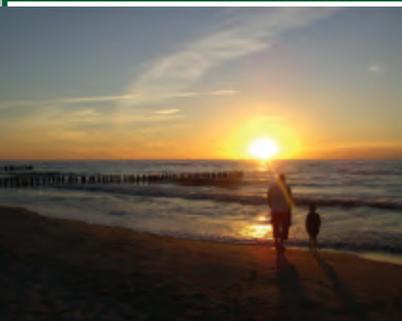


# *Office of Science and Technology*

*Office of Water  
U. S. Environmental Protection Agency*

2009

# ANNUAL REPORT





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# Foreword

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The Office of Science and Technology (OST), housed within EPA's Office of Water, uses sound science, engineering and public policy to protect and restore the nation's water quality. OST advances water quality, public health and environmental protection under the Clean Water and Safe Drinking Water Acts by:

- Producing regulatory guidelines and analytical test methods; standards and criteria recommendations; advisories for beach swimming, fish consumption, and drinking water; risk assessments and special studies identifying needed regulations; and models and tools.
- Setting national water quality goals and providing tools to measure progress in reaching them.
- Ensuring federal and state water programs reflect current scientific knowledge about water pollution causes and impacts on human health and ecosystems.

Collectively, OST's responsibilities help water program managers protect aquatic environments and human health.

In 2009 OST continued its efforts, collaborating with partners, ensuring that sound science guides EPA's work, and seeking stakeholder and public involvement. OST invited comments on the Preliminary 2010 Effluent Guidelines Program Plan and proposed effluent guidelines for airport deicing operations. New discharge regulations for the construction industry were published as well. OST also supported regional and state water quality standard development, partnering with our EPA Region 7 office on a determination that new recreational standards are required for a portion of the Mississippi River and with our EPA Region 4 office on a determination for Florida requiring numeric nutrient criteria adoption. To advance the use of sound science, OST began or completed several projects addressing contaminants of emerging concern. OST also supported development of the third drinking water contaminant candidate list. Additionally, OST worked on key action items from the National Water Program Strategy: Response to Climate Change. Lastly, OST participated in communication, education, and outreach efforts throughout the United States.

OST accomplished much in 2009 and will continue its efforts in 2010, focusing on nutrients by finalizing Florida's water quality standards, tracking state development progress of numeric nutrient standards across the country, and accelerating nutrient criteria adoption. OST will also complete research identified in the *Critical Path Science Plan*, advance proposed rulemakings and standards, publish the Pharmaceuticals and Personal Care Products Treatment Compendium, and publish ammonia, selenium and atrazine criteria.

*Ephraim S. King*  
Director, Office of Science and Technology





# Highlights

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- Effluent Guidelines for the Construction and Development Industry — In December 2009, EPA issued a final rule to reduce water pollution from construction sites. The new rule will phase in over four years. EPA expects compliance with this regulation to reduce the amount of sediment and other pollutants discharged from construction and development sites by approximately four billion pounds each year.
- Nutrient Pollution — Nutrient pollution is one of OST's top water priorities. Key nutrient activities in 2009 included:
  - Florida Determination — In January 2009, EPA issued a formal determination under the Clean Water Act that numeric nutrient water quality criteria are necessary in Florida for rivers, streams, lakes and estuaries. EPA began developing a proposed rule to implement this determination in close coordination with the Florida Department of Environmental Protection.
  - Nutrient Innovations Task Group Report — In August 2009, the Task Group, composed of state and federal regulators, published a report summarizing scientific evidence and analysis that characterized the scope and major sources of nutrient impacts nationally. The report also considers the tools currently used under existing federal authority and presents options for new, innovative tools to improve control of nutrient pollution sources. Lastly, the report presents findings and suggests next steps to better address nutrient pollution. The Task Group's report has prompted a robust discussion of nutrient pollution issues across the country.
- Water Quality Standards Determination for a Portion of the Mississippi River at St. Louis — In October 2009, EPA determined that Missouri needs new or revised water quality standards to protect recreational activities on portions of the Mississippi River around St. Louis. As a consequence of this determination, the state will develop revised standards for fecal contamination that will protect people using this section of the river.
- National Water Program Research Strategy — The Strategy, completed by OST in partnership with all Office of Water (OW) offices, the Office of Research and Development, and the regions in September 2009, describes the National Water Program's near and long-term research needs. The research identified will expand the National Water Program's science base for regulatory and non-regulatory tools and decisions, thereby increasing program credibility, expediting the production of needed tools, and achieving faster and better quantified water quality public health and environmental outcomes. A principal use of the Strategy is to inform potential research partners within the federal research community as well as the academic, industry and international communities of our research interests so that collaboration can be facilitated and the science more broadly and effectively communicated.
- National Lake Fish Tissue Study — In November 2009, EPA released results showing toxic chemical concentrations in fish tissue from lakes and reservoirs in most states. EPA estimated the percentage of lakes and reservoirs with fish containing potentially harmful levels of chemicals. This publicly available information will help states better protect their citizens.





# Technology-Based Solutions

## PRELIMINARY 2010 EFFLUENT GUIDELINES PROGRAM PLAN

On December 28, 2009, EPA published a Federal Register notice requesting comment on the preliminary 2010 plan regarding effluent guidelines, which are technology-based water pollution control regulations. The preliminary plan is a requirement of the Clean Water Act (CWA) and describes the Agency's continuing work to develop and revise effluent guidelines. The preliminary plan does not contain regulatory requirements; rather, it presents the process EPA uses to identify industries for further investigation and analysis. EPA will use the analyses' findings to determine if existing effluent guidelines must be revised and if new effluent guidelines for unregulated industries must be established.

The preliminary 2010 plan contains several highlights regarding recent analyses and decisions, including the September 2009 analysis and decision to revise and update an effluent guidelines rule for the Steam Electric Power Generating Industry. The preliminary plan also includes updates on analyses for Coal Bed Methane Extraction, Unused Pharmaceutical Management in the Health Care Industry, and Ore Mining and Dressing.

## NEW DISCHARGE REGULATIONS FOR THE CONSTRUCTION INDUSTRY

On December 1, 2009, the Agency published new effluent guidelines to reduce water pollution from construction sites. Construction activities, such as excavating and grading, disturb soil and sediment. If soil is not managed properly, it can wash off during storms, polluting nearby rivers and streams. The new rule, which will phase in over four years, will reduce the sediment discharged by about 4 billion pounds each year. In addition, the new regulations will significantly reduce the discharge of other pollutants, such as nutrients and toxic chemicals.

These regulations establish the nation's first, industry-wide monitoring requirements and enforceable numeric limitations for construction site stormwater discharges. The new limits are based on proven technology that will achieve significant improvement in the removal of pollutants. A numeric limit also ensures that applicable best management practices and treatment systems are maintained and operated in a consistent and reliable manner.

For more information, visit [www.epa.gov/waterscience/guide/construction](http://www.epa.gov/waterscience/guide/construction).





## PROPOSED EFFLUENT GUIDELINES FOR AIRPORT DEICING OPERATIONS

On August 28, 2009, the Agency proposed and invited comments on effluent standards for airport deicing operations. Establishing the new requirements would reduce the environmental impact of deicing practices while maintaining operational safety. The requirements apply to wastewater associated with deicing aircraft and airfield pavement at primary commercial airports. Deicing operations use large amounts of chemicals that may drain off airport facilities to nearby rivers, lakes, streams and bays. These

discharges can impact water quality by harming wildlife, contaminating drinking water sources, and affecting residential areas and parklands. The proposed regulations will reduce these negative impacts through a variety of affordable practices, such as on-site treatment of the wastewater, shipment off-site to a wastewater treatment plant, and/or changing deicing chemicals. If implemented as proposed, reductions of more than 40 million pounds of pollutant discharges per year can be expected.

For more information, visit [www.epa.gov/waterscience/guide/airport/](http://www.epa.gov/waterscience/guide/airport/).

## REPORT ON POLLUTANT DISCHARGES FROM STEAM ELECTRIC POWER GENERATION AND THE DECISION TO REVISE EFFLUENT GUIDELINES

In 2009, the Agency decided to revise the effluent guidelines for Steam Electric Power Generation due to the potential hazard to human health and the environment from the industry's pollutant discharges. The decision reflects the findings from our multi-year study of power plant wastewater discharges from ash ponds and air pollution control equipment at coal-fired plants. The information EPA collected during the study demonstrated that the current effluent guidelines issued in 1982 have not kept pace with changes in the electric power industry. Although treatment technologies are available to reduce pollutants before they are discharged to waterways, these systems have been installed in only a fraction of the nation's power plants.

To develop the revised effluent guidelines, EPA will survey the industry to collect detailed technical and cost information about power plant processes and electric generating units. In an October 2009 Federal Register notice, the Agency invited public comment on a draft questionnaire. In 2010, EPA will evaluate the comments, revise the survey, solicit comments a second time and distribute the questionnaires for completion.

For more information, visit [www.epa.gov/waterscience/guide/steam/](http://www.epa.gov/waterscience/guide/steam/).

# Water Quality-Based Standards

## IMPLEMENTING THE NATIONAL WATER QUALITY STANDARDS PROGRAM

Water Quality Standards (WQS) are the foundation of the national water quality program mandated by the CWA. Defining goals for U.S. waters 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, agriculture, etc.
- 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.
- Other policies that address the implementation of standards.

Through its Water Quality Standards Program, OST develops the recommended criteria and reviews the state standards that protect and restore the nation's water bodies. The CWA gives states and territories the lead to administer WQS programs. OST and EPA's regional offices (regions) provide federal oversight for state and territorial programs, and partner together as co-regulators on a daily basis. Tribes must apply for federal authorization to administer WQS programs under the CWA. OST provides technical assistance to tribes in applying for federal program authorization and in developing and implementing WQS and other water quality programs. To date, 44 tribes have federal authority to administer a WQS program. Across the United States, 35 tribes have EPA-approved, CWA-effective WQS programs. OST also plays an active role in providing training and technical support for tribes (see the Communication, Education and Outreach section of this report).

### Providing Regional and State Support on WQS

In addition to developing federal WQS regulations, national policy and guidance, OST supports regions and states on specific WQS actions. For example, OST reviewed many state standards packages submitted to the regions for review and approval. These included challenging issues such as antidegradation implementation procedures, use attainability analyses for hundreds of waters, numeric nutrient criteria, mixing zone provisions, and agricultural use policies. OST also took action to ensure that WQS protecting public water uses apply to 30 miles of the Mississippi River around St. Louis.



OST works closely with regions to support constructive, timely and defensible actions on state WQS submissions. Regions work with their states to ensure that states' standards revisions can be approved before they are adopted and submitted to EPA. Improving upon FY08 approval rates, EPA approved 93.2 percent of the state submissions received in FY09.

For more information about the National Water Quality Standards Program, visit [www.epa.gov/waterscience/standards](http://www.epa.gov/waterscience/standards).



### **Water Quality Standards Determination for Portion of the Mississippi River around St. Louis**

On October 29, 2009, EPA made a CWA determination that Missouri must create new or revised WQS to address whole body contact recreation, such as water-skiing and swimming, on a 28.6-mile portion of Mississippi River that flows through St. Louis. EPA's assessment indicated that the segment has shoreline features that include public parks, boat ramps, bike trails and sandy, sloping banks, and the available information demonstrated that the water quality necessary to support whole body contact recreation

could be attained. In addition, a whole body contact recreation use designation provides protection of downstream uses that EPA determined need new or revised WQS for whole body contact recreation. Missouri plans to address this issue in its next triennial review.

For more information about this CWA determination, visit [www.epa.gov/waterscience/standards/rules/stlouis/factsheet.html](http://www.epa.gov/waterscience/standards/rules/stlouis/factsheet.html).



### **Methylmercury Criteria Implementation Guidance**

EPA's 2001 water quality criterion to protect human health recommends that methylmercury in fish tissue not exceed 0.3 parts per million. Mercury in the air settles into water or onto land where it can be washed into water. Once deposited, certain microorganisms can change it into methylmercury, a highly toxic form that builds up in fish, shellfish and animals that eat fish. Fish and shellfish are the main sources of methylmercury exposure to humans. Young children, including unborn children, may suffer neurological damage as a result of exposure to mercury. EPA

committed to develop guidance to help states, territories and authorized tribes implement the criteria to help them achieve their methylmercury concentration goals in surface water to minimize uptake into the food-chain. Following changes based on public comments and internal and OMB reviews, EPA published the draft guidance to the Web site in January 2009. For more information, visit

[www.epa.gov/waterscience/criteria/methylmercury/index.html](http://www.epa.gov/waterscience/criteria/methylmercury/index.html).

## ESTABLISHING NUMERIC NUTRIENT WATER QUALITY CRITERIA

### 2009 Florida Determination Requiring Adoption of Numeric Nutrient Criteria

Florida's 2008 Integrated Water Quality Assessment revealed that approximately 1,000 miles of rivers and streams, 350,000 acres of lakes and 900 square miles of estuaries are impaired by nutrients such as nitrogen and phosphorus. Nutrient pollution can cause water quality problems such as harmful algal blooms, low-oxygen dead zones and declines in wildlife and wildlife habitat. These effects also disrupt recreational activities and threaten public health.



In January 2009, EPA issued a formal determination under the Clean Water Act, stating that numeric nutrient water quality criteria are necessary in Florida and committing the Agency to develop those standards for Florida unless the state adopts and EPA approves new standards first. The federal determination and rulemaking builds upon the substantial investments Florida has made in nutrient data collection, analysis and stakeholder involvement, and is consistent with the state and EPA's commitment to a stronger nutrient control program. The new numeric nutrient water quality standards will help Florida improve the efficiency and effectiveness of its water quality management tools, protect high-quality waters, identify waters impaired by nutrient pollution, establish total maximum daily loads and Basin Management Action Plans, and derive National Pollutant Discharge Elimination System permit limits.

EPA's decision letter on these actions can be viewed online at [www.epa.gov/waterscience/standards/rules/#det](http://www.epa.gov/waterscience/standards/rules/#det).

### Response to Office of Inspector General Report

The Office of the Inspector General issued a report to Agency officials in August 2009 recommending that OW set numeric nutrient water quality standards to meet the requirements of the Clean Water Act for waters identified as being of significant national value. In response to the report, EPA committed to develop a set of factors to consider when identifying and prioritizing states and waters to determine if numeric nutrient criteria are necessary. In addition, EPA committed to revise internal milestones to better gauge cumulative state progress, develop guidance for annual state performance discussions, launch a revised nutrient criteria Web site to better track state progress, and publish biennial reviews of state progress. EPA plans to make these reports publically available. For more information, see [www.epa.gov/oig/reports/2009/20090826-09-P-0223.pdf](http://www.epa.gov/oig/reports/2009/20090826-09-P-0223.pdf).



## IMPROVING BEACH WATER QUALITY, MONITORING AND PUBLIC INFORMATION

The National Oceanic and Atmospheric Administration (NOAA) estimates that almost 71 million people will visit beaches for a combined 970 million days in 2010. OST's Beach Program works in partnership with the regions and state and local governments to protect water quality at U.S. beaches and the health of beach visitors. The Beach Program focuses on five areas:

- Strengthening local beach WQS and monitoring efforts.
- Providing faster laboratory test methods for beach water samples.
- Predicting pollution problems by identifying causal sources and conditions.
- Investing in human health and analytical methods research.
- Informing the public about water quality problems at U.S. beaches.

### **Providing Funding for State Beach Programs**

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. In addition to notifying the public, states must also send EPA data on beach monitoring and notification for their coastal recreation waters, which EPA maintains in a database. Since 2001, the Agency has awarded almost \$82 million in grant funds to eligible states to protect the nation's beaches, including \$9.9 million in 2009. For more information, visit [www.epa.gov/waterscience/beaches/grants](http://www.epa.gov/waterscience/beaches/grants).

### **Keeping Track of States' Beach Closings and Advisories**

Each spring, OST releases a 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 2009, OST released a national summary report of state data on beach closings and advisories during the 2008 beach season. In July 2009, the report was supplemented by state reports that include program-specific accomplishments, issues and other information provided by the states and made available on EPA's Beach Monitoring and Notification Web site at [www.epa.gov/waterscience/beaches/seasons](http://www.epa.gov/waterscience/beaches/seasons).

# Application of sound science

## DRINKING WATER SUPPORT

OST develops risk assessments for drinking water contaminants in support of regulatory decisions made by EPA's Office of Ground Water and Drinking Water (OGWDW). This support includes development of contaminant candidate lists (CCL), regulatory determinations and six-year reviews of currently regulated drinking water contaminants.

### CCL3

Every five years, OGWDW publishes a CCL identifying the contaminants in drinking water most likely to pose a risk to human health. OST helps OGWDW identify the health effects used to determine the list. In 2009, EPA published its third CCL (CCL3). OST developed the approach used to group contaminants based on the potency and severity of effects. To support CCL3, OST also finalized health effects background documents summarizing available toxicological information and identifying research needs for the 35 contaminants that have available occurrence data from drinking water monitoring.

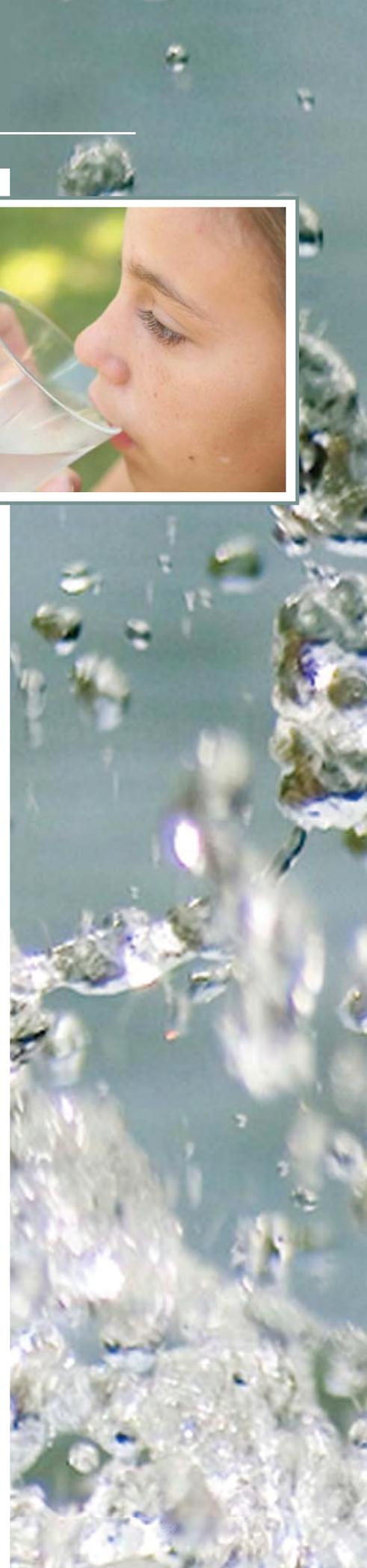
Visit [www.epa.gov/safewater/ccl/index.html](http://www.epa.gov/safewater/ccl/index.html).

### Regulatory Determinations

EPA reviews each drinking water regulation at least every six years. In support of the Agency's second six-year review released in 2009, OST finalized the toxicological data for 73 regulated chemicals. Updates identify changes that might impact the health basis of current regulations or suggest a need to revise the current health assessment due to research results published since the completion of the first six-year review in 2003. Visit [www.epa.gov/safewater/review.html](http://www.epa.gov/safewater/review.html).

### Other Drinking Water-Related Activities

OST developed a Provisional Health Advisory for Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) in response to regional needs to address contaminated sites and ground water. OST, in collaboration with the Office of Pollution Prevention and Toxics (OPPT), is developing full Health Advisories for PFOA and PFOS. OST also collaborated with OGWDW and the Office of Prevention, Pesticides and Toxic Substances (OPPTS) in establishing a process for managing a data call, including the development of a draft list of candidate chemicals for testing in the Endocrine Disruptor Screening Program (EDSP) in OPPTS. Visit [www.epa.gov/endo](http://www.epa.gov/endo).





## DEVELOPMENT OF NEW RECREATIONAL WATER QUALITY CRITERIA

A critical component of OST's work is publishing new recreational water quality criteria that states can use to strengthen their Water Quality Standards (WQS) programs. The BEACH Act requires OST to develop these criteria, which protect millions of swimmers in the United States from illnesses associated with water contaminated with pathogens. To revise the criteria to reflect current scientific data, OST and the Office of Research and Development (ORD) are implementing the Critical Path Science Plan (Science Plan) developed by U.S. and international scientific experts and published

by EPA in 2007. The Science Plan describes high-priority research, overall goals and questions associated with data gaps that EPA will pursue, setting the foundation for development of new or revised recreational water quality criteria recommendations.

In keeping with the Science Plan, OST engaged stakeholders at a meeting in October 2009 to communicate its research activities, share current thinking on criteria development, and obtain input on criteria implementation challenges. Through continued collaboration with ORD and experts in the stakeholder community, OST will help ensure that research clarifies key questions and creates sound recreational water quality criteria.

For more information on the status of this research and OST's work to develop new recreational criteria, visit [www.epa.gov/waterscience/criteria/recreation](http://www.epa.gov/waterscience/criteria/recreation).

### Partnerships for Research

To develop new or revised recreational water quality criteria by October 2012 as required under a court-ordered deadline, EPA has created partnerships to remain informed by the most relevant and recent research regarding recreational criteria. OST is working closely with the Water Environment Research Foundation (WERF) as they perform research in quantitative microbial risk assessment, pathogens and indicators in inland waters, and pathogens and indicators in tropical and subtropical waters. In February 2009, OST worked with WERF to hold an Inland Waters Experts Scientific Workshop that focused on identifying the short-term and long-term research needed to support the applicability of new or revised recreational criteria in inland waters. The final Experts Workshop Report has been used by WERF and EPA to identify and select research activities needed to better understand how the new or revised criteria will relate to inland waters.

In addition, OST and ORD have worked closely with the Southern California Coastal Water Research Project (SCCWRP), which performed many coastal marine epidemiological studies. In 2009, EPA provided technical and financial support for the epidemiological studies in Doheny Beach, Avalon Beach and Malibu Beach. For more information, visit [www.epa.gov/waterscience/criteria/recreation/oct2009/index.html](http://www.epa.gov/waterscience/criteria/recreation/oct2009/index.html).

## UNDERSTANDING CONTAMINANTS OF EMERGING CONCERN IN WATER

Several contaminants are currently emerging as concerns in U.S. waters. Pharmaceuticals and personal care products (PPCPs) are of particular interest and focus for OW. EPA is implementing a four-pronged strategy to strengthen scientific knowledge, improve public understanding, identify partnership and stewardship opportunities, and take regulatory action when appropriate. In 2009, OST continued to make significant progress in implementing EPA's strategy by initiating or completing several projects. Some of these activities included the Targeted National Sewage Sludge Survey (see below), the PFOA/PFOS Provisional Health Advisories (see Drinking Water Support section), the risk evaluations that led to inclusion of nine pharmaceuticals and one antibiotic on the final CCL3, fish and water sampling for selected PPCPs through the National Rivers and Streams Assessment, and revised federal guidelines for the disposal of unused pharmaceuticals by consumers. For more information, visit [www.epa.gov/waterscience/ppcp](http://www.epa.gov/waterscience/ppcp).

## BIOSOLIDS

Biosolids are the nutrient-rich, organic materials resulting from the treatment of sewage sludge. When treated and processed, sewage sludge becomes biosolids, which can be safely recycled and applied as fertilizer to sustainably improve and maintain productive soils and stimulate plant growth.

### Targeted National Sewage Sludge Survey Report

OST conducted the Targeted National Sewage Sludge Survey to produce the first national estimates of pharmaceuticals, steroids and hormones, flame retardants and other chemicals present in sewage sludge. A report on the survey results, including minimum and maximum concentrations for 145 contaminants, was released in January 2009. OST is in the process of evaluating the chemicals that were present. This research advances the understanding of materials present in treated sewage sludge and provides important input for EPA and others who must evaluate biosolids generated by the nation's POTWs. For more information, visit [www.epa.gov/waterscience/biosolids](http://www.epa.gov/waterscience/biosolids).

In addition to the Targeted National Sewage Sludge Survey Report, OST issued and made publicly available the 2005 and 2007 Biennial Reviews for Biosolids and initiated the 2009 Biennial Review. OST continued to build partnerships and provide technical and scientific support to regions and states on biosolid issues.

For more information, visit [www.epa.gov/waterscience/biosolids](http://www.epa.gov/waterscience/biosolids).

## COMMON CWA/FIFRA EFFECTS ASSESSMENT METHODOLOGIES

OW and the Office of Pesticide Programs (OPP) have different minimum data requirements for supporting effects assessment activities under the CWA and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). OPP and OW are exploring approaches to build on the science used by both programs to develop consistent common effects characterization methods for federal and state regulators. OW and OPP have developed a Scoping Document that describes the Agency's efforts. This document will be presented at six public meetings in January 2010. The feedback from these public meetings will inform the development of white papers that explain how EPA plans to integrate the approaches used by the OW and OPP. This common effects characterization methodology and resulting advisory values will allow federal and state risk managers to make environmentally protective, scientifically defensible, timely and consistent decisions about chemicals found in ambient water while meeting the mandates of CWA and FIFRA. Visit [www.epa.gov/waterscience/criteria/aqlife/cem.html](http://www.epa.gov/waterscience/criteria/aqlife/cem.html).



## NEW OR REVISED AMBIENT WATER QUALITY CRITERIA

### Technical Guidance Document on Bioaccumulation Factors

On September 30, 2009, EPA published “Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health; Technical Support Document, Volume 3: Development of Site-Specific Bioaccumulation Factors” in the Federal Register. This document provides states and tribes with tools to derive site-specific bioaccumulation factors (BAFs) for use in calculating site-specific human health ambient water quality criteria (AWQC). These tools will allow states and tribes to increase the accuracy of BAFs for their sites. This document supports increased consistency and transparency in our process and can help states and tribes better protect human health by providing methods to refine criteria using more site-specific and scenario-appropriate assumptions and values. Visit [www.epa.gov/waterscience/criteria/humanhealth/method/tsdvol3.pdf](http://www.epa.gov/waterscience/criteria/humanhealth/method/tsdvol3.pdf).

### Acrolein Criteria for the Protection of Aquatic Life

Following public input, EPA published final national recommended AWQC for acrolein for the protection of aquatic life in the Federal Register on September 10, 2009. An herbicide used to clear weeds from irrigation ditches and canals, acrolein is toxic to aquatic life at low concentrations. The criteria document EPA published recommends acrolein levels in the nation’s rivers and streams that will not adversely affect aquatic life. Visit [www.epa.gov/waterscience/criteria/acrolein/aq-final.htm](http://www.epa.gov/waterscience/criteria/acrolein/aq-final.htm).

### Acrolein and Phenol Criteria for the Protection of Human Health

On June 10, 2009, OST published the final national recommended water quality criteria to protect human health for acrolein and phenol. The updated water quality criteria integrate new reference doses for acrolein and phenol. EPA accepted scientific views from the public in September 2008 regarding a draft acrolein and phenol human health criteria document.

Visit [www.epa.gov/waterscience/criteria/acrolein/hhc-final.htm](http://www.epa.gov/waterscience/criteria/acrolein/hhc-final.htm) and [www.epa.gov/waterscience/criteria/phenol/index.htm](http://www.epa.gov/waterscience/criteria/phenol/index.htm).

## ENDANGERED SPECIES ACT TECHNICAL SUPPORT

OST has been engaged in efforts to consult with the National Oceanic and Atmospheric Administration (NOAA)-Fisheries and U.S. Fish and Wildlife Service (the Services) on Oregon’s water quality standards for toxic substances. The Office is also consulting with the Services at the national level on recommended water quality criteria for cyanide. Validation of existing AWQC as they apply in Oregon’s waters is currently underway and includes 23 compounds. The outcomes of these consultations will serve as a framework for all future interactions with the Services.

## FISH PROGRAMS

### 2007-2008 National Listing of Fish Advisories

Available online, the 2007-2008 National Listing of Fish Advisories (NLFA) was released in August 2009. The NLFA summarizes information for a two-year period about local fish consumption advisories issued by 49 states, territories and tribes in the United States. The NLFA database provides more detailed information such as the fish under advisory, the chemical contaminants in the advisory, the location of the water body, and the population for which the advisory was issued and allows the user to generate maps that summarize advisory information.



The NLFA from 2008 indicates that the number of advisories increased significantly between 2006 and 2008, as did the lake acres and river miles under advisory. These increases can be attributed to the issuance of several new statewide advisories that cover all river miles or lake acres in the state. Ninety-seven percent of all advisories involved five bioaccumulative chemical contaminants: mercury, polychlorinated biphenyls (PCBs), chlordane, dioxins and dichlorodiphenyltrichloroethane (DDT). The NLFA is available on the Web at [www.epa.gov/fishadvisories](http://www.epa.gov/fishadvisories).

### Establishing a National Baseline of Persistent, Bioaccumulative and Toxic Chemicals

The final National Lakes Fish Tissue Study report was released in November 2009. The study is EPA's first effort to research fish contamination broadly since the late 1980s, and is the first national freshwater fish contamination survey based on a random sampling design. The study allowed OST to develop national estimates for 268 persistent, bioaccumulative and toxic (PBT) chemicals in fish tissue from lakes and reservoirs in the contiguous United States. It also generated data that will define a national baseline against which EPA programs can assess the progress of pollution control activities to limit the release of PBT chemicals into the environment.

The study has yielded compelling information. For example, mercury and PCBs were detected in all fish samples collected during the four-year sampling period (2000-2003). The mercury concentrations for predators exceed EPA's recommended tissue-based criterion of 0.3 parts per million (ppm) for about half of the sampled population of lakes. Dioxins and furans were detected in predator and bottom-dweller samples at 81 percent and 99 percent of the sites, respectively. DDT was detected in predator and bottom-dweller samples at 78 percent and 98 percent of the sites, respectively. EPA is using these data to support Agency efforts such as developing an Agency-wide strategy for monitoring PBT chemicals, assessing mercury in the environment and characterizing the state of the environment.

OST collaborated with ORD and worked with the regions, 47 states, three tribes and two federal agencies to conduct the study. For more information about this study, see OST's Web site at [www.epa.gov/waterscience/fish/study](http://www.epa.gov/waterscience/fish/study).



## CLIMATE CHANGE-RELATED ACTIVITIES

Evidence suggests that climate change may impact water resources and could affect water quality. OST is working on several key actions under the *National Water Program Strategy: Response to Climate Change*. Several of OST's efforts in 2009 include:

- **Recreational Criteria and Climate Change:** Climate change may have implications for biological contaminants and pathogens in surface and recreational waters as water temperatures increase. To better understand this issue, as part of work to develop new or revised recreational water quality criteria under the BEACH Act, OST is conducting an epidemiology study to determine if human health risks in tropical waters, a surrogate for water bodies that could be affected by climate change, are different from human health risks in other waters. The study is expected to be completed in December 2010.
- **Water Quality and Hydrologic Condition of Surface Waters:** Climate change could impact hydrologic conditions across the country. To better understand this issue, in 2009 OST began examining how states are addressing the issues surrounding hydrologic condition and water quality.
- **Climate Research:** OST is actively involved in intra-Agency and interagency climate change research efforts, including working with ORD to identify and evaluate future research plans to address OW needs as related to global warming.

# Communication, Education & Outreach

## 2009 NATIONAL BEACH CONFERENCE

OST strives to ensure public health protection at beaches and to improve the accuracy and timeliness of notification actions. To support this goal, EPA sponsored the 2009 National Beach Conference on April 20–22, 2009, in Huntington Beach, California. The three-day conference, *Riding the Wave of Emerging Science*, brought together over 300 researchers, practitioners and policymakers from around the world to discuss water quality at beaches. Conference proceedings are available at [www.epa.gov/waterscience/beaches/meetings/2009](http://www.epa.gov/waterscience/beaches/meetings/2009).



## WATER QUALITY STANDARDS ACADEMY

For 2009, the Water Quality Standards Academy (WQSA) continued its 15 year tradition of providing high-quality training on Water Quality Standards and related regulatory programs. OST held two courses in the Washington, DC area and three customized courses developed to meet the specific needs of partnering organizations and the respective regions. For example, one was conducted with the Iowa Water Pollution Control Association and Region 7 in Muscatine, IO in October 2009. The Academy, in partnership with the Office of Wetlands, Oceans and Watersheds (OWOW), also developed and presented a two-hour webcast, “Introduction to Water Quality Standards,” in September 2009. Over 250 water quality professionals were trained in the live Academies and over 1,000 people participated in the webcast. For additional information, visit [www.epa.gov/waterscience/standards/academy](http://www.epa.gov/waterscience/standards/academy).

## New Water Quality Standards Academy Online Modules

The Water Quality Standards Academy Online (WQSA Online) has posted five new interactive Basic Course Supplemental Topics Modules. This WQSA online training makes training widely available, easily accessible and cost effective. The five new modules address Human Health Ambient Water Quality Criteria, Listing Impaired Waters and Developing TMDL’s, Monitoring and Assessment, National Pollutant Discharge Elimination System (NPDES) Permit Program, and Aquatic Life Criteria. Visit [www.epa.gov/waterscience/standards/academy/](http://www.epa.gov/waterscience/standards/academy/) for more information.





## TRAINING FOR INDIAN TRIBES

OW's Consolidated Tribal Training program seeks to enhance tribes' abilities to develop and manage water programs. Led by OST staff, this cross-office initiative provides a structured, progressive approach to tribal training and centralizes, on a single Web site, all of OW's training courses that assist tribes with creating and implementing water quality programs. The initiative improves access to training for tribes, often using tribal water quality experts as trainers. The focus in 2009 was modifying existing training courses and creating new courses to meet unaddressed needs, including a series of introductory Web-based trainings tailored to tribes, many of which featured tribal experts who shared their experiences in developing and implementing tribal water quality programs through case examples, lessons learned and personal experiences. Seventeen face-to-face trainings were also held in 2009. Visit [www.epa.gov/water/tribaltraining/webcasts.html](http://www.epa.gov/water/tribaltraining/webcasts.html) for more information.

## PARTNERSHIP TO REDUCE DENTAL AMALGAM DISCHARGES

In December 2008, OW signed a Memorandum of Understanding (MOU) with the American Dental Association (ADA) and the National Association of Clean Water Agencies (NACWA) to establish and monitor the effectiveness of a Voluntary Dental Amalgam Discharge Reduction Program. Participating dental offices will install and properly maintain amalgam separators and recycle the collected amalgam waste. In 2009, the MOU parties investigated methods to track progress, discussed annual performance goals, and increased their outreach to dentists and pretreatment programs. EPA also expanded coordination with stakeholders to include QuickSilver, a coalition of state environmental agencies concerned with mercury discharges.

## OUTREACH TO ASIAN COMMUNITY ON MERCURY IN FISH

Fish and shellfish are an important part of a healthy diet; however, nearly all fish and shellfish contain traces of mercury. Though mercury in fish and shellfish is a low risk for most consumers, some fish and shellfish contain higher levels of mercury that may harm a growing fetus or a child's developing nervous system. Higher than average levels of mercury found in 25 percent of adult New Yorkers of Asian descent are closely tied to fish consumption. OST developed public service radio messages to reach the ethnic Chinese community. The Chinese Radio public service announcements aired in March 2009 on five radio stations around the country. EPA also initiated the design and distribution of a tote bag with the public outreach message printed in Chinese and English. Throughout the development process, EPA responded to advice and recommendations provided by organizations that work closely with Chinese-Americans, the Agency's multi-lingual task force and the Office of Public Affairs. For more information, visit [www.epa.gov/waterscience/fish/publicinfo.html](http://www.epa.gov/waterscience/fish/publicinfo.html).

## 2009 EPA “WATER WARS” COLLEGIATE DEBATE SERIES

Building on the success of the 2008 Earth Day debates, OST hosted three public debates in the “Water Wars Debate Series” in 2009:

1. “Is the BEACH Act Investment Equal to the Risk Posed to Human Health? Should money that’s spent on monitoring and public notification be spent on prevention and remediation?” This debate was held with students from the University of South Carolina, Michigan State, Wake Forest and the University of Mary Washington in April 2009 at the EPA National Beach Conference in Huntington Beach, California.  
Visit [www.epa.gov/waterscience/beaches/meetings/2009/session8.pdf](http://www.epa.gov/waterscience/beaches/meetings/2009/session8.pdf).
2. “How the EPA could best achieve environmental justice solutions consistent with an Executive Order regarding Native Americans and people of color that live near Puget Sound?” This debate was held with students from Harvard, Whitman and the University of Puget Sound in August 2009 at the EPA Community Involvement and Training Conference in Seattle, Washington. Visit [www.washingtondebate.org/news/2009-08-18-epa-debate.html](http://www.washingtondebate.org/news/2009-08-18-epa-debate.html).
3. “Are federal/state fish advisory programs effective in protecting public health as an interim measure until the nation’s waters are restored to fishable status?” This debate was held with students from Harvard, the University of South Carolina, the University of Mary Washington and the University of Puget Sound in November 2009 at the EPA National Forum on Contaminants in Fish in Portland, Oregon. Visit [www.epa.gov/waterscience/fish/forum/2009/agenda2009.pdf](http://www.epa.gov/waterscience/fish/forum/2009/agenda2009.pdf).

## 2009 FISH FORUM

The Forum is an opportunity to bring together those who work on fish advisory issues to share the latest science and public health policies and establish national consistency. The topics discussed include sampling and analysis, emerging contaminants, risk assessment and toxicology, risk communication, and risks and benefits. The Tenth National Forum on Contaminants in Fish was held in Portland, Oregon, November 2-5, 2009, and was co-hosted by the Oregon Department of Human Services. Approximately 250 people attended from state, federal and tribal agencies as well as representatives from industry, academia, and various health and environmental advocacy organizations. Highlights of this year’s Forum included a special session weighing the risks and benefits of fish consumption. All presentations from the 2010 Forum are available online at [www.epa.gov/waterscience/fish/forum/2009/](http://www.epa.gov/waterscience/fish/forum/2009/).





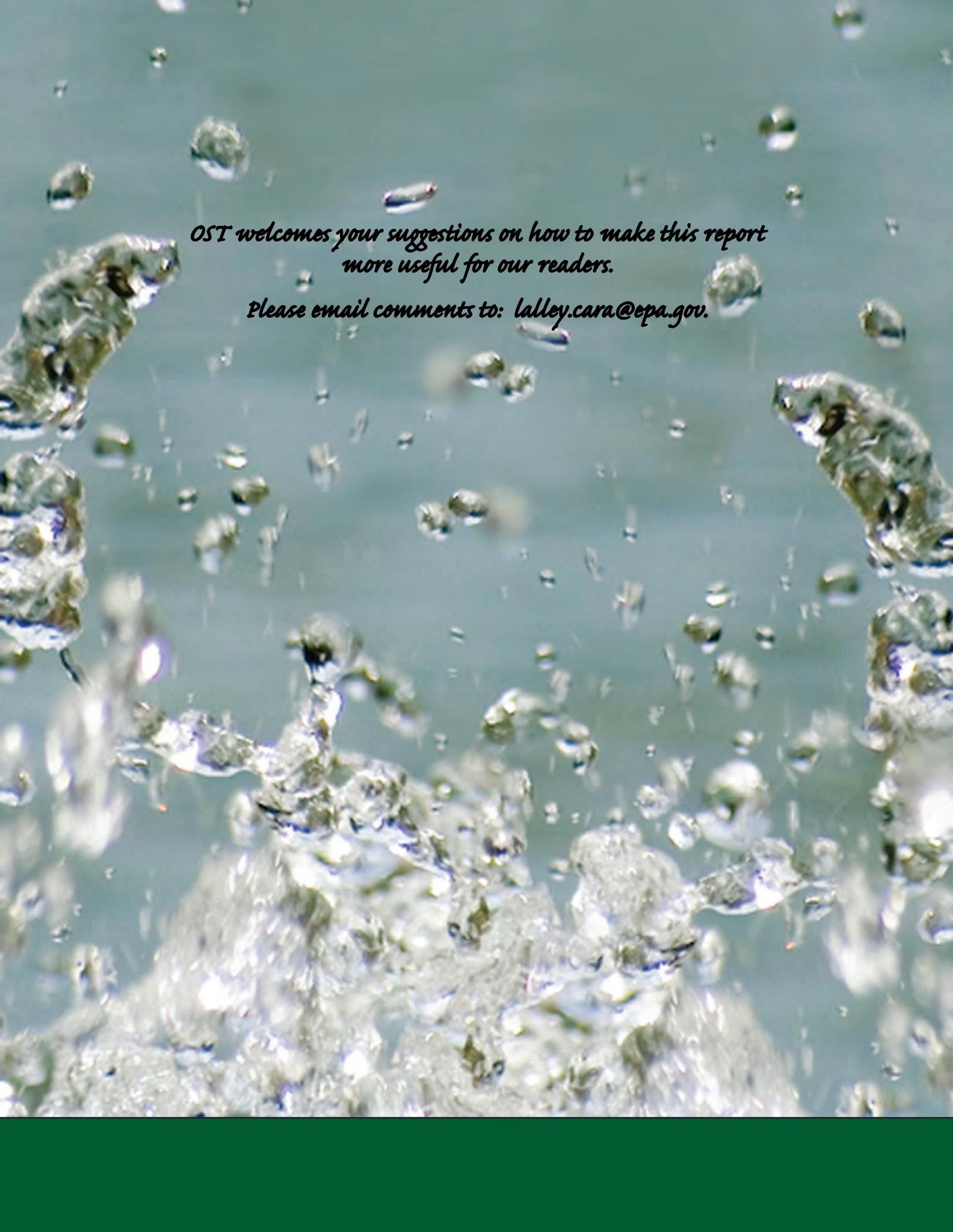
# Looking Ahead

- Nutrients — A main focus for OST in the next year and beyond, some activities of note include:
  - Finalize, if appropriate, numeric nutrient WQS for Florida lakes, rivers and streams.
  - More effectively track state progress in developing numeric nutrient WQS by establishing better performance milestones and issuing publically available state progress reports.
  - Provide increased financial and technical support to states and territories to help them accelerate the development and adoption of numeric nutrient water quality standards.
- Recreational Criteria and the *Critical Path Science Plan* — EPA is conducting critical science and research to publish new or revised recreational water quality criteria by October 2012. These will be used by states, tribes and territories in their adoption of new WQS to protect against illness associated with fecal contamination in water. The critical science and research projects are scheduled to be completed by December 2010.
- Proposed Rule for Existing Cooling Water Intake Structures — New proposed standards are expected to be available for public comment in 2010. The rulemaking will address cooling water intake structures at existing electric generating plants and manufacturing facilities. CWA section 316(b) rules are intended to protect aquatic organisms from death or injury by impingement or entrainment.
- Protecting Aquatic Life —
  - Ammonia — The goal is to address scientific input received on the draft ammonia water quality criteria published in December 2009 and publish final ammonia criteria by the end of 2010.
  - Selenium — OST plans to publish draft selenium criteria in 2010 for scientific input with a goal of publishing final criteria by the end of 2010.
  - Atrazine — Work will continue on atrazine with the focus on analyzing new data and developing appropriate revised criteria.
- Proposed Standards for Stormwater Management — OW is moving forward on a new rule to control stormwater from newly developed and redeveloped sites. In 2010, OST will focus on a survey to gather data from site developers, municipal separate storm sewer systems and states.
- PPCP Treatment Compendium — During 2010, EPA will publish the results of an extensive literature review of the effectiveness of various technologies in reducing PPCPs in water.
- Final Rulemaking for Airport Deicing Effluent Guidelines — EPA will consider public comments on the 2009 proposed rule and prepare a rulemaking package to issue final effluent guidelines to control wastewater discharges associated with deicing aircraft and airfield pavement.









*OST welcomes your suggestions on how to make this report  
more useful for our readers.*

*Please email comments to: [lalley.cara@epa.gov](mailto:lalley.cara@epa.gov).*