



**Association of State and Interstate
Water Pollution Control Administrators**



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**Testimony Before the
House of Representatives
Committee of Government Reform
On
Clean Water Act Enforcement
Field Hearing in Ipswich, Massachusetts
October 14, 2003**

Mr. Chairman and members of the Subcommittee, my name is Roberta (Robbi) Savage. I am the Executive Director of the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), a position that I have held since 1978.

The Association is the national, nonpartisan, nonprofit organization of the State and Interstate Water Quality Agency officials who are charged by law to administer the provisions of the Clean Water Act.

On behalf of the membership, let me extend our appreciation for your kind invitation to appear before you today to discuss the implementation and enforcement of the Clean Water Act.

As you know Mr. Chairman, the Clean Water Act (CWA) was designed by the Congress in 1972 to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Congress was clear and mindful of the importance of giving the States the lead role in the development and implementation of this nation's water quality programs.

There are 45 States with approved National Pollutant Discharge Elimination System (NPDES) programs, which means that 45 of the 50 States are designing and issuing permits to dischargers and are responsible for assuring compliance with the permits and the requirements of the CWA.

In the 31 years since the enactment of the statute, States have come to recognize that protecting and improving the nation's water quality presents many formidable and daunting

challenges. Effective watershed protection requires a comprehensive, integrated balance of resources for monitoring, standards setting, planning, permitting, compliance assistance, inspection, enforcement, nonpoint source management, data management, infrastructure financing, and other related activities.

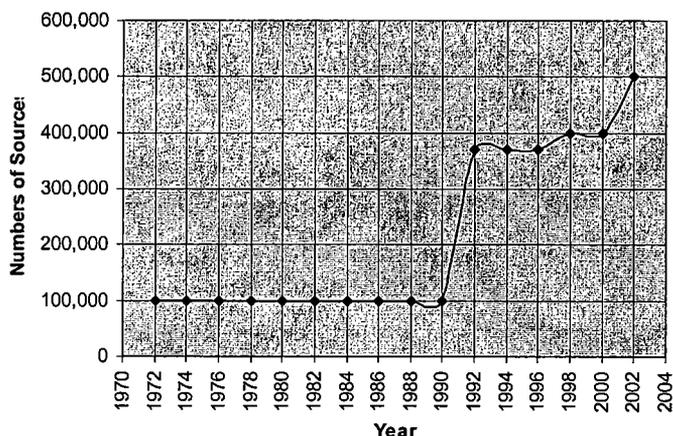
During the course of this testimony, I will outline the States' perspective on Clean Water Act enforcement and I will share with you some of my personal views, as one who has been involved with the national water program for more than 30 years. I will also discuss the delicate balance essential at the State level, between traditional enforcement techniques and compliance assistance.

Mr. Chairman, in most States, traditional enforcement and compliance assistance go "hand-in-hand." States are in the best position to understand local and State stakeholder priorities and needs and thus determine the appropriate mechanism for achieving compliance. Given the diverse needs, it is important that States have the flexibility to determine which tool best fits the facts of the situation. There is a reason why the old cliché "one size does not fit all" is pulled out at hearing after hearing. As trite as it may sound, this statement is a truism and the underlying philosophy that must guide the implementation of the statute.

To put enforcement in context, it is important to consider:

- In most States, the same staff is responsible for permit development, compliance, and enforcement. The growing permit work load affect's the program's ability to support compliance and enforcement. To the extent that the front end of the program can be streamlined, more resources can be focused on other aspects of the permit program. Consider also that in fiscal year 2002 alone, States completed 41,791 inspections, investigations, and audits of regulated facilities.
- The nature of the permit universe is changing in character and the workload is increasing dramatically. States must now not only deal with traditional municipal and industrial discharges, but also hundreds of thousands of sources related to construction, urban runoff, animal feeding operations, etc.

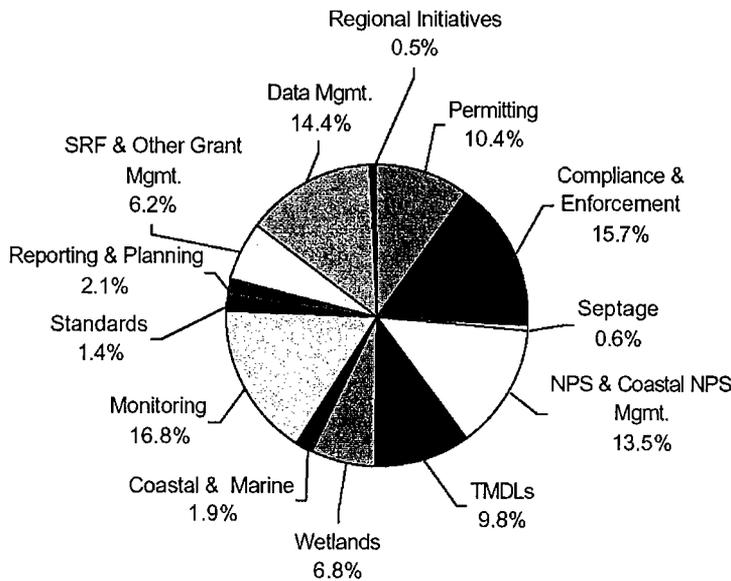
Figure 1. Growth of the NPDES Program (number of facilities or sources)



Since the inception of the NPDES program, the number of facilities required to have NPDES permits has quadrupled. USEPA expects this universe to continue to grow, especially with implementation of the new Stormwater and CAFO requirements.

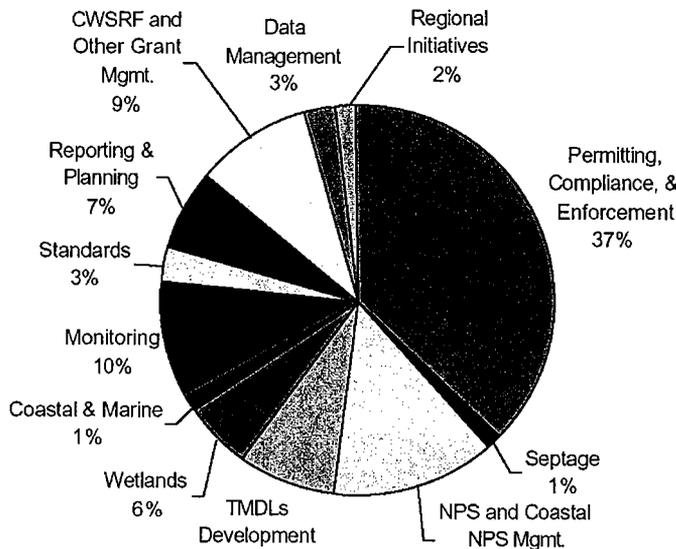
- This increase in the total number of facilities covered under the NPDES permitting program has outpaced the resources invested into the Water Programs. The resource funding gap in the nation's Clean Water Program has a significant impact on the States' ability to meet expectations.

Figure 2. National Average Resource Need for Water Quality (by program area)



Of the \$700-\$900 million resource gap, \$110-\$142 million is needed to meet the needs of the compliance and enforcement aspects of the program. The NPDES programs in the States have roughly a 50% shortfall.

Figure 3. State Expenditures for Water Quality Management



States spend approximately \$750-\$800 million dollars a year on the Water Program. By far, Permitting, Compliance and Enforcement is the largest component accounting for \$275-\$300 million.

COMPLIANCE AND ENFORCEMENT

Compliance with the requirements of the Clean Water Act is the underpinning of the statute and the implementing regulations.

An effective compliance/enforcement program should:

- Achieve environmental results,
- Protect human health and the environment,
- Assure that water quality violations are promptly corrected,
- Ensure that criminal behavior is identified and punished.

States seek to maximize compliance by employing integrated approaches of compliance assistance, compliance incentives, inspections, and traditional regulatory enforcement. As the first USEPA Administrator Bill Ruckelshaus once said "The best enforcement response is the one that produces and maintains compliance in the most efficient and timely manner...the one that will result in cleaner water..."

Compliance Assistance

Compliance assistance is intended to support the regulated community with their efforts to meet their environmental obligations. Because the programs are designed to first assume voluntary compliance with the requirements of the law, States and USEPA have developed educational materials and other related tools to educate and support the industry and government sectors' efforts to meet the statutory mandates. The regulated community is frequently comprised of small towns and small businesses, which are new to the permit program. As a part of compliance assistance, States also partner with other providers of assistance such as local governments, trade associations, non-profit organizations, and academia. It is important to note that compliance assistance usually starts well before a violation occurs or a rule is finalized, be it education, outreach, or advocacy. Information and education at the outset is preferable to remedial outreach, though compliance assistance can also occur where an onsite inspector makes helpful recommendations.

For example, the State of Washington has shifted toward more compliance assistance before taking an enforcement action. Almost all permittee contacts initially begin as compliance assistance, if this fails they escalate through informal enforcement, to formal enforcement, unless there is an acute threat to human health, or the environment. There is a considerable effort providing compliance assistance to new permittees and when new general permits are issued.

Kansas tries to educate by up-front technical assistance to avoid problems to begin with. The violations they see, by and large are not intentional or reckless. They provide assistance in the form of on-site visits or electronic means. In addition they provide technical assistance after an enforcement action to try to bring the violator in compliance and hopefully reduce chronic

noncompliance. Ninety percent of Kansas communities are small towns which depend on the State to help explain the rules and requirements they must meet. When the State sets up a regulatory program they consider the capabilities and nature of the entities to be regulated.

In the field, Louisiana inspectors may refer a facility to the State's Small Business Assistance Group or the Louisiana Rural Water Association.

Recently Tennessee held workshop training for over 2000 persons on permit requirements for erosion prevention/sediment control. Nationally the number of people that need to hear this message is well over 200,000.

Over the years, I have heard our members refer to an enforcement action as a failure. This is because a successful program is one in which compliance is achieved in a positive and cooperative manner, one where the "stick" is not necessary to achieve environmental results or the tool of first choice.

Be it technical assistance, good facility site design, knowledgeable operations professionals, better training, or adequate financing, the presence of these varied methods to enhance compliance indicates a healthy, effective and successful program.

Some States have found that they are unable to offer compliance assistance in situations where in the past it was deemed successful. This is because States simply do not have the necessary fiscal and technical resources available to continue to provide the level of support in years past.

For example, in Arizona, a 30% budget cut has forced the Water Program to focus only on the highest priority goals that can realistically be accomplished. Compliance assistance, beyond simple educational tools, can be very labor intensive and may require personal attention to individual facilities. When neither the human resources nor the time are available, the focus must shift to formal enforcement, generally prioritized by risk.

North Carolina did a study several years ago about the use of technical assistance and documented increased compliance where they had increased levels of technical assistance. The issue for them is funding to support such activities at a greater level than they currently can supply.

Compliance Incentives

Compliance incentives are policies that States have created to eliminate, reduce, or waive the need for penalties. This process is limited to business, industry, and government facilities that discover, promptly disclose, and expeditiously correct environmental insults. Allowing States to customize a compliance or enforcement response to a particular violation, based on honorable intent and demonstrated commitment to improvement, has proven to be of enormous benefit and enables States and facilities to get to the end goal faster. By accepting and recognizing voluntary disclosure, States are able to quickly address environmental hazards and encourage accountability. Clearly this type of response is not appropriate in all circumstances and the

permitting authority must be cognizant of the corporate culture of the dischargers and the historic track record for follow through and commitment.

Traditional Regulatory Enforcement

Traditional regulatory enforcement, at both the State and National levels, has been under attack recently. Consider that hundreds of billions of dollars have been spent the past 30 years on building and upgrading wastewater treatment facilities and that over 135,000 discharge permits have been issued, yet nearly 40% of the nation's assessed waters are not meeting water quality standards. The inference could be that ineffective enforcement programs are the cause of the impaired waters, but it is not that simple.

The reality is that State programs have been very effective at enforcing and achieving compliance for municipal and industrial point sources. Only a very small percentage of the remaining impaired water bodies can be attributed to point sources that are regulated and enforced under the NPDES program.

In Utah for example, only 0.9% of assessed streams and lakes are impaired by industrial point sources and 0.5% by urban runoff. Most of Utah's impairments come from natural sources, nonpoint sources, or other sources not regulated under the NPDES program. Although the numbers may be higher in some other States, it is well established that the majority of impairments across the nation are from non-point sources of pollution.

Figure 4. Sources of Impairment by Category from the 1998 § 303(d) List

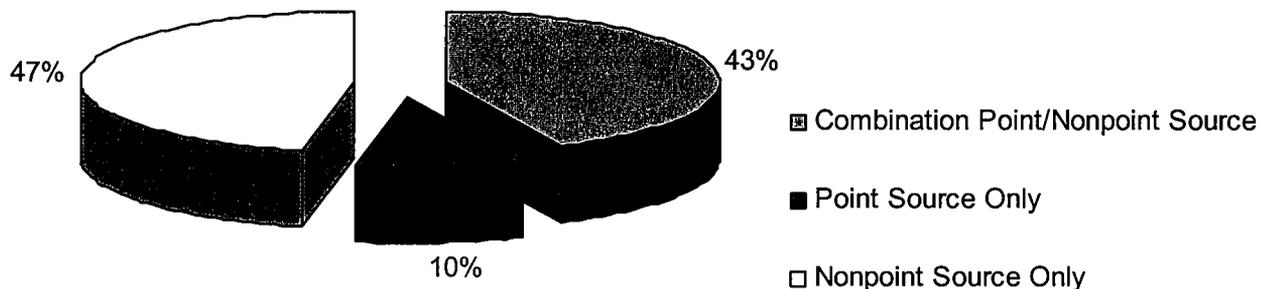


Figure 7. Leading Causes/Sources of Impairments in Assessed Rivers, Lakes, and Estuaries

	Rivers and Stream	Lakes, Ponds, & Reservoirs	Estuaries
Leading Causes	Pathogens (Bacteria)	Nutrients	Metals (Primary Mercury)
	Siltation (Sedimentation)	Metals (Primary Mercury)	Pesticides
	Habitat Alterations	Siltation (Sedimentation)	Oxygen Depleting Substances
Leading Sources*	Agriculture	Agriculture	Municipal Point Sources
	Hydrologic Modification	Hydrologic Modification	Urban Runoff/Storm Sewers
	Habitat Modifications	Urban Runoff/Storm Sewers	Industrial Discharges

* Excluding unknown, natural, "other" sources.

It is important to highlight that in some States, an increase in the traditional regulatory enforcement has become an effective deterrent. For example, the State of California passed a law, three years ago, creating a mandatory minimum of \$3,000 a day for a permit violation. This legislation focused State attention on the traditional enforcement model and away from post violation compliance assistance. Over the past three years, California's permit violations have fallen considerably.

One tool Georgia uses is a "Zero Tolerance" policy that "insisted that regulatory initiatives be put in place to ensure polluters whether public or private are identified and that appropriate penalties are levied in order to correct problems". This strategy applies to sensitive areas where water quality is stressed due to a high rate of growth. A monetary penalty is required for any permit violation or sewer system overflow. Over 100 formal enforcement actions have been taken each year.

For facilities that have a history of noncompliance, North Carolina can ratchet up the penalties each month. And they use Special Orders by Consent to codify schedules that are enforceable and incorporate stipulated penalties for missed schedules or noncompliance.

ENFORCEMENT MEASURES

In the four previous examples, California and Utah successes were reviewed using different variables. Utah focused on impairments to water quality standards while California focused on a significant reduction in permit violations. Georgia and North Carolina took a special approach for particular circumstances. These represent four different strategies which when used alone or in combination get to the same end point. A key factor to providing environmental protection is assuring State flexibility to tailor their programs to the local conditions and to promote discharger compliance through increasingly effective monitoring and compliance assessment.

Permit Compliance System

The backbone of the compliance and enforcement programs must be the effective collection and representation of water quality data. The Permit Compliance System (PCS) is the "USEPA computerized database of information on water discharge permits, designed to support the NPDES program." It is this system that is used to track and evaluate the progress of the NPDES program, including the status of enforcement and compliance.

It is the view of most States that the PCS is ineffective, inaccurate and inadequate to meet the needs of an ever growing and complex water permitting and enforcement program. PCS modernization has been a priority of our association for more than a decade and we are pleased to note that the Agency is moving forward with this important task.

There is full agreement that PCS is overly complicated, obsolete, user unfriendly, unorthodox, consistently down, and unusable for data entry. A large percentage of the violations included in a statistical analysis are actually false or are non-reporting violations resulting from missing data and are not actual water quality violations.

For example, in Utah the report shows a compliance rate of 65% for FY 1999. However, in going back and filling in the missing data and based on the Office of the Inspector General's definition, the actual compliance rate is 94%. Unfortunately, many States must rely on this Federal database to manage the NPDES program.

Forcing States to continue to input data in an ineffective system is complicating State and Federal efforts to effectively and accurately represent the status of the clean water programs. It is unfortunate that PCS, a clearly inadequate and undependable database, is currently being used by USEPA (and others) to evaluate State performance.

Mr. Chairman, it is even more troubling to note that this system is not equipped to handle stormwater permits, minor facilities, or to flag toxicity violations. This should not be a reflection of State enforcement performance. Rather, the system is a reflection of USEPA's failure to fulfill its technical support function to supply the necessary tools to the States in order to effectively administer the program.

ASIWPCA fully endorses the Office of Inspector General's (OIG) recommendation and prioritization to overhaul PCS. States cannot emphasize enough how important this priority must become for the integrity of the clean water programs.

Compliance Monitoring

States have long realized the importance of water quality monitoring to their overall water quality programs. Data gathered through monitoring is critical to making scientifically based determinations about the status of a State's water resources, the extent of water quality impairments, and appropriate solutions. Compliance monitoring specifically focuses on the control of long-term water quality, the quality of receiving waters as determined by testing

effluents, and the maintenance of standards during and after construction of a project. (I have attached for the record a recent article of mine that was published by the Environmental Law Institute and a power point summary of the recent ASIWPCA membership survey on water quality monitoring).

Watch List

One new mechanism the Office of Enforcement and Compliance Assurance has introduced is a Watch List. Basically, this is a list of target facilities in "significant noncompliance" (SNC). The designation refers to various violations of requirements that USEPA "deems the most serious and that may pose a more severe level of environmental threat," according to agency documents. In addition, the Agency is adopting "pilot" CWA criteria that encompass "violations with potential for serious environmental impact," including a serious, one-time release without enforcement, which USEPA defines as a reported daily measurement more than 200 percent above the permitted level.

States are greatly concerned by the creation of this list as it might possibly lead to use as an Enforcement Measure. This list would highlight for USEPA, and potentially others, those States who, in USEPA's view, are not implementing successful compliance and enforcement programs. While on the face of it, this may seem logical to some, those of us who work for and with the State environmental agencies know that there are many pitfalls in the development of such a list. My colleague Steve Thompson has effectively outlined the States' concerns with the Watch List in his testimony and the Association concurs and supports the points he has made before the Committee.

It is our position that if USEPA believes a State is not carrying out timely and appropriate enforcement actions, the Agency should first advise the State of their concern. The State should then be given the opportunity to take appropriate action. If a State fails to follow-up then USEPA should be able to step in and take action.

ENFORCEMENT OPERATIONS

States and USEPA work to use their combined resources to achieve the greatest environmental results possible. This collaboration occurs through different mechanisms including the Memorandum of Agreement (MOA), Memorandum of Understanding (MOU), Performance Partnership Agreement (PPA), and Performance Partnership Grant (PPG) agreement.

In these processes, USEPA and State officials sit down to discuss environmental conditions and program needs, agree on goals and priorities, devise strategies for addressing priority needs, decide what the roles and responsibilities of each partner will be, and decide how they will measure progress within the national framework.

For example, North Carolina splits the wetland ditching and draining cases with USEPA, because of the large workload associated with those cases. That has worked well.

USEPA needs to be far more communicative than they used to be. State/USEPA advance coordination is needed to plan ahead and undertake "work sharing." This should be a standard way of doing business, rather than being at the mercy or whim of individuals.

Often this process is time consuming and cumbersome and States are in agreement that internal USEPA enforcement operations must be streamlined and consolidated. One important example of streamlining would be the reintegration of the enforcement and compliance function back into specific media programs. Although States appreciate the necessity of having a national enforcement perspective at USEPA, they are opposed to having enforcement as a separate entity. States have found that there is a programmatic disconnect and an unnecessary hurdle to achieving the CWA goals.

Mr. Chairman, I have worked with or for the USEPA for the majority of my adult life. I have seen the Agency structured to include enforcement as an integral part of the environmental media programs, and I have seen and worked with the current structure where enforcement is separate and apart from the program decision making process.

Within most States, enforcement is organizationally located within the water programs, which allows for priority setting across the entire spectrum of water quality concerns and smoother less disjointed program operations. This is not the case nationally, which greatly interferes with the potential success of the collaboration efforts.

Aside from the "optics" of having a separate enforcement function, I personally can see no justification for such a bifurcated structure. As currently organized, USEPA and its enforcement activities are costly, uncoordinated, inefficient, and often governed as much by turf, access and budgets as by environmental protection. History has clearly demonstrated that the most effective structure is one where the enforcement function is well integrated into the media specific programs.

Federal Facilities and Cross Jurisdictional Concerns

USEPA should do a better job of ensuring compliance for the facilities they regulate (e.g., Federal facilities, Tribes). They could use more authority to take enforcement against other Federal agencies. When States try to address such violations, they run into the issue of sovereign immunity and cannot charge administrative penalties. They have a hard time getting a Federal agency to acknowledge that the State has jurisdiction to require corrective action.

Cross jurisdictional coordination is also an issue. For example, there is an enforcement action for Cincinnati that involves 250 CSOs on the Ohio River. On the other side of the river is another State in another USEPA Region with 100 CSO's. Obviously, the States and USEPA Regions need to dialogue as they carry out their responsibilities. It is hard to compel a large urban center to address environmental impacts in a unified manner if there is a disconnect.

Overfiling

Although this varies from Region to Region, many States do feel they have been successful at developing good relationships regarding enforcement actions and "federal overfiling". Typically, it is during the work plan negotiations that States and Regions will work cooperatively to define what cases they each will pursue, and if USEPA intends to "overfile."

Unfortunately, not all States' experiences are positive. Some States have noted changes in USEPA's approach to collaborative efforts. In these situations, USEPA has unilaterally dismissed long-standing agreements and has pursued action on its own, absent State input or concurrence. Such actions go against the premise of federalism and the co-regulator relationship.

States believe USEPA should only utilize its administrative penalty powers under § 309 if a State has failed to take sufficient enforcement action for a violation of the Clean Water Act. And, as J.P. Suarez committed when speaking to a group of State officials, USEPA should consult with the State in advance of an overfiling action. Further, USEPA should give the State the first opportunity to take additional enforcement actions when appropriate. Finally, USEPA should consider the State's enforcement record and not just isolated cases or situations in making a decision to pursue administrative penalties and to determine the sufficiency of a State's enforcement program.

WORK LOAD AND FUNDING

Funding for State environmental protection over the years has been inconsistent and generally inadequate. Along with program management, States have been faced with the daunting job of bringing their municipalities into compliance, spending hundreds of billions of dollars on sewage treatment and stormwater abatement.

As indicated, ASIWPCA members believe that the continued lack of resources impacts the mechanisms by which States can achieve compliance. A balanced NPDES program is important as well as a more adequately funded program. To the extent that it is difficult to keep up with the permit work load, the compliance goal will not receive the attention due. To the extent that States are not able to give enough attention to compliance assistance, there will be enforcement problems. States wish to stress that good public policy dictates that "Black hat" regulatory programs need to stay separate from "white hat" incentive/assistance programs. And, a well-funded enforcement program is essential to addressing pollution problems at the State level.

THE FUTURE

There is some discussion that the traditional mechanism for viewing enforcement is outdated. From the outset, these systems were created to identify violations through some regularized inspection schedule, and included reporting requirements. When the system identified

reviewable violations, States and/or USEPA made a decision regarding an enforcement response. This system ensured that the worst violations were identified promptly. Although States and USEPA have varied in the types of responses to violations, this basic pattern of reaction survived.

USEPA recently introduced "Smart Enforcement" as the next big step in moving forward with the enforcement compliance programs. "Smart enforcement" focuses on addressing some of the largest emitters of water pollution, using scientific data to make strategic decisions for better utilization of resources, using the most appropriate tool to achieve the best outcome, and effectively communicating the environmental, public health and compliance outcomes of our activities to enhance program effectiveness. USEPA sees "Smart Enforcement" as a common sense approach to problem solving and decision-making, and the States would agree that the philosophy is improving. However, despite its past successes, the reactive approach may no longer be the best way to achieve continuing environmental improvement.

Many States believe that there needs to be a major shift in setting measurable environmental and compliance goals before doing the work to achieve them. The process of setting measurable goals lays bare the assumptions and choices that are otherwise hidden in our selection of work. Are we prepared to have 5% of our streams be contaminated but not 10%? Is 5% even scientifically achievable and what are the fiscal investments for this level of success? Is 80% compliance with toxic emission standards acceptable or do we demand 99%? What are the implications if point sources are deminimous contributors to a problem? These choices are already being made, whether expressly or not. The use of measurable goals announces our intention to exercise control over the choices rather than let them control us.

The philosophical change suggested here is occurring in areas of law enforcement. We have recently seen encouraging stories about declining crime rates resulting from a change in the approaches to police work. Instead of simply responding to a call for help, i.e. reacting to crime one instance at a time, police are increasingly analyzing patterns of crime and looking for causes that can be changed. USEPA can be both motivated and informed by the experiences of other enforcement agencies.

For our part, the State Water Pollution Control Administrators will be working to:

- Streamline and innovative permit issuance in order to meet the dramatically increased permit universe and make use of the e-business tool available.
- Work with USEPA to manage the work load based on the impact permits have on the environment (a risk based approach).
- Improve and clean up data systems and make them more user friendly.
- Better train NPDES program staff, in anticipation of an over 30% staff turnover due to retirements over the next few years.
- Advocate a more proactive, measurable results approach toward compliance and enforcement.

CLOSING

Mr. Chairmen the public wants our assurances that their water is clean and safe. The public wants to know that they are protected. Yet the economic side of the environmental equation dictates frugality and incremental improvement. On the one hand, we have statutory mandates and deadlines. On the other hand, we have declining budgets and competing priorities

As the States strive to keep this all in balance they know that their primary responsibility is to restore and maintain the chemical, physical, and biological integrity of the nation's waters.

States are committed to achieving the requirements of the law and to meeting our own strategic goal of Clean Water Everywhere for Everyone. (ASIWPCA Strategic Plan is provided for the record).

At the same time, our membership is faced with serious financial deficits and stressors on their environmental programs. It is critically important that States continue to increase their efforts to address enforcement issues and that they be granted the flexibility to seek out and utilize common sense solutions.

USEPA and States share a commitment to protecting the environment and we agree that our resources should be used as effectively as possible to address the highest priorities. The pressure to account for results is growing: both partners and critics of USEPA and States have been urging us forward and now the Government Performance Results Act requires it.

Thank you Mr. Chairman and members of the Subcommittee for your attention to the enforcement aspects of the Clean Water Act. The State and Interstate Water Quality Agency officials thank you for the opportunity to appear before you today to present their perspectives and recommendations.



COVER STORY

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Sample Problem

It's the 30th anniversary of the Clean Water Act and our nation is celebrating the recovery of some of its most important lakes and rivers. However, a lack of water quality monitoring means we don't have adequate data on two-thirds of the country's aquatic resources. This shortage impacts virtually every clean water decision made by U.S. EPA and other federal agencies, the states, and local governments

ROBERTA HALEY SAVAGE

On October 18, which marks the 30th anniversary of the Clean Water Act, thousands of volunteers from around the country will take samples from local waterbodies and test them for pH, temperature, clarity, and dissolved oxygen. The National Water Monitoring Day will provide a quick snapshot of basic water quality in these locations. It will also highlight, unintentionally but ironically, a critical missing component in furthering the CWA's principal goals. After all these years, the picture of our nation's water quality that has been assembled by the federal and state governments is sadly under-developed.

To "restore and maintain the chemical, physical, and biological integrity of the nation's waters," as the act commands, means knowing their current health and thereby planning how to improve and protect it. After three decades, we can celebrate the fact that 53 percent of the rivers and streams assessed under federal and state clean water programs are rated by the U.S. Environmental Protection Agency and the states as "good" while 39 percent are "impaired." But the fact remains that these numbers only apply to the 19 percent of river and stream miles, most in highly populated and industrially developed areas, that have been assessed for their water quality. For the other 81 percent, the picture remains obscured. The image is slightly more complete for miles of estuaries and acres of lakes but, in total, according to U.S. EPA's National 2000 Water Quality Inventory, *two-thirds* of our waterbodies are unassessed, meaning that there are not enough data gathered by monitoring to fully evaluate them. Monitoring is supposed to define the problems, drive the planning and implementation, and evaluate the progress of clean water programs. This lack

of scientifically based data impacts virtually every clean water decision made by U.S. EPA and other federal agencies, the states, and local governments.

While we celebrate the impressive gains made in pollution reduction and the recovery of many of our most important waterbodies, it is important for our country to take stock and then decide where to go. Unfortunately, that's proven to be a lot tougher than it would seem.

As a nation, we have spent hundreds of billions of dollars on clean water programs, and built an impressive pollution control infrastructure to reduce municipal and industrial discharges. But we have spent only a fraction of that total on monitoring to evaluate their success or to determine what additional measures may be needed, such as programs to address non-point sources, reduce newly regulated substances, or to protect entire basins and watersheds. (In the last five years, national funding for non-point programs has been increasing, but it still has a long way to go.) The problems go beyond funding issues. As a General Accounting Office report concluded in 2000, "It would be cost-prohibitive to physically monitor all of the waters in the country, and, therefore, almost all states monitor a subset of their waters. However, most monitoring is not done in a way that allows for statistically valid assessments of water quality conditions in unmonitored waters." It will take more than money to ensure that monitoring works to achieve the goals of the act, according to the GAO. Agencies also need to improve their ability to analyze and utilize the data in their decisionmaking.

The public rightly expects us to protect their health and the environment. Citizens also expect the professionals to know about the problems America faces and how to re-

solve them. But when asked to produce scientifically valid water quality data, we often come up short. Measuring air quality is different. The atmosphere is a comparatively simple system, and it is a relatively straightforward exercise to measure the amount of the handful of "criteria" pollutants at a number of locations to give an adequate (if not perfect) picture of air quality on a continual basis. U.S. EPA sets National Ambient Air Quality Standards for these pollutants, and evaluates the progress of states in meeting the standards. Air agencies regularly report the number of days a city or region is not in compliance. Impressively, many state environmental agency websites give real-time data gathered from a nationwide system of state air quality monitoring stations for key pollutants at numerous sites around the state. "Code Red" air quality days make the headlines, and citizens are urged to take action such as car pooling and avoiding exercise.

Water quality is significantly more difficult. There is no single body for the entire planet but instead an intricate, branching web of brooks, ponds, bogs, groundwater, beaches, springs, swamps, streams, seeps, wetlands, rivers, marshes, estuaries, lakes, bays, etc. Air quality programs are designed primarily to protect public health, but water quality programs have to not only protect public health but also preserve ecosystems and ecosystem values and functions. That means evaluating not only for the presence of certain chemicals, but also evaluating physical and biological characteristics — not a task that can be done by reading a dial.

In the years leading up to the 1972 passage of what was then called the Federal Water Pollution Control Act Amendments — an era highlighted by flaming rivers and cesspool lakes — the emphasis was on pollution abatement. Implementation of the law began with the permit system on point sources called the National Pollutant Discharge Elimination System and a huge investment by industry and by states and municipalities (with significant federal funding) on pollution con-

trol. This focus on point sources was eminently reasonable because, as one state engineer put it, "first we had to get the chunks out of the streams." The act also requires states to assess water quality to determine the effectiveness of the NPDES program in achieving overall goals. In the press to implement the permit program, this mandate received little attention, and monitoring for other pollution was honored mostly in the breach.

Following the mandates of the law, William D. Ruckelshaus, EPA's first administrator, directed the agency, and hence the states, to focus attention on permitting and enforcement actions for industrial dischargers of significant pollution and on the distribution of the \$5 billion of congressionally authorized

annual funding for the construction of municipal sewer systems. And of course Congress played a role here too by focusing national attention on the implementation of technology-based approaches (e.g., secondary treatment for municipal wastewater facilities and best available technologies for industry). The result of this emphasis, though appropriate under the circumstances, was that monitoring was placed on the back burner along with the planning for watershed improvements and protection efforts so dependent on monitoring. It is not surprising, then, that it took regulators nearly a decade to

address non-point sources as a major concern. The lack of monitoring has led to serious information and funding gaps that have plagued the nation's water programs ever since.

Funding for state environmental protection has been inconsistent and generally inadequate. Program management funds have been directed toward the basics: permitting, compliance assistance, enforcement, and a host of other management tasks. States also faced the daunting job of bringing their municipalities into compliance, spending hundreds of billions of dollars on sewage treatment and stormwater abatement. According to Derek Smithee, director of water quality for the Oklahoma Water Resources Board, "Because of lack of quality data, Oklahoma was required far too often to make water

We have spent hundreds of billions on Clean Water programs but just a fraction on monitoring their success

Roberta Haley Savage is the Executive Director of the Association of State and Interstate Water Pollution Control Administrators. She is also an Adjunct Professor at the LBJ School of Public Policy at the University of Texas.



ANOTHER VIEW

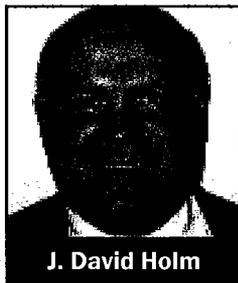
Time To Up Investment In This Key Infrastructure

Section 106 is the bedrock provision of the Clean Water Act that authorizes federal funding for state water pollution control programs. To receive "106 grants," states have to provide a prescribed match in funding. They have to maintain enforcement comparable to federal efforts. And they have to monitor the quality of their waters, including analysis, classification, annual updates, and reporting to U.S. EPA pursuant to Section 305. In 1972, it was clear to Congress that to achieve the ambitious goals of the act a solid foundation of properly collected and analyzed water quality data would be needed. Yet the requirement for monitoring envisions a scope and intensity of water quality assessment that rarely has been accomplished, even on the nation's highest profile waterbodies.

Many states, including my own, established fairly comprehensive monitoring programs in the 1970s and early '80s. Activities included fixed station networks to support trend analysis and reporting; descriptive studies for waterbody characterization; and detailed synoptic (top to bottom) watershed surveys for establishing a factual basis for use classifications, water quality standards, and permitting. Biological and chemical information was collected routinely.

However, during those early years of the nation's Clean Water program, increasing emphasis was placed on implementing the growing set of point source controls, which were still evolving, while state and federal budgets remained flat and inflation took a heavy toll on the program's resource base. Apparently, U.S. EPA looked the other way as states dismantled their ambient water quality monitoring programs so that they could maintain primacy for the rapidly expanding National Pollutant Discharge Elimination System permitting program. To my knowledge, until very recently no

state was seriously threatened with the loss of 106 federal funds for failing to meet the comprehensive monitoring requirement, but states were threatened with the loss of primacy for programmatic failures in the NPDES program. Bringing point sources of pollution into control as soon as possible was the country's first order of business, but the tradeoff produced some unfortunate results.



J. David Holm

Water quality monitoring programs were further weakened as agencies collected a tremendous amount of data but produced precious little information to support ongoing decisionmaking. Appropriators at both the state and federal levels became openly skeptical and quite parsimonious in their response to funding requests for improving monitoring capacity. In reality, many seemed to sense that no good news would come from more monitoring work by agencies with an "environmental agenda." It was also a time that preceded widespread availability of personal computers with user-friendly database and spreadsheet software so, in fairness, simply filing data was the extent of information management in those days.

As many state monitoring programs were weakened, other agencies, dischargers, academics, and citizens groups assumed monitoring roles to meet their needs and advance their own agendas. A process of Balkanization in data collection ensued that further eroded the comprehensive monitoring role states are expected to perform.

States need a substantial amount of high quality chemical, physical, and biological data for numerous stream segments for purposes of establishing the right water quality standards and use classifications during basinwide triennial review hearings. Much could be written about what it means to set the right standards, but suffice it to say that if this does not happen every other

functional water quality management element will be compromised one way or another. In Colorado, water quality standards rulemaking hearings are major events involving vigorous participation from a public with multifaceted points of view. This is the case despite the fact that standards have been thoroughly reviewed by the Colorado Water Quality Control Commission in each basin five or more times. We have not overcome the problems attendant with having a multiplicity of monitoring entities and too little money for monitoring.

While, from the outset Congress required states to develop comprehensive monitoring information to support water quality management, it vastly underestimated the investment that is required. Monitoring should be viewed as a needed component or overhead cost associated with each major water quality management program element. Indeed, monitoring is the basic informational infrastructure upon which the rest of the Clean Water program is built. In a recent survey, state water directors agreed that 17-percent of state Clean Water program budgets needs to be allocated for monitoring to fund this infrastructure; unfortunately, only half that amount, on average, is available.

Congress needs to ante up again to support state water quality monitoring programs to address this deficit, and states need to ante up as well, to provide additional matching funds. With increased funding, states should consider paying the costs for analyzing samples collected by well-trained personnel (with appropriate quality controls) who work for external monitoring entities. And U.S. EPA should require all NPDES permittees to sample and include information in their monthly discharge monitoring reports on the quality of their receiving streams, wherever feasible.

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quality management decisions based not on science, but political expediency and public perception." The problem continues to this day. As Ken Kirk, executive director of the Association of Metropolitan Sewerage Agencies, puts it: "The quality of data upon which many regulatory decisions are currently made is poor, and the methods used from sampling to quality control are not consistent. However, the know-how exists at the local and state level to provide a much clearer picture of the health of individual waters and to determine with greater precision the source of continued impairment."

What funding level is needed to create an adequate database for national water quality assessment? Last April, U.S. EPA released an interim version of its *State Water Quality Management Resource Analysis*, which concluded that the current national gap between funding to manage state clean water programs and the amount actually needed is between \$735-960 million per year — meaning that state programs are funded at roughly one half of what administrators say they require to meet the public's expectations for clean water. The average state need for all of these programmatic responsibilities is approximately \$31 million annually, but the average grant from the federal government is only \$3.8 million — about the amount a journeyman professional basketball player makes.

From this amount and the additional funding provided through their legislatures, states are expected to fund professional and administrative personnel, modernize data systems, set and improve water quality standards, collect, process, and report water quality data and information, issue NPDES permits, enforce against violators, conduct TMDL analysis and development, implement programs for stormwater, sanitary sewer overflows, animal feeding operations, groundwater management, and watershed protection, and provide vehicles for citizen input and participation. States reported that monitoring should comprise nearly 17 percent of their water quality program budgets, and if you include the needs for data management, this percentage jumps to 30 percent. At present, however, monitoring receives only 10 percent. Some environmental activists have taken advantage of this untenable budgetary situation by initiating a plethora of legal challenges against U.S. EPA for not forcing the states to implement the law's planning, monitoring, and assessment pro-

visions. Unfortunately, this litigation has become a vortex that has sucked valuable state and federal resources away from monitoring to pay for legal defense, making the problem even worse.

As a result of the Clean Water Act, many rivers and lakes have made remarkable recoveries over the last 30 years. Along the banks of the Cuyahoga River and Lake Erie, both icons of pollution three decades ago, a resurgent Cleveland flourishes, including an attractive national park along the banks of the river. Baltimore's Inner Harbor, once a chemical sink, attracts millions of visitors a year to its shops, restaurants, aquarium, and other attractions. Thousands of athletes jump into the Hudson River in New York City each August at the beginning of the national triathlon championship, which would have been unthinkable at the time the act was passed. But with two-thirds of the nation's waterbodies going unassessed, it is nearly impossible to develop a meaningful report card on the success of the Clean Water Act, a problem exacerbated by the fact that we also don't have a baseline to show where we started. There simply was no funding in 1972 to conduct a survey of the "waters of the United States." The problem is complicated further by the fact that our ability to detect and measure pollutants has increased by several orders of magnitude and water quality standards have become more stringent at the same time, which means that progress over 30 years is an apples-and-oranges comparison. Finally, adequate numerical water quality criteria for the most prevalent pollutants — e.g., sediment, pathogens, and nutrients — are either outdated or have yet to be issued by U.S. EPA.

Monitoring is the heart and guts of the Clean Water Act. It ties the act's various programs together into a comprehensive, nationwide scheme. When Senators Edmund Muskie and Howard Baker were creating the initial drafts of Public Law 92-500 in 1972, their intent was to design a comprehensive and integrated approach to restoring and

In the first years of the act, EPA's focus was on the permit program for industrial and municipal dischargers

ANOTHER VIEW

Data Are Insufficient, But They Can Be Better Used

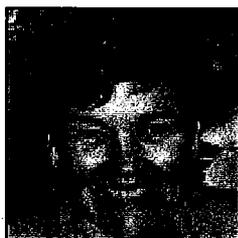
In a large, varying, and relatively wet country, it is a daunting task to assess waters against human health and aquatic life criteria for more than a hundred pollutants; evaluate biological conditions; and gauge physical habitat integrity, as the Clean Water Act requires. U.S. EPA has acknowledged that, in the face of these challenges, federal and state monitoring efforts are falling short. But while some might see the glass as half empty, we see it as half full. And we see some innovative ways of filling it during a time of fiscal challenge.

Still, it is half empty. It has to be acknowledged that existing monitoring programs and data collection activities do not currently support the level of decisionmaking necessary to protect and restore waters of the United States. Without integrated water quality monitoring and assessment programs, state and national water quality managers cannot make effective decisions, show trends in water quality, or evaluate how well management actions are achieving the goals of the Clean Water Act.

Monitoring program gaps include lack of sufficient geographic coverage to characterize waters of each state and the nation, lack of focus on all types of water resources, and difficulty in coordinating among multiple federal, state, academic, and volunteer organizations that collect monitoring data. Our challenge is to develop and enhance state monitoring programs that support timely management decisions, within the context of declining national and state budgets. We can meet this challenge through strategic redesign and implementation of monitoring programs, increased use of technology, and effective coordination with the efforts of others.

While more federal money would be welcome, and federal grants to support state water programs have increased as in-house resources have declined, in the cur-

rent fiscal situation we need to look in other directions for solutions. Rather than a silver bullet, these include the strategic re-orientation of state monitoring programs encouraged by U.S. EPA through guidance and regulation, the use of new and improved technology to collect and manage data, and the more effective use of data collected by properly trained volunteers, dischargers, and others.



Margarete Heber

U.S. EPA works with states through a variety of forums to make monitoring more efficient and effective. Agency guidance and policy promote integration of water quality monitoring designs with relevant management decisions. The new monitoring framework, evolving from ongoing EPA, state, and other stakeholder collaboration, involves a process that links broad-scale, probability-based monitoring with site-specific, targeted monitoring where problems are indicated.

There is tremendous potential for new technology to support monitoring. Advances in environmental sampling technology, such as remote sensing and in-situ monitors, can significantly reduce the costs of field data collection. Advances in data management and analysis increase the amount of data from various sources that are available to support decisionmaking. Electronic reporting improves the efficiency of data management and the accessibility of water quality characterizations.

EPA's new Watershed Assessment, Tracking, and Environmental Results (WATERS) capability integrates existing water quality databases, containing information submitted by states and other organizations, by using the National Hydrography Dataset as the geographic framework. WATERS presents the data as a map with all the "areas of interest" noted. Databases linked through WATERS to date include Water Quality Standards

adopted to protect specific waters, chemical and biological monitoring data, assessment results describing WQS attainment status, impaired waters, beach closures, and development of Total Maximum Daily Load limits.

Improving the comparability of data is a multi-agency effort aimed at developing consistent data standards for documenting data quality and for assessing the comparability of different analytical methods. The Environmental Council of States' environmental data standards committee recently proposed water quality data elements for chemical and microbiological analytes which define the information required to adequately document the quality of monitoring data, and will serve as the template for EPA's Central Data Exchange for monitoring data.

EPA hopes to expand its assistance to help states establish state monitoring councils. State monitoring councils can bring together all stakeholders conducting monitoring within the state. These councils facilitate planning and coordinating monitoring activities and sharing water quality data. Potential partners in each state include state and federal agencies, academia, volunteer monitoring groups, watershed groups, and local governments.

At the local level, watershed monitoring consortiums consisting of public/private partnerships may plan, fund, and implement monitoring activities at the watershed level. Local organizations with overlapping monitoring responsibilities and needs can pool resources and experience and draw on the local community — including industry, public utilities, citizen monitoring groups, and government — to generate monitoring data that supports local and state decisionmaking needs.

So the glass is half full, and we're doing our best to fill it. And we're monitoring our progress.

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maintaining water quality. They started by declaring national mandates for "zero discharge by 1985" and "fishable and swimmable waters by 1983." To achieve these overarching aims, especially the latter, they created a program that would use monitoring to drive state water quality assessment, analysis, standards setting, and planning, then permitting and effluent limitation guidelines for point source dischargers, grants for the construction of wastewater treatment facilities, and reporting, with federal oversight to assure successful implementation. And, when Representatives John Blatnik and William Harsha, the House floor leaders, were crafting their bill, they focused on a similar stepwise approach to pollution cleanup that included the traditional plan-design-implement strategies that had been successful in many of the states.

Monitoring is the key to this system. Monitoring should drive the planning process and provide the necessary data to evaluate the results of the programs that were created, and then provide feedback to show what remained to be done. As Sally Knowles, assistant chief of the Bureau of Water in the South Carolina Department of Health and Environmental Control, puts it, "Monitoring is the necessary vehicle for a cohesive, interrelated approach to water pollution control. Standing at the confluence, it provides the opportunity for integration of sometimes apparently non-related tasks or programs into a stepwise, interrelated approach to the protection of water quality in the state." But monitoring can only work in this way if the scientific and administrative means exist to analyze the data and use the analyses to inform agency decisionmaking. Collected data is of little value unless it is incorporated into a meaningful format that readily translates sampling results into decisionmaking tools. A former U.S. EPA administrator once opined that "I have rooms full of data, but no one can tell me if the water is getting clean."

Virtually all of the requirements of the act under the "restore and maintain" mandate are dependent on water quality analysis — and monitoring to support it. States are required to survey the waters in their boundaries and assign "designated uses," such as fisheries, drinking water sources, recreation uses, bodily contact, or shipping and other commercial uses. Section 303(c) then requires the reevaluation every few years of

water quality standards to meet the designated uses. Where monitoring data and technology-based effluent limitations indicate that waters do not meet the water quality standards necessary to achieve their designated uses, Section 303(d) calls for states to calculate the Total Maximum Daily Load of pollutants that create the impairment, then divide the loading of these pollutants among the various sources in the watershed. These Load Allocations are distributed among non-point sources through Section 319(a) and point sources through NPDES. Reaching out beyond specific waterbodies, Section 208 requires plans to be developed for water quality improvement for metropolitan areas and Section 209 for river basins or watersheds. And Section 303(e) requires continuous planning, which means that states must use monitoring to reassess waterbodies on a fixed schedule to chart their progress and feed back into the planning and implementation programs. Finally, Section 305(b) requires states to submit biennial reports to U.S. EPA on the status of their waters under these programs. The agency then collates the states' data and submits the National Water Quality Inventory to the Congress. All this implies monitoring at every stage of the process.

These interlocked programs, so important to the senators' and representatives' concept, were never fully implemented because of the lack of funding and personnel to do statewide water quality analysis and planning. When placed in a position to choose, the states' needs for site-specific water quality data and information for their day-to-day decisionmaking on permitting and to address spills and other emergencies has had a higher priority than producing a complete statewide assessment.

At the same time, there has been an ever-growing list of new requirements on the water quality programs and a demand for a growing level of sophisticated problem solving. These include: the expansion of state water quality standards from only a few parameters (such as suspended solids or biological oxygen demand) to over a hundred; the need to address toxic chemicals; the requirements for advanced levels of waste

Congress played a role, too, by providing funding for states and mandating technologies

Monitoring was supposed to be the heart and guts of the act. Senators Muskie and Baker wanted it to drive the program

treatment to meet water quality standards; the control of wet weather pollution, including non-point sources, stormwater, combined sewer overflows, and sanitary sewer overflows; groundwater/source water protection; animal feeding operations and nutrient management; and coastal and wetlands protection and pollution prevention.

The nation's mistake was not in the funding of point-source controls but in the non-funding of the non-point and monitoring programs.

Five years ago, in her evaluation of the Clean Water Act on its 25th anniversary for this magazine, Fran Dubrowski found lack of monitoring to be one of the key impediments to achieving the law's goals. However, she noted, "the Clean Water Act gives EPA all the authority it needs to require states to adopt comprehensive monitoring networks for all navigable waters. What is missing is the agency's willingness to require states to ante up. Until EPA begins to place an appropriate value on

adequate monitoring, our water program cannot move forward as Congress intended and the public demands."

Monitoring begins with the Clean Water Act's basic parameters — physical, chemical, and biological. Physical qualities are characteristics such as temperature and clarity. Chemical analysis involves looking for the presence and amount of specific constituents and pollutants such as dissolved oxygen and nitrates, toxic metals, and harmful organic compounds. Bio-monitoring generally consists of macroinvertebrate sampling and fishery sampling and provides information on species diversity and abundance, which is the determining factor in whether or not an aquatic life use is attained. Monitoring can range from fixed stations to "grab samples." It can range from meters reporting pH in real time to technicians scraping off rocks to test for the presence of tiny invertebrates. Costs per sample can range from a few pennies to more than a thousand dollars.

Monitoring data are collected by state environmental, agricultural, conservation,

health, and forestry agencies. Data are also collected by federal agencies, including the Environmental Protection Agency; the U.S. Geological Survey; the Army Corps of Engineers; the Departments of Agriculture, Energy, Interior, and Transportation; and the National Oceanic and Atmospheric Administration. Local government agencies, point-source dischargers, watershed councils, and citizen volunteer monitors also provide important monitoring data.

In the 1960s-80s, state monitoring efforts comprised fixed station networks used for trend monitoring and 305(b) reporting. There were also descriptive studies for waterbody characterizations, surveys to establish the factual basis for use classifications, and analyses to formulate water quality standards.

In the late 1980s and well into the 1990s, an acute crisis in state budgets translated into a significant amount of personnel loss by attrition, budgetary reallocations away from monitoring programs, a resultant breakdown of comprehensive monitoring networks, and the fragmentation of efforts attendant to the "crisis de jour." In testimony before the House of Representatives, Peter F. Guerrero, director of the General Accounting Office's environmental division, said: "States tend to focus their monitoring on waters with suspected pollution problems in order to direct scarce resources to areas that could pose the greatest risk."

Since the late 1990s, there has been a revival of the watershed management approach, which included the establishment of basin-wide monitoring systems and the orderly sequencing of associated monitoring, standards development, TMDL development, and permit issuance, attempting to at last put the Clean Water Act's water quality goals into place. Preliminary results from a survey completed in June by the Association of State and Interstate Water Pollution Control Administrators (funded in part by U.S. EPA) found that of 45 reporting states, half have all of the 10 elements of an adequate state monitoring program in place, as defined by the agency's draft monitoring guidance. The other half reported some components in place or under development. The ASIWPCA survey also shows that there is a wide range of state definitions of "monitored and assessed." One state may have a broad definition and therefore may indicate that all waterbodies have been monitored, while another state giving the same amount of effort

may nonetheless have a narrow definition and reflect only a small percentage. According to the GAO, "Variations are found in (1) the standards states use to assess water quality, (2) the way that states select their monitoring sites, (3) the kinds of monitoring tests that states perform and how they interpret the results, and (4) the methods that states use to determine the causes and sources of pollution." Such reporting can also be affected by the size of the state, by the number of waterbodies within the state, and total water resources. Some states found it difficult to reconcile the requirements of various sections of the law (e.g., 305(b) and 303(d) as a function of defining "monitoring and assessed"). The goals of these requirements are significantly different and are often inconsistently implemented from one U.S. EPA region to the next.

The survey also found that most states have moved or are moving away from fixed-site stations. States are now using more special studies, probability-based monitoring, and other targeted approaches. Bio-monitoring and bio-assessment (in-stream analysis to evaluate the indigenous aquatic habitat) has also become a focus of many state monitoring strategies.

The states reported to GAO that aside from a lack of adequate funding, the chief barriers to program implementation are hiring freezes and personnel caps. The most common barriers to developing comprehensive, ongoing monitoring programs at the state level are the lack of appropriately trained personnel for data collection and management and inadequate laboratory facilities and equipment.

Here, it must be noted that ASIWPCA found that volunteer monitoring, virtually non-existent a decade ago, is becoming a major contributor to state monitoring programs. While volunteer programs cannot substitute for effective governmental monitoring, they can help to increase the amount of monitoring data available for environmental decisionmaking. However, there is broad variation in what states provide in terms of support and technical resources for citizen monitoring. Also, there are varying degrees of quality control for citizen data collection.

The survey results also indicate that more attention must be paid to preventing the unimpaired or threatened waters from becoming polluted. This will require more monitoring of the health of a watershed as well as its water quality.

The lack of monitoring means that it is not really possible to issue a report card on the Clean Water Act after 30 years. Or maybe it means a grade of "incomplete" for federal and state programs. Comments from some of the survey participants help fill in some detail.

Many states cite large gains. According to Oklahoma's Derek Smithee, "We are now collecting data in a more comprehensive fashion. Using the states' Beneficial Use Monitoring Program, Oklahoma can interpret the data more consistently, and by using our Use Support Assessment Protocols, we are now making decisions with facts and data."

But even so, "needs improvement" is the grade for most programs. "We can no longer afford to prolong needed improvements in data quality," says the Association of Metropolitan Sewerage Agency's Ken Kirk. "Regulators must have the highest quality information to justify the imposition of billion-dollar upgrades to treatment plants and collection systems." In recent hearings on Capitol Hill, several senators declared that sound investment in environmental protection requires an accurate picture of the problems to be addressed. "We should know with much greater certainty what environmental benefits our communities will enjoy with their investment so that they are spending their money in ways that will guarantee water quality improvements," said Senator Joe Lieberman (D-Connecticut). Monitoring efforts at the state level, however, are hamstrung by lack of resources, and the potential for increased funding is grim. The availability of resources to secure qualified personnel is equally grim. Without a greater commitment by policymakers and the public, key water quality management decisions will continue to be made based on inadequate data.

Some regulators see monitoring improvements as not only critical to address existing programs such as industrial effluent and wastewater but also to highlight new problems. "Point source discharge monitoring indicates that things are well under control," says Buddy Morgan, a municipal wastewater treatment facilities manager in Alabama.

*Monitoring
would
underlie state
water quality
assessment,
standard
setting,
solutions, and
evaluation*

"The remaining problems are primarily from non-point source contributions from agricultural and other dischargers of diffuse pollution. There is little non-point source monitoring to accurately reflect the magnitude of the problem." But Glen Keppy, an Iowa farmer and past president of the National Pork Producers Council, feels differently: "Farmers, as the ultimate stewards of the land, are the ones who care for the earth on a daily basis. The industrial and municipal dischargers have had more than three decades to address their point source problems. The municipal sewer agencies have received hundreds of billions of dollars in congressionally authorized funds supplemented by local ratepayers to help build, maintain, and upgrade and monitor their pollution control systems."

With that said, there are opportunities to enhance the monitoring program.

These opportunities include: grassroots support to change the political winds and reverse the downward funding trend; coordination of monitoring efforts by all levels of government; integration of multiple objectives with single monitoring efforts; emphasis on the importance of monitoring at the local, state, and federal levels; incorporation of state-of-the-art approaches to link data systems and improve reporting; establishment of monitoring priorities with significant public involvement, which could include the creation of statewide monitoring councils or the creation of public/private monitoring partnerships;

the creation of a budgetary item for monitoring and assessment programs; establishment of volunteer monitoring corps to increase the total number of waters monitored; elimination of duplicative monitoring between and among the various state and federal agencies; increased use of part-time monitoring from universities or trade schools and the help and support of the public.

Though not a panacea, these and other innovations and enhancements could be the stopgap needed to elevate the stature of the water monitoring program and raise its priority so as to be recognized as the scientific foundation of water programs.

For its part, U.S. EPA is promising improvements. Bob Wayland, the director of

the Office of Wetlands, Oceans, and Watersheds, says, "There is no higher priority for our national water program than strengthening our monitoring program. This means that state and federal agencies need to work together to increase the number of monitored waters, monitor waters for all designated uses, manage our monitoring programs to anticipate emerging needs (e.g., TMDLs, permitting, water quality standards, etc.), use statistical modeling techniques to fill in the gaps between monitoring stations, and become more efficient in the use of available monitoring resources." The agency's assistant administrator for water, Tracy Mehan, says emphatically, "Monitoring is one of my highest priorities for 2004." Indeed, there is already speculation that the agency has proposed an increase in funding for monitoring to the Office of Management and Budget for 2004.

The mistake was not in funding point-source controls but in the non-funding of non-point and monitoring

This signal from U.S. EPA that the priority on monitoring will be elevated is timely and most welcome, especially in light of the increasing sophistication needed to report on water quality. To give an idea of what states actually need, here is a list from J. David Holm, the director of Colorado's Water Quality Control Division, "The ideal monitoring program would include: sufficient sampling intensity; sufficient sampling frequency; appropriate chemical analyses; ambient toxicity monitoring; bio-assessment; habitat assessment; watershed assessment; compliance monitoring; emergency/spill monitoring; project feasibility monitoring and project effectiveness monitoring. The ideal program would also include systematic statewide assessment and trends analysis."

Despite the term "ideal" — and the technical language — that list is an accurate and reasonable description of the monitoring elements necessary to protect public health and the environment, to achieve fishable and swimmable waters, to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Hopefully, the report card on the Clean Water Act at the next five-year anniversary will show the level of excellence the American people deserve. The question is whether our nation will be willing to dedicate the fiscal and professional resources necessary to accomplish that goal. •