WATER QUALITY IN THE STATES

TRENDS IN AMERICA

When it comes to water quality issues, states not only struggle with a lack of federal funding but also with finding approaches that address the many and varied sources that contaminate the nation's water.

Perhaps that's the most difficult part of water quality management for state government: The culprits of water pollution vary so widely. From industrial waste and agricultural runoff to poorly-repaired wastewater infrastructure and urban runoff pollutants such as chemical lawn fertilizer and motor oil, water quality is affected by virtually every part of American life.

Many states are coming face-to-face with these culprits and are finding that nonpoint source pollution—pollution for which the source isn't immediately obvious, such as runoff—as well as aging wastewater infrastructure are big issues for water quality.

According to a 2005 report by the Environmental Working Group, more than 195 million Americans were exposed to contaminated tap water—water exceeding health-based limits—because of various sources of pollution. In rivers and streams, according to Sarita Hoyt with the EPA Office of Wastewater Management, agricultural runoff is the leading source of pollution accounting for 105,000 miles of impaired waterway. In fact, agricultural and urban runoff combined account for 60 percent of the total contaminants found in the nation's water.

The other part of the problem—aging wastewater infrastructure—is responsible for more than 850 billion gallons of untreated sewage released into the country's freshwater supply every year, according to a 2004 EPA report to Congress. The nation's aging wastewater infrastructure is failing because old pipes were not built to support the current volume of wastewater. Not only that, but the pipes aren't being replaced quickly enough to handle increased demand, and they often back up and overflow, releasing sewage and untreated stormwater directly into freshwater supplies. And the problem will only worsen as the U.S. population continues to grow.

Unfortunately, not much is being done to fix the problem. Only 4 percent of the $5 billion granted to states each year through the Clean Water Act State Revolving Fund is used to address nonpoint sources of pollution from runoff, according to FedCenter, the federal government's environmental stewardship and compliance information center.

Funding for state water quality and infrastructure programs is also severely lacking, according to Linda Eichmiller, executive director of the Association of State and Interstate Water Pollution Control Administrators. In June

What is Nonpoint Source Pollution?

Nonpoint source pollution, unlike pollution from industrial and sewage treatment plants, is caused by rainfall or snowmelt. As the runoff moves, it picks up and carries away natural and manmade pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and even underground sources of drinking water. These pollutants include:

▶ Excess fertilizers, herbicides and insecticides from agricultural lands and residential areas;

▶ Oil, grease and toxic chemicals from urban runoff and energy production;

▶ Sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks;

▶ Salt from irrigation practices and acid drainage from abandoned mines;

▶ Bacteria and nutrients from livestock, pet wastes and faulty septic systems; and

▶ Atmospheric deposition and hydromodification (altering the natural flow of water through the landscape).

Source: EPA

2008, Eichmiller said states would need to invest at least $300 billion to $500 billion to fully fund wastewater infrastructure improvements.

Interstate Cooperation

Watershed boundaries often define where states get their water, as well as which states join forces to tackle issues of water quality. Two pioneering interstate compacts led the way for state cooperation on water quality efforts in the mid-1940s: the New England Interstate Water Pollution Control Compact and the Ohio River Valley Water Sanitation Compact. These compacts were established to protect the waters for member states so they can be used for drinking water and recreational activities. And both compacts are still active today, continuing to facilitate interstate collaboration in a variety of ventures, including bimonthly sampling and water quality monitoring and special studies on emerging water quality issues.

The pioneering efforts of the New England and Ohio River Valley compacts allowed another innovative group of states to come together with Congress nearly 60 years later to protect the water quality of one of the largest freshwater resources in the world. Among its goals to ensure fair and equitable distribution of shared waters, the 2003 Great Lakes Basin Compact continues to:

▶ Protect, maintain, restore and sustainably use the freshwater resources.

▶ Ensure the waters of the Great Lakes-St. Lawrence River Basin are accessible to the public and provide high quality drinking water for millions of people; safe, unpolluted beaches for swimming and boating; and a thriving fishery, free of consumption advisories.

▶ Ensure the waters of the basin support a diverse and healthy web of plants, fish and wildlife.

▶ Ensure harbors and waterways support recreational boating and a commercial navigation industry that efficiently moves goods, enhances the competitiveness of the regional economy and sets a global example in minimizing environmental impacts.

▶ Educate government leaders so that they recognize the importance of critical issues facing the Great Lakes, speak with a unified voice and make decisions that enhance resource protection and economic development.

State Innovation

Interstate compacts aren't the only way states can pursue better water quality. Two innovative approaches are gaining ground in the states: water quality credit trading and agricultural environmental management systems.

Water quality credit trading is patterned after successful air emissions trading programs such as the acid rain reduction programs of the 1980s. Credit trading builds on the idea of market-controlled pollution reduction and, in the case of water quality, provides market incentives to reduce both point and nonpoint sources of pollution. Because water contaminants come from such a wide variety of sources, regulation of only certain polluters (industry, for example) and not others (such as farmers who create a large volume of nonpoint source pollution through agricultural runoff) hasn't been working very well for overall state water quality. Credit trading programs, on the other hand, reward water quality improvements by creating credits that can then be sold to polluters who don't meet water quality standards.

Basically, credit trading exists within a specific watershed. If the state allows a certain level of a water contaminant such as phosphorus to be released into a particular watershed, all entities contributing to the pollution of the watershed are subject to a specific allowable pollution amount. Entities that reduce pollution to less than the allowable amount gain a credit that can

In its last National Water Quality Inventory report, the EPA found that only 28 percent of the country's wadeable streams were considered in good biological condition. In fact, 45 percent of the nation's larger rivers and streams, 47 percent of lakes, ponds and reservoirs and 32 percent of bays and estuaries were found to be impaired. And some states experience even more severe water quality problems. Only five of the thousands of lakes and streams in Oklahoma, for example, did not contain harmful levels of pollution, according to a recent Oklahoma Department of Environmental Quality report.
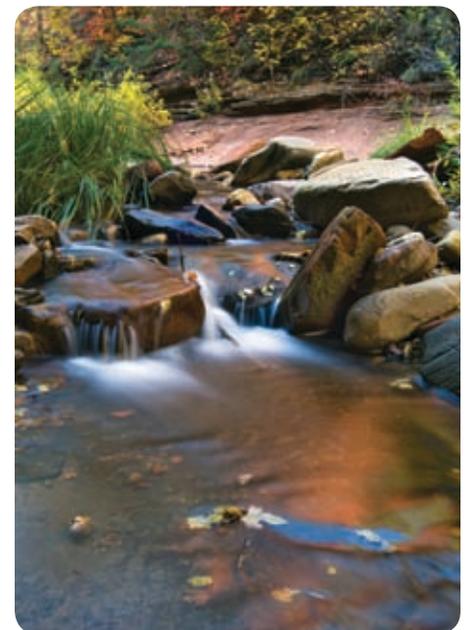
then be sold to entities that pollute more than the allowable amount. The philosophy of the cap-and-trade system is that the market will provide financial incentives to polluters who clean up their acts.

Seven states have statewide trading frameworks in place and four other states are developing trading frameworks, according to the EPA.

Because agricultural runoff contributes greatly to water pollution in the U.S., many states are urging farmers to use agricultural environmental management. Basically, agricultural environmental management (AEM) is an environmental planning tool that helps farmers assess their negative environmental impacts and correct them through best practices. According to a January 2007 article in Small Farm Quarterly, "AEM is a voluntary, incentive-based program that assists farmers in their environmental stewardship efforts and protects the quality of their farms' natural resources, which are the foundation of their long-term economic viability." While some farmers have been using AEM for a number of years, New York became the first state to implement a statewide agricultural environmental management program in 2005.

The New York program provides incentives and education to farmers to improve the overall quality of the state's natural resources. According to the program's web site, "the primary goal of (the agricultural environmental management program) is to protect and enhance the environment while maintaining the viability of agriculture in New York State." Specifically, the program is designed to:

▸ Document environmental stewardship activities farmers have already undertaken;

▸ Implement best management practices on farms consistent with the resources of each individual farm;

▸ Help farmers understand and comply with existing and future environmental regulations;

▸ Reduce farmers' exposure to liability;

▸ Increase the awareness of nonfarm

Simplified Example of Credit Trading

Lake A is contaminated with unsafe levels of nitrogen from two nearby sources: a wastewater treatment plant and a farm.

Scenario 1: No Trading Allowed

Farm	Wastewater Treatment Facility
Builds a vegetation barrier (to prevent soil erosion and runoff)	Upgrades sludge filtration system
Nitrogen removed: one unit	Nitrogen removed: one unit
Cost: $5	Cost: $10

Total nitrogen removed: two units
Total expenditure: $15

Scenario 2: Trading Allowed

Farm	Wastewater Treatment Facility
Builds two vegetation barriers, generating a nitrogen credit	Buys nitrogen credit from farmer
Total nitrogen removed: two units	Nitrogen removed: zero units
Cost: $10–5 from treatment facility = $5	Cost: $5

Total nitrogen removed: two units
Total expenditure: $10

community members of how agriculture benefits the environment and their communities, and how farmers are already working to protect natural resources;

▶ Increase farmers' awareness of how farm practices affect the environment on and off the farm;

▶ Provide one-stop-shopping service to farmers in terms of finding out about, applying for and melding together various local, state and federal assistance and incentive programs;

▶ Use limited public program and financial resources efficiently by working on farms with the greatest potential for impacting the environment; and

▶ Promote teamwork between farmers, agricultural service agencies and agribusiness.

Looking Ahead

As state populations grow and water contaminants increase, state governments will be faced with increasing water quality issues. "States have the primary responsibility for establishing applicable water quality standards … and for water quality monitoring and assessment programs for state waters," Hoyt, from the EPA, said. Because the federal government has not made water quality a top priority, responsibility lies with state and local governments to work together to improve the quality of America's water. And increased use of interstate compacts, credit trading and agricultural environmental management programs could provide states with some powerful tools to address water quality.

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State Water Quality Credit Trading Programs
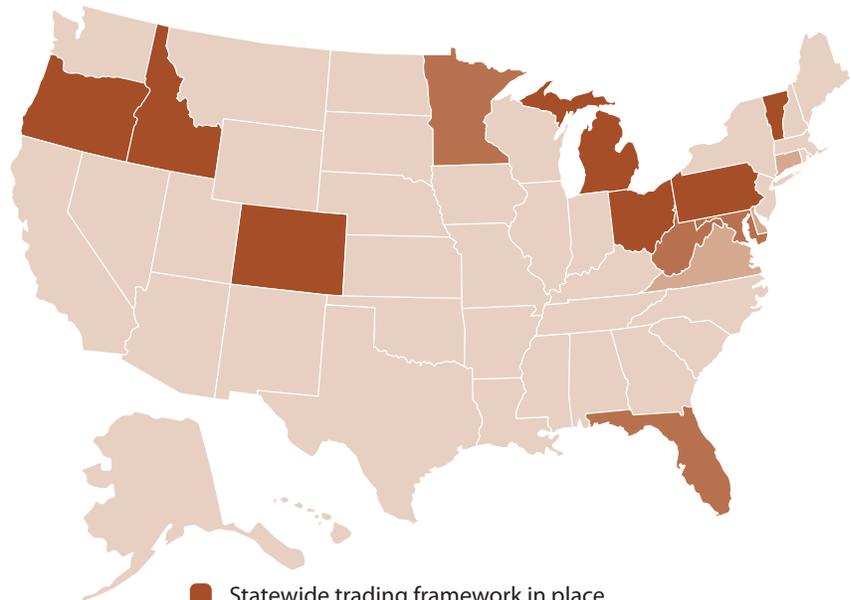
■ Statewide trading framework in place
■ Statewide trading framework in development
■ Watershed-specific trading program in place
■ No state trading program

Note: Only programs that have traded at least once are shown.
Source: EPA