non-credit courses for public water system personnel.
- Red Rocks CC has contracted with Olsson Associates in Golden for engineering and survey services.
- In addition to the two state agencies, many public water systems have committed to donating materials and in-kind services, including Denver Water and Consolidated Mutual Water District. We anticipate regional demand for access to this training facility.

Coming Down the Pipe...

News Alerts for the Drinking Water Community

by Sharon I. Williams, Capacity Building Unit Manager

The Safe Drinking Water Program offers unique training opportunities on a variety of interesting topics. All events are thoughtfully designed to provide a learning experience that will get you excited to apply what you've learned to be an even better operator. Plus, our events are all approved for Training Units! If you're interested in learning about the latest events sponsored by the Safe Drinking Water Program, don't miss these two resources available to you!

- Our training events website at http://www.cdphe.state.co.us/wq/drinkingwater/TrainingEvents.html has a list of our regularly scheduled curriculum of training events, as well as dates classes are scheduled and links to registration information. This site is updated regularly with new information.
- Our training listserve offers an opportunity to sign up to receive announcements by email. Be among the first to know about our most popular classes by signing up for the listserve at: http://mailman.listserve.com/listmanager/listinfo/CO-H2O-INFO.

At the Dolores Colorado Distribution Operator Series (CDOTS) training attendees observe a demonstration of distribution line flushing.

Drawing by Tiffany Jackson, Water Quality Control Division

Coach's Corner

by Mike Bacon, Capacity Coach

If you are a system that lacks an operations and maintenance plan, huddle around. The main reason you should have an operations and maintenance plan is no different than why you should change the oil, rotate tires, check fluid levels, change the air filter, or replace fan belts on your car. Doing these things keeps your vehicle in tip top shape so it lasts longer, performs efficiently and effectively and reduces breakdowns.

I have a 1970 El Camino. If not maintained, it doesn't perform well. If it doesn't perform well or isn't clean, I can't show it off! My maintenance schedule is different for my 1929 Model A. The Model A takes a lot of grease and oil! Maintenance schedules can vary on all vehicles. Similarly, operations and maintenance will be different for every water system large or small.

If a water system is failing mechanically because it is not maintained, this could affect the overall performance of the water system, affecting water quality in the treatment arena and distribution system.

Components comprising an operations and maintenance plan are:

Process flow diagram. The diagram should include the source water inlet side, treatment process, pressure/storage tanks, cisterns/clearwell and elevated tanks.

Operation and maintenance manuals for each piece of equipment including chemical treatment pumps, booster pumps and well pumps.

Maintenance schedule/record keeping system. A schedule of required maintenance, date to be performed and record keeping system for each item.

Well log and permit. This provides well depth, first draw information and gallons per minute capability of the well; useful information in determining pump efficiency.

Annual budget or cost sheet. This assists systems in determining annual equipment maintenance budget costs as well as development of equipment replacement schedules. This includes chemical and power costs.

Standard Operating Procedure. A guideline to expectations of routine checks; testing parameters, chemical solution formulas, pump inspections, meter readings and pressure gauge checks.

Emergency response. Written procedures to repair water breaks or leaks. The Colorado environmental release and incident reporting hotline at 1-877-518-5608 should be listed in case of a spill or loss of water pressure.

Hydrant testing. Maps showing hydrant locations. A schedule for flow testing and performing routine maintenance, documentation of hydrant type, date of installation and a record of maintenance work performed for each hydrant.

Valve exercise program. A schedule for routine exercise and maintenance, and a record keeping system indicating date work is completed.

Storage tanks. Storage tanks have specific cleaning and inspection procedures. Recommendations are to inspect tanks every three to five years or more often if necessary.

So, let's GO TEAM!

If you have any questions, or need more information in developing an operations and maintenance plan, please do not hesitate in contacting a coach: Mike Bacon at 303-692-2605 or Gordon Whittaker at 303-692-3580.

Contract Operators, an Invaluable Component in Successful System Compliance

by Lori Moore, Compliance Specialist

"No owner of a water or wastewater facility shall allow the facility to be operated without the direct supervision of an operator in responsible charge certified in a classification equivalent to or higher than the classification of the facility as specified in these regulations. For purposes of this regulation, "direct supervision" means that the operator in responsible charge has supervisory responsibility and authority with respect to the activities and functions of other facility operators." Regulation 100, the Water and Wastewater Facility Operator Certification Requirements, 5 CCR 1003-2, *Multiple Facility Operator Provisions, pages 23 to 24, 100.21.1...21.5.*

Contract operators make up an incredible 33 percent of the total number of certified water professionals who supervise the public water and wastewater systems required to have an appropriately certified Operator in Responsible Charge (ORC) pursuant to regulatory requirements under Regulation 100 (see above). Without this significant group of certified water professionals, there would be a greater number of systems without mandatory ORC supervision. So it is with gratitude that I write this about Colorado's contract operators, the ORC supervision they provide to the many systems across the state, and the work they do in partnership with the Water Quality Control Division to achieve and maintain compliance.

A contract operator may supervise many systems as operator in responsible charge, with duties including, and in no particular order of importance: communicating with the division and other governmental regulatory entities about facility operation and compliance, operation consultation, response to emergencies, related rule compliance, monitoring and sampling, record keeping, chemical dosing and residual sampling, reporting, being available for and attending sanitary surveys, coaching visits, site inspections, and any and all associated duties as supervising ORC. It then follows that a contract operator's work includes a great deal of interaction with the division. When the division conducts the above mentioned site inspections, sanitary surveys and coaching visits, it is extremely beneficial to view these opportunities as an excellent opening to collaborate and communicate questions about technical issues, compliance requirements, sampling and monitoring schedules, monitoring plans, discharge monitoring reports (DMRs) and anything else that the certified operator or facility may have regarding support and assistance.

It is imperative that systems are supervised by an ORC for each and every duty and task that is pertinent to that specific system's compliance needs. Being a contract operator for ORC supervision is not just lending a name to a system for the appearance of compliance, but it is overseeing every aspect of each and every water and wastewater facility's needs.

REMEMBER: when you put your name down on that ORC report form, you are officially accountable and must answer to all aspects of the supervision, care and well-being of that public water or wastewater facility. And again, thank you for the work that do! ♦

What Do You See?

by Paul Kim, District Engineer

Significant Deficiency:

In accordance with Section 2.1.6 of the State of Colorado, DCPWS , sanitary seals shall be designed to prevent the entrance of liquids and solids, and shall include a water tight port for electrical connection. During the sanitary survey, it was observed that the wellhead consisted of a plywood covering . To prevent foreign material from entering the well, the wellhead should be constructed with a sanitary well cap and a grouted seal.

Colorado's certified water professionals occupational professionalism and ethics

by Lori Moore, Compliance Specialist

This brief article is just another note of appreciation from the Facility-Operator Program, and to again restate the vital role that Colorado's certified water professionals have in the protection of the public health and environment through the work that they do in the supervision of water and wastewater facilities. Certified operators provide a service that is critical to a thriving, well-cared for and strong community; it's a service unique in its responsibilities to the community because clean drinking water and a clean environment are critical to the well-being and good health of every human being on earth.

Certified operators should protect, maintain, respond, control, observe, prepare, develop, administer, supervise and actively participate in all aspects of water and wastewater management. They must respond to the needs of their communities in their duties as water and wastewater professionals, every minute, every day, every month, every year. The responsibilities of certified water professionals are 24/7; and the ethical, responsible, reliable, accountable, dedicated, trustworthy, conscientious and professional attitudes and committed approach to the work that they do should also be 24/7. These statements are made with great consideration and respect for the hard work and challenging day-to-day responsibilities certified water professionals face in the work that they do. Certified operators must do their job with an unyielding and substantial commitment to their profession and what it means to ensure that every safeguard and precaution is taken in conjunction with a committed and unfailing sense of duty toward protecting public health and the environment.

The Water Quality Control Division depends upon a strong and productive partnership with Colorado's certified water professionals; it's a partnership that when paired with the other barriers of defense will strengthen and improve the work that we all do together for the protection of public health and environment. ♦

Facility Operator Program News

Exam Information

The next cycle of distribution, collection and small system certification exams will be in the fall/winter of 2011 at several locations across the state. Dates, locations and application materials are available on the OCPO website at www.ocpoweb.com. **The deadline for applying for exams will be Aug 15. Late applications will not be accepted!** The next cycle of treatment and small system certification exams will be in the winter/spring of 2012 at several locations across the state. Dates, locations and application materials should be available on the website (see above) on or around Oct 10. **The deadline for applying for these exams will be Dec 1.** Note: If you have already scheduled an examination and need to change the date, contact Teresa at OCPO at 303-394-8994.

WWFOCB news

The WWFOCB has made electronic testing available at the OCPO office. You must apply for exams by the ordinary deadlines, but then will be able to make an individual appointment to take the exam. Online testing is available for all levels. Advantages include instantly knowing your score, you may complete your Affidavit of Legal presence and purchase your certificate on site, and you have flexibility in arranging a test time to fit your schedule. You MUST be approved for standard paper-and-pencil exam to enroll and you MUST enroll at least two weeks prior to the exam date you want. Additional cost for online testing is $35. Details may be obtained from the regular Spring letter from the OCPO office and on the OCPO and WWFOCB websites. Go to the Operator Certification Program Office website at www.ocpoweb.com, click on the "Operators" tab, choose "Certification," then choose "Pre-Approved Enrollment." Read the information and follow instructions to enroll!

The next two Board meetings are scheduled for August 30 and September 27, 2011, at the Colorado Department of Public Health and Environment in the Sabin Room in Building A (unless otherwise noted). The meetings begin at 9 a.m. and are an excellent opportunity to hear and be heard. Please consider this an invaluable opportunity to bring your ideas, concerns or questions about water and wastewater certification, testing, careers, management or any other relevant topic to the people who can help affect change. If you would like to provide any comments in addition to the published agenda, you should contact Nancy Horan at 303-692-3463. Specific agenda information can be found at http://www.cdphe.state.co.us/op/ocb/Meetings/Meetings.html. For all other inquiries you may visit www.cdphe.state.co.us/op/ocb/index.html (the official Water and Wastewater Facility Operators Certification Board website).

Renewals: Please check the renewal date on your certification! Renewal applications must be submitted, along with the appropriate number of training units, completed legal presence documents and the application fee, **by the expiration date.** If you think you may not be able to complete your renewal by the expiration date, please call the Facility Operator Program (303-692-3510) to request a bridge letter. Remember, certificates expired for more than two years are automatically revoked!

ORC Changes: If you are the Operator in Responsible Charge (ORC) of a system and are leaving that system, please send written notice to the Facility Operator Program. The notice needs to include your name, the name of the system and the effective date of separation. Either snail mail or e-mail notifications are acceptable. If you are the administrator of a system with a new ORC, please submit a new ORC form to the Facility Operator Program as soon as possible. ORC forms may be found at: http://www.cdphe.state.co.us/op/ocb/opassist/orc/ORCreportForm.pdf.

Operator Certification Expense Grant Reimbursements Increased! If you work as an operator (either water treatment or distribution) for a community or non-transient non-community public drinking water system that serves a population of 3,300 people or less, you may qualify for certification cost reimbursement through our expense reimbursement grant. **The application MUST be received by Colorado Department of Public Health and Environment within six months of issue date on operator certificate.**

The grant money allotted for certification exam reimbursement and renewals has just been increased to $230 per application!

Application Forms: Contact: Lori Moore at 303-692-3510.

Ask Aqua Man

Dear Aqua Man,

Are public water systems required to report extra sampling to the division? It seems that reporting extra samples varies from rule to rule. Would you elaborate on the requirements for each rule for reporting extra sampling performed by a system?

Sincerely,

Sammy Pall

Dear Mr. Pall,

Conducting extra sampling outside of your monitoring schedule is typically not encouraged. Not only does it cost you more money but it is also discouraged because it is inappropriate for a system to collect multiple samples in order to obtain more desirable results. If you feel that additional sampling is warranted due to operational issues, please contact a compliance specialist first. All sampling procedures should be properly outlined in your monitoring plan. It is important to be aware that all lead and copper tap samples must be reported and used to calculate the 90th percentile for compliance. If you have specific questions about extra sampling, please contact a compliance specialist. ♦

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

Dear Aqua Man,

If my system experiences a line break in the distribution system, what steps do I need to take to notify the Division and my customers?

Sincerely,

Piper L. Break

Dear Ms. Break,

One of the best ways to deal with line breaks is to be prepared before it happens. You should have written Standard Operating Procedures, or SOPs, for line breaks that all water system staff members are aware of and have access to. Contact information for key personnel, investigation and isolation procedures, customer notification requirements and procedures, risk assessment, and repair and flushing procedures should all be included in the SOPs.

It is important that the water system notify the WQCD when a line break occurs ***if*** there was a substantial loss of pressure. Notifying the division will not only allow us to communicate with any media or customer inquires we receive, but also will let us assist you with the necessary steps to ensure that safe drinking water is restored to your distribution system. In the event of a line break during normal business hours please contact a member of our engineering or compliance staff. If a situation arises after hours, please call our Incident Reporting Hotline at 1-877-518-5608.

It is recommended that you keep extra public notice templates on hand in case of emergencies. These forms are used to notify your customers of the line break and contain all of the pertinent information such as system contact information, estimated time for repairs, boil or bottled water advisories (per instructions from the division) and possible health issues. You may wish to consider door hangers for those customers who may not be home at the time of the interruption of service. Be sure to include a multilingual version for non-English speaking customers.

Being prepared and maintaining open communication with the division is the best way to successfully handle a line break situation. ♦

Get Into Water! - Knowledge Management Research Shows Importance of Issue

By Jeff Oxenford, Oxenford Consulting, LLC and Melanie Fahrenbruch, MJF Consulting, LLC

The Get Into Water! Project has developed a Knowledge Management Initiative to identify best practices to ensure that mission critical (operations) personnel have the knowledge and skills to operate effectively. To accomplish this goal a survey was conducted of Colorado operators within 4 counties (Arapahoe, Denver, Boulder and Douglas) and throughout the state of Colorado. Results for the 150 respondents to the survey are shown in Figures 1 and 2. The results indicate that knowledge management (KM) is considered "important" to "very important" by the vast majority. Also, formal knowledge management programs are ongoing in less than 10 percent of the systems. This would indicate the timing is ideal for conducting activities to assist systems in implementing knowledge management.

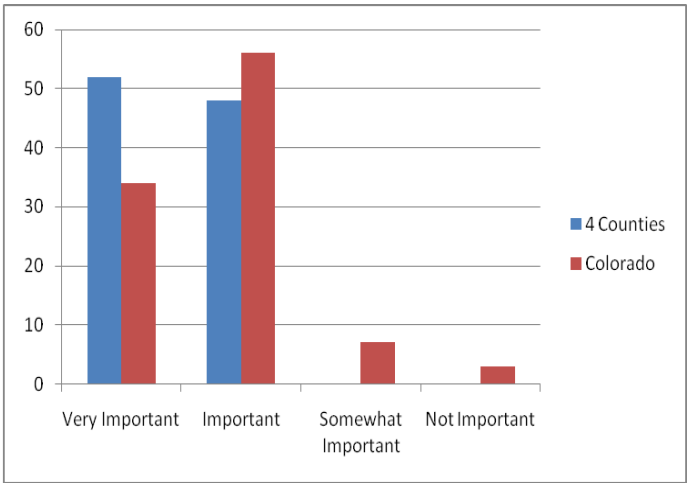


Figure 1: Importance of knowledge management

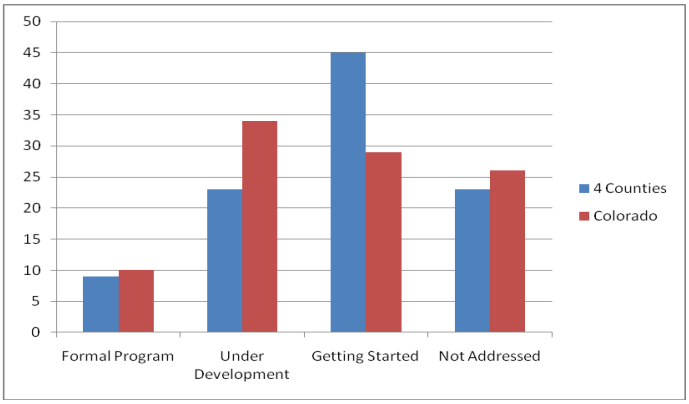


Figure 2: Stage of development of knowledge management programs in Colorado utilities

A workshop was conducted to develop an action plan for assisting utilities in implementing KM. The action plan recommends developing educational activities to assist utility managers in identifying the needs for and benefits of KM. It also recommends development of a knowledge management activities checklist that can be used in assessing current knowledge management activities and opportunities for additional activities. Please look for upcoming activities and tools on www.rmsawwa.net.

For more information: contact Jeff Oxenford at 720-353-4242.

The Get Into Water! Mission:

The Front Range water and wastewater industry will sufficiently recruit, train and retain personnel to ensure mission-critical positions are filled with qualified, trained and technically skilled employees. This project will address outreach and recruitment; training; knowledge retention; and human resource and operations staff collaboration.

Prevention of Distribution Chlorine Sampling and Test Errors

by Paul Kim

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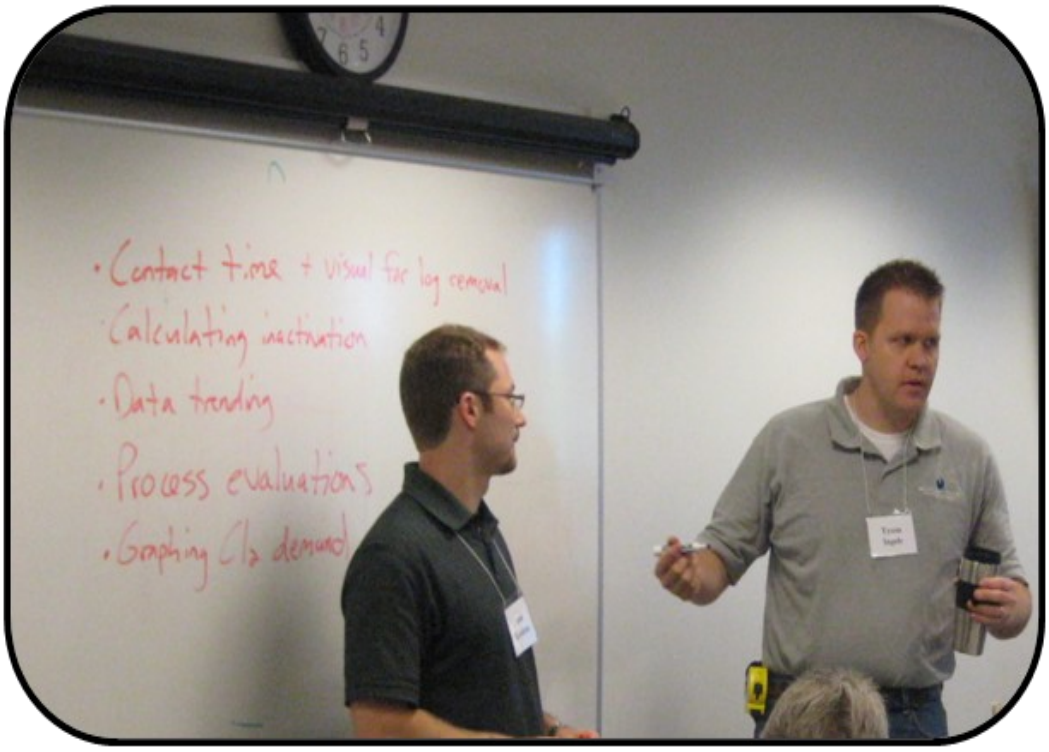
Chemical Reaction – To ensure the reagents are allowed to properly react with the sample, please review the testing method procedures. For example, DPD colorimetric method utilized with pocket colorimeters requires the reagents to react with the sample for a minimum of 20 seconds prior to testing. In the case of free chlorine, the sample should be analyzed within one minute after adding the reagent, and for total chlorine the sample should be analyzed three to six minutes after adding the reagent.

Instrument Operation - The operator should read and be familiar with the instrument functions. For example pocket colorimeters utilizing the DPD colorimetric method may have several ranges depending on the chlorine concentration within the distribution system.

Interfering Substances – Be aware of the water chemistry. Acidity, water hardness and other chemicals added to the water, such as manganese oxide, can affect the reported concentration levels. If the water chemistry is not within the testing levels of a proposed method, adjustments to the sample or another method must be utilized.

It is important to realize that improper sampling or testing procedures can lead to inaccurate results that can falsely indicate contamination or cause additional system resources to be expended. Therefore, the Water Quality Control Division recommends water systems develop standard operating procedures for chlorine sampling to eliminate chlorine sampling errors.



District Engineer Tyson Ingels, right, presenting at an operator training workshop.

Visit Us on the Web

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- Subscribe to Safe Drinking Water Program's RSS feed
  http://twitter.com/statuses/user_timeline/35859511.rss
- The Drinking Water Program's home page Web address is
  www.cdphe.state.co.us/wq/drinkingwater/index.html
- For training opportunities, please visit the division's website at
  www.cdphe.state.co.us/wq/drinkingwater/trainingevents.html
- To access Aqua Talk online, go to
  www.cdphe.state.co.us/wq/drinkingwater/QuickLinks.html.
- To access the district engineer county listing, go to
  www.cdphe.state.co.us/wq/engineering/techhom.html
- To access the contact list for drinking water rules, go to
  www.cdphe.state.co.us/wq/drinkingwater/RegulatoryGuidance.html
- Follow the Water Quality Control Division's Enforcement activities on Twitter

  http://twitter.com/WQCD_Enforce

Aqua Talk Newsletter Information

The following people contribute to the production of each issue of Aqua Talk: Ron Falco, Sharon Williams, Julie Conroy, Gloria Duran, Jacki Main, Louanna Cruz, Paul Kim, Lori Moore, Lisa Pine, Melissa McClain and Mike Bacon.

We welcome comments, questions, story ideas, articles and photographs submitted for publication. Please address correspondence to Jacki Main, Aqua Talk Newsletter, Water Quality Control Division, 4300 Cherry Creek Dr. S., B2, Denver, CO 80246-1530 or e-mail comments.wqcd@state.co.us. Enter "Safe Drinking Water Newsletter" as the subject. Past issues are available by contacting the editor or visiting the website at http://www.cdphe.state.co.us/wq/drinkingwater/QuickLinks.html.

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of Public Health
and Environment

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4300 Cherry Creek Drive South
Denver, CO 80246-1530
WQCD DRINKING WATER PROG - 2030

AQUA TALK

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

303-692-3500

4300 Cherry Creek Dr. S., Denver, CO 80246-1530

Internet address http://www.cdphe.state.co.us/

Division Internet address http://www.cdphe.state.co.us/wq/index.html

Date of Issue - Summer 2011

Editor: Jacki Main

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