EPA's Office of Research and Development

SAFE AND SUSTAINABLE WATER RESOURCES RESEARCH PROGRAM

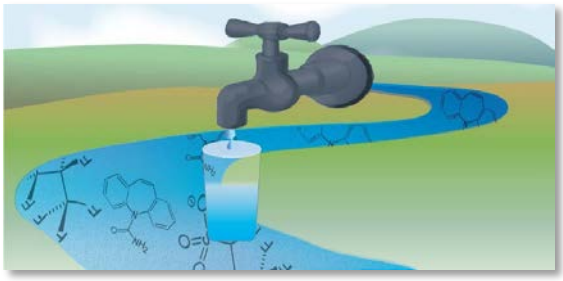
2016 BOSC Review of Water Systems

2016 Webinar Presentations

SSWR Research Webinar Series

EPA's Office of Research and Development (ORD) is hosting free bi-monthly webinars to share information on its Safe and Sustainable Water Resources (SSWR) Research Program. These webinars allow the SSWR Research Program to share current ongoing or recently completed research studies and results with internal and external stakeholders. epa.gov/water-research/water-research-webinar-series

This June 29 webinar attracted 1,012 attendees from all 50 states, D.C., Puerto Rico, Australia, Canada, Cape Verde, Ecuador, Greece, and Mexico. Over 400 continuing education certificates for one contact hour were provided.



Contaminants of Emerging Concern (CECs) in Source and Treated Drinking Water

CECs is a term which encompasses a vast array of chemicals such as pharmaceuticals, perfluoroalkyl substances, and surfactants, as well as microorganisms such as Mycobacteria and Legionella. These contaminants end up entering the water cycle, either through municipal or household use (entering the grey water), or excretion (entering the black water). CECs can survive wastewater treatment, and end up in surface waters, along with other contaminants which may run off of the land into the watershed. This water can be the drinking water source for a downstream community. Scientists from EPA and the U.S. Geological Survey have collaborated on a study examining the occurrence of CECs both in source water and treated drinking water from drinking water treatment plants from across the United States. This presentation discussed the occurrences of the chemical and microbial contaminants measured in the study, and examine the implications for aquatic life and human health.

Affiliation	Total
Federal Government	144
State Government	415
Local Government	119
Tribal Government/Nation	2
Utility (Public or Private)	138
Consultant or Tech. Assistance Provider	82
NGO/Association/Foundation	50
Academia/Education (Including K-12)	28
Council/Commission/Authority	5
Corporation/Company	17
Attorney/Legal	2
Media/Reporter	3
Military	3
Agriculture/Farming	1
Other	3

EPA Office	Total
AO-OEAA	1
OECA	2
OIG	4
OLEM	1
ORD-IOAA	7
ORD-NERL	4
ORD-NHEERL	6
ORD-NRMRL	5
ORD-OSP	2
OSCPP	1
OW-OGWDW	7
OW-OST	11
OW-OWM	3
OW-OWOW	3

EPA Region	Total
1	1
2	8
3	5
4	1
5	11
6	5
7	7
8	8
9	10
10	2

Tribal Nation	Total
Southern Ute Indian Tribe	2

Other Fed Agencies	Total
AANHS	1
CDC	1
Environment and Climate Change Canada	3
FDA	1
GAO	3
NPS	2
Smithsonian Institution	1
USBR	1
USDA	5
U.S. Department of State	1
USGS	10

This April 27 webinar attracted 300 attendees from 44 states, D.C., Canada, Greece, and Mexico.

Assessment of Major Ion Effects on Aquatic Organisms

Natural geochemical weathering introduces several inorganic ions to natural waters, primarily Na^+, K^+, Ca^{2+}, Mg^{2+}, Cl^-, SO_4^{2-}, and HCO_3^-/CO_3^{2-}. These ions not only define the basic chemistry of surface waters, but they also have physiological roles and are actively regulated by aquatic organisms. However, several land uses, including energy and mineral extraction, can increase concentrations of these geochemical ions to concentrations that pose ecological risks, either through direct discharge of process or waste waters, of by accelerating geochemical weathering. The ecological effects of increased ion concentrations are being explored through several inter-related research efforts that span levels of biological organization from physiological through field community levels. Research to date demonstrates that these effects are dependent on both the specific ions that are elevated, and on the background composition of the receiving water. This webinar provided an overview of EPA's research in this area, and some of the implications for predicting ecological risks and informing management decisions.

This February 24 webinar was a joint presentation between The Nature Conservancy and EPA. It attracted 818 attendees from 49 states, D.C., Puerto Rico, and Canada.

Financing Opportunities for Implementing Green Infrastructure Projects to Manage Stormwater

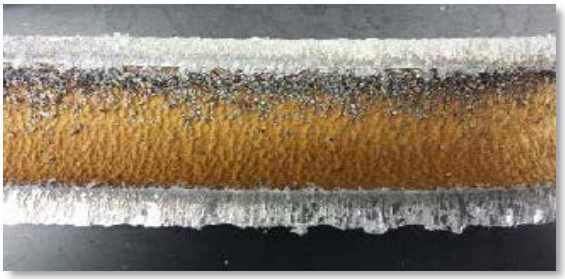
Presentation 1: The Nature Conservancy is working across the country on leveraging existing, and developing new innovative approaches, to finance and deploy green infrastructure projects to manage stormwater. This presentation provided an overview of work done around the country that enables the utilization of public and private funding sources to implement GI in order to create the greatest ecological, economic and social benefits. A discussion on how the Conservancy is exploring ways to share lessons learned and best management practices across multiple jurisdictions and municipalities was also provided.

Presentation 2: This presentation provided an overview of innovative financing for green infrastructure programs and highlight low-cost, state- of-the-art financing opportunities for green infrastructure projects through State Revolving Funds. EPA's new Water Infrastructure and Resiliency Finance Center was also discussed. This center of financial expertise is a resource to communities who are exploring options for financing resilient drinking water, wastewater, and stormwater infrastructure. It is working to promote innovative financing approaches and expand capacity building efforts through collaborative technical assistance, specifically on how to best support communities to develop dedicated sources of revenue for their stormwater and green infrastructure programs.

Small Systems Webinar Series

EPA's ORD (SSWR) and Office of Water (OW) are hosting this monthly webinar series to communicate current small systems research along with Agency priorities. The series is providing a forum for EPA to communicate directly with state personnel and other drinking water and wastewater small systems professionals, which allows EPA to provide training and foster collaboration and dissemination of information. Attendees have the option of receiving a certificate for one continuing education contact hour for each webinar. The 2016 webinars include presentations from the states. epa.gov/water-research/small-systems-monthly-webinar-series

This July 29 webinar attracted 1,315 attendees from 50 states (including 11 Tribal Nations), D.C., Puerto Rico, Brazil, Canada, Romania, and the Philippines. Over 800 continuing education certificates for one contact hour were provided.



Lead and Copper: Sampling and Water Quality Challenges

Presentation 1: Lead and Copper Tap Sampling Requirements and Procedures (EPA-OW). This presentation provided a review of Lead and Copper Rule (LCR) tap water sampling requirements for small systems, including site selection and sample collection. It will also provide clarification on recommended tap sampling procedures relating to aerators, pre-stagnation flushing and bottle configuration. The presentation will also point to instructional resources available to small systems.

Presentation 2: Flint Michigan: Water Quality Challenges and Moving Forward (EPA-ORD). This discussion included a timeline of the key events in Flint, MI, as related to the elevated levels of lead in the drinking water. The different Flint drinking water sources involved were presented, along with changes in water quality parameters that were impacted by the different source waters. The Flint crisis led to the establishment of the EPA Flint Technical Advisory Committee, and the task force recommendations were presented. In addition, sampling efforts that have taken place in Flint to-date were discussed, as well as planned pipe scale sampling associated with experimental pipe loop test rigs and excavated lead service lines. Other efforts underway include improving distribution system (DS) modeling and a DS flushing program. The results of a filter study were presented along with current corrosion control optimization efforts.

Affiliation	Total
Federal Government	153
State Government	578
Local Government	192
Tribal Government/Nation/Community	28
Military	31
Utility (Public or Private)	131
Academia/Education (Including K-12)	45
NGO/Association/Foundation	11
Consultant/Technical Assistance Provider	91
Developer/Manufacturer/Distributor	25
Corporation/Company	22
Media/Reporter	1
Medical/Hospital	4
Other	3

Tribal Nation/Community	Total
Bois Forte Tribal Government Public Works	1
Ho-Chunk Nation	1
Iowa Tribe of Oklahoma	1
Little River Band of Ottawa Indians	2
Little Traverse Bay Bands of Odawa Indians	1
Lower Sioux Indian Community	1
Miccosukee Tribe of Florida	16
Seminole Tribe of Florida	1
Susanville Indian Rancheria Natural Resources Dept.	1
Tohono O'odham Nation	1
Ute Mountain Public Works	2

EPA Office	Total
OCSPP	1
OECA	3
OIG	2
ORD-IOAA	6
ORD-NCEA	2
ORD-NERL	2
ORD-NHEERL	1
ORD-NHSRC	2
ORD-NRMRL	6
ORD-OSP	4
OW-HEC	1
OW-OGWDW	9
OW-OST	3
OW-OWOW	1

EPA Region	Total
1	5
2	12
3	1
4	2
5	8
6	10
7	14
8	8
9	17
10	5

Other Fed Agencies	Total
Bureau of Indian Education	4
Centers for Disease Control	0
Department of Veterans Affairs	5
General Services Administration	1
Health Canada	1
Indian Health Service	10
US Department of State	1
US Forest Service	2
Veterans Health Administration	3

This June 14 webinar attracted 845 attendees from 49 states, D.C., Puerto Rico, Canada, Brazil, the Russian Federation, and Serbia.

Revised Total Coliform Rule (RTCR) for Small Systems

Presentation 1: Federal RTCR Requirements Applicable to Small Systems (EPA-OW). This presentation discussed the federal RTCR requirements applicable to small systems serving less than or equal to 1,000 persons. Routine, additional routine, and repeat sampling requirements, and events that trigger a Level 1 or Level 2 assessment were addressed. The presentation also included the actions that public water systems (PWSs) should take once an assessment is triggered.

Presentation 2: RTCR Implementation from a State Perspective: Trials and Triumphs (Ohio EPA). Implementation of the RTCR has presented most primacy agencies across the United States with a variety of challenges. Seasonal water system requirements, treatment technique triggers, Level 1 and Level 2 assessments, an *E. coli* maximum contaminant level (MCL) instead of a total coliform MCL, and a whole host of additional issues and protocols have been keeping primacy agencies very busy over the past three years. This presentation gave a brief glimpse into what Ohio EPA experienced and what has been developed in order to implement the RTCR.

This June 14 webinar attracted 845 attendees from 49 states, D.C., Puerto Rico, Canada, Brazil, and the Russian Federation.

Disinfection Byproducts: Regulatory Issues and Solutions

Presentation 1: Stage 2 Disinfectant Byproducts (DBPs) Regulatory Review and Implementation Challenges (EPA-OW). This presentation reviewed the Stage 2 Disinfectant and Disinfection Byproducts Rule (DBPR) monitoring and reporting requirements, Stage 2 monitoring plans and plan revisions, reduced and increased monitoring, consecutive system issues, and operational evaluations. It also reviewed the treatment technique requirements of the Stage 1 DBPR that PWSs must continue to satisfy.

Presentation 2: Small System DBP Challenges and Solutions in Washington State (Washington State Department of Health). Washington State has over 1,100 small community and non-transient non-community water systems that are required to comply with the DBP Rule and serve less than 3,300 population. Most of the DBP MCL exceedances in the State have been in these small systems. These systems include both surface water and groundwater sources. This presentation provided a summary of some of the water quality challenges facing these small systems and highlighted a few success stories.

This May 31 webinar attracted 1,026 attendees from all 50 states, D.C., Puerto Rico, Canada, and Romania.

Responding to Harmful Algal Blooms, Optimization Guidelines, and Sampling for Utilities

Presentation 1: Removal Capabilities of Common Treatment Processes and Facility Evaluation Strategies and Performance Improvement (EPA-ORD). Harmful Algal Blooms (HABs), which include blooms of cyanobacteria, pose particular challenges and questions for small drinking water systems. Two of the most important are: "how well equipped is my facility to handle cyanobacterial cells and the toxins that may be released?" and "how can I improve my facility's performance within rigid financial constraints?" This presentation reviewed the removal capacities of common processes used in drinking water treatment, presented a strategy for evaluating an existing treatment facility and discussed how to use this information to improve a facility's performance.

Presentation 2: Source and Finished Water Monitoring Options and Their Limitations and Benefits (Ohio EPA). There are a variety of tools that can be utilized to monitor a water system's source and finished waters for HABs. Monitoring data can help a water system develop appropriate reservoir management strategies and optimize treatment for cyanotoxin removal. This presentation covered source and finished water monitoring options and their limitations and benefits. It also provided a few examples of how water systems in Ohio are using monitoring data to both focus reservoir management and optimize treatment following source and finished water cyanotoxin detections.

This March 29 webinar attracted 789 attendees from all 50 states, D.C., Puerto Rico, Canada, and Brazil.

Point of Use/Point of Entry Treatment Devices

Presentation 1: Household Water Systems: Tailoring Treatment Alternatives to Contaminants in Groundwater and Distribution Systems (EPA-ORD). This presentation highlighted research case studies on household water treatment systems. EPA's ORD has been evaluating the performance of Point of Use/Point of Entry (POU/POE) treatment systems designed for use in homes and small businesses for many years. Research studies will highlight the capabilities of kitchen sink membrane and carbon filters and their application to a wide variety of chemical and microbiological contaminants in well and tap waters. The research studies were conducted at EPA's Test and Evaluation Facility and at field locations.

Presentation 2: POU/POE Case Studies (New Hampshire Department of Environmental Services). About 1 in 5 bedrock wells in New Hampshire have unsafe levels of Arsenic, while others exceed the standards for Uranium, Radium and/or Gross Alpha contaminants. Approximately 90% of NH's non-transient systems serve less than 1,000 people, and rely on private septic systems for wastewater disposal. This presentation included state regulatory requirements along with case studies where POU/POE treatment was approved as the best alternative to achieve water system compliance, due to the inability of community systems to discharge residuals onsite, or the cost-effectiveness of treating only the potable water needs for very small NTNC systems.

This February 23 webinar attracted 671 attendees from all 50 states, D.C., Puerto Rico, Canada, Saint Lucia, and the U.K.

Consumer Confidence Reports: Electronic Delivery and Best Practices

The Consumer Confidence Report (CCR) Rule is a National Primary Drinking Water Regulation that requires community water systems (CWSs) to create annual drinking water reports and distribute them to customers and consumer by July 1st each year. Among other requirements, the CCRs contain information about detected contaminants and if there were any health-based or monitoring violations in the past year. In 2012 EPA conducted a Retrospective review of the CCR Rule in which EPA interpreted the language in the regulation to allow electronic delivery of the CCR if certain requirements are met. CWSs serving 100,000 or more persons must also post their current year's report to a publicly accessible site on the Internet. This webinar reviewed traditional and electronic delivery methods for the CCR as well as best practices for formatting the CCR. It also highlighted the CCR iWriter, a tool that walks a CWS through a series of questions and produces a CCR. Lastly, improvements to the *CCR Where You Live* Webpage, where a CWS can link the URL to their CCR that is already posted online to the EPA website will be highlighted.

This February 2 webinar attracted 577 attendees from 48 states (including 8 Tribal Nations), D.C., and Canada.

Uranium Standards in Drinking Water and Removal Technologies Research at Small Water Systems

Presentation 1: Uranium and health effects and uranium in drinking water standards (EPA-OW). Community water systems must comply with the maximum contaminant levels established by the Radionuclides Rule for radium-226, radium-228, gross alpha particle activity, beta particle and photon radioactivity, and uranium. The Rule intends to reduce the consumer's long term exposure to radiation in drinking water, thereby reducing the risk of cancer and improving public health protection. Uranium is a naturally occurring radioactive element and is present in virtually all soil, rock and ground water sources. Long-term exposure to uranium in drinking water in excess of EPA's standard may result in kidney toxicity. This presentation included an overview of uranium and health effects, followed by uranium in drinking water standards, including specifics about monitoring requirements, compliance, and violations.

Presentation 2: Removal of uranium from drinking water by small system treatment technologies (EPA-ORD). Radionuclides, such as uranium, occur naturally as trace elements in rocks and soils; thus, they can be found in dissolved forms in ground waters, some of which are used as sources of drinking water. This presentation included a short discussion of basic uranium chemistry followed by a discussion on small-system treatment technologies that are effective for uranium removal. These treatment technologies include coagulation/filtration, lime softening, anion exchange, activated alumina, and reverse osmosis. Both pilot- and full-scale treatment system information was covered. The presentation concluded with a discussion on residual disposal.