State of Alaska, Department of Environmental Conservation
Division of Environmental Health
Drinking Water and Wastewater Program
555 Cordova St.
Anchorage, Alaska 99501

Important Information

For Water Operators and Owners

Northern Flows

DW/WW Program Directory

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Alaska's Drinking Water & Wastewater Program Newsletter
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Message from the Manager

The days are longer and warmer, and our all too short Spring season is upon us. I was in Old Town Alexandria, Virginia, attending the midyear meeting of the Association of State Drinking Water Administrators (ASDWA) when I started writing this message for the newsletter. The repeated theme word I have heard during the ASDWA meeting was "challenge." From my perspective it is more like an "avalanche" and the challenge is getting it done, actually **all done**, with less, and still ensure adequate public health protection and safe drinking water. The world of drinking water is becoming more prescriptive in terms of water quality and treatment techniques, and the regulations are more detailed and complex. It is not going to be getting any easier to treat water for drinking water use and the cost to produce a gallon of treated water is ever increasing.

I believe the "avalanche" that is facing public water system (PWS) owners, as well as the State, is the group of new drinking water regulations that have been, or will soon be promulgated (finalized and published) by U.S. EPA. This group includes the Arsenic Rule, promulgated January 22, 2001, and effective February 22, 2002, the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) promulgated January 12, 2002, as well as the proposed Ground Water Rule and Radon Rule. Additionally, the Lead and Copper Rule Minor Revisions (LCRMR), Public Notification Rule (PNR), and the Radionuclides Rule promulgated by EPA January 12, 2000, May 4, 2000, and December 7,2000 respectively, will require additional monitoring and reporting for water system owners as well as the ADEC DW/WW Program staff.

The Arsenic Rule has lowered the MCL for arsenic in drinking water from 50 ug/L (micrograms per liter, which is equivalent to parts per billion) to 10 ug/L. All Alaska Class A PWS (Community and Nontransient Noncommunity Water Systems) have to be in compliance with this MCL by January 23, 2006. The State plans to adopt this Rule by reference and we expect to have the Arsenic Rule adoption completed by January 2005. We have been proactive in the State and have sent both an Arsenic Rule information letter and "plain English" Arsenic Rule fact sheet to all Class A PWS owners. We have required that all Class A PWS owners collect a raw (untreated) water sample from their system during calendar year 2002 and have it analyzed for arsenic by the laboratory used for routine monitoring. The results are to be sent to the local DW/WW Program Office. The goals for this sampling project are to obtain recent and reliable data for arsenic in raw drinking water across the state, and to look at those systems that currently treat the water to review the effectiveness of the treatment technology. We want to understand the magnitude of the potential problem, areas effected, and possible solutions for naturally occurring arsenic in drinking water sources in Alaska. Studies from the USEPA indicates that arsenic is directly linked to cancer in humans and other health effects such as circulatory problems and skin damage.

Many of the Community Water Systems will have to meet the Arsenic Rule Consumer Confidence Report (CCR) notification requirement for their 2001 CCR. These systems will be required to put arsenic health effects language in their 2001 CCR, which is due to the State by June 30, 2001. DW/WW Program staff will notify all Class A PWS owners by letter if their system needs to put the arsenic language in their CCR Reports.

The ADEC DW/WW Program has contracted with U.S. EPA and their

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This Issue

Is it a Direct or a Potential Cross Connection? By Linda Taylor P.E.

What is a "cross-connection"? The general definition is "a direct or potential connection of an unsafe water to a safe drinking water source or supply."

Connecting a sewer line to a water distribution line is a direct cross-connection. This allows unsafe water to be directly connected to a safe water supply, (that's bad). But, what is a "potential" cross-connection? Those are a little harder to explain or recognize. A "potential" cross-connection is a spot where a direct cross-connection might or could be connected to a potable water system. Let's look at some examples to give you some idea of what to look for as you stroll through your water treatment plant, wastewater treatment plant, and lift stations, etc.

In just about every janitor's sink there is a cut-off piece of hose connected to the faucet (a hose bib faucet) with the other end of the hose curled on the bottom of the sink. This is considered a "potential" cross-connection. As long as the water in the drain is not backing up and covering the hose there is no cross-connection. But, if the drain backs up covering the hose with wastewater, there is a potential (a possibility) that the wastewater can be sucked up into the potable water system.

How can this happen, you ask. There is a valve between the end of the hose and the potable water lines. If that valve fails (is leaking) and someone turns the water on full force just down the line from the sink, a venturi effect happens. This venturi effect will cause water to be sucked up through the hose and the valve thus contaminating the potable water. This method of contaminating the potable water lines is known as *backsiphonage*. When backflow from *backpressure* happens, the pressure of a connecting pipe is greater than the pressure in the water distribution system. The liquid in the connecting pipe will flow from the business into your water distribution system.

So, when you walk through your plants, both water and wastewater plants, look for potential cross-connections. Look for hoses on the floor, draped over railings, or hanging down in the water. Look for places where a hose or pipe can be connected to another. The best prevention is an air gap. The air gap should be at least as wide as 2 discharge pipe diameters and should be on a filter backwash waste lines, softener drain lines, etc. Look for places where the pressure in the pipe connecting a piece of equipment to your potable water has a higher pressure than the water line.

One area where potential cross-connections are frequently overlooked is in school chemistry or biology labs. Potable water is piped to those labs and students do experiments using the “venturi effect” to move water through filters. Students do not always watch their equipment as they should and the contaminated water can be sucked into the potable water system. So it is a good idea to provide backflow or backsiphonage protection against this possibility. Usually this protection is put on the school service line from the community potable water distribution line, however, don’t take this for granted, check it out.

What kind of protection would a potable water system need from a direct or potential cross-connection? It depends on the kind of hazard it is. Cross-connections are classified into low and high hazards. Low hazards are those that do not cause an immediate health effect. For example, if the Jack Daniels Whiskey Company had a failure of their backflow prevention valves and a vat of 60-year old whiskey got sucked into the water distribution line serving them and the subdivision a few miles away, no one would catch a disease or get immediately sick. Some people might not like the taste. Others might protest when the water operators started flushing the line to get rid of the “contaminated” water. This contaminant is a low hazard and a double check valve backflow prevention assembly would be the type of commonly used prevention device to protect the potable water system.

The school lab mentioned before is considered a high hazard. The chemistry labs have acids, caustic solutions, and some other really dangerous chemicals that would have an immediate harmful effect on the health of anyone drinking water contaminated with these chemicals. A reduced pressure zone backflow prevention assembly is needed for this situation. Other sources of high

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Message from the Manager (Cont’d)

contractor, the Cadmus Group, to provide Arsenic Rule training workshops in Alaska in June 2002. The current schedule for the workshops is the following: Juneau (June 3 -4), Anchorage (June 6- 7), and Fairbanks (June 10-11). Workshops are opened to regulatory agency staff, consulting engineers, and PWS owners. It is planned that each workshop will have seating available for 50 participants.

The LT1ESWTR builds on microbial pathogen protection initially established by the Surface Water Treatment Rule (SWTR) and increased by the Interim Enhanced Surface Water Treatment Rule (IESWTR). The State of Alaska currently has primacy for the SWTR and IESWTR. The LT1ESWTR applies to those systems serving less than 10,000 persons using either a surface water or ground water under the direct influence of surface water (GWUDISW) source. The Rule requires 2-log removal of *Cryptosporidium,* and individual filter performance reviews for systems that filter. For those few systems in the state using filtration avoidance for compliance with SWTR, this Rule will require that *Cryptosporidium* be included as a pathogen of concern in their watershed control plan. This Rule will also require that PWS begin disinfection profiling by July 1, 2003 for systems serving more than 500 persons and by January 1, 2004, for those systems serving fewer than 500 persons. The State of Alaska plans to adopt this Rule by reference during calendar year 2004.

For the Ground Water Rule, Class A PWS (Community and Nontransient Noncommunity Water Systems) that do not have any form of disinfection and are considered by EPA to be hydro-geologically sensitive, should prepare to monitor for dual fecal indicators, both bacteria and viruses (coliphage, either male specific or somatic). There will be a holding time of 3 days or less for these samples and they will have to be sent via Express Mail Gold Streak or something similar. Hydro-geologically sensitive aquifers include; karst, fractured bedrock, and cobbled. EPA plans to finalize this Rule early in calendar year 2003. As the rule is currently proposed, PWS will be required to be in compliance with this Rule in 2006. This will be a problematic rule for many small Alaska Class A PWS.

The Radon Rule is still in the proposal stage and is not expected to be finalized by U.S. EPA until 2003. This Rule will apply to Class A PWS (Community Water Systems) that use groundwater or a combination of ground and surface water. EPA has proposed two MCLs for this Rule, a prescriptive MCL of 300 pCi/L (pico Curies per liter) and an alternative MCL (AMCL) of 4000 pCi/L for States or PWS that develop a multimedia mitigation program (MMM). A MMM Program is basically a combined indoor air and drinking water program to reduce the health risks associated with radon inboth indoor air and drinking water. Radon is a colorless, odorless, dense, naturally occurring radioactive gas. According to U.S. EPA, breathing radon in indoor air is directly linked to lung cancer and drinking water with high levels of radon is linked to stomach cancer.

The ADEC DW/WW Program completed a random sampling of approximately 10% of the Class A Community Water Systems during the summer of 2001. A total of 58 samples were analyzed for radon in drinking water. The test results ranged from non detect (ND) up to 2,885 pCi/L. The one drinking water source that tested high for radon was resampled twice and each resampled test result was over 2,800 pCi/L. Fortunately, no samples exceeded the proposed AMCL of 4000 pCi/L, however, 15 samples exceeded the prescriptive 300 pCi/L MCL. The random sampling program of 10% of Alaska's Class A PWS, using predominantly a ground water source, indicates that compliance with the prescriptive MCL of 300 pCi/L for radon in drinking water will be problematic unless the State and/or local governments develop Radon MMM Programs.

Staffing within the DW/WW Program continues its dynamic ebb and flow. Long time ADEC staff, Rob Danner, in the Ketchikan Office retired effective March 31, 2002, and short time DW/WW Program staff, Stefanie Lockwood, has left the DW/WW Program to work for the Director, Division of Environmental Health. Congratulations to both Rob and Stefanie in all their future endeavors. Staffing within the South-central DW/WW Program, Anchorage Office, has finally been completed. Several new staff have been recently hired within the South-central DW/WW Program area, Anchorage Office. Please welcome: Chuck Blaney; Kathleen Free, and Lugene O'Fallon.

As we move forward into spring, enjoy the longer and warmer days as you prepare your drinking water and wastewater systems for the "challenges" that are in front of us. Together we can make it work and together we do make a difference.~

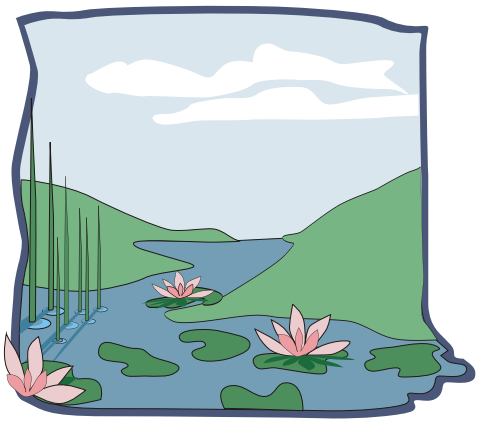
James Weise
Manager,
DW/WW Program

Source Water Assessment: Past, Present and Future By Suzan Hill

As a requirement of the 1996 Amendments to the Safe Drinking Water Act, The Source Water Assessment component of the DW/WW Program was approved by the EPA on April 4, 2000. Although program implementation got off to a slow start, much has been accomplished since that time.

The initial focus of program implementation was on the development of a comprehensive relational database, and Source Water Assessment Guidance Manuals. The database is an integral tool for the assessment process and is used for data management of PWS source location, contaminant source inventories, and the vulnerability analysis for the assessment. The Class A and Class B Guidance Manuals are technical step by step guides to assist the PWS owners and operators in understanding the purpose of a Source Water Assessment, their involvement in the process, and what to expect in the final Assessment Report.

To date, the Drinking Water Protection (DWPP) staff have completed source water assessments in the Girdwood and MatSu Valley areas, and are in the process of completing assessments in the Greater Anchorage, Cottonwood, and Fairbanks areas. They have completed 73 Class A and 30 Class B Source Water



Assessment Reports. In addition, four contractors (Ecology and Environment, Inc., Shannon & Wilson, URS Corporation, and BEST Resource) have completed the assessment process and produced reports for 117 Class B PWS. A list of completed assessments can be seen at the DWPP Website: Http://info.dec.state.ak.us/eh/dwpp/ complete.asp.

It is estimated that the DWPP staff and contractors will have completed over 600 PWS Source Water Assessments by June 30, 2002.

During the next year and a half, we will be initiating assessments throughout Alaska as follows: the Kenai Peninsula, South East Alaska, and Interior Alaska September, 2002 and Western, South West, and Northern Alaska January, 2003. As assessments are being initiated, Public Meetings will be held at towns central to those areas, i.e., Seward, Homer, Juneau, Dillingham, and Bethel. Invitations to attend the Public Meetings will be sent directly to PWS owners and operators within the affected areas.

For a list of completed assessments, visit our Website at http://info.dec.state.ak.us/eh/dwpp/complete.asp. If you have received your source water assessment include a brief summary of your source water's susceptibility to contamination based on the findings of the source water assessment in your CCR Report. This is your opportunity to educate your customers about the impacts that they and others have on the quality of their source water.~

Security for Public Water Systems By James Weise

Security at public water and wastewater systems has been an issue of concern on a national level since the tragedies of September 11, 2001. In Alaska, most of us don't think of "water and wastewater infrastructure security" as an issue because we believe that we are significantly removed from "mainstream America." Security is an issue though, and I encourage utility owners and operators to be more vigilant in their review of basic security awareness issues for their systems. Basic security for your water or wastewater system should include knowing the phone numbers for local law enforcement and ADEC staff, having a written emergency response plan prepared and knowing what is in the plan, keeping track of visitors and requiring a "check in" and "check out" for visitors, checking identification of all visitors, and just noting whether you have "strangers" around your system or utility. The State of Alaska, as well as the other states, will be receiving some limited funding very soon from U.S. EPA for security-related activities. Security-related activities include basic security awareness training and system vulnerability assessments. The State of Alaska intends to use some of this funding to retain a consulting firm to provide training to Public Water Systems owners and operators, ADEC DW/WW Program staff, as well as city managers and the general public.~

Operator Tip *by David Khan, PE*

During my recent visit to a drinking water system in southeast Alaska, I discovered that a diaphragm type chlorine pump was not properly working because its rubber gasket was leaking. Apparently, the gasket material had swelled and cracked. This situation raised a question in my mind: how long does a rubber gasket or an O-ring function properly in chlorinated water containing a chlorine residual and/or chloramines? A recent study, supported by the American Water Works Association Research Fund (AWWARF), found that chloraminated water was most detrimental to gaskets made from natural and synthetic rubber leading to material swelling, surface cracking, and a loss of elasticity. This study also found that the gaskets made from synthetic polymers, specifically formulated for chemical resistance, were least affected by chlorinated water. A good safety tip for operators would be to check your pumps O-rings or gaskets and replace them accordingly. ~

Is it a Direct or a Potential Cross Connection (Cont'd)

hazard backflows are hospitals and clinics (both human and animal), dentist offices, photograph development businesses, boat harbors, and any business using a chemical in their manufacturing process and wastewater treatment plants.

You should look at every connection to your water distribution system and ask yourself, "What liquid could be sucked or pushed into my distribution system from this building?" Determine if it is a low hazard, one that would not harm someone who drank water mixed with it, or a high hazard, one that would cause harm. Afer you have assessed your "risk" to a backflow hazard, order and install the appropriate backflow prevention assembly. Always order a backflow prevention "assembly," not a backflow prevention "valve." An assembly comes with a gate valve or ball valve on each end of the backflow prevention valve, that you wouldn't get by ordering the backflow prevention valve alone. These isolation valves are needed for proper testing and maintenance of the backflow prevention valves. The assembly should be tested annually. ~

Capacity Development *By Keven Kleweno P.E.*

We are changing the Capacity Development Program and need your help. Since October 1999, the Department of Environmental Conservation (ADEC) and the Regulatory Commission of Alaska (RCA) have been working with new Class A public water systems. We are trying to ensure that before water is provided to the public, the proposed public water system will be able to meet the technical, managerial, and financial capacity requirements found in the Safe Drinking Water Act and State Regulations. We have found several items in the State Regulations that could be changed to streamline the approval / certification process for both the developer of the public water system and the State Agencies. We would like your help in this effort. To start, we will be sending out letters to individuals that were members of the original Citizen Advisory Board (CAB) asking for their assistance again. If you are interested in being a new member of the CAB, please contact Keven Kleweno at (907) 269-7696.
If you can not be a member of the CAB, we still need your help. Please go to either ADEC or the National Rural Water Association's web pages and download the Capacity Development Self Assessment Guide for Class A public water systems. Complete the self assessment guide and mail it to either Keven Kleweno, ADEC, 555 Cordova Street, Anchorage, Alaska 99501 or Brad Ault, NRWA, 11723 Old Glen Hwy., Ste 203A, Eagle River, Alaska 99577. We need as many completed self assessment guides as possible to assist us in determining how best to change the State Capacity Development Strategy and to better understand the impacts that the new drinking water regulations will have on existing systems. ~

Http://www.nrwa.org/alaskaruralwater