

June 1994

WATER POLLUTION

EPA Needs to Set Priorities for Water Quality Criteria Issues



**RESTRICTED--Not to be released outside the
General Accounting Office unless specifically
approved by the Office of Congressional
Relations.**

RELEASED



United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-256354

June 17, 1994

The Honorable Max S. Baucus
Chairman, Committee on
Environment and Public Works
United States Senate

The Honorable Bob Graham
Chairman, Subcommittee on
Clean Water, Fisheries, and Wildlife
Committee on Environment and Public Works
United States Senate

After 20 years, the Clean Water Act¹ has led to many improvements in the quality of the nation's surface waters, but significant problems remain. Scientists and environmentalists, for example, have criticized the Environmental Protection Agency's (EPA) approach for controlling toxic water pollution as being too narrow to adequately protect water ecosystems. Recognizing limitations in its efforts thus far, EPA is expanding its traditional focus on specific chemicals in water to address a range of issues concerning the health of water ecosystems.

As agreed with your offices, this report (1) discusses EPA's progress in issuing the technical information, called water quality criteria,² that states consider in adopting water quality standards and setting pollutant limits in facilities discharge permits, and (2) addresses EPA's efforts to broaden the scope of its criteria development.

Results in Brief

EPA has issued ambient water quality criteria³ for 99 of the 126 pollutants designated by the agency as priority under the Clean Water Act. While such criteria are still needed for some of these priority pollutants, EPA plans to develop other types of criteria necessary for protecting water ecosystems. However, EPA's limited resources will restrict what can be accomplished. Consequently, setting priorities will be a crucial step in

¹The Federal Water Pollution Control Act of 1972 is commonly called the Clean Water Act.

²Water quality criteria consist of technical information on the effects of pollutants or chemicals on water quality, including its physical, chemical, biological, and aesthetic characteristics. Such criteria not only address the effects of pollutants in surface waters but also the effects of pollutants on sediment, the wildlife that feed on aquatic life within the waters, and other aspects of the water ecosystem.

³"Ambient" water quality criteria address the effects of pollutants or specific chemicals in surface waters on human health and aquatic life.

dealing with the significantly expanded scope of the agency's efforts to develop criteria. However, EPA has not developed a plan that (1) lays out specific criteria development priorities and the bases for these decisions or (2) establishes a timetable for when the activities will be completed. In addition, EPA has come under criticism from states, the regulated community, and other interested parties for not involving them in its criteria development decision-making or seeking their input in the early stages of criteria development. Developing an implementation plan for water quality criteria could help focus and guide EPA's efforts, involve interested parties, and inform those concerned with water quality of the dimensions of EPA's task and the justifications for choices on criteria development that the agency must make as it proceeds.

Background

To achieve the goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters, the Clean Water Act gave EPA broad authority to develop, publish, and periodically review water quality criteria. EPA's Office of Science and Technology, a division of the Office of Water, is responsible for developing these criteria. States use the criteria as guidance for developing state water quality standards and setting limits in permits for facilities that discharge pollutants into surface waters. Dischargers are subject to enforcement action if limits are exceeded.

EPA Has Made Limited Progress in Developing Water Quality Criteria

Little action on the development of water quality criteria followed the passage of the Clean Water Act until, as a result of a 1976 consent decree, EPA was required to publish ambient water quality criteria to protect human health and/or aquatic life for a specified set of pollutants or classes of pollutants by 1979. The Congress later specifically designated these same chemicals as toxic pollutants under section 307(a) of the Clean Water Act, and EPA selected 126 key chemicals or classes within this group for priority status.

Following a surge of activity in 1980, EPA's progress in developing and issuing criteria for the 126 priority pollutants slowed significantly. Of the 126 priority pollutants, 99 have been addressed by criteria for human health, aquatic life, or both of these types of criteria. As indicated in table 1, most existing criteria are supported by scientific studies and other technical documents that are more than 13 years old, and no new criteria for priority pollutants have been issued over the past 5 years.

Table 1: Priority Pollutants With Ambient Water Quality Criteria

Original issue date	Human health criteria ^a	Aquatic life criteria ^b
1980	90	29
1984	1	0
1986	0	1
Total	91	30

^aIn December 1992, EPA published updated human health criteria numbers for 71 priority pollutants. In doing so, EPA did not officially revise the criteria documents, and the states are not required to use the updated criteria numbers. Nevertheless, EPA encourages the states to base standards on the updated criteria numbers.

^bEPA formally revised the technical criteria documents supporting 12 aquatic life criteria between 1985 and 1988.

As table 1 indicates, of the 126 pollutants designated as priorities, over 70 percent have human health criteria, but less than one-quarter have criteria to protect aquatic life. While acknowledging that additional work remains to be done on the priority pollutants, particularly with regard to aquatic life criteria, EPA does not plan to develop criteria for all 126 priority pollutants. EPA officials maintain that they have issued human health criteria for the most serious of these pollutants and, as a result, have no human health criteria under development. EPA is, however, developing new or revised aquatic life criteria for 13 priority pollutants.

Beyond the remaining work planned for the priority pollutants, we found that EPA faces a potentially enormous task in the area of ambient water quality criteria for nonpriority pollutants.⁴ For example, our review of various Clean Water Act programs, the Safe Drinking Water Act, and EPA's Toxic Chemical Release Inventory⁵ identified about 1,100 pollutants that are being reported by industry as discharged to surface waters or are otherwise believed to be entering surface waters.

⁴EPA has issued criteria for 16 nonpriority pollutants and has criteria for an additional 13 under development. Nonpriority pollutants are pollutants that have not been designated as priorities under section 307(a) of the act. As we have previously reported, the priority pollutant list does not include all of the most harmful toxic pollutants causing surface water quality problems, even though it includes some of the most common pollutants. *Water Pollution: Stronger Efforts Needed by EPA to Control Toxic Water Pollution* (GAO/RCED-91-154, July 19, 1991). For a more detailed discussion of potentially uncontrolled toxic discharges and the difficulty of assessing their risk without human health and aquatic life criteria, see our recently issued report *Water Pollution: Poor Quality Assurance and Limited Pollutant Coverage Undermine EPA's Control of Toxic Substances* (GAO/PEMD-94-9, Feb. 17, 1994).

⁵The Toxic Chemical Release Inventory is required under section 313 of the Emergency Planning and Community Right-to-Know Act. The inventory contains reports from industrial facilities on releases of toxic chemicals into the environment.

State officials, environmentalists, and other groups told us that additional ambient water quality criteria are needed and point to the absence of adequate criteria for pesticides and for criteria that address the effects of pollutants on marine waters. Representatives of both the regulated community and states said that EPA also needs to reevaluate and revise existing ambient water quality criteria. These officials expressed particular concern about existing criteria for metals, contending that the criteria are overly stringent and based on outdated science.

EPA officials of the Office of Science and Technology acknowledge that there are many chemicals beyond those on the priority pollutant list that may warrant criteria. Nevertheless, these officials said that they do not intend to develop additional ambient water quality criteria beyond those currently being developed—for either priority or nonpriority pollutants—unless they are determined to be highly bioaccumulative.⁶

Currently, the Office of Science and Technology is revising the methodologies used to develop human health and aquatic life criteria. These methodologies describe the scientific information and procedures that EPA follows in developing criteria. Until these methodologies are revised, EPA officials said that they will postpone the development of additional criteria beyond those already in process. Once these methodologies are revised, EPA plans to assess their potential impact on existing criteria. If EPA determines that applying the new methodologies would result in significant changes to existing criteria, EPA officials said that they will consider revising those criteria.

EPA Expands the Scope of Water Quality Criteria Development

There is increasing recognition within and outside EPA that ambient water quality criteria alone are insufficient to protect human health and the environment. EPA's Science Advisory Board and other groups have said that other areas need attention and have criticized EPA for its heavy emphasis on ambient water quality criteria and the priority pollutant list. In 1991, a scientific advisory group convened by EPA,⁷ criticized the agency for disregarding serious conditions such as the destruction of habitats and the loss of biological diversity in ecosystems. This advisory group also criticized the agency for adhering to a priority pollutant list that was

⁶Bioaccumulation is the concentration of a substance from the environment in living tissues. For example, some fish and shellfish consume toxins with their food, which then concentrate at higher levels in their tissue and present a health hazard to the people who eat them.

⁷The advisory group's comments are summarized in an Apr. 1991 report entitled Report From the Forum of Scientists: Reauthorization of the Clean Water Act.

outdated and included pollutants of lesser concern than others, thus causing resources to be directed away from higher-risk problems. As a consequence of such criticism and other scientific information, EPA has, in recent years, broadened its efforts to include the following types of criteria.

- Sediment criteria, which address the effects of pollutants that contaminate sediment. The criteria are designed to protect (1) the organisms that feed on material in the sediment, (2) the aquatic life that feed on the organisms, and (3) the health of humans who ingest the aquatic life.
- Wildlife criteria, which address the effects of pollutants that bioaccumulate in aquatic life and are designed to protect waterfowl and mammals that subsist on aquatic life. Protecting wildlife also provides protection for humans who consume wildlife, such as ducks and geese.
- Habitat criteria, which address the effects of pollutants that affect water conditions, such as temperature, salinity, and turbidity, and are designed to ensure that aquatic life is adequately protected. In addition, habitat criteria that address physical alterations resulting from the construction of bridges, dams, and levees and other modifications to the physical habitat are designed to ensure that aquatic life (and the wildlife that feed on it) is adequately protected.
- Biological criteria, which are narrative statements or numerical values that describe the condition and biological diversity of the animal and plant life inhabiting waterbodies that are relatively free of pollution. Biological criteria serve as a measure of the health of aquatic communities and as a basis for establishing pollution control strategies.

EPA has made varying degrees of progress in developing these other types of criteria. For example, in the case of sediment criteria, the Office of Science and Technology has proposed for comment five criteria documents and a risk assessment methodology, with final issuance planned for 1995. Other work in progress relates specifically to the impacts of metals in sediment. For habitat criteria, EPA is in the early stages of developing and collecting the data to assess habitat alteration as a basis for developing protective criteria.

EPA Has Not Planned for Criteria Development

Considering its limited resources, EPA will be severely restricted in what it can accomplish for the foreseeable future. Funding constraints and competing priorities affected the agency's progress even when its efforts to develop criteria were limited to issuing ambient water quality criteria for priority pollutants.⁸ For example, officials from EPA's Office of Science and Technology estimated that in fiscal 1993 over 80 percent of the office's \$20 million budget was dedicated to addressing court-ordered mandates, including the development of effluent guidelines⁹ and drinking water standards, thus limiting the resources available for water quality criteria development. These officials point out that statutory mandates and other priorities have not been adequately funded or staffed for years, and no increases in program resources are anticipated.

Despite the growing demands on the agency's limited resources, EPA does not have an implementation plan that establishes priorities for the various criteria development areas. Issues concerning criteria are identified in a strategic plan drafted by the Office of Science and Technology. However, this plan only provides a general framework of broad program directions for the office. The office also prepares annual work plans that provide more specific information on what the agency intends to work on during the upcoming year. These annual work plans are basically budget documents that reflect the work that can be done within anticipated funding levels. What is missing from existing planning efforts is an implementation plan that identifies the top priorities for criteria development, explains the bases for these determinations, and establishes a timetable identifying when the activities will be completed.

One of the critical reasons for developing an implementation plan is the opportunity for involving the parties most affected by EPA's decisions, including states and the regulated community, in the priority-setting process and for building a consensus for EPA's decisions. On the basis of our discussions with representatives of these groups, we determined that the representatives would like greater assurance that the agency's priorities are consistent with what the groups perceive to be the most pressing needs and, where differences exist, a better understanding of the bases for EPA's decisions. While EPA did seek input from a variety of sources in drafting its strategic plan, the agency could also seek input from

⁸We have previously reported that funding constraints have caused problems with implementing the Clean Water Act, including EPA's criteria development efforts. *Water Pollution: Stronger Efforts Needed by EPA to Control Toxic Water Pollution* (GAO/RCED-91-154, July 19, 1991).

⁹Effluent guidelines include limits on the amounts of specific pollutants that may be discharged by categories of industries, considering the best available treatment technologies that are economically achievable.

external groups as it plans for criteria development and solicit comments on the implementation plan once it has been drafted.

More active involvement by external groups during the criteria development process itself could also be helpful. State and local governments, the regulated community, and other interest groups have expressed a variety of concerns about EPA's criteria development decisions, but one common theme is the desire to have some meaningful input as early in the decision-making process as possible. These groups believe that too often, EPA's decisions on what to regulate and where to set numeric limits are based solely on in-house evaluations without due consideration of external data or provision for outside review. Moreover, these groups contend that EPA generally does not solicit external comments until the time of a formal rulemaking, when it may be too late to have a real impact. As a result, some critics maintain that EPA's criteria do not reflect the most up-to-date scientific information. Regularly seeking input from the parties most affected by the agency's decisions could help avoid potential conflicts and ensure that EPA receives relevant scientific and technical data in the early stages of regulatory development.

Senate bill S.2093 to reauthorize the Clean Water Act contains a provision (section 202) that would require EPA to plan for its criteria development efforts. The provision would require EPA to periodically issue a plan that identifies the relative need for a wide range of criteria, such as criteria for human health, aquatic life, sediments, aquatic habitat, and wildlife. Each plan would establish a schedule for the publication of final criteria that EPA's Administrator determines would result in the greatest benefit to human health and the environment. Plans developed under this provision would be made available for public comment and would be submitted to the Congress not later than 2 years after the Clean Water Act is reauthorized and every 5 years thereafter. This provision addresses the basic issues raised in this report.

Conclusions

Over the past 20 years, EPA has made limited progress in developing water quality criteria mandated under the Clean Water Act. Numerous toxic pollutants remain without criteria, and various other criteria are needed to protect the aquatic ecosystem. EPA recognizes the need to expand the scope of its criteria development efforts to address the broad spectrum of conditions needed to sustain healthy water ecosystems if the goals of the Clean Water Act are to be achieved.

Deciding where to target EPA's limited resources will become more important than ever now that the scope of criteria development has been expanded. However, EPA's Office of Science and Technology does not have an implementation plan for criteria development that (1) identifies the top priorities and the rationale for those priorities or (2) estimates the time it will take to achieve them. Through such a planning effort, EPA could develop goals for each of the major areas in which criteria are needed and establish bases for the choices that must be made among the concerns that need to be addressed. In addition, such a plan would enable the agency to communicate the efforts required to meet program goals and ensure accountability by making the priorities public.

Many external groups, including states, the regulated community, and environmentalists, have a strong interest in EPA's short-term agenda and the ensuing regulatory decisions. While there will always be some level of disagreement about the choices EPA makes, soliciting input from external groups on the top priorities in criteria development and clarifying the factors considered in selecting those priorities will give stakeholders an opportunity to influence EPA's agenda and help ensure that the agency is focusing its attention on the most important issues. Moreover, soliciting the input of these groups when the plan is being implemented and when EPA is considering specific regulatory actions could both reduce the potential for conflict and ensure that the agency receives pertinent data early on in the decision-making process.

Recommendation

To ensure that EPA is focusing its limited resources on the most important elements of water quality criteria development, we recommend that the Administrator, EPA, take the following steps:

- Prepare an implementation plan for criteria development issues that identifies the agency's top priorities and the bases for them and establishes a timetable for addressing these activities.
- Regularly solicit input from affected parties when the implementation plan is being developed and when specific regulatory actions are being considered.

Agency Comments

We discussed the contents of this report with the Director and other senior officials of EPA's Office of Science and Technology, Office of Water. The officials agreed with the overall accuracy of our report, with our discussion of EPA's progress in developing water quality criteria, and the

need for the agency to broaden its efforts to address the wide range of concerns about criteria development. The officials also agreed that it could be helpful if EPA worked with other interested parties in planning for criteria development. The Director said that he would support a legislative provision that required planning for criteria development. We incorporated EPA's specific comments where appropriate. Also, as agreed, we did not obtain official agency comments on a draft of this report.

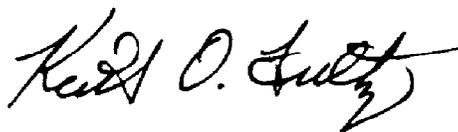
Scope and Methodology

To obtain information on the status of EPA's water quality criteria efforts, we obtained and reviewed the agency's criteria documents and other pertinent data from the Office of Science and Technology, Office of Water. We also discussed EPA's criteria development efforts with Office of Science and Technology officials, the scientific community, and those responsible for implementing the criteria, including representatives of states and the regulated community. To compile a list of additional pollutants that are not on the priority pollutant list and that may warrant ambient water quality criteria, we reviewed EPA data relating to various Clean Water Act programs, pesticides, drinking water, and the Toxic Chemical Release Inventory to identify pollutants being reported by industry as discharged to surface waters or are otherwise believed to be entering surface waters.

To obtain information on EPA's plans to expand its criteria development agenda beyond ambient water quality criteria, we interviewed Office of Science and Technology officials; in addition, we discussed the process used to set overall goals and to identify and prioritize specific tasks. We also obtained the views of those in the state, industry, scientific, and environmental communities regarding EPA's agenda and planning process. Our work was performed between February 1993 and April 1994 in accordance with generally accepted government auditing standards.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to the Administrator, EPA; the Director, Office of Management and Budget; and other interested parties. We will also make copies available to others on request.

This report was prepared under the direction of Peter F. Guerrero, Director, Environmental Protection Issues, who can be reached at (202) 512-6111 if you or your staff have any questions. Major contributors to this report are listed in appendix I.



Keith O. Fultz
Assistant Comptroller General

Major Contributors to This Report

**Resources,
Community, and
Economic
Development
Division, Washington,
D.C.**

Bernice Steinhardt, Associate Director
Charles Adams, Assistant Director

**Office of the General
Counsel**

Doreen Stolzenberg Feldman, Senior Attorney
Karen Keegan, Senior Attorney

**Boston Regional
Office**

Ellen Crocker, Regional Assignment Manager
Maureen Driscoll, Evaluator-in-Charge
Les Mahagan, Senior Evaluator
Linda Choy, Program Analyst

Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:

**U.S. General Accounting Office
P.O. Box 6015
Gaithersburg, MD 20884-6015**

or visit:

**Room 1000
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC**

**Orders may also be placed by calling (202) 512-6000
or by using fax number (301) 258-4066.**

**United States
General Accounting Office
Washington, D.C. 20548-0001**

**Bulk Mail
Postage & Fees Paid
GAO
Permit No. G100**

**Official Business
Penalty for Private Use \$300**

Address Correction Requested

