NEW EPA DRINKING WATER STANDARDS ADOPTED
By Mike Grimm, PE

Two new rules have emerged from the US Environmental Protection Agency that will improve drinking water quality standards. The first is the Interim Enhanced Surface Water Treatment Rule (IESWTR), published in the Federal Register on December 16, 1998, and is designed to address the health risks from microbial contaminants without significantly increasing the potential risks from chemical contaminants. The second rule, the Stage 1 Disinfectants/Disinfection Byproducts Rule (Stage 1 DBPR), was published concurrently with the IESWTR to control disinfectants and the formation of their byproducts.

(continued on page 2)

Advance Notice!!
American Water Works Association
Seminar on These Two New Rules! Right Here in Portland!

When: June 8-9, 1999 (2 days, 0.6 CEU each day)
What: June 8 - Disinfection by-products
June 9 - Interim enhanced surface water treatment
Where: Portland, Oregon!
(Double Tree Hotel - Columbia River)
Hotel Reservation Deadline: 5/24/99
Seminar Registration Cost: $90 for one day for small systems, $275 for two days for large systems
More Info: Call AWWA D/DBP-IESWTR Seminars, phone (800) 926-7337 and select “3” for seminar information, then “2” for hotel/registration information

This is a unique opportunity for you to attend a national level conference with national expert presenters, tailored to our region, right here in Oregon! Learn how to comply with these complex regulations and what impact the rules will have on you. Learn the implementation strategies that apply to the water quality and treatment practices in our region, and get the tools to make sure you are ready to comply. Attend Day 1 if you add a disinfectant to your water (or think you may have to in the future) or both days if you use surface sources, particularly serving over 10,000 people. Day 1 includes an update on the upcoming Groundwater Rule. Don’t miss this opportunity - it may be the best one you get!

Notice - Unregulated Contaminant Monitoring Comes To An End! (for now....)

EPA has suspended current unregulated contaminant monitoring requirements for water systems serving 10,000 or fewer people, effective March 9, 1999. A new Unregulated Contaminant Monitoring Rule is expected to be proposed in late March, 1999, and finalized in August, 1999. The rule will require a representative number of systems serving 10,000 or fewer people, and all larger systems, to monitor for up to 30 contaminants from the Contaminant Candidate List. EPA will provide for the monitoring and lab analyses for the selected small systems. So, you need conduct no further unregulated contaminant monitoring until this new rule is finalized! Your labs have already been notified.

NEW TECHNICAL ASSISTANCE CIRCUIT RIDERS ARRIVE AT THE DRINKING WATER PROGRAM
By Mike Grimm, PE

During the month of April, DWS will introduce two new circuit riders for small community water systems in Oregon. Funded with a portion of the Drinking Water State Revolving Fund (called a “set-aside” fund), the circuit riders will be providing statewide training and one-on-one technical assistance for communities under 10,000 population. The Oregon Association of Water Utilities (OAWU) has been hired to work with the groundwater systems and EES Consulting, Inc. has been hired to provide technical assistance to those communities using surface water.

The key element that each organization will provide will be known as a Resolution Plan for a community water system. The Resolution Plan is intended to help the communities understand what parts of the water system are in need of repair or bolstering, how to proceed with improvement, and what the cost of improvement will be. This technical service is being offered free of charge to the communities.

(continued on page 6)
Background History of both Rules

One of the key regulations EPA has developed to date to counter pathogens in drinking water is the 1989 Surface Water Treatment Rule (SWTR). Among its provisions, the rule requires that a surface water system have sufficient treatment to reduce the source water concentration of Giardia lamblia and viruses by at least 99.9 percent (3 log) and 99.99 percent (4 log), respectively. The goal of the SWTR is to reduce risk to less than one infection per year per 10,000 people. However, the SWTR’s limitation is that the source water of some systems has high pathogen concentrations that, when reduced by the levels required under the rule, still may not meet this health goal, and the rule does not specifically control for the protozoan Cryptosporidium.

Many water systems treat their water with a chemical disinfectant in order to inactivate pathogens that cause disease. The public health benefits of common disinfection practices are significant and well-recognized. However, disinfection poses risks of its own. While disinfectants are effective in controlling many harmful microorganisms, they react with organic and inorganic matter (disinfection byproduct precursors - DBPs) in the water and form DBPs, some of which pose health risks at certain levels. Since the discovery of chlorination byproducts in drinking water in 1974, numerous toxicological studies have been conducted that show DBPs to be carcinogenic and/or cause reproductive or developmental effects in laboratory animals. Additionally, exposure to high levels of disinfectants over long periods of time may cause health problems, including damage to blood and kidneys. While many of these studies have been conducted at high doses, the weight-of-evidence indicates that DBPs present a potential public health problem that must be addressed. One of the most complex questions facing water supply professionals is how to reduce risks from disinfectants and DBPs while providing increased protection against microbial contaminants. Much of the population is exposed to these risks. Therefore, a substantial concern exists.

Health risks associated with some DBPs are currently addressed by the regulation of total trihalomethanes (TTHM) at public water systems (PWSs) serving 10,000 or more people. EPA, however, believes that the promulgation of the Stage 1 DBPR will significantly decrease the risks posed by DBPs and disinfectants. The Stage 1 DBPR will broaden public health protection by covering many PWSs not currently regulated for TTHM or other DBPs.

Development of the IESWTR & Stage 1 DBPR

The new rules are a product of 6 years of collaboration among the water supply industry, environmental and public health groups, and local, State, and Federal governments. To address the complex issues associated with regulating microbial pathogens, EPA first launched a rule-making process in 1992 and convened a Regulatory Negotiation (RegNeg) Advisory Committee under the Federal Advisory Committees Act (FACA), representing a range of stakeholders affected by possible regulation. The RegNeg Committee met repeatedly over a period of 10 months and arrived at a consensus proposal for taking progressive steps toward addressing both DBPs and microbial pathogens. The 1992 consensus-building process resulted in the three following regulatory proposals:

1) A staged approach to regulation of DBPs (referred to as the Stage 1 and Stage 2 DBPRs) incorporating Maximum Contaminant Levels (MCLs), Maximum Residual Disinfectant Levels (MRDLs), and treatment technique requirements;
2) A companion IESWTR designed to improve control of microbial pathogens and prevent inadvertent reductions in microbial safety as a result of DBP control efforts; and,
3) An Information Collection Rule (ICR) to collect key information necessary to reduce many key uncertainties prior to subsequent negotiations for the Stage 2 DBPR.

Congress amended the Safe Drinking Water Act (SDWA) in 1996 and affirmed the strategy developed by the RegNeg Committee. Congress also established a series of new statutory deadlines for the rules.

In 1997, a similar FACA process was implemented with the M-DBP Advisory Committee. The M-DBP Committee convened to collect, share, and analyze new information available since 1994, review previous assumptions made during the RegNeg process, as well as build consensus on the regulatory implications of this new information. The IESWTR & the Stage 1 DBPR, as structured today, are the results of the FACA process.

Applicability and Key Dates for the IESWTR

The IESWTR applies to community water systems (CWSs) that use surface water or ground water under the direct influence of surface water (GWUDJ) as a source and serve 10,000 or more people. Systems must comply with the turbidity and monitoring & treatment technique requirements of the rule no later than December 17, 2001 (36 months after publication of the rule). However, PWSs with elevated levels of DBPs (Total Trihalomethanes - TTHM; and five haloacetic acids - HAA5) are required to develop an evaluation of their existing disinfection practices - a disinfection profile - no later than March 16, 2001 (27 months after publication). The timetable for the IESWTR is presented in Figure 1.
Applicability and Key Dates for the DBP Rule

The existing TTHM requirements apply only to systems serving 10,000 or more people. The Stage 1 DBPR covers a larger number of PWSs, applying to all CWSs and nontransient noncommunity water systems (NTNCWSs) that treat their water with a chemical disinfectant for either primary or residual treatment. In addition, certain requirements apply to transient noncommunity water systems (TNCWSs) that use chlorine dioxide.

The compliance dates for Stage 1 DBPR are December 16, 2001 and December 16, 2003. Surface water and GWUDI systems that serve 10,000 or more people will have to comply with the provisions of the rule beginning December 16, 2001. Surface water and GWUDI systems that serve fewer than 10,000 people and all ground water systems will have to comply with the provisions of the rule beginning December 16, 2003. The timetable for the Stage 1 DBPR is presented in Figure 2.

Requirements of the IESWTR

Disinfection profiling and benchmarking

Surface water or GWUDI systems having average annual TTHM ≥ 0.064 mg/L or annual average HAA5 ≥ 0.048 mg/L must develop a disinfection profile. The disinfection profile is a compilation of daily inactivation data computed over the period of one year. From the disinfection profile, the PWS calculates the average microbial inactivation potential for each month, and the lowest monthly average inactivation becomes the disinfection benchmark. The purpose of these provisions is to provide a process whereby a PWS and OHD, working together, assure that there will be no significant reduction in microbial protection as the result of disinfection practice modifications designed to meet the more restrictive MCLs for DBPs established in the Stage 1 DBPR. Those PWSs required to develop disinfection profiles that choose to modify their disinfection practices to meet the new MCLs, must establish the disinfection benchmark and consult with OHD prior to implementing such modifications.
addition, PWSs must keep the disinfection profile on file for OHD to review during a routine sanitary surveys.

Cryptosporidium
The IESWTR sets a maximum contaminant level goal (MCLG) of zero for the protozoan Cryptosporidium. It also establishes a requirement for 2-log removal of Cryptosporidium for systems that must currently filter under the SWTR. Systems that use conventional or direct filtration are assumed to meet this requirement if they are in compliance with the strengthened turbidity performance standards for combined filter effluent in the IESWTR (discussed below). Systems that use slow sand or diatomaceous earth filtration are assumed to meet the 2-log removal requirement if they are in compliance with the existing turbidity performance standards under the SWTR. The IESWTR also extends the existing watershed control requirements for unfiltered systems to include the control of potential sources of Cryptosporidium. Such sources must be included in an unfiltered system’s watershed control plan.

Strengthened turbidity requirements for combined filter effluent water
The IESWTR strengthens current treatment technique requirements for combined filter effluent for systems that use conventional or direct filtration. The turbidity level of a system’s combined filtered water at each plant must be less than or equal to 0.3 nephelometric turbidity units (NTUs) in at least 95 percent of the measurements taken each month, and the turbidity level of a system’s combined filtered water must at no time exceed 1 NTU (under the current treatment technique for filtered effluent, these turbidity requirements are 0.5 NTU and 5 NTU, respectively).

Individual filter monitoring requirements
The IESWTR introduces continuous turbidity monitoring for individual filters. Though there is no specific treatment technique violation associated with individual filter monitoring, the rule requires that surface water systems that use conventional or direct filtration must conduct continuous turbidity monitoring on the effluent of each individual filter. PWSs must

<table>
<thead>
<tr>
<th>Date from Rule Publication</th>
<th>Rule Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 16, 1998</td>
<td>Rule is published in Federal Register.</td>
</tr>
<tr>
<td>February 16, 1999</td>
<td>Methods specified in §141.131 for analyzing disinfection byproducts, disinfection residuals, and DBP precursors must be used.</td>
</tr>
<tr>
<td>December 2000</td>
<td>Large surface water and GWUDI systems may begin monitoring to determine Step 1 TOC removals before the compliance date.</td>
</tr>
<tr>
<td>December 2001</td>
<td>Large surface water and GWUDI systems must comply with the MCLs for TTHM, HAA5, bromate, and chlorite.</td>
</tr>
<tr>
<td>December 2001</td>
<td>Large surface water and GWUDI CWSs and NTNCWs must comply with the MRDLs for chlorine, chloramines, and chlorine dioxide.</td>
</tr>
<tr>
<td>December 2001</td>
<td>Large surface water and GWUDI TNCWs that use chlorine dioxide must comply with the MRDL for chlorine dioxide.</td>
</tr>
<tr>
<td>December 2001</td>
<td>Requirements of the DBP Rule generally apply to large surface water and GWUDI CWSs and NTNCWs.</td>
</tr>
<tr>
<td>December 2001</td>
<td>Monitoring requirements</td>
</tr>
<tr>
<td>December 2001</td>
<td>Reporting and recordkeeping requirements</td>
</tr>
<tr>
<td>December 2001</td>
<td>Compliance</td>
</tr>
<tr>
<td>December 2001</td>
<td>Treatment technique for control of DBP precursors</td>
</tr>
<tr>
<td>December 2001</td>
<td>Large surface water and GWUDI TNCWs that use chlorine dioxide must comply with requirements for chlorine dioxide and chlorite.</td>
</tr>
<tr>
<td>December 2002</td>
<td>Small surface water and GWUDI systems may begin monitoring to determine Step 1 TOC removals before the compliance date.</td>
</tr>
<tr>
<td>December 2003</td>
<td>Small systems using surface water and all remaining ground water systems must comply with the MCLs for TTHM, HAA5, bromate, and chlorite.</td>
</tr>
<tr>
<td>December 2003</td>
<td>Small surface water and GWUDI and ground water CWSs and NTNCWs must comply with the MRDLs for chlorine, chloramines, and chlorine dioxide.</td>
</tr>
<tr>
<td>December 2003</td>
<td>Small surface water and GWUDI and ground water TNCWs that use chlorine dioxide must comply with the MRDL for chlorine dioxide.</td>
</tr>
<tr>
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<td>Requirements of the DBP Rule generally apply to small surface water and GWUDI and ground water CWSs and NTNCWs.</td>
</tr>
<tr>
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<tr>
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</tr>
<tr>
<td>December 2003</td>
<td>Compliance</td>
</tr>
<tr>
<td>December 2003</td>
<td>Treatment technique for control of DBP precursors</td>
</tr>
<tr>
<td>December 2003</td>
<td>Small surface water and GWUDI and ground water TNCWs that use chlorine dioxide must comply with requirements for chlorine dioxide and chlorite.</td>
</tr>
<tr>
<td>June 2005</td>
<td>Systems that made a clear and irrevocable financial commitment before the applicable compliance date to install technologies that limit TTHM and HAA5 to 0.040 mg/L and 0.030 mg/L, respectively, must have these technologies installed and operating.</td>
</tr>
</tbody>
</table>
report instances of poor filter performance to OHD with the monthly turbidity report, and, based on performance triggers contained in the new rule, must take prescribed actions to identify and correct the cause(s). Those actions include filter self assessments (done by the water system) and comprehensive performance evaluations (done by OHD).

**Requirements of the Stage 1 DBP Rule**

**MCLGs and MCLs for disinfection byproducts**

The Stage 1 DBPR sets maximum contaminant level goals (MCLGs) for some of the regulated DBPs, a more stringent MCL for TTHM, and new MCLs for HAA5, bromate, and chlorite. MCLGs are set at concentrations at which no known or anticipated adverse health effects are expected to occur. They are non-enforceable public health goals. MCLs are enforceable contaminant standards that are feasible to achieve.

<table>
<thead>
<tr>
<th>Disinfection Byproduct</th>
<th>MCLG (mg/L)</th>
<th>MCL (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Trihalomethanes (TTHM)</td>
<td></td>
<td>0.080</td>
</tr>
<tr>
<td>Chloroform</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Bromodichloromethane</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Bromoform</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Dibromochloromethane</td>
<td></td>
<td>0.06</td>
</tr>
<tr>
<td>Five Haloacetic Acids (HAA5)</td>
<td></td>
<td>0.060</td>
</tr>
<tr>
<td>Monochloroacetic Acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dichloroacetic Acid</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Trichloroacetic Acid</td>
<td></td>
<td>0.30</td>
</tr>
<tr>
<td>Monobromoacetic Acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dibromoacetic Acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorite</td>
<td></td>
<td>0.80</td>
</tr>
<tr>
<td>Bromate</td>
<td></td>
<td>0.010</td>
</tr>
</tbody>
</table>

**MRDLGs and MRDLs for disinfectant residuals**

To protect against potential health risks caused by high levels of residual disinfectants, the Stage 1 DBPR sets the following maximum residual disinfectant level goals (MRDLGs) and maximum residual disinfectant levels (MRDLs). Like MCLGs and MCLs, respectively, MRDLGs are non-enforceable, while MRDLs are enforceable.

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>MRDLG (mg/L)</th>
<th>MRDL (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine</td>
<td>4</td>
<td>4.0</td>
</tr>
<tr>
<td>Chloramines</td>
<td>4</td>
<td>4.0</td>
</tr>
<tr>
<td>Chlorine Dioxide</td>
<td>0.8</td>
<td>0.8</td>
</tr>
</tbody>
</table>

**Treatment technique for disinfection by product precursors**

The rule includes a treatment technique that applies to systems serving a population of 10,000 or greater using conventional filtration technology. The treatment technique was established because disinfectants can react with DBPPs to form both regulated and non-regulated DBPs. The treatment technique requirements in the rule are designed to provide public health protection by minimizing the production of all DBPs. Compliance with the rule’s treatment technique requirement can be achieved by removing specified percentages of Total Organic Carbon (TOC) using enhanced coagulation or enhanced softening. Alternatively, systems are compliant by showing they meet alternative performance criteria that indicate removal of DBPPs is unnecessary or impractical.

**Best available technology (BAT)**

EPA has specified the Best Available Technology (BAT) for each MCL and MRDL established in the rule. These technologies and methods are believed to be effective in controlling chemicals in drinking water while remaining economically feasible for PWSs to employ. PWSs must use the specified BAT if they wish to qualify for variances.
More detailed information will be printed in the next Pipeline as the contract period commences. We would like to hear from you as this service gets underway. Please direct your comments to Mike Grimm at (503) 731-4317 or by E-mail at michael.w.grimm@state.or.us. Below is brief outline of areas and tasks on which both circuit riders will be working, and information on how to contact them directly:

OAWU (503) 873-8353
(Communities w/Groundwater)
• Resolution Plans
• Cross Connection Program one-on-one technical assistance
• General cross connection control training sessions - statewide
• Water distribution training sessions
• On site trouble shooting of short term problems (leak detection & repair, etc.)

EES Consulting, Inc. (Lee Odell, (503) 223-5900)
(Communities w/Surface Water)
• Resolution Plans
• Cross Connection Program one-on-one technical assistance
• General cross connection control training sessions - statewide
• Water treatment operations training sessions
• Revision of DWS Small Water System Training Course

Mike Grimm, PE, is in the Drinking Water Protection Unit of the Drinking Water Program

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EPA DEADLINE ON RISK MANAGEMENT PROGRAMS APPROACHES
By Carrie Gentry

Water systems that disinfect with chlorine gas should already be aware of EPA's Risk Management Program (RMP) Rule. The RMP rule is part of the Clean Air Act Amendments of 1990 and can be found in the June 20, 1996 Federal Register. The deadline for compliance with this rule is June 21, 1999.

In summary, the RMP rule requires certain facilities to register with EPA, develop a risk management program, and submit a summary risk management program. The legislation is rather complex, but any water system that utilizes chlorine gas as a disinfectant has the potential to be affected by this rule. The threshold quantity of chlorine gas for this rule is only 2500 lb.

Some water systems may opt to no longer use chlorine gas as a result of this legislation. This is a reminder that if a water system plans on switching to another form of disinfection (i.e.- from chlorine gas to sodium hypochlorite), plan review by the Health Division is required. For more information on the plan review process, please call (503) 731-4317. For more information on the RMP rule, please contact Lisa McArthur at the EPA at (206)553-0383 or visit EPA's website at www.epa.gov.

Carrie Gentry, EIT, is Regional Engineering Assistant in the Field Services Unit of the Drinking Water Program
CROSS CONNECTION UPDATE
By Bonnie Waybright, PE

The current list of approved backflow assemblies is dated 1999. The list will be updated annually with addendums added quarterly. Call (503)731-4899 to request a copy.

Certification Renewal

Backflow Assembly Tester and Cross Connection Inspector certificates expire on June 30, 1999.

Testers will need to submit proof of successful completion of a Backflow Assembly Tester Recertification (completed after June 30, 1997), proof of test gauge accuracy verification (dated July 1, 1998 or later), and the renewal fee. Backflow Assembly Tester Recertification classes used for the 1997-99 certificate will not be accepted for the 1999-2001 certificate, even if they were completed after June 30, 1997.

Inspectors will need to submit proof of attendance at a Cross Connection Inspector Update (completed after June 30, 1997), or proof of 0.5 CEUs of cross connection related training (completed after June 30, 1997), with the renewal fee. Proof of CEUs must include documentation of the cross connection content of the training received. Cross Connection Inspector Update classes and CEUs used for the 1997-99 certificate will not be accepted for the 1999-2000 certificate, even if they were completed after June 30, 1997.

Testers and Inspectors who do not work exclusively for a water supplier must be registered with the Construction Contractors Board (CCB) or licensed by the Landscape Contractors Board (LCB) to be eligible for renewal. This requirement is the result of a change in ORS 448.279 that occurred in 1997. Call the CCB/LCB at (503)378-4621 ext. 4900 for more information.

Renewal forms will be mailed out in late April. A $50.00 late fee will be assessed to all applications received after July 31, 1999.

Spill Resistant Vacuum Breaker Assembly (SVBA)

A new type of backflow prevention assembly has recently been approved. The SVBA is now approved for use in Oregon. The SVBA is very similar to the pressure vacuum breaker assembly, but the testing procedure is different. Certified backflow assembly testers in Oregon have been exposed to the test procedure at tester courses and recertification classes over the past few years, but until now have not been examined on it. Certified testers will now be required to demonstrate proficiency on this new test procedure at tester courses and recertifications.

1998 Annual Summary Report

We are now past the due date for the 1998 Annual Summary Report (ASR). Community water systems that have failed to report will soon be getting a notice from the Health Division. Every year the Health Division receives requests for extensions for filing the ASR. Some of these requests are from systems needing more time to finish their backflow assembly testing. Extensions are not granted in these cases. Remember that the 1998 ASR is for the 1998 calendar year. Any backflow assembly tests done in 1999 cannot be reported on the 1998 report.

Bonnie Waybright, PE, is in the Technical Services Unit of the Drinking Water Program
### TRAINING CALENDAR

**Oregon Assoc. of Water Utilities**  
(503) 873-8353  
Apr. 23  Water Rights  
June 15  Confined Space

**OCT, Inc.**  
Katie Lewis/(888) 863-8916  
Apr. 12-16  Water Plant Operator’s Certification Review

**Clackamas Community College**  
Michelle Meyer/(503) 657-6958 ext. 2388  
June 15-17  Water Works Short School

**Cross Connection/Backflow Courses**  
Backflow Management Inc. (B)  
(503) 255-1619  
Clackamas Community College (C)  
(503) 657-6958 ext. 2364

| Backflow Assembly Tester Course | May 17-21  Portland (B)  
June 7-11  Oregon City (C) |
|---------------------------------|---------------------------|
| Backflow Assembly Tester Retraining/Recertification | Apr. 30  Oregon City (C)  
May 6-7  Oregon City (C)  
May 13-14  Oregon City (C)  
May 21  Portland (B)  
May 21  Oregon City (C)  
June 4  Portland (B)  
June 4  Oregon City (C)  
June 5  Portland (B)  
June 18  Oregon City (C)  
June 19  Bend (B)  
June 30  Portland (B) |

| Cross Connection Inspector Course | Apr. 12-15  Oregon City (C)  
Apr. 19-22  Portland (B) |
|---------------------------------|---------------------------|
| Cross Connection Inspector Update | Apr. 16  Oregon City (C)  
June 3  Portland (B) |

**Water System Training Course**  
Oregon Health Division  
Roberta Lindgren/(503) 731-4317  
Apr. 14  Grants Pass  
Apr. 21  Hillsboro  
June 11  Sandy

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