Oregon Drinking Water News
PIPELINE
Drinking Water Program, Oregon Health Division

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SDWA Reauthorization Passes Senate, 95-3

During the past two years, Senator Mark Hatfield and his staff have worked diligently and skillfully on behalf of Oregonians to amend, revise and improve the federal Safe Drinking Water Act (SDWA). The Senator's substantial efforts to build consensus helped move the SDWA Amendments of 1994 (S 2019) to a 95-3 approval in the Senate on May 19. Hatfield and other Senators contributed key amendments to the final version of S 2019 which resulted in strong support of the bill by members of the drinking water coalition including, among others, the National Governors' Association, American Water Works Association, National Rural Water Association, National League of Cities and Association of State Drinking Water Administrators.

Rather than summarize the provisions of the bill and its history, we have printed below the Senator's press release on the legislation. As you will see, the Senator received much valuable information on safe drinking water issues from many Oregonians engaged and interested in the public drinking water supply field. He asked me to convey his thanks and appreciation to you for all of your thoughtful advice and support.

What's the next step? Answer - SDWA reauthorization in the House of Representatives. A number of bills have been introduced in the House but none has yet had committee hearings. Oregonians should now contact their representatives to promote completion of the SDWA reauthorization process. **Dave Leland**

Hatfield Brokers Key Compromise, Says Standards to Remain High

Washington, DC, May 19 — The US Senate has approved legislation that provides for sweeping changes in the federal government's safe drinking water laws.

The Safe Drinking Water Act Reauthorization amends legislation passed in 1986 and makes several key changes in the law regarding monitoring, standard setting for contaminants, and methods for assisting with water systems that cannot comply.

Senator Mark Hatfield, the Ranking member of the Senate Appropriations Committee, played a key role in the debate by brokering a compromise agreement that cleared the way for action by the full Senate. The legislation had been stalled for several months.

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Coliform Sampling Plans Reduce Errors

by John Potts

In January 1991, the total coliform rule became effective for all public water systems in Oregon. This new rule, required by the 1986 amendments to the federal Safe Drinking Water Act, brought numerous changes to the sampling requirements, analytical methods and follow-up procedures to coliform bacteria monitoring. A major feature of this rule is the requirement that all public water supplies must collect and report a minimum of five routine coliform bacteria samples per month. Most small systems in Oregon now collect one sample per month or even one per quarter. We estimate the total additional cost of increased monitoring to the 2,500 small Oregon water systems could be as much as $3M per year! Fortunately, the rule does allow the state to reduce coliform monitoring to fewer than five per month if:

1. *The system has an approved written coliform sampling plan, and*
2. *A sanitary survey of the system is conducted at least every five years, and*
3. *The survey shows the system is free of sanitary hazards that could cause coliform contamination.*

The Health Division Drinking Water Program and public water systems have until June 1995, to develop and put in place a program for issuing coliform monitoring reductions that is acceptable to EPA. Until then, routine monitoring frequencies will remain as they are now. **Dave Leland**

The intent of this article is to assist water system managers and operators in the development of coliform monitoring plans. Future articles will focus on sanitary surveys and sanitary hazards as these features of the monitoring reduction program are developed over the next year.

The purpose of routine coliform sampling is to assure that the water delivered to all users meets drinking

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John Potts, R.S., is an environmental health specialist in the Drinking Water Program's Corvallis office.

Inside this issue:

Hatfield *(Continued from page 1)*

"We've made significant improvements in the law without compromising safety standards," Hatfield said. "This is a good bill that is balanced and workable."

Hatfield crafted an agreement with the Chairman and Ranking Member of the Senate Environment and Public Works Committee that would give local governments more flexibility to structure safe drinking water programs to fit their needs. The bill passed today also includes a revolving loan fund program to help state and local governments upgrade water treatment plants.

Hatfield heard complaints from hundreds of water system operators in Oregon as well as the nation's governors and mayors about the existing law, which many claimed was burdensome and nearly impossible to implement. In July of 1993, he hosted a seminar on the issue in Wilsonville, Oregon attended by state, federal, and local officials concerned about the existing laws, including representatives from the State of Oregon, the City of Portland, City of Salem, and many others.

"I heard from local governments and water system operators throughout the state of Oregon who want clean, safe, drinking water," Hatfield said. "Unfortunately, the existing law was an impediment to that goal and it was becoming more difficult to achieve given the burden of regulatory overkill."

Hatfield said the revised version of the law passed by the Senate today was a major step in the right direction.

"States need the authority to design programs that meet the standards but also reflect the ability to comply at the local level. Why should a local water system in Oregon have to repeatedly monitor for a contaminant that only occurs in Florida?"

From Sen. Hatfield's office:

Safe Drinking Water Act Concerns from Oregon

SELECTION of new contaminants: One of the biggest concerns of Oregonians about the SDWA is that in 1986 Congress forced EPA to regulate 25 new contaminants every three years, regardless of the need for or cost of the regulation.

Solution: Bill eliminates this requirement and replaces it with a requirement that EPA study seven contaminants every five years, then make an independent decision about regulation.

RISK assessment: Citizens want to know that the contaminants EPA decides to regulate actually pose a health risk.

Solution: Bill requires EPA to use good science and assess the risk of contaminants before proceeding with regulation.

COST-BENEFIT analysis (standard setting): There is great concern that EPA sets standards for contaminants at a level that is overly cautious and unrelated to the level of health protection secured for the cost.

Solution: Bill requires EPA to assess the amount of health risk reduction and the compliance cost of a proposed regulation. After this analysis, EPA may set the standard at a less stringent level if the costs can be substantially reduced and the health risk is not increased significantly.

MONITORING burden: Citizens are upset that they monitor for contaminants that have never been in their water.

Solution: Bill allows states to tailor flexible community monitoring programs. In addition, systems under 10,000 will only test once every three years for carcinogenic contaminants if they are not present in the first of four tests during that 3-year period.

SMALL system flexibility: Small systems are particularly hard hit by many of the current Safe Drinking Water Act regulations because they don't have the economies of scale of a large city.

Solution: Systems serving fewer than 10,000 people are eligible for a streamlined variance process and a new small system technology program. A number of other flexibility provisions are included in the bill for small systems, including funding for continuation of the "circuit rider" rural assistance program.

FUNDING: Citizens and local government don't like unfunded mandates. Safe Drinking Water Act regulations are technical and expensive.

Solution: Bill establishes a $599 million State Revolving Loan Fund and more than doubles grants to states.

Sampling Plans *(Continued from page 1)*

water microbial standards. It is essential that the entire system be routinely monitored since coliform contamination can occur anywhere in the system. The coliform sampling plan guides the operator in selecting routine sampling sites to ensure monitoring is conducted at representative points and regular intervals. It also establishes repeat sampling sites for monitoring in the event of a positive routine test result and helps assure that proper sampling is conducted even when staff assignments change. The size and complexity of the plan will be dependent upon the structure and composition of the water system. These plans must be submitted to the Health Division or local county health department upon request and made available for review at the time of any site visit or sanitary survey.

Sampling Sites

Careful selection of sampling sites is extremely important. They should be located throughout the distribution system, represent varying conditions that occur and be chosen with consideration for the complexity of the water system. It is also important to identify potential areas of concern that may adversely affect the microbiological quality of the water and include those sites in the sampling plan. Examples are: cross connection hazards, varying population densities, low pressure zones, deteriorating water mains, shared use connections, low velocity water movement areas or any other conditions of concern.

Customers' faucets and specially installed sampling taps are the two most commonly used sampling sites; either is acceptable. Many water suppliers use special taps for coliform sampling sites. These are connected directly to the distribution piping. They can be a simple riser pipe with a faucet connected to the distribution main or a more sophisticated manufactured sampling station that is installed at the water meter or into the distribution main. Special sampling taps are preferred by some utilities because they are more accessible to the sample collector and are not influenced by conditions within customer's plumbing systems.

Sampling at a customer's faucet may not accurately reflect the conditions of the distribution system due to conditions in the customer's plumbing that are not under the control of the water supplier. In many cases, this is the only way to collect a sample; if this is the case, it is recommended that each faucet be carefully examined to assure suitability. Some examples of conditions that are undesirable:

- Swivel-type faucet with a common control valve for hot and cold.
- Faucets with leaky packing material around the stem.
- Faucets that supply areas where bacterial contamination is highly probable, such as janitorial sinks or commercial cleaning sinks.
- Faucets close to or below the ground surface.
- Faucets that point upward.
- Faucets with internal threads in the spout.
- Samples collected through a garden hose or other faucet attachment.
- Faucets with aerators. Remove aerators prior to sample collection.
- Drinking fountains and bubblers.

Sampling Plan

The basic sampling plan consists of three components:

- A map of the distribution system.
- A narrative description of the plan.
- A sample plan maintenance program.

Some guidelines for developing these components:

1. A map of the distribution system showing:
   - All water sources and their entry points into distribution.
   - The area served by each water source (if not combined prior to distribution)
   - Treatment facilities (filtration, disinfection, etc.).
   - Storage tanks and reservoirs.
   - Pressure reducing stations.
   - Booster pump stations.
   - Pressure zones.
   - Routine sampling sites.
   - Repeat sampling sites.
   - Interconnections and critical valves.
   - Pipe material and size (if known).
   - Location of blow offs/flushing points.
2. A narrative description of the plan including:
   - Water system name.
   - The seven digit water system ID number (41-----).
   - The name of each source.
   - Storage/reservoir volume.
   - Treatment plant description--process utilized, source(s) treated, location, etc.
   - Pressure stations.
   - Total population served.
   - Total number of service connections.
   - Number and area of pressure zones with population and service connections in each zone.
3. A sample plan maintenance program includes:
   - Minimum number of routine samples required per monitoring period.
   - Total number of routine sample sites needed to represent all distribution areas and areas of concern. Health Division recommends selection of 3-4 times the number of sites needed to meet minimum testing requirements.
   - Location of all routine sampling sites needed to cover all areas in the distribution system. The location of these sites must be on the map of the system and the specific location (address) must be listed in this section.

- Schedule for sample collection for systems that collect multiple samples per month. The samples should be collected on regular intervals (daily, weekly, bi-weekly,etc.) and not all on the same day.
- Monthly rotation cycle; typically a system has more sampling sites than required monthly samples and will rotate among those sites. A description of the rotation schedule must be included. It is desirable to rotate through each sample site three to four times per year.
- Note location of at least one site upstream and one downstream within five service connections of each routine sample site. Additional sites must be identified for systems collecting one sample per monitoring period because they are required to collect four repeat samples following a positive routine. Systems collecting two or more samples per month collect three repeat samples.
- Systems collecting fewer than five routine samples per month must collect five routine samples the month following a coliform detection in a routine sample. These locations must be identified in the narrative and they are usually other routine sampling sites.
- A brief narrative on the sample collection technique. Many instances of false positive test results occur due to improper technique. An excellent sampling plan is of little value if the personnel collecting samples are not properly trained. Follow the directions from the laboratory that accompany the sample container.
- A schedule of the distribution line flushing program. This maintenance procedure is vital in reducing the possibility of coliform and biofilm buildup. Systems with dead end lines should practice this on a regular schedule.
- Measure and record the free chlorine residual on the lab slip each time a coliform sample is collected if the system chlorinates.
- Name and phone number of the sampling plan preparer.
- Date the plan was prepared.

The majority of water systems developing these plans will have relatively simple plans as their structure and composition is not too complex. Water systems such as schools and single building facilities without distribution systems will still be required to develop a sampling plan. In most cases, the plan will be relatively short and simple with a small number of sampling sites identified.

The sampling plan is a tool for water systems to use to identify the most representative points to collect bacteriological samples. A thorough plan will help support reduction of coliform sampling and minimize poor site selection and techniques which contribute to false positive results.

EPA's Rationale for for Five Coliform Tests per Month

EPA funded studies by Christian and Pipes in 1982 and 1983 demonstrated that coliforms in contaminated water systems are very unevenly dispersed.

Small areas within the distribution system may have high coliform densities while large volumes may lack coliforms entirely.

Calculations from the studies demonstrate that even when the arithmetic mean coliform density is greater than one per 100 ml, the probability that a single 100 ml sample will not have coliforms is very high.

It follows, therefore, that most samples, even in a contaminated water system will be coliform free. Thus, a larger number of samples is necessary to detect contamination.

An expert panel convened at a 1981 workshop recommended that a minimum sampling frequency be five samples per month for small systems. This value is based on the calculation that, if 60 or more samples per year are collected and 95% or more are coliform-negative, there is a 95% confidence that the fraction of water with coliforms present is less than 10%.

The panel recommended that this level, at which at least 90% of the water is coliform free, be accepted as a "protection reliability standard."

By comparison, if a system collects only one sample per month or 12 samples per year and one of those samples is coliform-positive, we are 95% confident that only 66% of the water is coliform free.

In the absence of other assurances of protection, EPA believes that fewer than five samples per month cannot adequately represent the microbiological quality of the water. A few coliform-negative samples may give a false sense of safety.

This is the basis for allowing fewer than five samples per month based on the results of a sanitary survey.

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Please send requests for article topics or manuscripts of your articles to John Gram, editor (503 / 731-4010).

This issue's contributors include Dave Leland, John Potts and Bonnie Waybright of Oregon Health Division. (45-94/191545)

Staff Notes

In the Monitoring and Compliance unit, Kolin Fielding has changed his name to reflect his Native American heritage and is now Cody Blue Eagle.

Joe Bogart and Georgine Proctor have returned to work after illnesses. Welcome back!

Bob Patterson, engineering assistant in the Pendleton office of the Field Services unit, has resigned to become a Regulatory Specialist with the Public Works Dept., city of Pendleton. Good luck!

Phase 2 and 5 Monitoring for 1994

During 1993, community and nontransient noncommunity public water systems serving more than 300 people were required to report Phase 2 test results (38 inorganics and synthetic organics). In addition, those systems serving over 150 connections had to report Phase 5 test results (23 inorganics and synthetic organics).

During 1994, water systems serving from 100-299 people must report initial results for Phase 2 contaminants. Phase 5 test results are not required until 1996. Technically, the rule specifies that initial testing for Phase 2 consists of four quarterly tests for one year now that the "Chafee Amendment" of 1993 has expired. However, the Drinking Water Program is conducting a detailed review of over 600 test results received to date. We will be submitting an alternative monitoring plan to EPA this summer proposing continuation of the single initial organics test if that test shows no detection of organic contaminants.

Pending completion of this alternate monitoring plan, we suggest that community and nontransient noncommunity water suppliers serving 100 people or more, who have not yet conducted any Phase 2 monitoring, proceed as soon as possible to collect and report the results of one initial sample. When we complete our statewide data review, we will contact those systems that must collect additional samples. Contact your laboratory directly to arrange for the sampling.

Water and Wastewater Financing Program

Program rules were adopted in late March. No construction projects have been funded in this short timeline but the Lyons-Mehama Water District's $1.4 million project is under review. Fourteen water and sewer projects, however, have benefitted from $152,000 in Technical Assistance grants and loans as of May 31. In May, $50,000 was awarded for three TA projects.

If you want a W/WFP handbook, call Oregon Economic Development Department in Salem at 503 / 986-0122. If you have questions about water system project financing for your community, call Dave Phelps, Drinking Water Program, Health Division, in Portland at 503 / 731-4010.

Cross Connection Update

Cross connection certification cards are finally out! After many weeks of struggling with the new system, the Drinking Water Program mailed 721 cards: 158 cross connection inspector, 420 backflow device tester, and 143 combination certificates.

Lists of certified backflow device testers and of approved backflow devices are now available from the Drinking Water Program. The current device list is dated April 1994.

To request either list, call Diane Weis at 503 / 731-4899. (Reminder: The Health Division no longer sells backflow device test report books. To order these, contact the AWWA at 503 / 246-5845).

Give Us a Piece of Your Mind

The masthead box in the ***PIPELINE*** says the newsletter is "intended to provide useful information on technology, training and regulatory and public policy issues to those involved with the state's public water systems to improve the quality of drinking water in Oregon." It asks for "requests for article topics or manuscripts of your articles."

We know from comments received by DW Program staff that many find the articles helpful in understanding the ever-increasing myriad regulations that apply to the way drinking water is developed, produced and distributed.

To make ***PIPELINE*** more valuable, we'd like to find out something about you, how you use the newsletter and what changes or additions, if any, you'd like to see. Please take a minute, complete the following survey and return it to John Gram, ***PIPELINE*** editor, Box 14450, Portland 97214-0450. If you prefer not to cut this out, a photocopy will do or fax it to 503 / 731-4077. Thanks.

1. I am
   - ω a water system operator
   - ω a water system manager
   - ω a water system tech staff member
   - ω a backflow/cross connection inspector/tester
   - ω employed in the water industry but in none of the above capacities
   - ω a consulting engineer
   - ω not employed in the water industry
2. When ***PIPELINE*** arrives, I
   - ω read it cover to cover
   - ω read most of it
   - ω read it barely, one or at most two articles
   - ω put it directly into the round file
3. The articles are
   - ω too technical for me to understand
   - ω not technical enough; gimme some meat!
   - ω just the right mix of explanation and how-to info
4. When I'm through with ***PIPELINE***, I
   - ω pass it on to others
   - ω file it for future reference
   - ω round file it
5. I'd like to see articles on

   _____

   _____

6 I'd like to prepare and submit an article on

   _____

   _____

Please contact me (name) _____

at (phone) _____

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Department of Human Resources
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David E. Leland, Manager s 503 / 731-4010

Training Calendar

American Water Works Association
Teleconference:
Preventing Waterborne Disease; How to Optimize Treatment Workshops, Sept. 9; information will be forthcoming

Seminars:
Confined space July 20
Excavation safety July 21-22
Both at Convention Center, Pendleton; sponsored by Pacific North West Section; contact Judy Grycko, AWWA, Portland, 246-5845.

Workshop:
Slow sand filtration Sept. 26-27
Contact Dan Bradley, Salem, 588-6063

Short school, Water Works Operator:
Sept. 13-15: sponsored by Southern Oregon Subsection at Umpqua Community College; contact Chris Hunter, Roseburg, 503 / 672-5559

Sept. 14-16; sponsored by North West Subsection at Clackamas Community College; contact Judy Jannsen or Duane Lee at Lee Engineering, Oregon City, 655-1342

Oregon Association of Water Utilities 503 / 364-8269
Regulatory update
Sept. 8 Klamath Falls
Oct 27 Bend

Wellhead protection
Sept. 13 Eugene

Hydrant/valves
Sept. 15 Lincoln City

Water system training courses
Drinking Water Program, OHD

Month	*County*
June	Josephine, Jackson
July	Crook, Deschutes, Hood River, Jefferson and Wasco/ Sherman
August	Lincoln

Contact Claudia Stiff, Portland, 503 / 731-4317

Cross connection / backflow courses
Clackamas Community College (C) 503 / 657-6958 x 2364
Backflow Management Inc. (B) 800 / 824-4385

Cross connection control (B)
(For systems required to have a program but not a certified inspector)
June 29 Bend

Basic Tester course (C)
Aug. 1-4 Hermiston
Dec. 12-15 Clackamas Community College

Tester update (C)
Aug 5 Hermiston
Aug. 25-26 Seaside
Oct. 13-14 Eugene
Oct. 21 Clackamas Community College
Dec. 1-2 Clackamas Community College
Dec. 16 Clackamas Community College

Inspector course
July 11-14 Sheridan (B)
Nov. 14-17 Clackamas Community College

Inspector update
July 8 Bend (B)
Nov. 18 Clackamas Community College