



Office of Science and Technology

What OST Works On

- *Effluent Guidelines*
- *Water Quality Standards*
- *Water Quality Criteria*
- *Analytical Test Methods*
- *Beach Water Quality*
- *Fish and Wildlife Consumption Advisories*
- *Drinking Water and Health Advisories*
- *Contaminated Sediments*
- *Water Quality Economics, Benefits, and Statistics*
- *Water Quality Models*



Other EPA Water Offices:

Office of Wastewater Management

Office of Wetlands, Oceans, & Watersheds

Office of Ground Water and Drinking Water

American Indian Environmental Office

What We Do

The Office of Science and Technology (OST) sets national environmental baselines for the quality of the Nation's waters. OST ensures these baselines reflect the latest water pollution science and best available water pollution control technologies to support the Office of Water's programs to keep water safe and clean. Every year under the Clean Water Act and Safe Drinking Water Act, OST produces major water pollution control regulations, guidelines, methods, standards, science-based criteria and studies that are critical components of national programs that protect people and the aquatic environment.

OST works in three main program areas:

- Engineering and Analysis
- Standards and Health Protection
- Health and Ecological Criteria

Developing the Scientific Basis for a Regulatory Framework

OST conducts and sponsors extensive research and empirical studies that help other EPA programs, states and tribes protect their drinking water supplies and minimize the effects of pollutants on fish, wildlife, and the aquatic environment. Federal, state, tribal and local governments use this information to set limits on the kinds of pollutants that may be discharged by industries directly into waters and through wastewater treatment plants. OST works closely with stakeholders, who include states, tribes, local governments, industry, environmental groups and academics, to help them set and meet their water quality goals. Our stakeholders also participate in identifying manufacturing processes that reduce or prevent the production of polluting chemicals and in setting our future regulatory goals. While OST's products form the scientific basis for most water programs that protect human health and the aquatic environment, EPA's ten regional offices communicate the information to our co-regulators and the public. Together with EPA's Office of Research and Development, other Office of Water offices, and the regions, OST provides the tools and the training that states and tribes need to develop and maintain strong scientifically-based water pollution control programs.



OST Gives Scientific & Technical Support to:

Point source discharge programs



Nonpoint source programs



Wetlands programs



Drinking water programs



Dredged material management programs



Geographic specific programs (e.g. Great Lakes, coastal areas, estuaries)



Total Maximum Daily Loads



Water quality monitoring programs

Key OST Partnerships

- Other Government Agencies
- Other EPA Offices
- Other OW Programs
- Regional Offices
- State/Interstate/Tribal/Local Partners
- Regulated Community
- General Public

Engineering and Analysis

The Engineering and Analysis Division (EAD) develops National technology-based limitations and guidelines that control pollutant discharges from industry into surface waters and waste and wastewater treatment works. EAD regulations also control the intake of cooling water. To do this, EAD identifies appropriate and achievable industrial processes and wastewater treatment technologies and develops laboratory analytical test methods. These processes, technologies, and methods are the basis of the effluent limitation guidelines that underlie NPDES (National Pollutant Discharge Elimination System) discharge permits. Many of the pollutants our guidelines address are persistent toxic compounds like lead or benzene, but the guidelines also address conventional pollutants.

Effluent Guidelines

www.epa.gov/waterscience/guide

We develop technology-based effluent guideline regulations that limit pollution from over 50 industrial categories (including chemical and pulp and paper manufacturing). These rules involve extensive industry-specific engineering and economic studies, wastewater analyses, and treatment option assessments. Effluent guidelines ensure that industrial wastewaters will achieve levels of pollutants based on the best technology that is economically possible. EPA issues effluent guidelines for categories of existing sources and new sources under Title III of the Clean Water Act.



Concentrated Animal Feeding Operations

Iron & Steel



Effluent Guidelines Under Development and Recently-Published

- Aquaculture
- Centralized Waste Treatment
- Coal Mining
- Coastal Oil and Gas
- Commercial Hazardous Waste Combustors
- Construction and Development
- Concentrated Animal Feeding Operations
- Iron and Steel Manufacturing
- Landfills
- Meat Products
- Metal Products and Machinery
- Offshore Oil and Gas
- Pesticide Formulating & Packaging
- Pesticide Chemicals Manufacturing
- Pharmaceutical Manufacturing
- Pulp, Paper, and Paperboard
- Synthetic-Based Drilling Fluids
- Transportation Equipment Cleaning

Analytical Methods and Laboratory Services

www.epa.gov/waterscience/methods



EAD is the arm of OST that develops and validates laboratory analytical methods to analyze wastewater, drinking water, sediment, and other environmental media to be used by industries, states, municipalities, and tribes. In addition, EAD provides a wide spectrum of laboratory analytical services to support data collection projects, such as National Fish and Biosolids Surveys.

Protecting Water Quality Through Science

Water Quality Modeling

www.epa.gov/waterscience/models/

SHPD supports the development of TMDLs (Total Maximum Daily Load) for impaired waterbodies through the development and use of modeling tools such as BASINS and AQUATOX.



Standards and Health Protection

The Standards and Health Protection Division (SHPD) directs the national program for adoption of State and Tribal water quality standards. It develops policies and guidance, and provides assistance to EPA regional offices and states on adopting appropriate uses, water quality criteria, and antidegradation protection for specific water bodies, and on development of total maximum daily loads to meet water quality standards. SHPD also develops and manages cross-media, agency wide policies to limit the public's exposure to toxicants and pathogens. Lastly, SHPD conducts environmental assessments to help evaluate the effects of regulations on water quality.

Water Quality Standards

www.epa.gov/waterscience/standards

SHPD is improving the process for developing, adopting, and approving water quality standards that support our regions and their partners in defining, and then maintaining, their locally-designated state and tribal water uses. We are committed to building productive working relationships as states and tribes improve their water quality standards programs and, where needed, revise their water quality standards regulations to support those improvements.

Fishable

Swimmable

Drinkable



Contaminated Sediments

www.epa.gov/waterscience/cs

OST assesses the extent, severity, and sources of contaminated sediment in the United States. We develop tools designed to prevent the volume of contaminated sediment from increasing and to reduce the existing volume. As required by the Clean Water Act, SHPD develops and submits to the Congress the biennial National Sediment Quality Inventory. We also play a leadership role in assuring EPA implements the Agency's Contaminated Sediment Management Strategy.



BEACH Watch

www.epa.gov/waterscience/beaches/

Under the BEACH Program, EPA develops new laboratory test methods for detecting contaminants in beach water and SHPD provides grants to state, tribal, interstate, and local agencies to establish effective monitoring and public notification programs for beaches. BEACH Watch is the first federal Internet-based information system to inform the public about local beach closings and conditions.

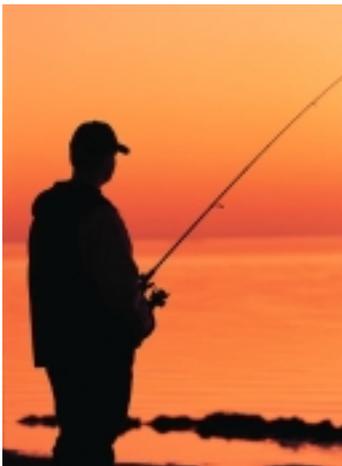


Fish and Wildlife Consumption Advisories

www.epa.gov/waterscience/fish



This SHPD program assists states and tribes in communicating to their residents the risks of eating contaminated fish and providing the tools they need to help lessen these risks. SHPD maintains the National Listing of Fish and Wildlife Advisories, a user-friendly database that is available to the public via the Internet, and develops technical documents and guidance materials that help states and tribes monitor, assess, and notify the public when and where non-commercial fish are not suitable to eat.



Health and Ecological Criteria

www.epa.gov/waterscience/criteria

The Health and Ecological Criteria Division (HECD) develops goals for surface waters and drinking water to ensure they are safe for aquatic life, human use, and consumption.

Goals Under Development and Recently Published

Aquatic Life

Nutrient Criteria to Protect Surface Waters

www.epa.gov/waterscience/standards/nutrient.html

- Rivers & Streams
- Estuarine & Coastal
- Lakes & Reservoirs
- 17 Criteria Documents



Chemical Criteria to Protect Aquatic Life

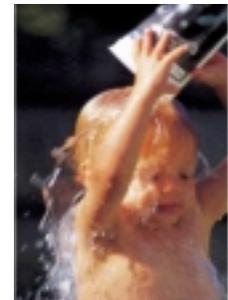
www.epa.gov/waterscience/criteria

- Ammonia
- Lead
- Atrazine
- Nonylphenol
- Cadmium
- PCP Pentachlorophenol
- Copper
- Selenium
- Diazinon
- Salt Water Dissolved Oxygen
- Tributyltin
- Silver
- National Recommended Water Quality Criteria Table

Biological Criteria for Surface Water Integrity

www.epa.gov/waterscience/biocriteria

- Estuarine & Coastal
- Rivers & Streams
- Lakes & Reservoirs
- Stressor Guidance
- Large Rivers
- Wetlands



Human Health

www.epa.gov/waterscience/criteria

Drinking Water

- Acanthamoeba
- Legionella
- Aeromonas
- Manganese
- Arsenic
- Mycobacteria
- Disinfection Byproducts
- Radionuclides
- Drinking Water Intake Report
- Radon
- Enteroviruses & Hepatitis A
- Viruses
- Giardia
- Waterborne Infectious Disease Strategy

Surface Water

- Methylmercury Fish Concentrations
- Methodologies
- 26 Updated Criteria

Economics & Benefits Assessment

www.epa.gov/waterscience/economics

OST develops data and models to strengthen the EPA's ability to estimate the benefits associated with improving water quality. These tools can be used to estimate the aggregate benefits of the Clean Water Act, and of various individual regulatory policies.