



Office of Science & Technology

ANNUAL REPORT

Calendar Year 2011

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Foreword

The Office of Science and Technology (OST) is proud to present its annual report on progress and accomplishments in supporting national and state water quality programs in 2011. OST's mission is to integrate and apply sound science and technology to protect public health and the environment under both the Clean Water Act and the Safe Drinking Water Act. We do this through close collaboration with state partners and transparent engagement with stakeholders to develop sound, scientifically-defensible standards, criteria, advisories and industrial effluent guidelines that form the scientific and technological foundation for safe and clean water across the country. This annual report highlights OST's successes during the 2011 calendar year and provides a look ahead into ongoing work and initiatives for 2012.

In 2011, OST built upon its 2010 efforts with greater collaboration among partners and stakeholders to ensure that sound science and the latest technologies guided our programs' work. OST completed several important actions related to water quality standards, including assisting the regional offices in reviewing and approving important state adoptions of: designated uses that will protect recreation on high profile waterways, revised human health criteria for toxics based on new fish consumption levels, and improvements to antidegradation regulations.

OST worked hard to help states develop and adopt numeric criteria to prevent and reduce nutrient pollution, and to identify ways to facilitate state implementation of numeric nutrient criteria. OST also helped some states begin developing innovative nutrient regulations that will increase the certainty that waters that exceed the nutrient criteria are truly impaired, while still requiring water quality-based permits at protective levels.

Other accomplishments included the disbursement of more than \$10 million in grants to help protect beachgoers from pathogens; the publishing of a primer on how to use bioassessment in a variety of water quality management programs; and the release of draft recommendations for ambient water quality criteria for protecting human health in recreational waters.

The great work OST has accomplished in 2011 reflects its exceptional, diverse and creative staff. Whether addressing policy issues, water-quality research or technological innovation, OST's staff assures that the nation's water programs have the benefits of strong science, current public health and ecological research, and the best available information on treatment technologies and analytic methods.

As OST moves into 2012, we anticipate issuing several important draft and final rulemakings, reports and water quality criteria recommendations, such as the Final Methods Update Rule, the Improved Website for Beach Monitoring and Advisory Information and the Nutrient Indicators Dataset. We are also excited to celebrate with the rest of the Office of Water a benchmark year – the 40th Anniversary of the Clean Water Act. Among other accomplishments, OST contributed to the progress in reducing water pollution over the past 40 years by issuing national technology-based regulations for 57 industries thereby preventing the discharge of over 1.2 billion pounds of toxic pollutants each year into U.S. waters; by making over \$111 million available in grants to protect swimmers at America's beaches; and by assisting states, territories, and tribes in establishing their own water quality standards regulations. Specifically, since 1972, EPA has published national recommended water quality criteria for over 150 pollutants and all 50 States, all U.S. territories, and 38 Indian tribes have established standards for their water.



Ephraim King
Director, Office of Science and Technology

What We Do



OST Mission Statement

OST uses sound science, engineering and public policy to protect and restore the nation's water quality. OST ensures that federal and state water programs reflect current scientific knowledge about water pollution causes and impacts on human health and ecosystems. Under the Clean Water and Safe Drinking Water Acts, OST advances public health and environmental protection by producing technology guidelines for industrial discharges and cooling water intakes; analytical test methods; water quality standards (WQS); water quality criteria recommendations; models and tools; guidance for advisories for beach swimming, fish consumption and drinking water; and risk assessments and special studies identifying needed regulations.

Who We Are

OST is organized into three Divisions: Engineering and Analysis Division (EAD), Standards and Health Protection Division (SHPD) and Health and Ecological Criteria Division (HECD). OST's scientists, analysts, economists, engineers, statisticians, risk assessors, environmental protection specialists and information specialists extend across the three OST Divisions and are tasked with working cohesively to execute the overall OST mission. EAD is responsible for developing analytical methods and technology-based requirements for wastewater dischargers and facilities with cooling water intakes under the Clean Water Act (CWA). SHPD leads the national WQS program by working with states and tribes as they develop and implement their WQS regulations to protect human health and the environment. HECD develops ambient water quality criteria recommendations to help states and tribes protect human health and aquatic life, including threatened and endangered species. HECD also develops drinking water health advisories and the scientific underpinnings for national drinking water standards.

OST and EPA's Strategic Plan

In 2011, EPA released its Strategic Plan for Fiscal Years (FY) 2011-2015. EPA Strategic Plan is organized around five key goals: Taking Action on Climate Change and Improving Air Quality; Protecting America's Waters; Cleaning Up Our Communities and Advancing Sustainable Development; Ensuring the Safety of Chemicals and Preventing Pollution; and Enforcing Environmental Laws.

What We Do

(Continued)

The Protecting America's Waters Goal of the Strategic Plan states:

Protect and restore our waters to ensure that drinking water is safe, and that aquatic ecosystems sustain fish, plants, and wildlife, and economic, recreational, and subsistence activities.

EPA's FY 2011-2015 Strategic Plan charts a course for the Agency over the five years. It is organized around five key goals:

- 1. Taking Action on Climate Change and Improving Air Quality**
- 2. Protecting America's Waters**
- 3. Cleaning Up Our Communities and Advancing Sustainable Development**
- 4. Ensuring the Safety of Chemicals and Preventing Pollution**
- 5. Enforcing Environmental Laws.**

To support EPA's overall strategic direction, OST has conducted its activities to support several of the Agency's objectives: Clean and Safe Water, Healthy Communities and Ecosystems, and Compliance and Environmental Stewardship.

Assist Federal and State Water Programs

Dissemination of an integrated planning process to help local governments dealing with difficult financial conditions identify opportunities to achieve clean water by controlling and managing releases of wastewater and stormwater runoff more efficiently and cost effectively.

- Scheduled development of Natural Gas Wastewater Standards as part of administration's priority to ensure natural gas development continues safely and responsibly;
- Supporting the National Pollutant Discharge Elimination System (NPDES) permit program by providing technology-based standards for industrial and municipal dischargers;
- Administering an analytical methods program to support the monitoring and compliance activities for permit writers and other water programs;
- Developing recommended ambient water quality criteria and reviewing state, territorial and tribal WQS which serve as the basis for the nation's water quality-based programs;
- Providing guidance to states on developing and implementing fish consumption advisories, assisting states in promoting advice to consumers and developing federal fish advisories with the Food and Drug Administration when necessary; and
- Developing drinking water health advisories for contaminants that do not have federal drinking water standards to support EPA regional offices, state governments and other public health officials.

Technology-Based Solutions

Overview

OST develops technology-based solutions to meet CWA requirements for controlling point source wastewater pollution and protecting aquatic life. These solutions are based on the performance, availability and affordability of treatment and control technologies. OST's efforts in this area include establishing effluent limitations for industries that discharge wastewater, improving existing guidelines, identifying new industrial pollution reduction technologies and establishing technology requirements for cooling water intake systems to prevent harm to aquatic life. The effluent guidelines program is intended to reduce pollutant discharges to the greatest extent that is technologically feasible and economically achievable for an industry.

Effluent Guidelines Program Plan

In 2011, OST published the final 2010 Effluent Guidelines Plan, in which we announced the initiation of three rulemakings. The three are Shale Gas Extraction, Coalbed Methane Extraction (both sectors are included in the existing oil and gas extraction category (40 CFR Part 435) and pretreatment standards controlling discharges of dental amalgam from dental offices. EPA scheduled development of shale gas wastewater standards as part of the Obama administration's priority to ensure natural gas development continues safely and responsibly. OST also made progress on the 2011 annual review of existing effluent guidelines and the 2012 Preliminary Plan.

For more information, please visit <http://water.epa.gov/scitech/wastetech/guide/basic.cfm>.

In December 2011, EPA published online a draft procedure for the analysis of perfluorinated chemicals that may be found in sewage sludge and biosolids using high-performance liquid chromatography combined with tandem mass spectrometry. EPA developed this draft procedure because of the widespread concern about the presence of these contaminants in biosolids and the lack of a test procedure for measuring these contaminants. EPA published the draft procedure as guidance to assist laboratories and provide a starting point to use in the analysis of perfluorinated chemicals in biosolids.

For more information, visit <http://water.epa.gov/scitech/methods/cwa/index.cfm>

Progress Revising Regulations for Steam Electric Power Generating

In 2011, EPA embarked upon a series of outreach efforts to obtain feedback on the potential scope and requirements of revised effluent guidelines, including dialogues with tribal representatives and consultations with state and local governments.

In 2009, EPA started a rulemaking to revise the effluent guidelines for Steam Electric Power Generating, which was originally issued in 1982. EPA has largely focused current rulemaking efforts on discharges from power plants fueled by coal, petroleum coke or oil. Facilities in the sector were asked to respond to an EPA questionnaire to provide detailed information about operational characteristics and financial conditions. More than 700 facilities responded.

For more information, please visit http://water.epa.gov/scitech/wastetech/guide/steam_index.cfm.

Technology-Based Solutions

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Progress Toward Final Airport Deicing Effluent Guidelines

Airport discharges from deicing operations can have major impacts on water quality, including reductions in dissolved oxygen, reduced organism abundance and species diversity, contamination of drinking water sources, creation of noxious odors and discolored water in residential areas and parkland.

OST continues efforts to develop an effluent guideline to address wastewater collection practices used by airports and treatment of those wastes.

For more information, please visit <http://water.epa.gov/scitech/wastetech/guide/airport/index.cfm>.

Progress Toward Final CWA Analytical Methods Update Rule

EPA publishes laboratory analytical methods that are used by industries and municipalities to analyze the chemical, physical and biological components of wastewater and other environmental samples that are required by regulations under the authority of the CWA. EPA proposed a methods update rule to approve new and revised analytical methods (test procedures) for wastewater regulations. In 2011, EPA received extensive feedback from laboratories, states, vendors, regulated entities, and others in response to the proposed methods update rule. OST continues to evaluate the public comments and is preparing a final rulemaking notice. The final rule will address the public comments and the Agency's rationale regarding its decision to approve or to defer approval of certain methods. The final rule is scheduled to be signed in spring 2012.

For more information, please visit http://water.epa.gov/scitech/methods/cwa/update_index.cfm.

Progress Toward Stormwater Proposed Rulemaking

EPA is developing a proposed regulation to reduce stormwater discharges from new development and redevelopment and make other regulatory improvements to strengthen the stormwater program. In 2011, OST provided analytical support in the proposed rule development including the analysis of costs, economic impacts and benefits of a variety of options considered for the proposed rule. OST presented the analytical approaches to a panel of experts that were convened to review the technical approach and the approach taken to evaluate the water quality benefits of the proposed rule.

The proposed national rulemaking is considering such key rulemaking actions as: developing performance standards from newly developed and redeveloped sites; evaluating options for expanding and improving EPA's municipal program; and evaluating the establishment of a single set of minimum measures requirements for regulated municipal separate storm sewer systems. A proposal date for the stormwater rulemaking and a final action deadline will be decided upon in 2012.

For more information, please visit <http://cfpub.epa.gov/npdes/stormwater/rulemaking.cfm>.

Water Quality-Based Standards

Overview

States and territories lead the implementation and administration of WQS programs under the CWA, with EPA regional offices and OST providing oversight and guidance.

Defining the goals for U.S. water bodies and setting the standards against which all other surface water quality programs measure success, WQS consist of four elements:

- Designated uses for water bodies, such as recreation, aquatic life support, public water supply and agriculture,
- Water quality criteria that establish numeric pollutant concentrations or narrative descriptions of water conditions that must be met to attain designated uses,
- Antidegradation policy to maintain and protect existing uses and high-quality waters, and
- Other policies that address the implementation of standards.

Regional and State Support for Water Quality Standards

In addition to developing federal WQS regulations, national policy and guidance, OST supports EPA regional offices and states in taking constructive, timely and defensible actions on WQS. OST helps its regional counterparts review many state standards packages submitted to the regions for review and approval or disapproval. EPA approved more than 90 percent of the state submissions received in FY 2011.

In 2011, EPA worked closely with several states, including Kentucky and Idaho, as they adopted critical improvements to their antidegradation regulations. For both states, EPA approved enhanced antidegradation implementation methods.

In Illinois and Missouri, EPA approved important adoptions of designated uses that will protect recreational uses submitted by the states. In Illinois specifically, EPA and the State were able to work together to complete the steps necessary to lock-in primary contact recreation uses for five high-profile waterways in the Chicago area, about which EPA had previously made the determination that less protective uses were not sufficiently protective.

Finally, in Oregon, EPA collaborated with the state to adopt wholly revised human health criteria for toxics based on new fish consumption value based on regional survey data. EPA approved the state's submittal, which will provide increased levels of protection to all Oregon's citizens. EPA also worked with Utah to approve new selenium criteria for the Great Salt Lake, which will provide for the protection of wildlife.

Water Quality Standards Academy

The Water Quality Standards Academy offers opportunities to attend a five-day Basic Course, an introductory course designed for staff with fewer than six months of experience with WQS and criteria programs. Most recently held in December 2011, the Basic Course offered both in person and online, is a comprehensive and highly-structured course that introduces students to all aspects of the WQS program, including the interpretation and application of WQS regulation; policies and program guidance; the development of water quality criteria; and other facets of the water program. The Basic Course also was offered for tribal members, including information specific to tribal lands.

For more information, please visit <http://water.epa.gov/learn/training/standardsacademy/index.cfm#brief>.

Water Quality-Based Standards

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Progress Toward Proposed WQS Regulatory Revisions

EPA intends to propose changes to the federal water quality standards regulation that interprets part of the CWA. OST has worked hard to develop a draft proposed rule that the Agency submitted to OMB for interagency review. Once final, the rule will help states and EPA provide enhanced water resource protection and make regulatory requirements clearer and simpler. The rule is expected to provide clarity in six key WQS program areas:

1. EPA Administrator's determinations that new or revised WQS are necessary
2. Designated uses for water bodies
3. Triennial reviews of state, territorial and tribal WQS
4. Antidegradation provisions to protect water quality
5. Variances to WQS
6. Compliance schedule authorizing provisions

Once approved by OMB, EPA plans to publish the proposed rule in the Federal Register in 2012.

For more information, please visit <http://water.epa.gov/scitech/swguidance/standards/rev.cfm>.

Urban Waters Movement

EPA is seeking to help communities—especially underserved communities—as they work to access, improve and benefit from their urban waters and the surrounding land. In 2011, OST partnered with the Anacostia Watershed Society, the Anacostia Watershed Restoration Partnership, and the District of Columbia, and the local governments of Montgomery County, Gaithersburg and Rockville in Maryland to encourage local homeowners to install rain barrels to help prevent contamination of the Anacostia River. In conjunction with these partners, OST developed and disseminated messaging to encourage homeowner installation of rain barrels, successfully reaching out to over 600,000 citizens in the Anacostia Watershed.

Water Quality-Based Standards

(Continued)



Improving Beach Water Quality, Monitoring and Public Information

OST's Beach Program works in partnership with EPA regions and state and local governments to protect water quality at U.S. beaches and to protect the health of beach visitors. The Beach Program continued efforts in 2011 with a focus on five areas:

- Strengthening local beach WQS and monitoring efforts to enhance protection of public health at beaches,
- Improving tools for monitoring and providing predictive tools and faster laboratory test methods for beach water samples,
- Improving ways to identify causal sources and conditions,
- Investing in human health and analytical methods research, and
- Working with states to inform the public of water quality monitoring and notification information about U.S. beaches

BEACH Act Grants

To improve water quality testing and help beach managers better inform the public about water quality issues, Congress passed the Beaches Environmental Assessment and Coastal Health (BEACH) Act in October 2000. The Act authorizes EPA to provide grants to coastal and Great Lakes states, territories and tribes to develop and implement beach water quality monitoring programs and inform the public about the risk of exposure to disease-causing microorganisms in the water. To date, EPA has made available more than \$100 million in BEACH grants to help protect beachgoers. As a result, the number of beaches monitored almost quadrupled from about 1,000 in 1997 to more than 3,600.

In 2011, the Agency awarded nearly \$10 million to eligible state, territorial and tribal governments. EPA set aside \$100,000 for eligible tribes to develop beach programs.

For more information, please visit http://water.epa.gov/grants_funding/beachgrants/.

Water Quality-Based Standards

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2010 National Beach Swimming Season Report

Each spring, OST releases a BEACH Report summarizing notification actions—the number, location and duration of beach closings and advisories—in the United States during the previous year’s swimming season. In May 2011, OST released a national summary report of state data on beach closings and advisories during the 2010 beach season. The 2010 BEACH Report highlighted that the percentage of beach season days for monitored beaches open and not under advisories stayed constant at 95 percent and the number of beaches affected by advisories or closings dropped 15 percent (compared to 2009). The 2010 BEACH Report is supplemented by state reports that include program-specific accomplishments, issues and other information provided by the states and made available online.

For more information, please visit

http://water.epa.gov/type/oceb/beaches/upload/national_facsheet_2011.pdf.

2011 National Beach Conference

In March 2011, the OST sponsored a three-day conference to provide a national framework for discussion of beach water quality issues, exchange of information, and coordination of efforts in research and decision-making. More than 250 participants attended the conference, learning about beach health initiatives across the country and internationally; presenting information on methods, indicators, and modeling techniques; and identifying beach health needs. Training sessions included topics such as, “How Beach Management is Evolving in a Time of Changing Priorities” and “How Can Predictive Tools Complement Beach Monitoring Programs?”

BEACON Interface Improvements

In 2011, EPA began efforts to develop a new, more user-friendly public interface for the Agency’s eBeaches information system. The enhanced Beach Advisory and Closing Online Notification (BEACON) system provides access to three types of information that are now more easily accessible and updated more frequently on EPA’s website. The three types of information include mapped location data for beaches and water monitoring stations, monitoring results for various pollutants such as bacteria and algae and data on public notification of beach water quality advisories and closures. These improvements allow beachgoers across the nation to more quickly and easily find up-to-date information on the health of their favorite beaches. The improved user interface for BEACON is scheduled to be made available on EPA’s website in early 2012.

For more information, please visit

http://iaspub.epa.gov/waters10/beacon_data.about_beacon#about.

Water Quality-Based Standards

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Fish Contamination Program

EPA provides guidance to state, tribal and local governments on how to monitor their waters and issue fish consumption advisories when contaminant levels are unsafe. EPA also works with other federal and state agencies on programs to ensure the safety of shellfish and the quality of the waters in which they live.

Monitoring the concentrations of persistent, bioaccumulative and toxic (PBT) chemicals in fish tissue is an important national activity for assessing the quality of U.S. waters and for tracking the effectiveness of pollution control programs. EPA is continuously evaluating the water quality of U.S. lakes and rivers based on chemical concentrations in fish, providing information to the public on the range and levels of chemical contaminants found in fish commonly caught and consumed by recreational and subsistence fishers, applying fish tissue analysis as an effective approach for determining the occurrence of contaminants of emerging concern in U.S. waters, and generating data to measure the effectiveness of air and water pollution control programs.

2011 National Listing of Fish Advisories

OST updates the National Listing of Fish Advisories (NLFA) on a biannual basis with updates made on an as needed basis or as new information becomes available. OST published the last NLFA in 2010. In fall 2011, we revised the 2010 NFLA due to changes in the data previously reported. The current NFLA reports that approximately 17.7 million lake acres and 1.3 million river miles are under advisory, representing 42 percent of the nation's total lake acre-age and 36 percent of the nation's total river miles. The number of lake acres under advisory decreased by 2 percent and the number of river miles decreased by almost 8 percent since the NFLA was last released in 2008.

For more information, please visit

http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/advisories_index.cfm.

Great Lakes Fish Contamination Study

As part of EPA's larger effort to restore the Great Lakes and address five urgent priorities (cleaning up toxics and areas of concern, combating invasive species, promoting near-shore health by protecting watersheds from polluted run-off, restoring wetlands and other habitats and tracking progress, education and working with strategic partners), OST collaborated with the Great Lakes National Program Office and Office of Research and Development to begin the first statistically-based study of fish contamination in the Great Lakes.

In 2011, OST completed sampling at approximately 150 near-shore sites in the Great Lakes for analyses relating fish contaminant data to human health. EPA expects to report the study results in 2013 and 2014 via multiple reports.

Reducing Nutrient Pollution

Nutrient pollution is a widespread, serious and growing problem, and has become one of the costliest and most challenging environmental problems in the country. The health of the American people is threatened by nutrient pollution in the water they drink and in which they swim, boat and fish. Clean water is vital to the economy, and industries like agriculture and food processing depend on safe and abundant water resources.

In March 2011, the Acting Assistant Administrator for the Office of Water, Nancy Stoner, released a memorandum to reaffirm EPA's commitment to partnering with states and collaborating with stakeholders to make greater progress in accelerating the reduction of nutrient loadings to our nation's waters. The memorandum includes key principles guiding Agency technical assistance and collaboration efforts with states and urges the Regions to place new emphasis on working with states to achieve near-term reductions in nutrient loadings.

State Nutrient Criteria Efforts

OST and the Regions support the states in their development of numeric nutrient criteria, or limits on the amount of nitrogen and phosphorus allowed in surface waters. EPA funded data gathering, provided experts to analyze data and recommended nutrient criteria values. OST also identified barriers and options to facilitate state implementation of numeric nutrient water quality criteria.

In 2011, OST worked hard to help states develop and adopt nutrient criteria to protect water bodies from nitrogen and phosphorus pollution. A number of states should be commended for their accomplishments this past year.

Florida

EPA has been coordinating with Florida to develop numeric nutrient-related water quality criteria for Florida's estuaries, coastal waters, and flowing waters in South Florida. This work, which included the development of a framework for criteria development, delineation and segmentation of estuaries, collection of significant amounts of state-specific data and selection of analytical tools, has provided the basis for much of the state's numeric nutrient criteria rule, as well as the rule EPA is promulgating for Florida under a court-ordered consent decree. EPA is prepared to withdraw federal rules for any waters that become covered by state law that meets the requirements of the Clean Water Act.

Maine

Maine submitted a draft version of their nutrient rule for EPA's preliminary comments. Maine's innovative rule constructs a standard that will rely on biocriteria to increase the state's certainty that waters that exceed the nutrient criteria are truly impaired, while still requiring water quality-based permits at protective levels.

Minnesota

EPA approved Minnesota's first submission of site-specific nutrient criteria since the state adopted nutrient criteria in 2008. Minnesota adopted site-specific criteria for phosphorus, chlorophyll a, and Secchi disk depth for Lake Byllesby, a man-made reservoir with one of the highest watershed-to-surface area ratios and drainage areas in the state.

Missouri

EPA approved site-specific nutrient criteria for 25 of Missouri's high quality lakes and reservoirs. Missouri adopted site-specific criteria for phosphorus, nitrogen and chlorophyll.

Wisconsin

EPA and Wisconsin's Department of Natural Resources collaborated in the development of phosphorus criteria for lakes, reservoirs, streams, rivers and Great Lakes. This effort culminated with the Wisconsin legislature's adoption of numeric phosphorus criteria and corresponding provisions for developing and implementing Wisconsin Pollutant Discharge Elimination System permit provisions.

Reducing Nutrient Pollution

(Continued)

Nutrient Pollution Website Enhancements

In July 2011, the Office of Water (OW) developed a new and improved website about nitrogen and phosphorus pollution to provide the public with information about where this type of pollution—comes from; its impacts on human health and aquatic ecosystems and actions that people can take to help reduce nutrient pollution. EPA's new website also includes updated information on states' progress in developing numeric water quality criteria for nutrients as part of their water quality standards regulations.

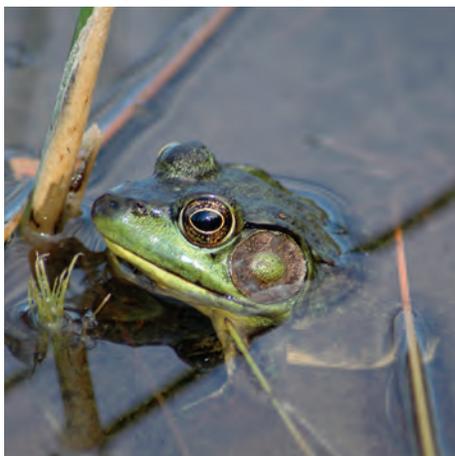
To facilitate state and local efforts to reduce nutrient pollution, the website includes a Nitrogen and Phosphorus Pollution Data Access Tool. The goal of the tool is to support states in their nitrogen and phosphorus analyses by providing the most current data available on: the extent and magnitude of nitrogen and phosphorus pollution; water quality problems related to this pollution; and potential pollution sources in a format that is readily-accessible and easy-to-use. With this comprehensive data, EPA, the states, and other stakeholders will be able to more quickly gather additional, less-accessible data and develop effective source reduction strategies for nitrogen and phosphorus.

For more information,

please visit <http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/index.cfm>.



Application of Sound Science



EPA uses the best scientific information available to anticipate potential environmental threats, evaluate risks, identify solutions and develop protective standards. Sound science helps EPA ask the right questions, assess information and characterize problems clearly to inform Agency decision makers. OST leads the National Water Program in applying sound science through its development of tools, data, recommendations, policies and regulations that serve as the foundation upon which all other EPA water programs are built and against which they measure progress.

In 2011, OST led a variety of projects that resulted in EPA gaining important scientific knowledge that will help protect water resources. OST's efforts in these areas provide other EPA offices and state co-regulators with access to important data to support their projects and programs.

Bioassessment Primer

Biological assessment (or bioassessment) is a method of evaluating the health of a specific water body using factors that include direct data measuring the presence, condition and numbers of types of fish, insects, algae, plants, and other organisms. In 2011, EPA published, *A Primer on Using Biological Assessment to Support Water Quality Management*, at the request of state and tribal water programs. This technical document serves as a primer on the role of biological assessments in a variety of water quality management program applications including reporting on the condition of aquatic biota, developing biological criteria, and assessing environmental results of management actions. The document provides information on new technical tools and approaches for developing strong biological assessment programs and on examples of application of biological assessment information by states and tribes.



Application of Sound Science

(Continued)

Ambient Water Quality Criteria Development

Ambient water quality criteria (AWQC) are recommended numeric values for pollutant concentrations in ambient waters that are protective of human health or aquatic life. The criteria are developed under section 304(a) of the CWA and are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. The criteria are used to establish state water quality standards and ultimately provide a basis for controlling discharges or releases of pollutants.

EPA provides the detailed means for developing the water quality criteria, including systematic procedures for evaluating cancer risk, noncancerous health effects, human exposure, and bioaccumulation potential in fish. EPA periodically revises AWQC to ensure that they reflect the latest scientific knowledge on the kind and extent of all identifiable effects on health and welfare that may be expected from the presence of pollutants in any body of water, including ground water. In 2011, EPA used the latest science to its development of draft revised criteria for human health protection in recreational waters and draft criteria for aquatic life protection from the effects of carbaryl.

Draft Revised Recreational Water Quality Criteria

In 2011, EPA published and requested scientific views on its draft AWQC recommendations for protecting human health in ambient waters that are designated for primary contact recreation (e.g., swimming, bathing, surfing, water skiing, tubing, skin-driving, water play by children). EPA considered the latest research and science when developing the draft criteria, which are based on epidemiological studies demonstrating a link between human illness and fecal indicator bacteria in recreational waters. Upon issuance as final criteria in 2012, these recommendations will serve as guidance to states and authorized tribes in developing water quality standards to protect swimmers from exposure to water that contains organisms that indicate the presence of fecal contamination. EPA also conducted a multi-laboratory validation study in 2011 on a new ambient water test method that uses quantitative polymerase chain reaction (qPCR) to detect the freshwater indicator bacteria, *Enterococcus*.

For more information, please visit <http://water.epa.gov/scitech/swguidance/standards/criteria/health/recreation/index.cfm>.

Draft Carbaryl Water Quality Criteria

Carbaryl is a pesticide used to control insects, slugs and snails and to thin fruit in orchards. It can enter water bodies via runoff and potentially harm aquatic life. In October 2011, EPA released a Draft Aquatic Life AWQC for Carbaryl. The document provides guidance to states and tribes authorized to establish water quality standards under the CWA to protect aquatic life from the acute and chronic effects of carbaryl. Once issued in final form, the criteria document will help states, territories, and authorized tribes add a concentration level for carbaryl to their water quality standards at or below which aquatic organisms will be protected.

For more information, please visit http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/carbaryl_index.cfm.

Application of Sound Science

(Continued)

National Water Program Research Strategy Implementation

The National Water Program Research Strategy was developed to more completely define the Water Program's research needs, to organize those needs around EPA's Strategic Goals and to communicate them to potential research partners. The Water Research Strategy documents the hierarchy of research needed for successful implementation of EPA's National Water Program.

In 2011, implementation of the Strategy focused on improved resource-leveraging activities and outreach to Canada, Water Environment Research Foundation, and the Society for Environmental Toxicology and Chemistry, among others. The Strategy was also instrumental in the development of the Office of Research and Development (ORD's) recent Safe and Sustainable Water Research Program and alignment of this \$1.24 million research program with Water's program goals. This endeavor promoted national and international research cooperation and resource leveraging opportunities. The addition of the National Water Research Program's newsletter on EPA's website in 2011 increased our ability to reach out to partners on current research from both inside and outside EPA.

For more information please visit <http://water.epa.gov/scitech/research-riskassess/researchstrategy/index.cfm>.

Strategy Implementation Partners

- Water Environment Research Foundation (WERF)
- US-Canada Partnership
- Society for Environmental Toxicology and Chemistry (SETAC)
- Nickel Producers International Research Association
- Water Research Foundation
- American Water Works Association
- Singapore Public Utilities Board
- National University of Singapore
- World Health Organization
- Federal State and Tribal Risk Assessor's Conference

Water Environment Research Foundation

The Water Environment Research Foundation (WERF) is an important research partner for OW. The subscribers to WERF are specifically interested in research and tools that assist them in meeting their water quality obligations and reducing the uncertainty in setting and measuring AWQC and for chemicals and nutrients as well as standards for biosolids management. OW coordinates with WERF on research portfolios for water quality and biosolids.

US- Canada Partnership

In 2011, EPA participated in a meeting in Ottawa with representatives from Health Canada Pest Management Regulatory Agency to obtain a better understanding of the issues related to water quality in both countries, to leverage resources and collaborate in areas of mutual interest, and to identify a near-term action plan as well as a collaborative path forward.

Society for Environmental Toxicology and Chemistry

OST participated in the annual meeting of the Society for Environmental Toxicology and Chemistry to share our findings on the science impacting priority water issues including: emerging contaminants like pharmaceuticals and personal care products, nutrients management and reduction, biosolids risk assessment, environmental indicators, microbial risk assessment, metals, ecosystem service valuation, as well as on specific chemicals such as tryclosan and carbofuran.

Water Research Quarterly Newsletter

The 2011 OW online newsletter, Water Research Quarterly, compiled Agency- and journal- published research activities on water-related topics. Providing the newsletter on OW's website showcased the activities more broadly to EPA and non-EPA parties interested in the Agency's completed, ongoing and needed research. The newsletter targets leadership and technical staff working in water risk assessment. 2011 marked the first year of delivering relevant and timely leads (over 300 links) to research, publications and meetings to OW and its collaborators, stakeholders and partners. Beginning in January 2012, this newsletter will be published on a semi-annual basis and will be called Water Research Updates.

Looking Ahead



The following are significant milestones OST anticipates reaching in 2012.

Preliminary 2012 Effluent Guidelines Program Plan

Using the data and information from the annual reviews, OST is preparing a Preliminary 2012 Effluent Guidelines Program Plan. This Plan will identify any new or existing industrial categories selected for effluent guidelines rulemaking and provide a rulemaking schedule. The Preliminary Effluent Guidelines Program Plan will be published by the end of calendar year 2012.

Final Airport De-icing Effluent Guideline Rule

In spring 2012, EPA plans to publish final technology-based effluent limitations guidelines and new source performance standards for discharges from airport deicing operations.

Final Methods Update Rule

The final rule is scheduled to be signed in spring 2012. The final rule will include new and revised methods published by the Agency, voluntary consensus organizations (e.g., American Society for Testing and Materials International and the Standard Methods Committee) and by commercial entities. These changes will provide additional flexibility to the regulated community and laboratories in their selection of analytical methods for use in Clean Water Act programs.

Improved Website for Beach Monitoring and Advisory Information

In early 2012, EPA plans to launch an improved website for beach advisories and closings called BEACON. The enhanced site will allow the public to access the most current water quality and pollution testing information more quickly and easily for more than 6,000 U.S. beaches. BEACON has the capability to update information as frequently as every two hours based on new data provided by states, territories and tribes. Users have access to mapped location data for beaches and water monitoring stations, monitoring results for various pollutants such as bacteria and algae, and data on public notification of beach water quality advisories and closures. For the first time, users will be able to access reports that combine notifications and water quality monitoring data and use map navigation to identify specific beaches.

Human Health Benchmarks for Pesticides

OW and the Office of Pesticide Programs are finalizing the first human health benchmarks for pesticides (HHBPs), supporting EPA's Drinking Water Strategy to expand public health protection by sharing data collected under different statutes so that it can be used most effectively. EPA plans to publish the online table of HHBPs in spring 2012 and update it annually to ensure that the best available science is accessible to states and other stakeholders.

Looking Ahead

(Continued)

Nutrient Indicators Dataset

In spring 2012, OST plans to publish a Nutrient Indicators Dataset (NID) on EPA's nutrient pollution website to help inform the public about key nitrogen and phosphorus sources and impacts, and states' efforts to minimize nutrient pollution. Each of the 9 Indicators in the NID represents the best information currently available on a nationwide basis, allowing for state-by-state differentiation.

Proposed WQS Regulatory Revisions

EPA has submitted a draft proposed rule to OMB for interagency review. The proposed rule will help states and EPA provide enhanced water resource protection by simplifying and clarifying regulatory requirements. Once approved by OMB, EPA will publish the proposed rule in the Federal Register which is scheduled to be released in spring 2012.

Proposed Nutrient Standards for Florida's Estuarine, Coastal & Southern Waters

EPA is under a consent decree to propose federal numeric nutrient water quality criteria to protect aquatic life in estuaries and coastal waters within the State of Florida, and in flowing waters in south Florida, from nitrogen and phosphorus pollution by May 2012. The proposed rule would also include downstream protection values to ensure the attainment and maintenance of Florida's water quality standards for downstream estuarine waters. EPA prefers that the State implement its own numeric nutrient criteria and EPA is prepared to withdraw federal rules for any waters that become covered by state law that meets the requirements of the Clean Water Act.

Final Revised Recreational Water Quality Criteria

EPA plans to publish final revised recreational criteria in October 2012. These recommendations will serve as guidance to states and authorized tribes in developing water quality standards to protect swimmers from exposure to water that contains organisms that indicate the presence of fecal contamination. Implementation guidance to accompany the criteria recommendations is scheduled to be available by the end of 2012.

Wastewater Discharge Loading Online Tool

OST staff initiated the development of the Discharge Monitoring Report Pollutant Loading Tool which combines Discharge Monitoring Report data from NPDES-permitted facilities and Toxics Release Inventory data from industrial facilities with other EPA databases to create new insights on point source pollution. The release of the online tool, slated for early 2012, supports key actions identified in the May 2011 CWA Action Plan Implementation Priorities for both transparency and new government tools for addressing the most serious problems.

Improved Fish Advisory Website and Database

In spring 2012, OST will publish an enhanced fish advisory website, including a newly redesigned NLFA interactive search and mapping website, additional advisory and fish tissue data from 2009 and 2010, and results from 2010 National Survey of Fish Advisory Programs.

Looking Ahead

(Continued)

Revised National Fish Consumption Advisory for Mercury

EPA and Food and Drug Administration will publish and request comments on a draft revised mercury fish consumption advisory in 2012. The revised mercury fish consumption advisory will revisit earlier recommendations for selecting and eating fish or shellfish, particularly for pregnant women, nursing mothers and young children, to ensure reduced exposure to the harmful effects of mercury.

Pretreatment Standards for the Dental Sector

In 2012, EPA plans to propose technology-based pretreatment standards under the Clean Water Act (CWA) for discharges of pollutants into publicly owned treatment works (POTWs) from existing and new dental practices that discharge dental amalgam. The proposed rule would require dental practices to comply with requirements for controlling the discharge of dental amalgam pollutants into POTWs based on the best available technology, amalgam separators, and Best Management Practices. EPA is also proposing to amend selected parts of the General Pretreatment Regulations (40 CFR Part 403) to streamline oversight requirements for the dental sector.

Establishment of Requirements for Cooling Water Intake Structures at Existing Facilities

EPA submitted a draft notice of data availability (NODA) to the Office of Management and Budget (OMB) for review. The NODA summarizes significant data EPA has received or collected since publishing our April 2011 proposed rule, Requirements for Cooling Water Intake Structures at Existing Facilities and Phase I Facilities. The NODA requests public comments on possible revisions for the final rule and presents preliminary data on the benefits of the proposed rule for the Northeast Region of the U.S., based on the results of a stated preference survey. EPA plans on issuing a final rule for existing facilities by July 27, 2012 per a consent decree with Riverkeeper.

The Clean Water Act: 40 Years of Achievements

In 2012, EPA will hold events throughout the year to commemorate the accomplishments, benefits and impact of the Clean Water Act.

For more information, please visit www.epa.gov/cleanwater40.

