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BY THE COMPTROLLER GENERAL

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Report To The Congress

OF THE UNITED STATES

Improving The Scientific And Technical Information Available To The Environmental Protection Agency In Its Decisionmaking Process

Major constraints plague the Environmental Protection Agency's ability to set standards and issue regulations. The most important factor is the inconclusive scientific evidence on which it must often base decisions. Numerous court suits result.

EPA should

- finalize and issue its operating procedures on regulatory decisionmaking and
- make the Science Advisory Board an integral part of its decisionmaking process for all major actions involving scientific and technical information

The National Science Foundation should request proposals to develop and test the science court concept. This court would not be a judicial court but a mechanism to ventilate scientific disputes during the decisionmaking process.

The Federal judicial system seems adequate to consider the technical aspects of environmental cases in order to render decisions on the process the Agency follows. A separate judicial environmental court does not appear warranted.



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To the President of the Senate and the
Speaker of the House of Representatives

Inconclusive scientific evidence hinders Federal officials' ability to make complex technical decisions. We made this review to provide the Congress with information on the various alternatives that the Environmental Protection Agency might use to consider scientific and technical information. These alternatives may apply to other areas of national interest as well, where scientific and technical information is a major issue in the decisionmaking process.

We are sending copies of this report to the Director, Office of Management and Budget; the Administrator of the Environmental Protection Agency; and the Director of the National Science Foundation.


Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

IMPROVING THE SCIENTIFIC AND
TECHNICAL INFORMATION AVAILABLE
TO THE ENVIRONMENTAL PROTECTION
AGENCY IN ITS DECISIONMAKING
PROCESS

D I G E S T

The Environmental Protection Agency (EPA) finds itself caught between two groups with divergent views. On the one hand, environmental groups urge it to enforce strict controls. On the other hand, industry stresses costs and technological difficulties in complying with them. One byproduct of this confrontation is litigation against EPA as a result of its decisions. (See p. 4.)

Since the early 1970s, environmental litigation has grown markedly and suits against EPA are commonplace. From an overall perspective, however, such suits do not represent a substantial portion of the courts' workload. Most suits are not decided on substantive issues which involve scientific or technical information but rather on procedural or statutory interpretation issues. (See pp. 8 to 11.)

Reducing the number of court suits is difficult, but an independent assessment of scientific and technical information would be welcomed by the courts. The many serious constraints EPA must deal with in making decisions generate litigation. For example, regulations and standards deal with scientific and technical issues at the frontiers of science where supporting data and research is not yet available or conclusive. (See p. 12.)

A/C The National Academy of Sciences' 1977 study of EPA's decisionmaking process, particularly for acquiring and using scientific and technical information, found no major flaws. But some improvements are needed. Official

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procedures need to be finalized and published to make sure that the process is carried out properly and consistently throughout EPA. (See pp. 13 and 23.)

EPA also needs to recognize more formally the Science Advisory Board which contributes to the decisionmaking process. The Board was successful in having EPA make extensive revisions to a criteria document it developed for setting an air quality standard for lead before the Agency used it as a basis for setting the standard. The Board also forestalled a suit by an environmental group because EPA had not met a standard setting deadline. The Board should be involved in all major EPA actions that deal with scientific and technical information. (See pp. 24 to 26.)

A/C ✓
Another way scientific and technical information could be considered would be to have a "science court." The court would not be a judicial court but a way to ventilate scientific disputes during the decisionmaking process. Arguments would be presented before an administrative law judge and a panel of experienced scientists who would decide the scientific facts to be considered in a decision. (See pp. 27 to 30.)

The science court and the Science Advisory Board both would provide the EPA Administrator with an independent review of the scientific and technical information. In addition, the science court would provide for cross-examination and the formal procedure would establish a better administrative record of the scientific evidence.

However, because of such few major cases involving scientific and technical information, the creation of a permanent science court at this time does not appear to be justified. Further development and testing of the science court concept though, is warranted.

The science court concept could apply in other areas of national interest as well--such as occupational safety and health, food and drug, and national health programs--where scientific and technical information is a major issue in the decisionmaking process. It could be sponsored and operated by an independent organization, such as the National Science Foundation, the National Academy of Sciences, the Administrative Conference of the United States, or the academic community.

In the past, the National Science Foundation has received several unsolicited proposals from various public institutions to conduct a science court. One such proposal was submitted by the Administrative Conference. The Foundation did not fund the proposals because they were not designed to give statistically significant results. (See pp. 50 and 51.)

Mediation is another way which can be used to ventilate scientific disputes. It involves each advocate learning the opposing positions and explaining those positions to the mediator. A paper would then be prepared explaining original positions and differences, changes in positions, and remaining differences or final consensus. Unlike the science court, which would reach a conclusion, mediation would lay out the alternatives. (See p. 31.)

Another potential mechanism is to develop a number of commissions on such long-term controversial issues as environment, energy, food additives, and medical technology. Such commissions might organize debates among informed people who have conflicting views, to seek clarification and to explore alternative policies and their anticipated consequences. The commissions could create panels of expert advisors to interpret and clarify differences in technical opinions for congressional committees. These would become part of the public record. (See pp. 31 to 32.)

Background

The judiciary is being asked increasingly to grapple with scientific and technological issues. It is not the Federal courts' primary role, however, to determine scientific validity or to decide technical disputes; their role is to evaluate whether EPA followed a reasonable decisionmaking process. Thus, a major argument for establishing a separate judicial environmental court--that judges lack sufficient expertise to make determinations of technical fact--has little merit. (See pp. 33 and 37 to 44.)

The Administrator of the Environmental Protection Agency should:

- Finalize and issue the Agency's operating procedures on regulatory decisionmaking.
- Require that the Science Advisory Board become an integral part of EPA's decisionmaking process for all major actions that involve scientific and technical information.

GAO recommends that the Director of the National Science Foundation:

- Issue a program announcement soliciting proposals to develop and test further the science court concept. (See p. 52.)

AGENCY COMMENTS

Environmental Protection Agency officials agreed with the recommendations to improve the Agency's decisionmaking process. National Science Foundation officials endorse the further development and testing of the science court concept, but they disagreed with the recommendation to solicit proposals because prior unsolicited proposals received by the Foundation did not warrant funding. GAO believes the science court concept should be reconsidered at this time. The National Science Foundation is in the best position

to entertain and evaluate proposals for a test design from various groups both in and out of Government, so that the test results would have applicability to all Government regulatory agencies.

GAO also discussed the report with a number of other Government officials, organizations, and individuals having an interest in these issues. Most were in agreement that there needs to be more scientific and technical input to the decisionmaking process by the most knowledgeable and reputable scientists; they did not agree on the way to obtain such input. (See pp. 52 to 55.)

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ABBREVIATIONS

EPA	Environmental Protection Agency
GAO	General Accounting Office
NAS	National Academy of Sciences

CHAPTER 1

INTRODUCTION

We have been increasingly concerned with the impact of environmental litigation on the Environmental Protection Agency's (EPA's) regulatory process. This report focuses on that issue with a view toward (1) determining whether EPA's decisionmaking process could be improved to forestall EPA from being involved in court suits and (2) identifying alternative role models for the Federal judiciary in reviewing environmental decisions.

EPA was established on December 2, 1970, as a result of a Presidential order. For the first time, 15 environmental control programs, formerly scattered through the Federal Government, were unified in a single, independent agency. EPA's basic mission is to mount an integrated, coordinated attack on the environmental problems of air and water pollution, solid waste management, pesticides, radiation, and noise. Above all, EPA is a regulatory agency responsible for setting and enforcing the environmental standards that are specified in statutes the Congress enacts.

In fiscal year 1979, EPA received appropriations of \$5.4 billion, including \$4.2 billion for the water pollution control construction grants program.

EPA was conceived at the height of popular support for environmental action. Clearly dissatisfied with earlier Federal efforts at pollution control, the American public demanded new measures for environmental protection. The Congress complied by passing a series of ambitious and explicit environmental laws prescribing administrative actions. The high expectations have been EPA's burden ever since.

EPA's overwhelming tasks in its first years were to (1) develop, under tight statutory deadlines, fair and reasonable regulations that could stand the test of judicial review, (2) organize a staff to handle its new, diverse, and complex responsibilities, (3) organize an implementation program, (4) develop a program to strengthen its base of scientific, technical, and economic data and analyses, and (5) consider the trade-offs necessary to maintain national interest and support. However, EPA's main focus was on carrying out its statutory mandate to develop regulations.

The regulatory reach of EPA programs is probably unparalleled. The new laws required EPA to become familiar with a vast set of newly regulated companies discharging waste and to gain their cooperation within a very short time, a task further complicated by the fact that dischargers have every incentive to delay complying with new controls whenever feasible. The base of scientific and technical information available to EPA was relatively weak. Thresholds of exposure to harmful substances were highly uncertain; costs of abatement programs were unknown; and benefits to be derived from pollution abatement, although often significant, could not be quantified. The case for controls was thus difficult to demonstrate, leaving EPA vulnerable to charges of setting rules that could not be substantiated scientifically.

EPA's efforts to control pollution have resulted in some solid accomplishments. But failures and compromises have also occurred. Despite the volume of environmental legislation and regulations enacted in the 1970s, certain environmental problems persist and even grow worse while new ones continue to appear.

Decisionmakers seem unsure about whether environmental goals are too costly to achieve and whether the right balance has been struck between environmental quality objectives and energy, economic, and social goals. The cost of complying with environmental regulations and the resultant effect on inflation and the economy has been the subject of heated debate in recent months. Industry and administration economic advisors contend that unnecessary and excessive environmental regulations further aggravate today's high rate of inflation. Environmentalists counter that these regulations are a very minor factor in inflation and that their benefits far outweigh the costs when considering improvements to public health, reduced property damage, and increased crop yields that result from pollution control spending.

SCOPE OF REVIEW

We reviewed a 1977 report by the National Academy of Sciences (NAS) on decisionmaking in EPA and discussed the report with an NAS official and former members of its staff who helped in writing the report. We also analyzed the courts' role in air and water pollution and performed an extensive review of environmental litigation concerning air and water pollution issues. We also obtained litigation statistics from the Administrative Office of the United States Courts.

We interviewed three judges of the Court of Appeals, District of Columbia Circuit, who have been involved with environmental litigation. We also interviewed the chief administrative law judge at EPA to discuss EPA's adjudicatory process. In addition, we interviewed officials of the Department of Justice, National Science Foundation, Office of Science and Technology Policy of the Executive Office of the President, Administrative Conference of the United States, and staff members of an environmental interest group and public interest law firm.

Chapter 2 describes the constraints EPA faces in making regulatory decisions. Chapter 3 discusses EPA's decision-making process and the National Academy of Sciences evaluation. Chapter 4 considers some mechanisms for ventilating scientific and technical issues to improve the process. Chapter 5 comments on the adequacy of the role of the Federal judiciary, and Chapter 6 contains our conclusions and recommendations, and agency comments.

CHAPTER 2

CONSTRAINTS PLAGUE EPA'S

DECISIONMAKING PROCESS

In its short history, great demands have been made on EPA for action to protect the environment. However, at the same time, major obstacles blocked its attempts to act. EPA decisionmakers have had to deal with major constraints affecting their ability to issue environmental regulations and set standards. The most significant factors affecting EPA's decisionmaking process are:

- The regulations and standards concern scientific and technical issues at the frontiers of science where supporting data and research is not available or conclusive.
- Environmental groups push EPA to promulgate strict controls while industry emphasizes the economic consequences and technological problems in implementing the controls.

In addition, other factors which affect EPA's regulatory process involve the mandates established in environmental legislation. For example, the Congress has passed complex legislation with rigid deadlines that EPA is sometimes unable to meet and the statutory language is sometimes ambiguous and at other times restrictive, limiting EPA's alternatives.

These constraints are interrelated and mitigating them is difficult, as they are inherent in regulatory decision-making. For some constraints, no solutions exist.

An outgrowth of these constraints has been the increase in environmental litigation, which in many cases has further delayed environmental protection efforts.

Much information on constraints is contained in a 1977 NAS report entitled "Decision Making in the Environmental Protection Agency." The three-volume report was part of a series of analytical advisory studies mandated by the Congress in 1974. The report examined EPA's decisionmaking process in order to recommend more effective use of scientific and technical information in making regulatory decisions.

LACK OF SCIENTIFIC INFORMATION

NAS noted that a major constraint in EPA's decisionmaking process is the lack of adequate scientific and technical information available to the Agency. In spite of poor data, the Administrator must sometimes make a decision knowing full well that it cannot be supported by the degree of probability or certainty usually considered acceptable.

A major argument raised by industrial dischargers and trade associations in their lawsuits challenging the effluent limitation guidelines was that EPA used inappropriate methodology and inadequate data bases, which resulted in unreasonable guidelines.

Commenting on EPA's decision to allow the use of the pesticide Ferriamicide, an environmental newsletter stated that EPA's decision to approve the use of an experimental pesticide was a roll of the dice, as are many EPA decisions made on incomplete scientific knowledge. The Environmental Defense Fund agreed with this assessment, stating that EPA's decision was "clearly the result of political, not scientific, considerations."

The House Appropriations Committee in its report on EPA's 1979 budget request also criticized EPA's data. The report cited the proposed regulations on control of organic chemical contaminants in drinking water as an example of no substantive supporting scientific evidence. The American Water Works Association also criticized the same proposals because they were based, in its view, far too much on speculation and not nearly enough on scientifically sound research. The problem confronting EPA is that in many instances health effects are unknown and sometimes unknowable.

INDUSTRY INCENTIVE TO DELAY

Industry compliance with the regulations generally results in substantially higher industry costs. It may be wiser and cheaper for a discharger to appeal an environmental protection standard or requirement which is not based on sound scientific information than to install pollution control equipment. With limited investigatory resources, procedural and legal safeguards, and an overcrowded court system, enforcement efforts by regulatory agencies and State and local governments are difficult.

The expense of engaging an extensive cadre of attorneys is far less than the cost of buying and operating pollution control equipment. The longer the attorneys can use the recourses available under the law, the more the company or industry benefits financially. The process of bringing a case to court and holding the court hearings is very time-consuming. If the court remands the case to the Agency for further consideration, further delays occur.

LEGISLATIVE FACTORS

NAS concluded that when specific criticisms of EPA's decisionmaking are traced to their roots, the problems are more frequently traced to the environmental statutes than to faulty EPA administrative actions. The statutes impose stringent deadlines, contain ambiguous language, and give EPA limited alternatives to carry out the legislative objectives. These factors impose constraints on EPA's ability to set regulations.

Statutory deadlines

As a part of congressional efforts to mandate rapid improvements in environmental quality, the statutes that EPA implements provide for some deadlines to set standards or regulations. The deadlines force EPA to act hurriedly on the basis of inadequate data, resulting in poor decisions that fail to withstand challenge in the courts. Some water effluent guidelines were overturned in the courts for this reason. In addition, the deadlines do not always permit EPA enough time to acquire, analyze, and generate new scientific and technical information that might have an effect on the decisions.

Some statutes contain citizen suit provisions so that interested parties, such as environmental interest groups, can take EPA to court when it fails to issue a regulation within the required time frame. For example, when EPA did not meet the deadline to establish standards for hazardous air pollutants, the Environmental Defense Fund brought a citizen suit against EPA (Environmental Defense Fund v. Ruckelshaus 1973). The Natural Resources Defense Council filed suit when EPA failed to meet the 1-year deadline for publication of guidelines for best practicable technology under the Federal Water Pollution Control Act Amendments of 1972 (Natural Resources Defense Council, Inc. v. Train 1974). An organization of truck and bus drivers sued when EPA did not meet the deadline for publication of proposed noise emission standards on heavy duty trucks (PROD, Inc. v. Train 1976).

Time constraints also have an effect on EPA's decisionmaking procedures. All rulemaking must allow time for outside review and comment on proposed actions. However, industrial and environmental representatives complain that the time provided for comment, either by EPA or the law, is insufficient. The deadlines also force EPA away from formal trial-type procedures to less time consuming informal procedures. Informal procedures do not always result in an adequate record, which judges use to review the case. In EPA's consideration of whether to suspend automobile emission limitations, time constraints restrict the use of full trial-type procedures.

Mandated alternatives

The statutes restrict the alternatives EPA can consider in making a decision. For instance, under the Clean Air Act, EPA cannot set the levels of ambient air quality standards for most pollutants or approve or disapprove State plans designed to attain air quality standards on the basis of economic consequences or technical feasibility, but only on the basis of protecting public health. The EPA Administrator was taken to court when he approved a State implementation plan that was allegedly economically and technically infeasible. The court, however, decided in favor of the Administrator (West Penn Power Co. v. Russell Train 1976).

In contrast, the Federal Environmental Pesticide Control Act requires that EPA cannot cancel the registration of a pesticide, even though it poses an unreasonable risk to man and the environment, unless EPA also takes into account the impact of cancellation on the production and prices of agricultural commodities and retail food prices.

Ambiguous language

While the laws establish a general framework and specific directives for EPA decisions, no statute is entirely clear in its mandates. Environmental statutes emerge as products of political compromise. It is very difficult for the Congress to write a finely tuned and completely unambiguous law. As a result, some critical issues are not addressed and are passed to regulatory agencies for resolution.

Numerous court cases arise which challenge the Administrator's interpretation of the law. In one case, the Administrator attempted to impose sanctions on a State or its officials for failing to comply with EPA regulations requiring the State to regulate the pollution-creating

activities of others. The court ruled that the Clean Air Act did not authorize the Administrator to take such action (State of Arizona, et al v. EPA, et al 1975; Edmund G. Brown, Jr., et al v. EPA 1975; State of Alaska, et al v. EPA 1975).

Similar issues arose under the Federal Water Pollution Control Act. One suit involved the question of whether EPA could issue a permit which would have permitted dischargers to miss the deadline set in the legislation for compliance with effluent limitations (Bethlehem Steel Corp. v. Train 1976).

REGULATORY LITIGATION: A BYPRODUCT OF ENVIRONMENTAL DECISIONMAKING

Because of the constraints that affect EPA, litigation has become an integral part of EPA's regulatory process. A recent case exemplifies the problem EPA faces. EPA was taken to court by both an environmental group and an industry as a result of its decision to suspend registration and prohibit the manufacture and sale of aldrin and dieldrin because of their adverse effect on health. The industry objected to the suspension of the registration, while the environmental group objected to EPA's allowing the industry to use up its existing stock of the pesticide (Environmental Defense Fund, Inc., et al v. EPA, et al 1975).

To determine the extent of regulatory litigation, both from an overall and EPA perspective, we obtained from the Administrative Office of the United States Courts statistics on cases filed in the U.S. courts of appeal during the 4-year period ending June 30, 1978. Most cases involving administrative review (regulatory) issues are filed directly in the courts of appeal rather than in the district courts.

Regulatory cases do not comprise a significant percentage of total cases filed. Of the 18,918 cases filed during the 12-month period ending June 30, 1978, only 1,879--10 percent--were regulatory cases. The other 90 percent of the cases involved suits of administrative enforcement, civil and criminal activities, and bankruptcy.

In like manner, EPA cases are not a very large part of the court of appeal's administrative review workload. Of those cases filed during the 4-year period ending June 30, 1978, 11.1 percent involved EPA. Although this percentage was low, only the Interstate Commerce Commission and energy-related agencies had more cases on review than EPA. It should be recognized, however, that the number of cases does not necessarily indicate the courts' workload, as some cases are very complex and may take years to litigate.

The chart on page 10 shows the number of administrative review cases filed during the 4-year period by circuit. The chart shows that:

- The number of cases filed each year has remained relatively constant.
- The number of EPA cases has declined from 290 in 1975 to 154 in 1978.
- The District of Columbia circuit had the largest percentage of cases for the 11 circuits--26 percent.
- The number of cases in the 11 circuits varied significantly from year to year.

Analysis of EPA cases

EPA told us that from July 1975 through July 1978, the Federal courts decided 153 cases in which EPA was a litigant. Most of the cases were filed in the appeals court. We randomly selected 86 of these cases to determine the issues on which they were decided (statutory, procedural, or substantive) and whether the judges reviewed technical information in deliberating the case. There has been much debate in recent years about the need for a separate environmental court because of the concern that judges must understand complex scientific and technical information to decide environmental cases. (See ch. 5.)

In most instances, a case will be brought on all possible issues--statutory (an interpretation of the law), procedural (the decisionmaking process used), and substantive (the data used, generally scientific or technical data). In reviewing and deciding the case, however, judges usually will not address all the issues. The court will limit itself first to consideration of statutory issues, then to procedural issues, and finally to substantive issues. Most of the EPA cases we reviewed were not decided on substantive issues.

- Forty-one cases were decided on questions of statutory interpretation.
- Thirty-one cases were decided on procedural issues which involved a review of the process under which the regulation or standard was developed.
- Nine cases were decided on a substantive review of aspects of EPA decisions.

ADMINISTRATIVE REVIEW

CASES FILED IN THE

U S. COURTS OF APPEAL

10

Circuits	Year Ending								Percentage			
	6/30/75		6/30/76		6/30/77		6/30/78		Total 4 Years		EPA to total	Circuit to total
	Total	EPA	Total	EPA	Total	EPA	Total	EPA	Total	EPA		
D C	495	37	556	54	539	38	475	33	2,065	162	7 8	26 3
First	37	3	45	3	60	5	52	5	194	16	8 2	2 5
Second	169	10	229	9	159	2	119	1	676	22	3 3	8 6
Third	136	26	167	38	136	9	131	8	570	81	14 2	7 3
Fourth	120	69	88	8	108	33	115	16	431	126	29 2	5 5
Fifth	218	37	269	11	329	9	264	18	1,080	75	6 9	13 7
Sixth	88	30	137	24	199	81	126	24	550	159	29 0	7 0
Seventh	95	24	94	7	118	14	111	13	418	58	13 9	5 3
Eighth	55	11	64	7	64	7	61	8	244	33	13 5	3 1
Ninth	360	22	351	28	316	18	344	23	1,371	91	6 6	17 5
Tenth	48	21	58	19	64	4	81	5	251	49	19 5	3 2
Total	<u>1,821</u>	<u>290</u>	<u>2,058</u>	<u>208</u>	<u>2,092</u>	<u>220</u>	<u>1,879</u>	<u>154</u>	<u>7,850</u>	<u>872</u>		

--Five cases were decided on both substantive and procedural issues.

Statutory interpretation decisions involve issues such as how the term "navigable water" was defined under the Federal Water Pollution Control Act (Natural Resources Defense Council, et al v. Train, et al 1975); whether the Clean Air Act authorized the Administrator to disapprove a State plan which was economically or technologically infeasible (St. Joe Minerals Corp. v. EPA 1975, West Penn Power Co. v. Russell Train 1976); whether the issuance of a gasoline reduction plan was within the Administrator's scope of authority under the Clean Air Act (City of Santa Rosa, et al v. EPA 1976); and whether EPA could allocate less than the entire amount of money authorized for construction grants (State of Minnesota, et al v. EPA, et al 1975, Train v. City of New York, et al 1975, Train v. Campaign Clean Water, Inc. 1975). Basically, the suits arose because of a disagreement over the way in which EPA interpreted the law. To resolve the issues, the courts reviewed the legislation, congressional committee reports, floor debates, and other relevant information to determine the intent of the Congress when it wrote the law.

Procedural decisions focus on the procedure EPA followed in making a decision. The cases involved such questions as whether EPA had to hold a hearing before issuing a permit (State of Maryland, et al v. Train, et al 1976); whether EPA followed its procedures for reviewing a bid (Maclean Construction Co. v. EPA, et al 1976, Northern Construction Co. v. Mayo, et al 1975); whether EPA staff had a conference with the administrative law judge during an adjudicatory hearing process (Environmental Defense Fund, Inc., et al v. EPA, et al 1975); and whether the court had jurisdiction to hear the case (American Petroleum Institute, et al v. Train, et al 1975).

Substantive reviews, on the other hand, focus on the adequacy of the scientific data on which EPA bases its decision. The court reviews the record compiled by the Agency to ensure that the decision is based on substantial evidence and is neither arbitrary nor capricious. To do this, the judges often review the scientific and technical supporting information. Examples of such cases included whether an environmental impact statement was adequate (EDF, et al v. Costle, et al 1977); whether the discharge of waste from an iron ore plant was a threat to health (Reserve Mining Co. v. EPA, et al 1975); and whether the scientific evidence supported the Administrator's decision to regulate gas additives (Ethyl Corporation v. EPA 1976).

CONCLUSIONS

Reducing litigation is most difficult. Because of its adversary role to those being regulated and to environmental groups, EPA attracts court suits. Law journal articles and our discussions with EPA officials and outside organizations all point to the same conclusion: EPA's decisions will not satisfy everyone and the unsatisfied will sue.

EPA's decisions are generally based on less than certain scientific evidence and ultimately result in value judgments. The application of different values understandably leads to divergent results even when the scientific evidence is similar. Institutions having different goals and concerns obviously have different values; and it is for this reason that representatives from industry, environmental groups, and EPA can each come to reasonable, but completely different conclusions using identical scientific data. If the EPA Administrator sets a standard too high, industry will sue; if the standard is too low, environmental groups will sue. One case involved suits from both sides when EPA took a middle ground (Environmental Defense Fund, Inc., et al v. EPA, et al 1975). However, even the best scientific evidence will not eliminate the problem of litigation because value judgments are always a part of policy decisions.

Some mechanisms for ventilating scientific and technical matters exist that may reduce the number and types of issues on which court suits may be brought. These are discussed in chapter 4.

CHAPTER 3

EPA'S DECISIONMAKING PROCESS IS BASICALLY SOUND BUT NEEDS TO BE FORMALIZED

NAS gave high marks to EPA's decisionmaking process. Although NAS made several recommendations to improve the process (see p. 19), its staff indicated that (1) no major flaws exist in EPA's procedures, (2) EPA does a credible job on the most important aspects of the process, and (3) implementation of the recommendations would make EPA a model agency. A further indication of the soundness of EPA's process is the fact that the White House used the process as a model for the President's March 1978 Executive order on improving Government regulations.

EPA's process, however, needs to be formalized. This would reduce the possibility of court suits concerning whether EPA used a proper procedure in reaching a decision. A new manual on developing regulations is currently in process.

EPA PROCEDURES FOR DEVELOPING REGULATIONS

Perhaps the most conspicuous feature of EPA's early regulation writing was its volume; demanding new environmental statutes required it to produce large numbers of standards and regulations in short order. The volume of early EPA rules contributed to the Agency's interest in introducing careful decisionmaking procedures, since both the Office of Management and Budget and reviewing courts openly criticized the quality of analyses accompanying rapidly forged EPA regulations. In addition, the functional basis of EPA's structure, with separate offices for research, media programs, enforcement, and management, created a special need for internal coordination.

The NAS study noted that EPA's procedures for writing standards and regulations are elaborate compared with practices in other Federal agencies. The procedures are designed primarily to assure that new rules receive careful review and participation by various EPA components. Of principal importance is clearance by a standing steering committee of EPA officials (a continuing group representing the six Assistant Administrators, General Counsel, and certain Office Directors on the Administrator's staff) before a proposed or final regulation formally passes to the Administrator for his consideration.

Not all published EPA decisions are products of the steering committee system. NAS noted from a sample that only about one-sixth of the items published in the Federal Register had received formal steering committee review. The majority of the printed regulations were minor modifications of earlier regulations or were routine decisions (e.g., registration of a specific pesticide product) typically delegated to lower level EPA officials. Despite these and other exceptions, the steering committee procedures are at the heart of EPA regulatory decisionmaking for they govern the development of most of the salient and precedential regulatory policies.

A typical regulation is developed in a four-stage process. (1) starting work on a regulation, (2) preparing a development plan, (3) preparing a decision package, and (4) conducting a three-part internal review before publication. Each regulation goes through the third and fourth stages twice, first as a proposal and again in final form. The following process describes the steps in EPA's manual on decisionmaking now being developed. The process is essentially the same one in effect when NAS performed its study.

Starting work on a regulation

Regulations are generally developed in response to a congressional statute or an EPA determination of a need for new regulation. When an EPA assistant administrator for an office (the Office of Water and Waste Management, the Office of Enforcement, the Office of Toxic Substances, or the Office of Air, Noise and Radiation) decides to start work on a new regulation, he sends a notification form to senior EPA management. The notifying office is referred to as the lead office and has primary responsibility for writing the new regulation.

The notification form indicates whether the new regulation is significant. It invites interested offices to assign personnel as work group members. A work group consists of representatives from the major media offices; EPA regional offices; and the Offices of General Counsel, Legislation, Planning and Management, and Research and Development. In addition, representatives from the Offices of International Activities, Civil Rights, Federal Activities, Land Use Coordination, and Public Awareness may serve on work groups.

The notification form sets a date for submitting a development plan to the steering committee, which oversees the mechanics of the process and conducts the first internal review of materials prepared by the lead office.

Preparing a development plan

The assistant administrator for the lead office appoints a chairperson for the work group assigned to work on "significant" regulations. The EPA office wishing to write the new regulation cannot officially begin drafting the new rule until the EPA Administrator has received the development plan. The lead office request for clearance must include a development plan which is put together with the advice and assistance of the work group. The initial clearance is intended both to prevent unnecessary Federal regulation and to guard against plans that do not adequately involve interested groups in decisionmaking.

An early step in this process is deciding whether the regulation falls into the "routine" or "major" class. Development plans for routine regulations are approved by the lead office and reviewed by the steering committee before substantial work begins. Development plans for major regulations must also pass through a "red border" review (an internal review by all Assistant Administrators, General Counsel, and Chief Staff Office Directors), with heads of EPA's 10 regional offices also having an opportunity to comment. The plans must receive the Administrator's approval before substantial work begins.

A development plan includes an extensive list of items:

- A brief description of the possible need to regulate and the consequences of not regulating.
- A timetable with target dates for identifying and notifying interested outside parties, completion of the initial draft, internal and external review of drafts, award and completion of contract work, any required progress reports, steering committee review, publication of the proposed regulation, end of the public comments period, and promulgation of the final regulation.
- The text of a Federal Register notice that describes the purpose of the proposed action, the development schedule, the issues that must be resolved, the alternatives to be considered, the special analyses that will be conducted, the plan to obtain external participation, the name and location of an appropriate EPA contact person, and an invitation for comments and solicitation for submission of needed information.

- A determination on whether the significant regulation is routine or major.
- A list of issues to be resolved.
- A summary of the major options that will be evaluated, including a discussion of whether alternatives or supplements to direct regulation are feasible.
- A list of any normally required materials that the work group expects to omit from the decision package, with a brief explanation.
- A list of offices within EPA whose expertise and assistance will be needed and a plan for coordination with EPA regional offices.
- A plan to involve those parties outside EPA, indicating how persons interested in and affected by the regulation will be identified, notified, and brought into the process.
- An estimate of EPA money and personnel needed to develop the regulation.

Preparation of a decision package

After the development plan is completed and the Administrator authorizes work on the new rule, the work group begins analyzing alternatives, assembling support materials, and writing the preamble and regulation. These items make up the decision package. While members of the work group may write portions of the document, the work group chairperson has overall responsibility for regulation drafting and is accountable to lead office superiors who provide guidance on the substance, procedures, and policy of the regulation.

The decision package contains the following items:

- An action memorandum: A brief summary of the regulation, including a description of alternatives considered (with a summary of incremental environmental and economic effects, where feasible); environmental, economic, and resource impacts; unresolved issues; anticipated public reactions; recommended action; and a summary of why the recommended alternative is the least burdensome way to accomplish environmental goals.

- Federal Register documents: A preamble written in plain English that describes the facts and rationale for the decision to regulate, how the regulation fits into the larger regulatory program, and how the recommended action is the least burdensome way to accomplish environmental goals.
- Analyses: Support documents that identify and quantify the regulation's environmental effects, economic impacts, energy impacts, technical feasibility, anticipated barriers to implementation, alternatives and supplements to direct regulation, urban and community impact, and operating assumptions EPA has made when the impacts cannot be determined exactly.
- Resource requirement summary: A summary of money and personnel that EPA and State and local governments will need to implement the regulation.
- Reporting impacts statement: Details the impacts of reporting and recordkeeping on those subject to the regulation.
- Public participation summary: Comments from other Federal agencies and State and local governments and EPA's response to each major comment.
- Evaluation plan: A plan and schedule for subsequent evaluation of the regulation's effects.

The NAS study reported that the operating styles of working groups varied widely. The roles played by working group members varied considerably and appeared to depend somewhat on the level of personal interest of the representative selected. There was also variation in the lead office's actual dependence on the working group; many lead offices performed the work themselves and looked to the working group for largely passive review, and some relied more heavily on working group members.

The working group maintains a documentary file in the course of rulemaking to facilitate compilation of the formal administrative record if the regulation is challenged in the courts.

Conducting internal reviews

After the lead office assistant administrator approves the decision package, it enters prepublication review. This

process has three parts: steering committee review, red border review, and final review by the Administrator.

The steering committee reviews all significant regulations to help resolve any issues on which the work group does not reach consensus and to make sure the decision package meets standards of completeness, quality, and comprehensibility. When the steering committee resolves a major issue, it identifies for senior management the nature of the issue and the resolution reached. NAS noted that the steering committee appeared to act more as an appellate body than a deliberative legislative body in that it only rarely conducted intensive reviews of the work groups' efforts.

The red border review involves all assistant administrators, General Counsel, and chief staff office directors. The EPA Administrator's review completes EPA's process for a proposed rule or standard.

The proposed rule then appears in the Federal Register, and formal comments are requested from all interested parties. Normally the public comment period is 60 days. Despite any earlier attempts to obtain the views of affected groups, this notice-and-comment device usually reveals issues that require further resolution.

At the close of the public comment period, the regulation is returned to the working group for preparation of a final rule. The work group reworks the regulation, gains steering committee, red border, and Administrator clearance. Finally, the Notice of Rulemaking is published in the Federal Register.

NAS noted that a review of formal procedures should not be taken as a picture of how EPA decisions were actually made. The procedures implied decisionmaking that was structured, passionless, and synoptic; as would be expected, most of the actual interaction between the writers of a new EPA regulation and other inside and outside groups was necessarily informal, incremental, and sometimes contentious. The importance of the formal steering committee system was that it provided some safeguards for sound decisionmaking.

NAS stated that the steering committee procedures facilitated the systematic examination of new policy by all interested parts of EPA without encumbering EPA in a procedural straitjacket. When the stipulated procedures were followed, there was an opportunity if not an assurance that the assumptions, facts, and analyses supporting a new

EPA rule would be made explicit and scrutinized by informed experts. EPA retained flexibility both to expedite rule-making when necessary and to suspend action in order to gather necessary additional facts and expert opinion.

Also, the steering committee procedures helped foster openness in the drafting of EPA regulations. NAS found, for instance, that some type of public meeting was held in two-thirds of the cases it reviewed. Furthermore, three-fourths of the decisions involved some type of outside advisory group, usually by a standing group that either had a statutory charter or, more often, was established at EPA's own initiative. NAS noted that EPA was introducing two further measures to solicit outside participation: (1) more systematic use of the Advance Notice of Proposed Rulemaking to obtain external views very early in the rulemaking process and (2) the periodic Federal Register publication of lists of all rules being developed within EPA and the name of a contact person for each rule.

NATIONAL ACADEMY OF SCIENCES
RECOMMENDATIONS ON EPA'S
DECISIONMAKING PROCESS

NAS' 1977 report gave high marks to EPA's decision-making process but made 19 recommendations on improving the process. (App. I contains a listing of the recommendations.)

The following sections detail the findings and recommendations we consider the most important ones to improve EPA's decision process.

Analysis in support of decisionmaking

NAS stated that although EPA's elaborate procedures for developing standards and regulations had significantly improved the quality of analysis by assuring open review of proposed actions, the analysis, nevertheless, often treated important factors inadequately. EPA did not consistently include a systematic and comprehensive consideration of feasible alternatives.

NAS noted that systematic and well-documented analyses could substantially improve the quality of EPA decisions by providing a framework for discussion and for public understanding of the factors that enter the decision process. The analyses would make possible the generation and evaluation of a more complete set of regulatory alternatives. Routine consideration of potential problems of implementing regulations and standards would help assure the practicality of

EPA decisions. The careful consideration of uncertainties in available information and in the analyses would be useful both in directing EPA's research efforts toward resolving those problems that appear to be particularly critical for decisions and in enhancing the credibility of EPA decisions. Even where existing legislation limits EPA's freedom to choose alternatives or consider certain factors, EPA should assume responsibility for examining the consequences of various courses of action and making the analytic results available to the public.

NAS recommended that EPA's decisions on standards and regulations should be supported by analyses that explicitly state the objectives of the decisions; identify feasible alternatives; evaluate (quantitatively, to the extent possible) the consequences of each alternative decision; explore potential problems in implementation; and indicate and examine the degree of uncertainty about the effects of EPA actions. The analyses should be available to the public.

To a great extent, EPA's Executive order report requires the analyses that NAS recommended.

Advice and review from scientists and engineers outside EPA

NAS stated that EPA often relied on previously unpublished or unreviewed data; this placed a special burden on EPA to make certain that the scientific and technical basis for its decisions was accurate and reliable. In addition, EPA did not have a regular and effective channel for advice to the Administrator from outside scientists and engineers, with the result that independent scientific judgments had not always been provided to the Administrator.

NAS recommended that scientific and technical data and analyses used in decisionmaking should be reviewed routinely at an early stage to assure that all relevant data is considered and to reduce the possibility of misinterpretation or misuse of scientific results. In this process, EPA would be greatly aided by the wide range of scientific and engineering expertise that exists outside EPA. The reviews should be available to the public as a matter of course. On decisions that set significant precedents or substantially affect public health or welfare or on public or private expenditures, the Administrator personally should have access to independent scientific advice and evaluations of the overall technical basis for decisions.

We comment more extensively on this subject in our discussion of EPA's Science Advisory Board. (See p. 24.)

Procedural requirements
for decisionmaking

NAS stated that traditional procedural requirements established by statutes and court decisions for EPA action have not always been well suited to the types of decisions EPA makes. As a result, EPA, under the direction of Federal courts and on its own initiative, experimented with innovations in procedures. A number of these innovations have benefited the decisionmaking process and could be used more widely. Several additional changes in the procedures could be developed to assist in decisionmaking and to make the decisionmaking process more open to external review.

NAS recommended that EPA should:

- Make greater use of procedural innovations developed within EPA and other Federal agencies that, when combined with steps to increase openness in the Agency and the use of explicit analysis, will reduce the need to rely on formal procedures characteristic of trials and adjudications.
- Institute a more orderly procedure for compiling the relevant documentary record and making its contents easily available to the public. In addition, EPA should explicitly define and adhere to policies stating which information submitted by regulated parties and which internal memoranda should be available to the public.
- Make public an understandable summary of the rationale for each regulatory decision (including decisions not to take action) by publishing, at the time of Notice of Proposed Rulemaking, a complete statement of the basis for its findings and its reasoning, including descriptions of (1) the scientific, economic, and other information (including information on statutory requirements and judicial decisions) relied on to evaluate the alternatives and the uncertainties in the information, (2) the analyses used in making the decision, and (3) the relative importance given to conflicting considerations in reaching the decision.

EPA has set up a docket system available to the public on major final and proposed rules for the Clean Air Act. Also, EPA's Executive order report requires a summary of EPA's rationale for a regulation in the fashion that NAS recommends.

EPA DOES NOT USUALLY PREPARE
ENVIRONMENTAL IMPACT STUDIES
FOR REGULATORY DECISIONS

Most types of actions EPA takes are not subject to the National Environmental Policy Act's requirement that Federal agencies prepare environmental impact statements on major actions significantly affecting the environment. EPA generally claims an exemption from the requirement, except for grants to construct publicly owned wastewater treatment facilities and permits issued to dischargers of pollutants into navigable waters. EPA voluntarily prepares impact statements on some other actions. More effective use of the impact statement process would improve EPA's decisionmaking process.

The National Environmental Policy Act requires all Federal agencies to include an environmental impact statement in every recommendation or report on proposals for legislation and other major Federal actions that significantly affect the quality of the human environment. The act recognizes that each Federal agency needs to prepare an impact statement to provide detailed information on the environmental impacts for consideration, along with economic and technical factors, before taking any major Federal action.

Impact statements should (1) explain to Federal and State agencies, decisionmakers, and the public the potential environmental effects of proposed actions, (2) explore alternatives that could avoid or minimize adverse impacts, and (3) evaluate both long- and short-range implications of proposed actions. As part of the impact statement process, the agencies must consult with and obtain comments from Federal, State, or local agencies which have jurisdiction over or special expertise on any environmental impact involved.

In a report to the Congress entitled "Congressional Guidance Needed For Preparing Environmental Impact Statements" (CED-78-104, Sept. 13, 1978), we concluded that EPA should be preparing impact statements on more actions that significantly affect the environment. EPA voluntarily prepares impact statements on some of its most important regulatory actions, although the types of actions which EPA considers are not always clear.

To make sure that EPA properly considers environmental factors before taking any major action, we recommended that the Congress:

--Reevaluate the need for continuing the statutory exemptions from the impact statement requirement now provided to EPA for actions taken under the Federal Water Pollution Control and Clean Air Acts, as amended.

--Clarify EPA's responsibilities for preparing impact statements on major actions significantly affecting the environment which it takes pursuant to other environmental laws.

The Congress has not yet acted on these recommendations.

EPA NEEDS TO FORMALIZE ITS MANUAL FOR DEVELOPING REGULATIONS

The December 1974 "Procedures for the Standards and Regulations Development Process" is EPA's official manual on developing regulations. A number of ad hoc memorandums and guidelines on the process have changed the procedures, but the 1974 manual was never officially updated. An EPA official told us that the 1974 manual is no longer considered a part of the official Agency manual system.

Beginning in 1976 draft manuals incorporating many of the changed procedures were written and circulated. A December 1977 draft was the last revised draft manual, but it never became a formal manual. However, all of the assistant administrators concurred with this draft, except for one who took no action. Although this is the currently "accepted" manual for developing regulations, EPA offices are not obligated to abide by the manual since it has not been signed by the Administrator.

In the summer of 1977, the White House began formulating an Executive order to improve Government regulations. Parts of EPA's May 1977 draft manual served as models for the order. Executive Order 12044 "Improving Government Regulations" was issued on March 23, 1978. EPA's final report implementing Executive Order 12044 was published in the Federal Register on May 29, 1979.

In July 1979 EPA was preparing an Agency handbook for regulation development based on the December 1977 draft and the report to implement the Executive order. The Agency expects to complete a review draft of the handbook by September 1.

CHAPTER 4

MECHANISMS FOR VENTILATING SCIENTIFIC AND TECHNICAL ISSUES SHOULD BE USED MORE EXTENSIVELY

A relatively recent but important innovation in EPA's decisionmaking process has been input by the Science Advisory Board. Composed of eminent scientists, the Board acts at the direction of the EPA Administrator and gives independent advice to him. We believe that EPA should use the Board more extensively and that its use should be mandatory on major EPA decisions dealing with scientific and technical issues.

Other mechanisms that have potential for improving the decisionmaking process include a science court, mediation, and advisory panels. While each of these mechanisms has both advantages and disadvantages, their use in certain situations would be helpful in ventilating the scientific and technical issues and ultimately providing a more complete administrative record of the decisionmaking process. It is possible that these mechanisms might reduce the number and type of issues on which court suits might be brought.

SCIENCE ADVISORY BOARD: A USEFUL ELEMENT IN THE DECISIONMAKING PROCESS

The Board was created in 1974 as an advisory body within EPA's research and development office. Over the years, the Board has been given more responsibility and in 1977 was statutorily mandated under the Environmental Research, Development, and Demonstration Authorization Act of 1978. The Congress believed that much criticism of EPA could probably be avoided if the EPA Administrator's decisions were fully supported by technical information which had been reviewed by competent scientific authorities. The action by the Congress is consistent with the NAS recommendation that all proposals and completed research should be reviewed on their technical merits by scientific and technical peers. (See p. 20.) The Federal Insecticide, Fungicide, and Rodenticide Act and the Clean Air Act also legislate advisory panels to review the scientific bases for regulations. (The Science Advisory Board set up a subcommittee as an advisory panel for the reviews mandated by the Clean Air Act.)

The Board has the responsibility to provide independent scientific/technical advice to the Administrator in response to his request or to needs perceived by the Board, subject

to the Administrator's approval. It is part of the Office of the Administrator. The Board has an executive committee of 15 members; 6 standing committees (Health, Ecology, Technology, Pollutant Transport and Transportation, Measurement, and the Clean Air Scientific Advisory Committee); and 1 standing subcommittee on toxic substances. The Board has about 80 scientists (academicians, researchers, industry representatives, and environmentalists) who serve as consultants and convene as committees about four times a year. EPA makes an effort to provide a balance of scientific views and disciplines within the Board membership. Other experts are brought in as needed. For fiscal year 1978, the Board's budget was \$750,000.

As a general rule the Board advises the Administrator on the adequacy of the technical and scientific data underlying an EPA standard or regulation and gives no opinion on the standard or regulation itself. However, the Clean Air Act of 1977 requires the scientific review committee (EPA's Clean Air Scientific Advisory Committee) to review the criteria for the national primary and secondary ambient air quality standards and to recommend to the Administrator any new national standards and revisions of existing criteria and standards.

The Board has been involved in only a few decisionmaking processes which resulted in a final rulemaking. One example is the national ambient air standard for lead, effective October 5, 1978. The Board had a significant effect on EPA's criteria document which contains the scientific and technical data EPA used to set the standard. The Board recommended on two separate occasions that EPA revise the criteria document because it was not adequate in several areas. During the lead standard development process, the Natural Resources Defense Council decided not to bring court suits against EPA for not meeting the deadline for setting the standard because the Council was satisfied that EPA, acting on advice from the Science Advisory Board, was making a reasonable effort to develop a criteria document that met the Board's standards.

Development of the lead standard resulted from a 1975 suit by the Natural Resources Defense Council and others against EPA to control lead as a national ambient air quality standard. The courts decided that lead should be listed as an air pollutant, since the Administrator determined that it was a health hazard, and required EPA to set a standard by August 10, 1977.

EPA completed drafting a criteria document in November 1976, and in January 1977, the Science Advisory Board met to discuss the document. The Board had set up a "Subcommittee on Scientific Criteria for Environmental Lead" which had a charter to comment on the technical accuracy and completeness of the draft criteria document and comment particularly on the scientific validity of the conclusions. The subcommittee met in a one-day open session. The subcommittee concluded that the document had major deficiencies and should be redone. Subcommittee members raised such issues as the literature review was lacking, the analysis was inadequate, new pertinent research information was not included, and a major conclusion was overly simplistic. The subcommittee gave EPA general outline topics that should be included in the revised document, suggested EPA obtain the resources to revise the document, and recommended that the new document be finished in 90 days.

In May 1977 EPA drafted a new criteria document which incorporated the additional studies suggested by the subcommittee. In June the subcommittee met again to discuss the revised criteria document, and again the subcommittee had major problems with the document. The subcommittee chairman stated that the document raised such questions as the relationship between lead in air and the lead in blood; raised questions about the susceptibility of children and pregnant women to lead; gave inadequate emphasis to the significance of lead in soil and dust; needed more discussion on the rate of change in urban/rural lead and the effects of air lead on foodstuffs; and needed a statement about the importance of personal hygiene habits.

During this second meeting an observer from the Natural Resources Defense Council indicated that he would rather see EPA move in the direction of a strong criteria document than meet the August 10 deadline without one. He said the Council might not proceed with a contempt motion if it saw evidence of good faith terms to produce a scientifically sound document. The Council decided not to bring suit even though the deadline was not met.

The subcommittee met for the third time in October 1977 and gave its approval to the revised criteria document.

In December 1977, EPA proposed a national standard; it finalized the standard in October 1978.

ALTERNATIVE MECHANISMS FOR
ACQUIRING AND USING SCIENTIFIC
AND TECHNICAL INFORMATION

Science court

A mechanism to ventilate scientific disputes which has been much discussed in recent years is the so-called science court, as advocated by Arthur Kantrowitz. The science court would not be a court in the judicial sense but would be used for arguing and deciding disputes of scientific facts that are relevant to important public decisions. It would create a situation in which the adversaries direct their best arguments at each other before a panel of experienced scientists and an administrative law judge during the decisionmaking process. This would provide an opportunity to raise all of the issues.

The science court was recommended by a Presidential task force in 1976 which formulated a plan to establish one on an experimental basis. The task force, chaired by Kantrowitz, was terminated during the Ford administration. It issued an interim report presenting its plan for a science court experiment, but it did no further work. Many questions, such as what subjects should be chosen for the experiment and how the experiment would be funded, were never resolved.

The basic mechanism proposed by the task force is an adversary hearing, open to the public, governed by a disinterested referee, in which expert proponents of the opposing scientific positions argue before a panel of expert scientific judges. Once an issue was presented to the court for disposition, advocates (called case managers) for the opposing points of view would be chosen from among expert proponents of these positions. After isolating and clearly defining the factual questions within the issue under dispute, the court would conduct an adversary proceeding that begins with a case manager presenting his or her case in the form of experimental data and theoretical calculations. The "evidence" would be closely scrutinized and subject to challenge by the opposition. The case managers would have the opportunity to cross-examine each other. Since the rules of scientific evidence, not the rules of legal evidence, would guide the proceedings, all cross-examination and other challenges to the opposition would be confined to the merits of the arguments and would not involve questioning the case managers' expertise. Expertise would be established in the course of selecting case managers. Once the arguments were completed, the panel of judges would make a finding of the scientific

facts by issuing a series of factual statements. These statements of fact might be qualified with statements about probable validity or margins of error. These statements would also define areas where scientific knowledge does not exist. By pointing out where important knowledge is lacking, the science court would suggest areas where new research should be initiated.

The science court would be limited to making judgments on scientific fact that could form the basis for policy decisions to be made by the executive, judicial, and legislative branches of the Government. While the court's findings would not be binding, but only advisory in nature, public pressure would probably be sufficient to insure reliance upon the court's judgment. The science court could, in addition to supplementing the decisionmaking process of the Congress and regulatory agencies, supplement the judicial system by making determinations of scientific fact in cases involving complex technical questions. The science court, by establishing an administrative record which would ensure the Administrator considered all available scientific evidence, might be most useful to the courts that review technically complex environmental cases.

Proponents of the science court point out that by institutionalizing the scientific advisory function by creating a science court, scientific components of a decision would be separated from political and moral components. They contend that agencies such as EPA have built-in biases which can influence judgments of fact. For example, EPA has been entrusted with the duty to protect the environment for society. A science court would be in a position to be politically impartial and would provide a means for separating science from politics.

Writing in the Cornell Law Review, Judge David Bazelon of the U.S. Court of Appeals for the District of Columbia strongly supported the goal of the science court to reduce the extension of authority beyond competence, but pointed out some of its shortcomings. He feared that a lengthy adversary proceeding might exaggerate the importance of factual issues and might tend to diminish the importance of the underlying value choices. Further, he was not entirely clear on whether all disputes could or should be "resolved." Experts usually disagree not so much about objectively verifiable facts, but the inferences that can be drawn from those facts. They disagree because it is impossible to say with certainty which of those inferences are "correct." Finally, Judge Bazelon was concerned that the kind of adjudicatory procedures contemplated by the science court might be very time consuming.

The most fundamental criticism raised by opponents of the science court has been that facts and values cannot be separated in considering science policy issues. The Presidential task force drew a distinction between fact and value and proposed that the science court be concerned solely with questions of scientific fact. This distinction might be possible, opponents claim, if by scientific fact the task force meant what courts refer to as findings of fact--findings of what has already happened, or historical facts. Of the questions posed in scientific controversies, these purely factual issues are the most easily resolved and least emotionally charged. They are the kind of disputes that existing mechanisms (government agencies and advisory groups) are most capable of resolving efficiently and accurately.

The task force, however, defined "scientific fact" to mean, "a result, or more frequently the anticipated result of an experiment or an observation of nature." This definition clearly included predictions, estimates, and other evaluations, based on statistical judgments rather than on actual observations. Opponents claim that the final output of the science court procedure would not simply be a report on "what is," but a predictive judgment even when it is not a value judgment. Scientists' values would almost inevitably influence the assumptions and analytical models on which the panel chose to rely when making findings of scientific fact. Values cannot be avoided in making findings based on estimates, theoretical assumptions, and coarse calculations.

Opponents stated that existing fact-finding mechanisms are adequate even in the more difficult controversies in which complex inferences and predictions must be made on the basis of historical facts, situations in which facts and values are unavoidably mixed. Studies of scientific decision-making have recommended that agencies state openly when predictions and values, as opposed to verifiable evidence, account for their decisions.

In the DDT case, for example, an EPA advisory committee noted the potentially dangerous qualities of that pesticide (persistence, mobility, and liquid solubility) but made no finding that DDT was actually carcinogenic. The hearing officer refused to cancel DDT's registration. The EPA Administrator, however, found sufficient evidence of the danger of DDT and emphasized that it had not been proven safe. The reviewing appellate court--treating the matter as a problem of administrative law, not a problem in chemistry, biology, medicine, or ecology--concluded that the Administrator could rely on general data and laboratory

experiments on animals to find an unacceptable risk. The Administrator, in other words, had made a value judgment that the statute allowed him to make.

Opponents contend that the same pattern--and the same open statement of the basis for a decision--is repeated in numerous decisions on environmental issues.

Critics question the feasibility of separating fact from value as well as the desirability of such a separation if it is possible. For major public policy issues with technical facets, the political and social value questions are invariably more significant than those relating to science and technology. If the science and technology questions are isolated for separate consideration by a science court, they are likely to acquire a greater political impact than they deserve.

Opponents contend that the basis for the science court, a legal process, is an inappropriate mechanism for determining scientific fact. Since the nature of legal and scientific methods differ, the procedure for determining both sorts of facts should also be unique. Scientific facts are determined on the basis of an experiment that tests a particular hypothesis. Legal facts, however, necessitate making judgment about past events that are not a matter of certainty, but rather one of probability. Further, the adversary process relies on cross-examination where the personality and verbal ability of the advocates can influence the decision. The ultimate determination of legal fact has validity because of the perception that the procedures for arriving at those facts were fairly constructed and applied. The validity of scientific facts should be based on standards of scientific research, not on standards for a fair hearing.

Finally, opponents question the feasibility of some procedural aspects of the science court. Where does one find unbiased "judges" who have familiarity with the scientific issues? Is it possible for litigants on both sides of the issue to agree on their respective case managers? Are there just two sides to an issue?

The science court concept has attracted considerable discussion in recent years. At a science court colloquium held in September 1976, a proposed "experiment" to test the efficacy of a science court was endorsed by the Secretary of Commerce, the Science Advisor to the President, and the EPA Administrator. The experiment to be designed by NAS and funded by the National Science Foundation, never went beyond the discussion phase.

Mediation

Another mechanism which can be used to resolve scientific disputes is mediation. Mediation groups for environmental controversies are located in Seattle, Washington, and Minneapolis, Minnesota. In mediation, both sides work to find a common ground and explore solutions with the mediator acting as a catalyst. While the concept for environmental mediation is relatively new, these two groups have had some success. For example, the Seattle group, the University of Washington's Office of Environmental Mediation, mediated a resolution to a 17-year old dispute over construction of a dam on a scenic portion of the Snoqualmie River. The dispute involved farmers, State and Federal officials, land-use planners, citizens groups, and environmentalists. The mediated solution was to build the dam in a different place on the river. Both sides agreed that mediation was the key to settling the dispute.

Mediation as a means for clarifying positions to each adversary and the public has also been proposed as an alternative to the proposed science court. Such mediation would involve each side learning the opposing position. After receiving written explanations from the opposition, each advocate would explain the opposing positions to the mediator until the advocate could do it to the satisfaction of his counterparts. In this way everyone is assured of knowing the issues. The next step would be to write a paper explaining original positions and differences, changes in positions, and remaining differences or final consensus. The paper would be a contribution to nonscientists as well as scientists, especially to policymakers, because it would be the only source in which proponents of different views spoke to the same questions, in the same language, and with complete awareness of alternative arguments. Where the science court would reach a conclusion, mediation would lay out the alternatives.

Advisory panels

Another potential mechanism is to develop a number of commissions on such long-term controversial issues as environment, energy, food additives, and medical technology. Such commissions might organize debates among informed people who have conflicting views. The purpose of such debates would be to seek clarification rather than consensus and especially to explore possible alternative policies and their anticipated consequences.

The commissions could create panels of expert advisors to interpret and clarify differences in technical opinions for congressional committees and to assist them at hearings. Their contribution to the public hearing would be part of the public record. This would satisfy the need for a "translation service" to clarify for the public the diversity of opinion that exists today among informed people concerning controversial technologies.

An article in a chemical magazine "Chemical Times and Trends" supported the concept of an advisory board to help reduce the spiraling cost of regulation. The article suggested that each regulatory agency should have access to and use of an outside panel of scientific experts to assure that its actions were based on the best possible scientific understanding. It was felt that such a panel would assure that any data used would be subject to rigorous peer review and would go far to eliminate poor quality, spurious or biased data, or interpretations.

CHAPTER 5

THE FEDERAL JUDICIARY SYSTEM IS ADEQUATE FOR REVIEWING ENVIRONMENTAL DECISIONS

The Federal judicial system generally appears adequate to consider the complex technical issues brought about by environmental legislation. Environmental matters are not sufficient in number nor sufficiently distinctive to merit separate treatment within the judicial system, such as through an environmental court. Environmental cases can be as different from each other as they are from cases in other areas. They often involve broad administrative law and constitutional law questions that could better be handled by the existing appellate court.

This chapter traces the changing nature of the courts' role, examines the question of a separate environmental court, and considers other alternatives available within the existing court system. These alternatives are considered as mechanisms for improving the way the judicial branch reviews environmental cases, not as a means for reducing litigation. As air and water pollution litigation constitute the majority of EPA cases, we have focused on the Federal judiciary's role in air and water pollution control.

THE ROLE OF THE COURTS

Air and water pollution litigation is not a new phenomenon in the Federal courts. Before the start of the 20th century, Federal courts were already hearing cases involving air and/or water pollution. For example, in 1883, the Supreme Court held that a railroad engine house and repair shop had to do whatever necessary, even if it meant moving to another location, to prevent chimney smoke and cinders from entering a neighboring church.

While the Federal courts have played an important role in air and water pollution control for some time, the nature of that role has changed significantly. Early court involvement in pollution cases resulted from complaints by individuals against polluters who they claimed were creating nuisances. The courts' role in these early cases was to make technical decisions and set policy. Now, statutes have vested in administrative agencies the job of controlling pollution, which involves much of the technical fact finding and policy formation previously done by the courts. The courts' primary role has, therefore, changed to reviewing agency actions to control pollution. This role change

seems to reflect pollution's change from a private issue involving individual controversies to an issue of interest to the public at large.

Early role

Until recently, most court involvement in the areas of air and water pollution resulted from complaints by individuals based on such common law theories as nuisance, trespass, negligence, and riparian rights. The basic theory was that certain private rights of the injured party were being violated by the alleged polluter. The pollution, in other words, was causing a nuisance or a trespass; or was violating riparian rights; or was negligently caused, resulting in legal injury to the complaining party. Courts were also more likely to make technical determinations, such as whether certain substances were having claimed effects. In one case (DeBlois v. Bowers 1930), the court determined, in effect, that fumes emitted into the air from the defendant's galvanizing plant had not caused physical illness and had not injured the plaintiff's buildings or its trees and plants.

The court in the same case also made a policy decision. While agreeing that there was some pollution, the court determined that it was "justifiable if unavoidable." In reaching this decision, the court "balanced the equities":

"* * * in view of the infrequent occasions on which the plaintiffs suffer from the nuisance, and on account of the great and disproportionate injury to the defendants and to the community which would be caused by an injunction preventing the operation of the steel works, no injunction ought to be granted. The inconvenience and temporary discomfort of the plaintiffs during the few occasions each year when the fumes are oppressive are greatly overbalanced by the benefits which the community receives from the presence of the plant."

Many other early cases also involved policy determinations made by balancing competing interests. More often than not, it seems, the interests of maintaining the industry outweighed the interest of enjoining the pollution.

In these early cases, pollution and its potential effects were not viewed as the problem. The problem was that certain action, which constituted what we now think of as

pollution, resulted in legal injury to certain individuals. In other words, the problem was viewed retrospectively, not prospectively, and individually, not collectively. It was not treated as a matter requiring preventive action by society.

Present role

Today there is a major effort to control air and water pollution; leading that effort are regulatory agencies such as EPA. Pollution is no longer viewed as the problem of an injured individual or individuals but as a societal problem that should be curbed before further damage results. Through statutes and regulations, industry and others are advised how to conduct themselves and what the penalties will be if they fail to comply. The role of the Federal courts has evolved into one that, to a large extent, consists of reviewing and interpreting agency action and generally acting as overseer of the implementation of pollution control laws.

The role of the courts in air and water pollution control is significant. As a 1973 report of the Ford Foundation points out:

"The rôle of the courts is critically important. While courts do not have complete power of resolution, they have a unique capacity to review without prejudice, test the facts, air the opposing arguments, and clarify opposing interests. Precisely because there are no sure measures of the rival values--for instance, of killing mosquitos with DDT and sparing the rest of the living environment, or between licensing off-shore oil drilling and safeguarding life in the sea; precisely because no one can say certainly which alternative is to be preferred in any given circumstance or prove with numbers that one course or the other costs more, there are often no guidelines for expert decisions that commend themselves to all reasonable men. The courts, therefore, are needed to do what they do best: to examine whether the authorities have sufficiently carried out their responsibility to weigh countervailing values in accordance with law and, if not, to order them to try again."

Today the major role of the Federal judiciary in pollution control is to assure that the intent of such laws as the Clean Air Act, as amended, and the Federal Water

Pollution Control Act, as amended, are carried out; a major part of that assurance involves reviewing actions of such agencies as EPA. Although Federal district courts (the Federal trial level) sometimes make technical findings of fact and policy decisions, most Federal court involvement in pollution control does not require such findings and decisions. Rather than weighing competing interests, the courts are now more apt to restrict themselves to judging compliance with law and determining whether others have properly considered competing interests. For example, in Bethlehem Steel v. Train 1976, the U.S. Court of Appeals for the Third Circuit held that EPA could not extend the compliance date for industrial dischargers to achieve the best practicable technology. Conceding that the decision might be a hardship on the company, the court said that the Congress intended the compliance date to be rigid. It did not matter to the court that the company's failure to complete the installation of equipment for achieving the best practicable technology was not its own fault. The court thus strictly interpreted the law and did not weigh competing interests involved in the case.

Federal court involvement in air and water pollution cases today often consists of reviewing agency action. The scope of review is limited to determining whether the action was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" (or, in some cases, whether the agency decision is "unsupported by substantial evidence"). To make this determination, a court must consider whether the action was based on a consideration of the relevant factors and whether there was a clear error of judgment. The standard of review is a narrow one--the court should not substitute its judgment for that of the agency. Policy is thus set by the agency, not by the court.

Furthermore, the Supreme Court's recent Vermont Yankee Nuclear Power Corp. v. National Resources Defense Council 1978 decision severely restricts a court's power to second guess an agency's procedural roles. The opinion emphasized that the formulation of procedures was to be left within the discretion of the agencies to which Congress had confided the responsibility for substantive judgments. Reviewing courts are generally not free to impose additional procedural rights if the agencies have not in the exercise of their discretion chosen to grant such procedures.

Harold Leventhal, Circuit Judge for the U.S. Court of Appeals for the District of Columbia Circuit, views the relationship between the court and the agency as:

"* * * a partnership in the public interest between the reviewing court and the agency being reviewed, both of which must be considered parts of the administrative process as a whole, with review combining effective supervision, judicial restraint and administrative flexibility."

Where the agency is not properly fulfilling its responsibilities for environmental decisionmaking, whether doing too little or too much, the court plays its vital role as overseer.

Federal courts have become forums for citizens to vent their complaints about air and water pollution. Both the Clean Air Act, and the Water Pollution Control Act authorize citizens to commence civil actions against anyone violating a pollution control standard or against the Administrator of EPA for failing to carry out the duties of that position.

IS AN ENVIRONMENTAL COURT NEEDED?

Should the way the Federal judiciary carries out its role be modified because of the special nature of environmental problems? Should a separate environmental court be established? These questions have been debated more and more as the environmental legislation has resulted in a significant increase in environmental cases moving through the court system.

Section 9 of the Federal Water Pollution Control Act Amendments of 1972 directed the President, acting through the Attorney General, to study and report on the feasibility of establishing a separate court, or court system, for jurisdiction over environmental matters. The Congress required the report because it was concerned that the increase in litigation on environmental matters, the detailed specialized legislation which had been enacted on this subject, the high degree of sophisticated technology involved in pollution control, and the judiciary's increasing involvement in reviewing beneficial and adverse effects of ongoing programs might justify a new environmental court.

The October 11, 1973, report concluded that the time was not then appropriate for establishing an environmental court, saw no present or foreseeable future need for such a court, and strongly recommended against it.

The major arguments supporting creation of an environmental court are as follows:

1. Judges lack sufficient expertise to make determinations of technical fact.
2. An environmental court would help the courts handle the ever-increasing caseload.
3. The decisions of an environmental court would tend to be more uniform.
4. Presence of an environmental court would increase efficiency in disposing of environmental controversies.

The major arguments against creating an environmental court are as follows.

1. An environmental court would tend to take a narrow view of cases, concentrating on environmental aspects.
2. The physical location of an environmental court would be inaccessible for most, since there would probably be only one court for the entire country.
3. Criminal aspects of a case would have to be separate from the civil part of the case unless district court facilities were duplicated.
4. It would be very difficult to define the court's jurisdiction and to identify environmental cases.
5. Courts now handle complex environmental cases adequately.
6. The environmental litigation caseload is not large in relation to the courts' workload.
7. A separate court would preclude the inconsistencies in decisions between jurisdictions which reviewing courts find useful.
8. The existing system can work quickly when necessary.

Arguments supporting establishment
of an environmental court

1. Lack of expertise. The leading argument for establishing an environmental court is that judges lack sufficient expertise to understand technical facts in many environmental cases. Proponents suggest that the court system should develop expertise in dealing with environmental controversies.

In cases involving review of administrative action, where the court is not supposed to substitute its judgment for that of the agency--i.e., not supposed to make findings of fact--the court sometimes oversteps its bounds. And, even when the court remains within its bounds, judges are liable to have difficulty with complex technical cases. Judge Bazelon, referring to judicial review of administration action, remarked that:

"* * * decisions involving scientific or technical expertise present peculiar challenges for reviewing courts. The problem is not so much that judges will impose their own views on the merits. The question is whether they will even know what's going on. In one complicated case, I was moved to write, 'I recognize that I do not know enough about dynamometer extrapolations, deterioration factor adjustments and the like to decide whether or not the government's approach to these matters was statistically valid.' * * * Where the evidence is scientific or mathematical, most judges are in over their heads, whether they know it or not."

Thus, proponents contend that while a court should limit its review of EPA's action to a determination of whether, in a specific instance, the Administrator's decision was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," it must still be able to understand technical facts in reaching its decision. For example, in one case (CPC International, Inc. v. Train 1975), the court had to deal with and understand many technical facts in holding that the record failed to support:

"* * * the Administrator's conclusion that technology necessary to achieve incremental removal of 30 pounds of BOD 5 (5-day biochemical oxygen demand) and 40 pounds of TSS (total suspended solids) per MSBu (thousand standard bushels is available for use in new [corn wet milling] plants."

2. Heavy caseload. The next argument raised in support of an environmental court is that it would help the courts to handle the ever-increasing caseload.

Proponents contend that environmental litigation has two characteristics that tend to aggravate the current and future workload problems. First, because it is complex and raises novel issues, environmental litigation tends to take much more time per case than many other kinds of cases. Secondly, environmental litigation is a relatively new area and much growth can be expected. Creation of a specialized environmental court, according to its proponents, would help alleviate the workload problem.

3. Uniform decisions. Another argument in support of establishing an environmental court is that it would promote uniformity or consistency of decisions. Uniformity of law would allow for predictability of decisions and enable individuals and industry to plan their actions more effectively. To achieve uniformity, the environmental court would need exclusive trial and appellate jurisdiction, with last resort appeals going to the Supreme Court. In this way, the diversity of different districts and circuits could be avoided. A step in this direction is the Clean Air Act provision which requires that cases of national interest be reviewed directly by the District of Columbia Circuit, U.S. Court of Appeals.

An example of confusion that has resulted from lack of uniformity is the standard for reviewing an administrative decision not to prepare an environmental impact statement required under the National Environmental Policy Act because a project will not have a significant environmental effect. The U.S. Court of Appeals for the Second Circuit has limited its review to determining whether the agency's decision is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." In contrast, the fifth circuit has held that the agency's decision not to file an environmental impact statement should be judged under a rule of reasonableness, rather than by the standard of arbitrariness or capriciousness.

4. Efficient disposition of cases. The last reason supporting an environmental court is that it might be more efficient in resolving environmental controversies. Reserve Mining Co. v. EPA 1975, which lasted more than 4 years, is an extreme example of prolonged litigation of an environmental case. Other examples are: Sierra Club v. Morton 1970, which required 3 years in Federal courts; Scenic Hudson Preservation Conference v. Federal Power Commission 1971

which required more than 7 years to adjudicate; and Wilderness Society v. Morton 1973, involving the Alaska pipeline issue, which lasted about 3 years before the Congress intervened by authorizing the pipeline.

Proponents contend that judicial delay in environmental litigation results from two sources: the general slowdown from an excessive workload and the technical nature and volume of the subject matter. They argue that environmental litigation is more time consuming than other types of litigation, especially for judges who do not have the needed expertise. They believe that special environmental courts would help reduce delay from each of these two causes. Cases could be heard sooner because of a relatively small workload, and they could be disposed of more expeditiously because of a developed expertise in the subject matter. Further, by lessening the workload of the regular Federal courts, the environmental court could contribute to more expeditious disposition of the other cases.

Arguments opposing establishment of an environmental court

1. Narrow perspective. Opponents of an environmental court suggest that such a court would tend to focus on environmental aspects of a case and fail to consider other factors properly. A generalist court, they argue, is more detached and has a better perspective to consider environmental questions in context and reach well-balanced decisions. Judge Leventhal argues that review to ensure balance, coupled with restraint on the part of the reviewer, requires a generalist who can penetrate the scientific explanation underlying a decision just enough to test its soundness. A specialist whose attention was directed exclusively to environmental issues would tend to intrude his own judgment on the issues, thereby coopting the discretion of the agency.

Judge Leventhal further criticized the establishment of an environmental court as being vulnerable to pressure from special interest groups. He stated that the selection of judges, for instance, would become a political event threatened by the possibility that one or the other group would consistently dominate the choice. This fear is borne out by the fate of the Commerce Court, which was established as a special forum to review decisions by the Interstate Commerce Commission and was abolished 3 years after its creation at least in part because the Congress feared that it was being captured by the railroads at the expense of the public interest.

2. Inaccessibility. Opponents contend that an environmental court would not be as accessible as the district courts. Due to practical considerations, such as the low volume of environmental suits, an environmental court would in all likelihood be a centralized court. Therefore, it would not be readily available to citizens throughout the country. The court would be hampered in its ability to act quickly because it would be unfamiliar with the local setting of most activities involved in lawsuits. It would require extensive, time consuming and costly travel by parties and witnesses. Either a local specialized bar or extensive travel by counsel would result.

3. Criminal/civil dichotomy. Many environmental cases involve criminal as well as civil questions. To maintain criminal jurisdiction in environmental cases, the court would have to hear such matters locally, as required by article III, section 2, clause 3 of the Constitution. This would result in significant duplication of existing Federal court facilities. Establishing an environmental court without criminal jurisdiction would have the undesirable effect of dividing the enforcement of statutes, such as the Federal Water Pollution Control Act and the Clean Air Act, which provide for both criminal and civil enforcement.

4. Jurisdictional problems. Another argument is the difficulty of defining the court's jurisdiction and identifying environmental cases. Since many controversies can have environmental overtones, jurisdictional problems would be enormous if an environmental court system were established. The environmental court would be resolving significant nonenvironmental issues, which could lead to the establishment of two lines of precedent between the environmental courts and the Federal courts.

5. Courts handle environmental cases adequately. Opponents of an environmental court rebut the lack of expertise argument by pointing out that the Federal courts are accustomed to dealing with complex issues and evaluating the testimony of experts in fields with which the judges are not familiar. Furthermore, the broad range of issues involved in environmental litigation defies the acquisition of expertise in environmental matters.

Opponents might point to a case such as Ethyl Corporation v. EPA 1976 in support of their position that the present system is adequate. In Ethyl, the court reviewing the Agency action held that EPA's determination that lead emissions presented a significant risk of harm to the health of urban populations, particularly to the health of city children, was not arbitrary, capricious, an abuse of

discretion, or otherwise not in accordance with law. The court, in reaching its decision, recognized that it should look at EPA's determination not as the chemist, biologist, or statistician that judges are not qualified to be, but as a reviewing court exercising its narrowly defined duty of holding agencies to certain minimal standards of rationality.

The courts have been able to handle complex technical questions in the past by using several different devices. The President's October 1973 report points out the following devices for use where expertise beyond that of the judge is needed: (1) rely on the parties and their experts to explain things, (2) require parties to submit detailed findings of fact, (3) require parties to submit briefs on troublesome points, (4) appoint special masters or advisory juries to conduct a separate proceeding on one or more issues. Rule 53 of the Federal Rules of Civil Procedure specifically provides for the appointment of masters in complicated cases. It should be noted that the master is not an expert and his or her work is not limited to findings of fact. The purpose of appointing the master is to free the judge's time to pursue other cases.

Many Government agencies and private interest groups have expressed satisfaction with the Federal court system and the way it has handled environmental matters. They believe that the courts have demonstrated the ability to resolve environmental cases adequately and that environmental law cases pose no more difficulty to the judiciary than many other types of cases, such as complex patent infringement, copyright, or antitrust cases, or personal injury cases involving disputed medical evidence. Some further believe that unlike areas such as tax and patent law, environmental law involves many situations and broad questions in different areas of law. Thus, it is argued, environmental law may never develop into the distinct specialty that tax and patent law have become.

6. Environmental litigation caseload is not large. Opponents counter the workload argument by pointing out that environmental litigation does not comprise a significant percent of the total cases filed; EPA cases are not a significant part of the court of appeals workload; and the number of EPA cases filed during a 4 year period declined from 290 in 1975 to 154 in 1978. (See p. 10.)

7. Inconsistent decisions are sometimes useful. Opponents view the inconsistencies resulting from the Federal court system as an advantage. The President's 1973 report recognizes that uniformity of law and predictability

of results of litigation would probably be promoted by the establishment of a single court system to hear environmental cases. It concluded, however, that one of the advantages of the Federal system over a single court system is that frequently before the Supreme Court speaks there has been diversity among the district courts and courts of appeals on the matter. Thus, the Supreme Court has the advantage of seeing various approaches by lower courts to the same issue. Considering the significant legal issues which remain to be answered concerning environmental matters, it is not certain that it would be an advantage for these issues to be resolved by a single environmental court.

8. System can work quickly. Opponents argue that the Federal judicial system is set up to act quickly in appropriate situations. Under Rule 65 of the Federal Rules of Civil Procedure, the court has the power to issue temporary restraining orders and preliminary injunctions as quick, temporary forms of relief until the court has an opportunity to hear the matter in depth.

An example that demonstrated the speed with which the courts can act was the suit filed by environmental groups to block an underground nuclear test by the Atomic Energy Commission on the Island of Amchitka, off the coast of Alaska. Only 2 months elapsed between the time the district court issued a summary judgment and the court of appeals reached a final decision to allow the test. During that time, complete trial and appellate proceedings took place. On the morning of the day of the blast, the court of appeals heard arguments and issued an order refusing to enjoin the test. The detonation occurred as scheduled.

However, Judge Leventhal has pointed out that expeditious treatment of a case may result in failure to properly analyze and reason the case. He said that the savings promised by time constraints may well turn out to be illusory. A large number of environmental cases in the District of Columbia Circuit in recent years have been given a right-of-way over other matters in actual practice, with expedition in decision, only to result in remands which of necessity extend the time for ultimate decisionmaking. This occurred in International Harvester Co. v. Ruckelshaus 1973.

International Harvester involved review of an EPA decision refusing to suspend for a year the 1975 emission standards for light duty vehicles under the Clean Air Act. The court of appeals, in an opinion by Judge Leventhal, remanded the case for further proceedings regarding EPA's determination that the necessary technology was available

to meet the standards in question. Judge Leventhal attributed the need for remand to the expeditious decision of the district court.

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In November and December 1978, we discussed the question of whether an environmental court was necessary with three judges of the District of Columbia Circuit Court: Chief Judge J. Skelly Wright and Judges Leventhal and Bazelon. The three judges were opposed to an environmental court. Chief Judge Wright said an environmental court is not necessary because he considers the major problems to be with the Agency's rulemaking process. He commented that EPA's formalizing the record was not completely adequate and the courts had difficulty following EPA's decisionmaking process. He believes that the courts should concentrate on making sure that the agencies carry out their responsibilities, and that if any changes were to be made, the agencies should receive the attention.

Judge Leventhal said that an environmental court would provide more technical background to review environmental cases. But he asserted that it is important for judges to be generalists--to have an understanding of legislative purpose, to review issues for fairness, and to decide questions of administrative procedure. He said that underlying the legal issues in each case there must be some awareness of the scientific method involved. Judges can obtain an adequate sense of the approach of the scientific method without a technical understanding. He stated that although the workload in the District of Columbia Circuit is intensive, it was not an impossible burden, and an environmental court would not alleviate the workload.

Judge Bazelon commented that he was opposed to an environmental court because he believes that the court's role should be limited to making sure an agency has performed as required by its process.

ALTERNATIVES TO AN ENVIRONMENTAL COURT

Specialized Federal appellate court

In July 1978 the Justice Department suggested the possibility of a specialized Federal appellate court to improve the Federal appellate system. The proposed court would replace the Court of Claims and the Court of Customs and Patent Appeals and, in addition to assuming the jurisdiction of those two existing courts, would have exclusive jurisdiction of all appeals from the U.S. district courts

and Tax Court in patent, civil, tax, and environmental cases. Review would be in the Supreme Court by writ of certiorari (petition for review). As the Justice Department points out in its proposal, this proposal does not conflict with the conclusion of the President's report, "because it only addresses the issue of centralized appellate review."

Federal environmental trial cases would still be tried in U.S. district courts. Furthermore, the jurisdiction of the proposed court would be much broader than that of the previously proposed environmental court.

The Justice Department proposal asserts that the proposed specialized appellate court would

"introduce more stability, predictability, and uniformity into the system and at the same time aid the workload problems of both the Supreme Court and the regional courts of appeals."

According to the proposal, the new court would eliminate some evils--lack of uniformity and "forum shopping"--caused by fragmented review in tax, patent, and environmental litigation and would make business planning easier by introducing more stable law in these areas. It is also pointed out that the new court would not be unduly specialized and would provide a flexible forum to meet changing conditions. The new court would not, however, help Federal district courts in trying complex environmental cases and other complex technological cases.

Reaction to the proposal has been generally negative: the Council on Environmental Quality stated that the proposal was unacceptable. The Council challenged the premise that environmental issues are too complex to be resolved by existing appellate review processes, and expressed concern over committing environmental law questions to a court primarily devoted to tax and patent law questions.

The three judges of the District of Columbia Circuit court voiced strong negative reactions to the proposal.

The Justice Department has submitted a proposal to the Congress for a court to deal with patent, civil, and tax cases; the Department is still considering whether environmental cases should be included in the proposed court.

Expanded use of certain existing mechanisms

In a 1974 article, Judge Leventhal stated his belief that appellate courts will have to develop greater flexibility in handling environmental cases. They deal with their technical inadequacies only by asking for supplemental memoranda and argument and by remanding to the agency for additional findings. Judge Leventhal suggested, as an alternative to an environmental court, that the appellate courts become more flexible by becoming freer in calling on counsel for supplemental help and by issuing proposed opinions. A proposed opinion would be commented on by experts to determine whether the court's view reflected misapprehension of a technically complex record.

Judge Leventhal informed us that in a recent case (Alabama Power Company, et al v. EPA, et al 1979) the courts came closer than they ever have to issuing a proposed opinion. Because of the complex and subtle nature of the case, the large number of questions raised, and the preclusion of full court consideration, the court issued an opinion, invited petitions for reconsideration, and later will issue final, detailed opinions.

Judge Leventhal also suggested that while trial courts should use court-appointed experts (neutral expert witnesses) and experts in the role of masters, appellate courts need a hybrid between a master and a scientific law clerk--a scientific expert who might be available, at the call of the appellate court, not to give evidence or resolve factual or technical issues, but to advise a court so that it could better understand the record. Judge Leventhal told us that the Hruska Commission on Revision of the Federal Court Appellate System in April 1975 recommended in its draft report that judges have scientific advisors; but he indicated that the recommendation was deleted from the final report because the American Bar Association opposed it. The Association was concerned that the advisors might unduly influence the judges' decisions.

CHAPTER 6

CONCLUSIONS, RECOMMENDATIONS, AND AGENCY COMMENTS

CONCLUSIONS

EPA's statutes proclaim national goals of rapid improvement and protection of the environment and the public against health hazards. Trying to meet these demands places EPA between two groups with divergent views and competing interests.

Environmental groups urge EPA to promulgate and enforce strict controls, while industry stresses the economic consequences and technological difficulties in implementing the controls. One byproduct of this confrontation is litigation against EPA as a result of its decisions.

The volume of environmental litigation experienced since the early 1970s has raised questions about what can be done to prevent or at least lessen the number of court suits. Is EPA's decisionmaking process in need of a major overhaul so fewer suits are brought to the courts? Do the courts need help in dealing with the scientific and technical issues contained in the suits which the courts must hear? Would a separate environmental court be a feasible solution? If not, what alternatives are available to EPA and the Congress?

Since the early 1970s, environmental legislation has grown markedly and suits against EPA are commonplace. From an overall standpoint, however, such suits do not represent a substantial portion of the courts' workload. In fact, the number of cases involving EPA has declined since 1975. Most suits are not decided on substantive issues which involve scientific and technical information, but rather are decided on procedural or statutory interpretation issues.

Reducing the number of court suits is very difficult because the many serious constraints EPA must deal with in making decisions generate litigation. Regulations and standards deal with scientific and technical issues at the frontiers of science where supporting data and research is not yet available or conclusive. The statutes are sometimes subject to broad interpretation or are restrictive, limiting EPA's alternatives.

In 1977 the National Academy of Sciences completed a comprehensive study of EPA's decisionmaking process,

particularly the process of acquiring and using scientific and technical information. NAS gave EPA's process high marks and found no major flaws. In fact, the President's March 1978 Executive order on improving Government regulations was based principally on EPA's process.

Although the process is generally sound, some improvements are needed. The process has operated informally since 1974 and official Agency procedures should be finalized and published.

We also see the Science Advisory Board as a useful addition to EPA's decisionmaking process. Composed of eminent scientists, the Board acts at the direction of the EPA Administrator and gives independent advice to him. In its consideration of the document EPA developed for setting an air quality standard for lead, the Board was successful in having EPA make extensive revisions to the document before EPA used the document to set the lead standard. Although it has not had extensive experience as yet, the Board has the potential for resolving disputes over the scientific and technical data EPA uses to set standards or make regulations.

EPA needs to recognize the Science Advisory Board more formally as a valuable input to its decisionmaking process and to require the Board's involvement in all major EPA actions that deal with scientific and technical information.

A concept which has been debated in recent years is the so-called science court. The court would not be a judicial court but a mechanism intended to ventilate scientific disputes during the decisionmaking process. Adversaries would direct their arguments at each other before a panel of experienced scientists who would decide the scientific facts to be considered in a decision. An administrative law judge would preside over the hearing.

Proponents claim a major advantage of a science court would be to make the decisionmaking process less subject to question because there would be little doubt over what scientific and technical information the agency should have used and, more importantly, what inferences it should have made from that information. An advantage would also accrue to the courts reviewing a case in which the science court was involved because the record would be clear on what scientific and technical data the agency used and how it was used in making the decision.

Opponents claim a major disadvantage of the science court is that scientific and technical facts cannot be separated from value judgments; and further, they should

not be separated in the consideration of major public policy issues with technical facets. Procedural problems about the operation of the science court still remain as do questions of whether a legal model is the proper forum for deciding issues of science and technology. Finally, the process is particularly time consuming.

The science court does offer an alternative method of dealing with the problem of resolving major disputes over scientific and technical information. Given the low number of major cases which involve scientific and technical information and the existence of the Science Advisory Board to review such information, the creation of a permanent science court to assist the EPA Administrator at this time does not appear to be justified. However, because of the lack of information and experience on the institutional arrangements for resolving environmental disputes, the science court concept should be developed and tested.

The science court concept may have applicability in other areas of national interest as well, where scientific and technical information is a major issue in the decision-making process--such as occupational safety and health, food and drug, and national health programs.

However, further development and testing of the science court concept is necessary before a judgment can be made concerning the feasibility of using this technique in the official rulemaking process of a regulatory agency.

It would be a useful addition to the existing body of knowledge on the science court, if a practical test with the science court could be conducted. The test could be operated by a regulatory agency concurrently with the existing decisionmaking process. However, it would be more appropriate to have a science court test sponsored and operated by an independent organization completely divorced from the regulatory process.

In this regard, a science court test could be operated by a public institution such as the National Academy of Sciences, the Administrative Conference of the United States, or the academic community. In the past, the National Science Foundation has received several unsolicited proposals from various public institutions to conduct a science court with its sponsorship. One such proposal was submitted by the Administrative Conference. The National Science Foundation did not fund the proposals because they were not designed to give statistically significant results.

We believe that these public institutions that have previously expressed an interest in further developing and testing of the science court concept should continue to refine the study design and research objectives of such a test. The National Science Foundation is interested in the science court as an innovative mechanism for resolving scientific and technical disputes. National Science Foundation officials stated that they would continue to consider proposals for sponsoring a science court.

It should be recognized that both the Science Advisory Board and science court techniques would provide only one input--a scientific and technical input--into the final decision. Decisionmakers must also consider other equally important issues such as economic impacts, technological feasibility, and political considerations.

The judiciary is increasingly being asked to grapple with scientific and technological issues of great complexity. The appeals court caseload involves cases relating to matters on the frontiers of technology. However, these courts generally do not resolve factual disputes or make value judgments and policy choices. Where administrative decisions on scientific issues are concerned, the courts should not be expected to evaluate the agency's scientific and technical determinations. Furthermore, courts should not substitute their own value preferences for those of the agency to which the Congress has delegated the decisionmaking power and responsibility.

Courts scrutinize and monitor the decisionmaking process to make sure it is thorough, complete, and rational; to assure that all relevant information has been considered; and insofar as possible, to assure that those who will be affected by a decision have had an opportunity to participate in it.

Considering that the Federal courts' primary role is to evaluate whether the agency followed a reasonable decision-making process, and not to resolve the technical disputes, it becomes more evident that a major argument for establishing a separate judicial environmental court--that judges lack sufficient expertise to make determinations of technical fact--has little merit. Further, the courts' workload of environmental cases, although increasing over the last 10 years, does not justify a separate court. In summary, we consider that a separate judicial environmental court is not warranted.

RECOMMENDATIONS

We recommend that the EPA Administrator:

- Finalize and issue the Agency's operating procedures on the regulatory decisionmaking process to be followed in setting standards and issuing regulations.
- Require that the Science Advisory Board become an integral part of EPA's decisionmaking process for all major EPA actions that involve scientific and technical information and request from the Congress the additional resources that will be needed to support the increased use of the Board.

We recommend that the National Science Foundation Director:

- Issue a program announcement soliciting proposals to develop and test further the science court concept.

AGENCY COMMENTS

To expedite issuance of the report, we did not obtain formal, written agency comments; however, we discussed the report with EPA and National Science Foundation officials, and other Government officials, organizations, and individuals having an interest in the issues. Their comments are included where appropriate.

EPA agreed with the recommendation on formalizing its decisionmaking regulations. EPA expects to complete a draft version of the regulation development handbook by the end of August.

EPA generally agreed with the recommendation on requiring the Science Advisory Board's input on major EPA actions. Agency officials supported the need to expand the Board's role in reviewing scientific and technical data before issuing regulations or standards. They pointed out that the Board has already increased its role in these activities, particularly through the Clean Air Scientific Advisory Committee.

National Science Foundation officials told us that they endorse the further development and testing of the science court concept, especially since administrative decisions are often based on inconclusive scientific information. They said that the idea of a science court is promising but how effective it might be would not be

known until it is tried. They added that more than one test may be needed before it can be determined whether it works and how it works best.

The National Science Foundation disagreed with the recommendation to issue a program announcement, but would still be willing to consider unsolicited proposals for the further development and testing of the science court concept. Because the Foundation made known its interest in receiving similar proposals about 2 years ago and found none that warranted funding, the Foundation does not want to issue a program announcement. It believes such action would imply that the Foundation was convinced that supportable proposals would be forthcoming. Also, the Foundation does not believe it should direct its resources to improve the administrative procedures of a particular agency. The Foundation believes the report indicates that the test should be designed for use at EPA.

We believe the science court concept has merit and hope that this report will stimulate activity toward a science court test. We believe the National Science Foundation should reconsider its position and solicit proposals from the scientific and academic community. A preliminary step would be to formally request the views of the scientific and academic community to determine their interest in developing proposals for the test. Finally, although the report addresses EPA's decisionmaking process, we conclude that the science court concept may have applicability in other areas of national interest. We are not suggesting that the science court test be conducted only for EPA's use.

We received comments both in support of and opposed to testing the science court concept. Offices within EPA had differing views on the merits of a science court test. The Office of General Counsel told us that a science court might be useful in working on narrowly focused regulatory decisions, particularly adjudicatory decisions for licenses, permits, and pesticide cancellations. The Office said, however, that the Science Advisory Board is probably the best approach in promulgating regulations of general applicability.

The Standards and Regulations Evaluation Division and the Science Advisory Board stated that the arguments presented in the report do not warrant testing the science court concept. They said the Board already performs some of the important responsibilities envisioned for the science court.

Judge Bazelon supported testing the science court concept. He said that he is interested in finding a mechanism that will make the decisionmaking process more open, identify the reasons for one decision over another, and provide for the greatest amount of participation and input. However, he had some concerns about how the court would operate. He questioned whether it is possible to find experts who are independent and objective about the issues before them, and how a science court could be restricted to only factual issues. He said the science court would have to deal with issues of facts and the inferences to be drawn from those facts. He suggested that a separate panel should address the value considerations of a standard or regulation.

Judge Leventhal told us there is no harm in testing the science court concept on one issue although he is very skeptical about the court working. He said that there is the difficulty in taking policy issues out of science issues: where scientific facts are known, making a decision is not a problem, but where scientific facts are unknown, the decision becomes one of policy. He supported using panels and committees, provided the members represent all views, because scientists are used to this peer review procedure.

Judge Wright opposed the science court concept as he does any process that would take away what the Congress gave to the agency official--the authority and responsibility to make judgments about scientific evidence. He expressed similar concern over the difficulty in finding experts who are also objective and independent. He believes the primary focus in improving the decisionmaking process should be on compiling a proper record for review and eliminating contacts outside the formal proceeding.

The Department of Justice did not endorse the science court concept because it believes that its quasi-judicial procedure is cumbersome, time consuming, and procedurally difficult to implement. A science panel like the Science Advisory Board could achieve the same results, said a Department official, but in an atmosphere in which scientists would be more comfortable.

An NAS official was also opposed to the science court concept but for a different reason. He believed that a science court procedure is not needed to make determinations of scientific fact. The disputes in these scientific and technical issues that need to be resolved center around values, but the science court would not address value questions.

The Office of Science and Technology Policy of the Executive Office of the President was not enthusiastic about the science court concept. Its basic objection is that the real questions to be addressed relate to the interpretation of scientific data and not to the findings themselves. The Office also believes the adversary process is an administrative burden and is no improvement over existing procedures--such as the Science Advisory Board and NAS panels. Though an Office official said that he believes there is a need for something better, he said the evidence for not testing a science court outweighs the evidence for testing it.

NATIONAL ACADEMY OF SCIENCES RECOMMENDATIONS ON
DECISIONMAKING IN THE ENVIRONMENTAL PROTECTION AGENCY

1. Analysis in support of decisionmaking

EPA's decisions on standards and regulations should be supported by analyses that explicitly state the objectives of the decisions; identify feasible alternatives; evaluate (quantitatively, to the extent possible) the consequences of each alternative decision; explore potential problems in implementation; and indicate and examine the degree of uncertainty about the effects of EPA actions. The analyses should be available to the public.

2. Barriers to the implementation of EPA regulations

EPA should systematically take account of the difficulties of translating its rules into environmental action at the local level. The assessment of resource constraints and of other qualitative barriers to implementation should be an important concern in the formulation of new EPA regulations.

3. Advice and review from scientists and engineers outside EPA

Scientific and technical data and analyses used in decisionmaking should be reviewed routinely at an early stage to assure that all relevant data is considered and to reduce the possibility of misinterpretation or misuse of scientific results. In this process EPA will be greatly aided by the wide range of scientific and engineering expertise that exists outside EPA. The reviews should be available to the public as a matter of course.

On decisions that set significant precedents or substantially affect public health or welfare or public or private expenditures, the Administrator personally should have access to independent scientific advice and evaluations of the overall technical basis for decisions.

4. Dependence on regulated industries for data and analysis

EPA should develop sufficient scientific and technical expertise within the Agency or through independent institutions and should institute procedures to assure the quality, reliability, relevance, and completeness of data provided by industry for EPA's use.

5. Scientific and technical research in support of decisionmaking

The principal role of EPA's in-house laboratories should be to perform research and supply technical expertise responsive to immediate Agency needs. These laboratories should be assessed for the quality and relevance of their work and their efforts should be redirected when necessary. The exchange of information and views between the research and development activities and the regulatory activities of the Agency should be improved, and the scientific leaders in EPA should be more deeply involved in the regulatory decisionmaking process.

In those technical areas in which in-house capability is neither adequate nor feasible to develop (given the realities of political and bureaucratic constraints), EPA should use research centers outside the Agency. Research that can better be done in other existing governmental laboratories, such as certain studies of health effects, should be carried out in those laboratories and supported by EPA.

EPA should support a strong, stable, long-term program in environmental research in areas central to its regulatory responsibilities.

6. Statutory deadlines on administrative actions

Statutory deadlines should continue to be imposed on EPA's administrative actions. They should reflect a realistic view of the time required to make a reasonable assessment of available information. There should be provisions permitting EPA to extend deadlines under certain conditions and for specified periods.

7. Procedural requirements for decisionmaking

EPA should make greater use of procedural innovations developed within EPA and other Federal agencies that, when combined with steps to increase openness in the Agency and the use of explicit analysis, will reduce the need to rely on formal procedures characteristic of trials and adjudications.

8. Interagency review

For proposed rules, present procedures for interagency review should be retained, except that they should be conducted concurrently with public notice-and-comment procedures rather than preceding them. Interagency review of final regulations should be greatly expedited. Some of the time saved by these changes should be used to extend the period for outside comments on proposed rules and to introduce a short period for submission of replies to the first round of comments.

9. Judicial review

The current structure and standard for judicial review should be maintained with the exception that legislative changes should be made to provide that certain EPA decisions that apply uniformly over the Nation be reviewed only in the U.S. Court of Appeals for the District of Columbia.

10. Public participation

EPA, perhaps through an impartial body, should provide some of the financial support of groups or individuals who can contribute to rulemaking or adjudicatory proceedings by raising new issues or by submitting additional assessments or analyses of relevant issues. To gain an understanding of difficulties of implementation, the Agency should experiment with means for providing such support.

11. Priorities

EPA's priorities should be established more explicitly, openly, and systematically to achieve the greatest expected improvement in environmental quality with available pollution control resources. Ideally, the estimation of expected improvement in environmental quality should be based on quantitative measures of environmental conditions.

12. Organizational feedback

EPA should initiate programs to assure feedback information on the implications of its actions in three areas.

--Environmental indicators. To better assess the ultimate environmental impacts of its actions, EPA should improve its use of monitoring data in decisionmaking and should develop management-oriented environmental indicators that can be used to gauge environmental progress.

--Implementation studies. To improve its understanding of the pragmatic problems of applying regulations to individual dischargers, EPA should initiate a regular program of implementation studies. As part of the program, EPA should reexamine the effectiveness of its formal reporting system and its practices for awarding program grants to State and local governments.

--Retrospective analysis. To improve analyses supporting regulatory decisions, the Agency should initiate a series of retrospective reviews of the adequacy of past analyses.

13. More effective sanctions

EPA should vigorously use its authority to assess civil penalties without going to court. Where such authority has not yet been conferred, statutes should be amended to increase the availability and utility of such sanctions.

EPA should modify its sanctions under grant requirements to provide for the use of less severe penalties than withdrawal of the grant. EPA should also develop alternative sanctions that would create incentives for the States to implement environmental regulations effectively.

14. Alternative strategies

EPA's current regulatory framework should be revised and supplemented to allow the use of management strategies

that may be more cost-effective in achieving environmental objectives and that experiment with greater use of economic incentives, including effluent charges.

15. EPA's role under the National Environmental Policy Act

EPA should devote more resources, including sufficient technical staff support, to its review function. EPA should comment at the earliest possible opportunity on expected adverse impacts caused or condoned by the actions of other agencies, emphasizing impacts likely to involve the exercise of EPA regulatory authority at a later date.

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