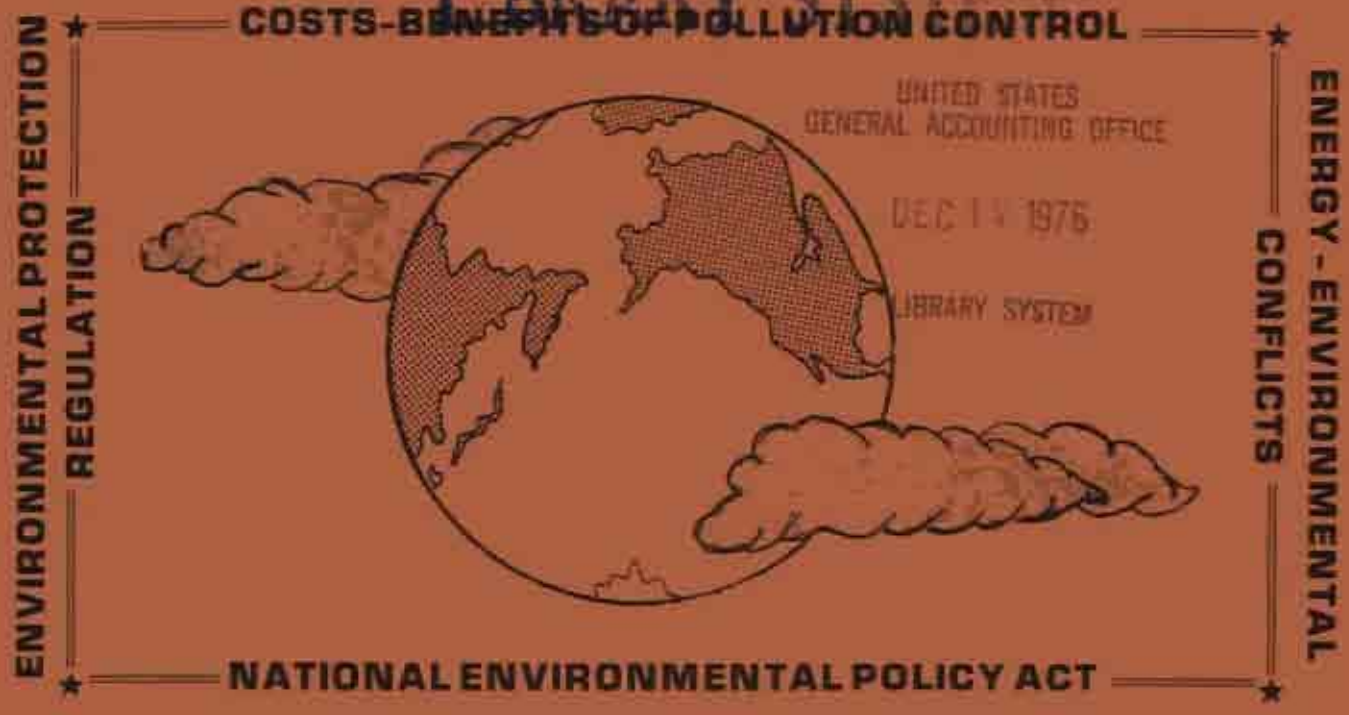
PROCEEDINGS OF GAO SYMPOSIUM ON ENVIRONMENTAL PROTECTION ISSUES



COMMUNITY AND ECONOMIC DEVELOPMENT DIVISION

UNITED STATES GENERAL ACCOUNTING OFFICE

NOVEMBER 1976

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

Dear Mr. Eschwege:

This is our report on our Division's Symposium on Environmental Protection Issues held in Annapolis, Maryland, on May 24, 25, 26, and 27, 1976. Our Division, as part of its responsibility for planning and coordinating GAO's audits of environmental protection programs, held this symposium to provide GAO professional staff with an opportunity to hear the views of top-level officials in both the public and private sectors on environmental protection issues. The symposium addressed the following four issues:

--How much environmental protection--What should be the Federal role?

--Cost/benefit--How much protection at what cost?

--Energy/Environment--What are the conflicts and how should they be resolved?

--National Environmental Policy Act--Should it be amended?

Included in the report are the Comptroller General's opening statement on recent environmental trends and GAO efforts; the keynote address by Russell E. Train, Administrator, Environmental Protection Agency; the guest dinner speaker, Russell W. Peterson, former Chairman, Council on Environmental Quality; presentations made by top-level officials in the public and private sectors; and pertinent questions and answers following the speakers' and panel members' remarks. The report also includes a foreword by the Division's Environmental Coordinator which summarizes the discussions of the issues addressed at the symposium.

We believe that the views expressed by the speakers at the symposium provided valuable insight into the problems, the conflicts, and the interactions associated with implementing environmental protection programs. The proceedings should be of value to GAO professional staff, Government decisionmakers, and corporate officials affected by environmental protection programs. We further believe,

based upon the remarks of the symposium attendees, that similar symposia on other Community and Economic Development Division issue areas would be beneficial.

Sincerely yours,

Wilbur D. Campbell
Associate Director

Henry Eschwege, Director
Community and Economic Development
Division

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FOREWORD

The United States economy each year absorbs billions of tons of natural resources and turns out goods and services which we either consume or reinvest for future production. As the economy is producing these goods and services that contribute to our standard of living, it is simultaneously producing other things--polluted rivers and streams, the smog that characterizes our major cities, congestion, and encroachment on our wilderness areas--all of which detract from our quality of life.

Pollution in its various forms--air, water, noise, solid waste, and hazardous substances--has been an environmental concern in the United States for many years. Federal policy has gradually developed to deal with pollution on a national basis, culminating in comprehensive pieces of legislation enacted by the U.S. Congress during the early 1970s. This legislation substantially enlarged and strengthened the regulatory and subsidy parts of Federal environmental policy and committed the Nation to ambitious goals for a clean environment. If carried out, current laws will require estimated expenditures of up to $500 billion over the next decade by taxpayers, consumers, industrial firms, and municipalities.

Decisionmakers, now however, seem to be unsure as to whether the right balance has been struck between environmental quality objectives and energy, economic and social goals. The energy crisis coupled with a period of inflation and unemployment has led to a general reexamination of our pollution control goals and strategies. Questions are being raised in the public and private sectors such as:

--How much environmental regulation and who should regulate?

--What are the costs and benefits of environmental protection programs?

--Should alternative pollution control strategies be used?

--Has the right balance been struck between environmental objectives and energy self-sufficiency goals?

--Does the National Environmental Policy Act cause undue delays in urgently needed projects?

These are the major issues that were addressed at the symposium and the speakers' and panel members' discussions are summarized below.

HOW MUCH ENVIRONMENTAL PROTECTION-- WHAT SHOULD BE THE FEDERAL ROLE?

This issue was selected for discussion because there had been considerable concern expressed in the public and private sectors about overregulation by the Federal Government.

The speakers addressing this issue generally agreed that it is not a question of regulation or no regulation but a question of how much regulation and who should regulate.

How much regulation?

The consensus of the speakers was that the Federal Government had to take action to protect human health and the environment against degradation. But some speakers expressed the view that it may have gone too far too fast without adequately considering the economic and social consequences of the Federal effort, especially in wanting to eliminate the discharge of pollutants into receiving waters and to prevent any deterioration of air quality.

Industry has accepted the Federal presence and admits that as a result, cleaning up the environment has proceeded faster than in the past and has no desire to turn the clock back, even if it could. But industry also believes that the time has come to ask and get the answers to many questions:

--Has the Federal effortexpanded too swiftly in compliance with political pressures?

--Have proper priorities been fixed for the allocation of national resources?

--Has it failed to recognize the economic problems that industry faces?

--Have objectives been set without the necessary consideration of technological factors--and the feasibility thereof?

--Is there too much overlap between Federal, State and local jurisdictions?

--Are the standards too stringent?

--Has zealousness to clean up the air and the water prevailed over common sense?

--In short, has there been overkill?

Further, industry is concerned because the enlarged Federal participation has brought into being new and growing bureaucracies at the Federal, State and local levels. The corporate paperwork associated with environmental laws and regulations--not to mention the countless hours spent at internal meetings and public hearings--imposes heavy burdens on the highly skilled manpower in private industry capable of dealing with it.

Who should regulate?

The consensus of the speakers was that the primary responsibility should and, in fact, does lie with the Federal Government. The factor which led to increased Federal involvement has been that pollution problems are not confined by local, State, or regional political boundaries.

Pollution control traditionally had been State and local responsibilities. Many States managed significant air and water pollution control programs long before the Federal Government began playing a very active role in the 1970s. Particularly in these States, but to some degree in nearly all States, there has been an understandable reluctance to accept Federal authority, especially when it appeared to be of such a massive nature that it overshadowed the efforts of the States. States believe that the Federal Government should provide national direction to be followed by State and local governments within the framework of national laws. But this should be done without undue Federal control and duplication of effort.

COST/BENEFIT--HOW MUCH PROTECTION AT WHAT COST?

This issue was selected because there is concern in the public and private sectors that the costs of achieving environmental protection standards are not worth it in terms of improved environmental quality.

The consensus of the speakers was that this is a key issue. But, unfortunately, the costs and benefits of achieving environmental protection standards are not well known and cost/benefit analysis has not been used in developing pollution control strategies.

Therefore, decisionmakers established national pollution control strategies based on technology. This strategy is attractive to legislators and regulators because it is easier to administer. However, such a strategy

--is not equitable because some of those who pay (taxpayers, consumers, etc.) for pollution control may not benefit in terms of improved environmental quality in their area of the country,

--may not be the most cost-effective approach to solving pollution problems in specific geographical locations, and

--does not address the total pollution problem such as how to dispose of pollution residue removed by treatment.

Government decisionmakers, therefore, need to consider using alternative strategies--such as cost/benefit and cost-effectiveness analyses--in solving pollution control problems that addresses economic, energy, and social tradeoffs and the total pollution problem.

ENERGY/ENVIRONMENT--WHAT ARE THE CONFLICTS AND HOW SHOULD THEY BE RESOLVED?

This issue was selected for discussion because of the debate over how to strike the right balance between environmental quality objectives and energy self-sufficiency goals.

The panel members provided good insight into the energy/environmental conflicts and generally agreed that we should not completely sacrifice environmental quality to expand domestic energy supply and use.

The conflicts

Energy environmental conflicts raised by the panel members included

--the potential environmental damages associated with developing new domestic energy resources,

--the energy cost of operating pollution control equipment,

--the high cost of reclaiming land after stripmining coal,

--potential environmental damages resulting from developing oil and gas resources in the Outer Continental Shelf and the Gulf of Alaska,

--the high cost of controlling sulfur dioxide emissions from fossil fueled power plants, and

--curtailment of siting new coal-burning power plants in areas that will not deteriorate air quality.

How to resolve the conflicts

The consensus of the panel members was that it will take a long time to resolve the energy/environmental conflicts. How will they be resolved? In the long run, the political process will take care of the conflicts. Meanwhile, Government decisionmakers should

consider both sides in the decisionmaking process, more research and a lot more thought should be given on how these conflicts can best be resolved, and some good public policy analysis should be done which takes into account all the Nation's energy and environmental needs.

NATIONAL ENVIRONMENTAL POLICY ACT--SHOULD IT BE AMENDED?

This issue was selected because there has been concern that environmental considerations required under the act are addressed after the decisions have been made on proposed Federal actions causing undue delays in projects, promoting nuisance litigation, and entailing excessive costs.

The consensus of the speakers was that the National Environmental PolicyAct (NEPA) does not need to be amended by legislation. Most of the problems such as delays associated with the act can be solved by appropriate management commitments to follow the intent of NEPA and to integrate the environmental impact statement process into Federal agencies' decisionmaking process.

Roy J. Kirk
Assistant Director for Planning
and Coordinating Reviews of
Environmental Protection Programs

OPENING STATEMENT--RECENT

ENVIRONMENTAL TRENDS AND GAO EFFORTS

BY

THE HONORABLE ELMER B. STAATS

COMPTROLLER GENERAL OF THE UNITED STATES

I would like to welcome our distinguished guest, participants, and attendees to this environmental protection symposium. As evidenced by the presence of our prominent speaker this evening and the impressive list of participants scheduled for the next 3 days, we hope to share the views of top-level officials from Federal and State Government, from private industry, and from publicly supported environmental organizations on some of today's environmental issues.

The views expressed by the speakers at this symposium should give our professional staff valuable insight into the problems, conflicts, and interactions associated with implementing environmental protection programs. This should help us to be more responsive to the Congress, to the Federal agencies, and to the public in carrying out our responsibilities for evaluating the efficiency, economy, and effectiveness of Federal environmental protection programs.

RECENT TRENDS

I would like to mention briefly some of the more recent trends in the environmental protection movement.

The environmental movement, dramatized by the mass demonstration on the first Earth Day in 1970, is far from dying. The movement is much less visible than it once was, because the tactics have changed from angry confrontation to quiet activity in courts and legislatures. With the change, evidence indicates that the movement's influence has spread and grown. Conservationists are pressing ahead despite setbacks, such as the dampening

effects of the energy crisis and recession and the President's vetos of the strip mining bill and his proposal to the Congress to delay for 5 years auto emission standards and to push back deadlines for cleaning up utility smokestacks. Most big national environmental groups, such as the Sierra Club, report a steady increase in membership and financial support.

The Congress, during the last several years, recognized the need to protect the environment and enacted tough Federal laws, including the National Environmental Policy Act of 1969, the Clean Air Act of 1970, the Noise Control Act of 1972, the Federal Environmental Pesticide Control Act of 1972, the Federal Water Pollution Control Act Amendments of 1972, the Marine Protection, Research and Sanctuaries Act of 1972, and the Safe Drinking Water Act of 1974. These laws have far-reaching consequences that will be felt for years to come. Further, the $18 billion program to assist municipalities to construct waste water treatment facilities has become the largest Federal public works program.

Americans care about the quality of the Nation's air, water, and land, as evidenced by the effect the environmental movement has had in the political arena. In congressional and State elections during 1974, politicians found out that an antienvironmental stand could lose an election. National, State, and local environmental groups were more active in the elections and scored more victories than ever before. Thirteen of 17 candidates supported by League of Conservation voters won their election, including several who were considered long shots. At the State level, Colorado and Alaska candidates running on an environmental ticket won dramatic victories.

Further, public opinion surveys show that Americans are willing to pay the price for a clean environment. Six out of 10 Americans are more concerned with improving the environment than they are with tax reduction or a curb on prices. They understand that without prompt vigorous action, the risks of pollution can only grow and, in the end, cost far more than the programs contemplated today.

Yet we cannot ignore the conflicts and interactions of pollution control programs with other high priority issues facing the country, such as our need for energy self-sufficiency.

The Arab oil embargo of 1973 and the subsequent shortage of gasoline posed the greatest short-term threat to the strength of environmental groups. Americans began to realize that some clean-air goals, such as reducing automobile emissions, might cut down gasoline mileage and thus make operating a vehicle even more expensive. They saw electricity rates going up and realized that pollution control regulations requiring pollution abatement equipment might be partly responsible. The energy crisis, however, has had the positive side effect of focusing attention on the need to conserve energy which has a positive environmental effect.

In the future, we need to look at our environmental problems in a new light; we must consider problems which are more complex and far reaching than those to which we have become accustomed. We must be concerned not only with protecting the environment but also with the cost of that protection and the interaction of these environmental efforts with our need to develop our natural resources, such as food and fiber, materials, and energy. All of this must be accomplished while still attempting to maintain a high level of national prosperity.

I am particularly pleased that you will be focusing, in your discussion tomorrow morning, on the subject of costs and benefits resulting from our various environmental protection programs. We are fortunate in having Russell Train, Administrator of the Environmental Protection Agency, on hand for this purpose, as well as Professor Fred Singer. The Washington Evening Star of May 20 carried the story of a recent interview with Russell Train, indicating that the agency's decisions in the past had been misinterpreted, and stated that the new guidelines drawn up over the past several months providing for expanded and independent evaluation of the health risk and economic impact of EPA programs would help change the "perception on the outside that we were engaging in a zero risk game. We are not. We must balance the benefits against the risks."

This is a welcome statement for it bears on one of the most serious problems which we face today and which will become increasingly more critical in the months and years ahead.

There is also a recent trend to focus on preventing pollution rather than trying to abate it by using control technology. For example, control of automobile pollution has rested largely on tailpipe technology which has brought impressive gains in reducing the levels of pollutants; however, the focus in the future in controlling automobile pollution with probably center around the total automobile in the larger context of transportation control plans instead of the car through the tailpipe.

Likewise, many of the Nation's waterways are cleaner now than a decade ago as a result of installing technology-based water pollution control facilities. But we have not yet found ways to prevent many of the smaller and possibly hazardous chemicals which are the products of modern technology from entering our rivers, streams, and lakes. Further, we need to assess the total water pollution problem--including pollution from nonpoint sources as urban and rural storm water runoff--and select the most economical and effective way to solve the problem. A start has been made in this direction through the creation of area-wide water pollution control planning agencies authorized by section 208 of Federal Water Pollution Control Act Amendments of 1972. But a lot more needs to be done or else we may wind up spending billions of dollars controlling point sources of pollution which may not help improve water quality because of pollution from nonpoint sources.

Pending legislation

The Congress has also been active in the environmental area. It is considering many bills to either amend existing environmental protection legislation to fine tune existing programs or to create new onces to control pollution from sources not yet controlled.

Past laws have concentrated on forcing the development of technology to control pollution. Great strides have been made; however, the Congress is in the process of allowing some flexibility and more time to achieve the goals of pollution control legislation. The more important aspects of bills under consideration by congressional committees which would amend existing legislation include

--proposed legislation to amend the Federal Water Pollution Control Act to allow some flexibility and more time for municipal and industrial discharges to achieve water quality requirements, to provide additional funds of $17 billion to assist municipalities construct waste water treatment facilities, and to give the States more responsibility in administering water pollution control programs, and

--proposed legislation to amend the Clean Air Act to extend the deadline for automobile manufacturers to achieve some automobile emission standards, to relax the requirement that auto makers guarantee the performance of pollution control systems, and to grant some relief to industry in achieving certain air quality standards.

It appears that most of the proposed legislation is being considered in order to balance environmental, social, energy, and economic needs.

Yet, the Congress is very much aware of the need to protect our environment against degradation from sources not yet under control. Bills introduced for new environmental protection programs include

--proposed legislation to impose Federal standards for surface mining of coal (vetoed twice by the President),

--proposed legislation to regulate and control the use of toxic substances, and

--proposed legislation to create a permit program to control the disposal of hazardous wastes.

It is clear that the Congress is very much concerned about protecting the quality of our environment.

GAO EFFORTS

In the past, we in GAO have provided much valuable assistance to the Congress and Federal agencies by evaluating, reporting, and testifying before congressional committees on a wide range of activities covered by Federal environmental protection programs. During the last 2 years we have issued 21 reports on environmental issues to the Congress and have testified six times before committees having oversight responsibility of pollution control programs. I am sure that the Congress very much appreciates our efforts in this very important area.

In the future, I believe that we can make even a greater contribution to the Congress and the public by addressing those environmental protection issues having the greatest national priority. Some of the more important national issues include questions such as:

--Is the environment being effectively managed and protected through Federal environmental protection programs?

--Do adequate safeguards exist to prevent the misuse of Federal pollution control grant funds and excessive costs?

--Are the costs of achieving environmental protection standards worth the improvements in health and environmental quality and is there adequate machinery in the executive branch to make a proper evaluation of these costs and benefits?

--How much pollution control can the Nation afford without adversely affecting the development and use of our natural resources, including energy and our continuous economic prosperity?

--Can less costly or more effective pollution control methods be developed or imported from other countries?

These are the issues that were pondered in preparing the program plan for the environmental protection area, and these are the issues we hope to explore more fully in the next 3 days.

I encourage all of the GAO staff involved in the environmental area to become familiar with the program plan and to use it for identifying and planning future work efforts. Users of the plan should also take an active role in recommending possible changes to the plan when they have ideas for new job areas. The program plan should always be an up-to-date and current document. Only through constant use and change will it become the dynamic process it was conceived to be and result in providing the greatest amount of leadership and guidance for GAO priority work in the area of environmental protection and related issue areas.

I would like to conclude by suggesting that we, as an independent agency in the legislative branch, can play a major role by identifying problems of implementing environmental protection programs and recommending to the Congress and executive agencies better ways in which to make environmental protection programs work in harmony with other national priorities. The interest and desire of those here tonight will be the key factor in making this happen. I commend you for your interest in the environmental area.

HOW MUCH ENVIRONMENTAL PROTECTION--WHAT SHOULD BE THE FEDERAL ROLE?

SPEAKERS' AND PANEL MEMBERS' PRESENTATION
AND RELATED QUESTIONS AND ANSWERS

KEYNOTE ADDRESS

BY

THE HONORABLE RUSSELL E. TRAIN

ADMINISTRATOR

ENVIRONMENTAL PROTECTION AGENCY

Most of us, I am sure, would agree that one of the most striking phenomena to emerge in this country over recent years has been the increasing antipathy, even antagonism, toward government, marked by a revolt against "Washington" in general and Federal regulation in particular. This public attitude appears, indeed, to be opening up a whole new order of politics--one with which I must admit to a good deal of personal sympathy. Like most people, I have little personal liking for the constraints upon individual choice which Government regulation often imposes.

I do not think it is a bad idea to look at government with a skeptical and jaundiced eye. I believe, in fact, that we must do a far better job, as a people and as a country, of keeping an eye on government and insisting that it do its job better than it has. I am, however, deeply concerned that, while the antigovernment rhetoric finds easy and enthusiastic acceptance and is rapidly becoming the common coin of American politics, it may prove difficult and perhaps impossible in actual practice to produce the changes promised. It may well be that we have had thoroughly unrealistic expectations of what government could do for us; but I am afraid we may be replacing these with equally unrealistic expectations about how rosy life would be without government. We may, in short, be setting ourselves up for an even more shattering recurrence of the "manic-depressive" cycle we went through in the late Sixties and early Seventies--a cycle of inflated rhetoric and meager results, followed by massive public frustration and resentment.

I would suggest that the intrusion of government regulation into our lives is not the real issue before us--at least to the degree that it assumes we have a real choice between regulation or no regulation. To

pose the issue in these terms is just as mistaken and misleading as to argue that, as a society, our only alternatives are between growth or no growth. It is not a question of growth or no growth. The question is how and where we are going to grow. Similarly, it is not a question of regulation or no regulation. It is a question of how and where we are going to regulate.

Surely, we can reduce and cut out some government programs; we can improve the efficiency of others; we can streamline, simplify and otherwise improve regulation--and President Ford has, in my view, exercised admirable and effective leadership along these lines. But these are very different things from simply "getting rid of regulation;" these are ways of making regulation work.

It seems to me that increasing regulation is an inevitable, if perhaps unfortunate, by-product of our high technology and high economic growth society associated with high and rising densities of human populations. If we really wish to maintain our commitment to an increasingly complex economic, technological, and social system, it is illusory to think we are going to get away from big government. Major government programs and widespread regulation are inherent in that kind of society, which is the kind of society we apparently want.

I think we had better face the fact that increased economic growth, more intensive agricultural production, increased energy usage, more synthetics in the environment, instant global communications, the increasing speed and volume of transportation, more population, crowding and land pressures--all inevitably mean more regulation. If we must have nuclear power to insure the supply of energy we feel we need, we had better accept as well the need for regulation to protect the public from accident, from radioactive wastes (perhaps for thousands of years), and from terrorist acts. If we must greatly expand the use of coal, we had better accept as well the need for regulation to protect the health and safety of miners, to protect the land, and to protect the public health from the products of combustion. If modern agriculture requires the use of highly toxic chemicals to control pests, we cannot avoid regulation to protect human health and the environment. And so it goes. There is no way to accommodate such levels and kinds of activity without regulation. To put it even more bluntly, it is really regulation that makes further growth possible at all. Alvin Weinberg has suggested that our commitment to nuclear power involves a Faustian bargain. Perhaps we need to recognize as well that ever-increasing levels of economic and technological activity may also exact a cost in terms of human freedom. This is a recognition that will come particularly hard to Americans--witness our present antagonism toward regulatory constraints--since much of our economic success has stemmed from the opportunity to exploit with few constraints the natural riches of a virgin continent. What once seemed limitless resources of soil, forest, water, minerals and energy have suddenly become a finate world in which interdependence is the new reality.

Once we understand that "government regulation" is here to stay, and that we need to focus our efforts on making it work better, we need to distinguish between two very different kinds of Federal regulatory activities and agencies: between what we might call the "social regulators" such as EPA and OSHA, and the more traditional "economic regulators" such as the Interstate Commerce or Federal Power Commissions. These traditional agencies are designed to help get rid of obstacles and inefficiencies that keep market forces from operating freely. EPA was established not to keep these forces from operating, but to make certain that they operate in the public interest by insuring that the market increasingly takes into account environmental costs that it would otherwise exclude from its calculations. Left unregulated in a highly advanced industrial society, all the normal economic incentives of a competitive, free enterprise system work to encourage the disposal of vast volumes of wastes into the environment, at rapidly increasing cost to public health and welfare and the natural environment. Regulation is required to internalize this cost, thus utilizing the free market system to achieve pollution abatement with the greatest economic efficiency. (The only alternative, or effective supplement, to such regulation would be a system of effluent and emission charges, and there has been little or no movement in this direction.)

In the area of environmental protection, therefore, there can be little question of "deregulation." What must always be open to examination--and what EPA, as an Agency, must do an increasingly better job of insuring--is the degree and extent of public participation in the regulatory process, the efficiency and effectiveness of specific regulatory approaches and timetables, and the accuracy and adequacy of the scientific and other data upon which these are based.

In this regard, EPA has pioneered a process that--to my knowledge--comes closer than that of any other agency in the Federal government to achieving the goal of full public participation in regulation development. We have, over the past several years, taken a number of major steps to overhaul and improve our processes for developing guidelines and regulations. These efforts have had four main objectives: First, to open up our processes for developing regulations; Second, to simplify our regulations; Third, to streamline our regulations; and Fourth, to reduce to the barest minimum any adverse social and economic impacts of our regulations. Let me touch briefly on each of these objectives.

First, we have in all of our regulatory efforts made great strides toward involving, from the very start of the regulatory development process, affected and interested segments of the public--including other levels of government, other Federal agencies and, where appropriate, the Congress--as well as the broad spectrum of scientific and technical expertise outside the Agency. We have made especially noteworthy improvements along these lines in our pesticides regulatory decision-making process. And just a few days ago, we announced the adoption of interim procedures and guidelines for improving the Agency's ability to assess the risks and benefits of carcinogens while offering the maximum opportunity for public review of the Agency's deliberations.

Second, we have undertaken a sustained effort to make sure that our regulations are written in clear and concise English so that they can be readily understood--not only by experts and lawyers--but by the small businessman and the farmer and the ordinary citizen whom they deeply and directly affect.

Third, we have set up rather stringent procedures for streamlining our regulations by asking, not only of every regulation we have already issued, but of every regulation we are thinking of developing: "Is this regulation really necessary?" In this regard, we have reviewed all regulations under development when these procedures were adopted. That review covered some 125 regulatory initiatives, some 20-25 of which were either deferred, dropped, or proposed in different form. These procedures also include a requirement that all regulatory proposals must be approved by my office before their development.

Fourth, it is essential that EPA does all it can to meet its responsibilities in ways that won't put people out of business or out of work and that won't impose excessive and unreasonable costs. EPA has, in fact, been preparing economic analyses on its standards and regulations years before the President's requirements for inflationary impact statements. By the time EPA's standards and regulations reach final form, they have received--and they reflect--the scrutiny of other Federal agencies, industry environmental groups, and the general public. While I cannot claim the process is perfect--as no process is perfect--it is the most open and rigorous process of economic impact analysis performed by any agency of the Federal government. As a result of this process, we have, in several instances, altered proposed guidelines and extended compliance deadlines in order to avoid plant closings and avert job losses. Most recently for example, we have ruled that several iron and steel plants in the Mahoning Valley in Ohio would not have to meet national requirements for water pollution abatement until 1983. Our analysis indicated that meeting these requirements on schedule might throw as many as 25,000 workers out of jobs--about 14% of the region's total work force.

The development of EPA's Interim Primary Drinking Water Regulations under the Safe Drinking Water Act provides an excellent example of how our regulations are prepared. These regulations establish maximum levels for drinking water contaminants which may affect public health. Under this act, the major responsibility for enforcing EPA regulations rests with the States. For that reason, representatives of State agencies attended several meetings of EPA work groups set up to develop the regulations and made a significant contribution to the regulations.

Throughout the process of developing these regulations, EPA received recommendations from the National Drinking Water Advisory Council. The Council, created by the Safe Drinking Water Act, is composed of representatives from environmental groups, consumer groups, State agencies, and private industry. In formulating its recommendations, the Council held

numerous meetings and actively sought the participation and advice of industry, public interest groups, and other governmental agencies. Before the publication of the regulations in the Federal Register, the Agency also held a meeting with concerned environmental groups to explain the proposed regulations, and to discuss EPA's current thinking on other related issues.

When the National Interim Primary Drinking Water Regulations were proposed in March of last year, public comments were invited and public hearings were held in Boston, Chicago, San Francisco, and Washington, D.C. Almost 500 written submissions resulted, totaling several thousand pages, with 77 witnesses testifying at the public hearings. In all, an aggregate of over 3,500 separate comments were contained in the written submissions and oral testimony. Based on the comments received and further consideration of available data, the Agency made a number of changes in the regulations before they were promulgated on December 24, 1975.

The Safe Drinking Water Act also required EPA to publish regulations concerning the requirements for State implementation of the Interim Primary Regulations and for States to obtain EPA grants for such implementation. In order to insure that States had an adequate opportunity to take part in the development of these regulations, the Agency held major meetings involving all of the States in Chicago and in Dallas. The discussion and comments by the States in these two meetings were taken fully into account by the EPA work group which developed the implementation and grant regulations proposed on August 7, 1975.

Public hearings on the proposed regulations were held in San Francisco, California, on September 3, 1975, and in Washington, D.C., on September 5, 1975. Although the act did not require these hearings, the Agency scheduled them because we believed the public should have the opportunity to comment on the regulations. Since the promulgation of the regulations on January 20, 1975, we have held numerous meetings with State representatives to discuss their implementation and enforcement programs.

Not all of our regulations have been developed with as much public participation and dialogue. But I can state that the development of these regulations serves as a model for the Agency's future regulatory development.

As a result of the improvements we have made over the past several years, every regulation we now issue must run the most grueling and rigorous gauntlet of comment, review and revision that exists anywhere in the Federal Government. To be sure, our processes are by no means perfect; they are still in the early--even pioneering--stages of development, and we have a long way to go before we can be anything close to satisfied with them.

It is by thus continuing to improve the regulatory process itself, and, where it is necessary, by revising the basic legislation itself, that we can expect to achieve an increasingly effective Federal regulatory approach toward safeguarding the public from the hazards of pollution. The Congress is now considering amendments to our air and water and other environmental legislation. Some of these I fully support as essential toward genuinely strengthening the legislation; others I oppose as undermining our ability to achieve the goals set forth in the legislation itself.

I am, in particular, disturbed by various measures introduced in the Congress that, while they vary in some details, would all give the Congress what amounts to a direct item veto over regulations issued by EPA and other agencies. In fact and in intent, these amendments would thoroughly subvert not only the orderly processes of government, but the separation of powers that the Constitution has established as one of the most fundamental elements of our system of government.

It is essential that the Congress continually assess and review regulations to assure that they do help achieve the goals set forth in the legislation and that they are justified and authorized by the law. But these measures go far beyond the bounds of such thoroughly legitimate congressional oversight and review. They are unworkable; they would throw an already complex regulatory process into virtual chaos; they would put the Congress into a quasi-judicial position which could bring it into direct conflict with the courts, not to speak of the Constitution.

Beyond the extensive delays, the chaos, the conflicts with the courts that these measures would surely generate, the simple fact is that they are unworkable. EPA promulgates a large number of regulations each year, most of them required by statute. These often include extremely complex standards based on extensive scientific and factual records. It would be an enormous task for the Congress to review all the data necessary to make an informed decision regarding the correctness of the regulations. At the present, EPA's regulations add up to four volumes or 2,763 pages of the Code of Federal Regulations. While it is difficult to estimate the actual volume, we do know that the support data for our technical standards is substantial. On several effluent limitations and guidelines (promulgated pursuant to the Federal Water Pollution Control Act), the records certified to courts in connection with subsequent litigation exceeded 100,000 pages each. Routinely, the records exceed 10,000 pages. It would be a conservative estimate that the background data for 12 months of rule-making activity would exceed two million pages.

Where Congress disagrees with a particular regulation it already has procedures for voiding the actions of the regulatory agency--through amendment of the authorizing legislation or, in some cases, riders to appropriations acts, both of which techniques have been used for EPA.

The Congress, on several occasions, has exercised an effective oversight on EPA implementation of its statutes such as the regulations involving transportation control plans.

I believe that the congressional oversight of agency actions can best be accomplished by the continual exchange of information between the agencies and congressional committees and by prompt consideration by Congress of amendments to the statute where it believes that an agency's regulations do not comply with congressional intent. This approach will certainly avoid the problems I have referred to and preserve the traditional and complementary roles of the three branches of Government.

We have had the most success, as an Agency, in carrying out those parts of our environmental laws that involve the control of specific sources of emissions or effluents by the application of technology. We have had the least success in trying--often under deadlines imposed by the courts--to require pollution control measures that involve very real changes in life styles and land use patterns. These are changes that can take place only over a period of time; they entail very basic social and economic and environmental choices and tradeoffs that can only be made by the people involved and affected through the political process at the State, local, and regional levels. I see such a process as one in which societal choice evolves from the ground up with open "give-and-take" which recognizes and reflects the extraordinary diversity of needs, conditions, and aspirations which make up this country.

Increasingly, in the years ahead, real and lasting environmental progress must substantially depend on State and local initiative and action. The Federal role must, inevitably, focus more and more not simply upon the development of national standards and regulations and guidelines, but upon encouraging and assisting in the development of joint Federal, State, and local decision-making processes that can enable the citizens of this country to deal effectively with what might be called the issues of growth--the issues involved, for example, in trying to preserve and maintain air quality, to control nonpoint source water pollution, and to relate and reconcile different environmental concerns such as clean air and clean water with each other and with social and economic concerns such as housing, and jobs, and energy.

Faced with an extraordinarily complex array of issues, and often forced to proceed under stringent court-imposed deadlines, EPA has put in place much of the regulatory machinery needed to ensure the eventual achievement of a sound and healthy environment for all Americans. It has made its share of mistakes, to be sure. Its success has not always been complete. But the Agency has demonstrated a very real ability to learn from its mistakes as well as a determination to take costs more effectively into account, to open up its processes of rule- and decision-making so as to include everybody affected, and to build

plans and programs from the botton up so as to place as much responsibility as possible in our regional offices and at the State and local level.

It is, as I suggested at the start, primarily in these terms--of devising the most appropriate and effective regulatory approaches and of making the regulatory process itself as open and accountable as possible--that we can most usefully approach the whole question of government regulation in our society. It is only through the political process and the machinery of government that we can expect to cope effectively with the increasingly complex public problems that are part and parcel of the high technology, high growth society that we have chosen to be. Our most urgent piece of business, in my view, is to make that process and that machinery work far better than they do. That is no easy task, and it is time we got on with it.

Selected Questions and Answers

Q: I think most of us would agree that the choice is not between regulation or no regulation, but to what degree and the extent of regulation we should have. A good point to bring up might be the proposed Toxic Substances Control Act. I believe that industry evisions it as another example of bureaucratic rigidity and they cower at the prospect of EPA getting hold of all their prospective substances or products and causing seemingly interminable waves, frustrating marketing demands, etc. Industry also argues that having air and water pollution control laws now, why do we need more regulations?

A: Well, you have asked two questions. First, why do we need additional authority to deal with toxic substances in addition to regular air and water authority. The fact is that the other laws are not really sufficiently comprehensive to deal with the toxic substances problem such as polychlorinated biophenes or PCBs. Under the water act, you can, although rather cumbersomely, control the direct discharges of PCBs but this would only address a fairly small part of the problem, in fact a rather minute part in terms of the overall presence of PCBs in the environment. The need is to deal with the use of the chemical as a whole; its manufacturing process and its overall use for which there is no authority at all at the present time.

Second, I do not find much argument, even with industry, although there is the fear of over regulation, with the need for additional authority in this area. The concern you express about more unnecessary, if you will, regulation interfering with the industrial processes of the chemical industry and the introduction of new chemicals into commercial use, is a real one--it is shared by me as well as by industry.

That does not go to whether there should or should not be toxic substances legislation. It goes exactly to what kind of authority is spelled out in the legislation and how much flexibility Congress is willing to give me as the Administrator. The tendency nowadays is to leave little flexibility to the Administrator for all sorts of reasons. It is not just a post-Watergate phenomena. It has been building for years as many of us know.

Having spent some time writing tax statutes back in the mid-50's and late 40's on the Ways and Means Committee, I am aware that this has been a long-standing process in our legislative branch.

Concerning the toxic substance legislation, I have been arguing that whatever you do, give us something that is fully manageable; does not impose impossible deadlines on us; does not require us to solve all the problems of the world all at once in terms of chemicals; and give us the ability to set priorities in the agency without having the priorities forced upon us.

Q: Do you think that EPA could take more of a lead role in regulating nuclear power rather than defer it to the Nuclear Regulatory Commission (NRC)?

A: That is a tough one. I think that you know when the reorganization of the Atomic Energy Commission (AEC) and the splitting of the development role to the Energy Research and Development Administration (ERDA) became a fact, it was felt that the NRC would have the credibility and the public confidence that would permit it to carry out its regulatory responsibilities particularly the protection of of the public health, safety and the environment. I think this has made a very marked improvement in the process. Time will only tell, of course, how ultimately effective it is.

I would like to see EPA play more of a role. We have a considerable role at the present time in terms of radiation standard setting. But we are not in the safety field at all. We do not have any particular expertise in that area and I do not particularly desire to get into it.

We do play a fairly significant role in conjunction with ERDA and NRC in terms of waste disposal policy. We have been influential in that regard, in moving the NRC and ERDA away from short-term solutions to the recognition that we need a long-term solution. We have had a limited capability to provide technical assistance to States on radiation matters. That was eliminated in the budget submission to the Congress. There is some indication that these funds will be restored. I personally feel that while there may be some overlap in that particular regard, it is helpful in terms of public confidence to have EPA in this picture, particularly at the State and regional levels. That is not to point any finger at anybody else. I think it is a good idea particularly at the present time when there is so much public debate, uncertainty and concern over nuclear power generally.

Q: How compatible do you think environmental quality is with economic growth?

A: They are compatible but as you gathered from the opening portion of my talk with reference to the philosophical issues which relate

to your question, I feel that as you move to higher levels of economic and technological activity, it is really inevitable that you are going to require more environmental as well as other kinds of social regulations to make them acceptable to society and to make them workable. I do not know that there is a real incompatibility. I suppose in some ultimate sense, there is a basic environmental constraint on unlimited growth, but that is so far away that it is really not an issue.

Environmental regulation and standards do have a constraint on unfettered growth. But I like to think that the result is again, not no-growth but clean growth. This is the issue in nonsignificant deterioration, for example, now in the Senate Clean Air Act Amendment Bill.

Every analysis we have done of the various proposals and a fair number of differences amongst them, would indicate there is no basic prohibition in these proposals at all as far as growth development is concerned. But it will provide a strong influence in terms of the citing decisions, the sizing of plants and facilities, the installation of control technologies, and on growth development. It will be a real technology forcing effect in terms of the development of new technologies to permit relatively clean operations. I do not see any basic incompatibilities at all between economic growth and environmental regulation. I do see in the short term, obviously, all sorts of transitional problems such as in the energy field.

Q: You mentioned that EPA is making an effort to simplify regulations. Is something done other than public hearings on proposed regulations to make sure that the small farmer and the small businessman really understand the regulations?

A: I said we were trying, I did not say we had succeeded. In answer to your question, I have got to say that this is one of the most dispiriting elements of the whole thing. First, I think any environmental regulatory process or requirement involves additional costs to the regulated and tends to be regressive in terms of the small farmer and the small businessman. I feel that is true of every other regulation, not just environmental. This is unfortunate, because it seems to me that the pressures in our socity militate against the small businessman and the small farmer which is very unfortunate. I do not know what all the answers are.

Some of our water pollution control effluent limitation guidelines have managed to exclude small units, pretty much on a quantitative basis, although the statutory basis for doing this a little bit

shaky. So there is one case. You obviously cannot restrict the use of a given pesticide on a large farm and not on small farms. You have to have equivalent treatment across the board. We have tried, however to have pesticide applicator systems which are so simple and easy to use that they do not in fact impose any real burden on any farmers, small or large.

We are struggling with this issue and I am not sure whether we are finding good answers to relieving unnecessary burdens on small businessmen and small farmers.

Q: Is there a threat to ban any farm chemicals presently in use?

A: There are a large number under review and I suppose that it is not a threat. The fact is that we had a few farm chemicals listed as suspect back in the 60's and we are really just getting around to a hard look at them. Yes, I would imagine there are some pesticides now in use whose use will either be further restricted or may, even in fact, be banned. I cannot tell you which ones these are. There is a list of some 90 pesticides which had been suspected as being carcinogenic. But this is a working list that has been around the agency for some time and things come and go from it. It has been made a matter of public record, been submitted to congressional committees, and is available in the agency for whatever value it is.

Q: What do you personally see as the biggest problem or target areas that you will address in EPA for say the next 5 or 10 years? What big areas are you concentrating on now?

A: Obviously, I am always asked that question and do not really know what a very good answer is. In terms of realtively new problems or new in terms of our perception of them, it is the whole area of chemical contaminants in the water, in the air, in our drinking water. These will be getting more and more attention. They certainly get enough public attention.

We have been dealing fairly effectively with what I call the traditional pollutants, the biological oxygen demanding wastes and suspended solids and things of this sort to which most of our water quality legislation has been directed. It is in these new areas where we have a long way to go.

But some of the more conventional pollutants--nonpoint source pollution involving agricultural run-off, urban storm water, development activity run-off--have a very major impact on water quality, as here in the Chesapeake Bay. These pollutants are

very hard to get a handle on and require whole new approaches. The approach to controlling agricultural run-offs, sediments (not just soil, but soil particles bound to pesticides, fertilizers, etc.) requires good land management practices, which is very hard to arrive at by a regulatory approach. I hasten to say that EPA wants no part in telling the farmer how to manage his land. We have enough problems. This whole area is a major area of concern and I see that becoming the focal point of activity in the agency in the next 5 to 10 years.

Q: How critical is the need to retrofit aircraft with noise control?

A: I think it is fairly critical. We have done some very extensive cost-effectiveness analyses on this problem. The Federal Aviation Agency strongly agrees with us on this. The problem we have is that airports all around the country are being subjected to an increasing number of suits by landowners around the airport, which perhaps could have been avoided in the first instance by proper land management. But that is water over the dam. On last count, there were some $700 million worth of lawsuits around the country.

There are all sorts of costs of this sort that go into the equation suggesting that retrofitting aircraft is in fact a cost-effective approach. It would be far better of course, if we could replace the existing fleet in fairly fast order with new and quieter aircraft. But that is a money problem of major magnitude.

REMARKS BY

ALVIN L. ALM, ASSISTANT ADMINISTRATOR

FOR PLANNING AND MANAGEMENT

ENVIRONMENTAL PROTECTION AGENCY

There are basically two factors which have lead to the increased role of government, and particularly the Federal Government, in protecting environmental quality. The first may be traced to the economics of pollution control. The justification for any economic activity is based on the relative costs and benefits of that activity. A product or service which costs more to produce than the consumer is willing to pay, obviously will not be produced. Traditionally, however, the costs of production have been measured in terms of the internal costs to the manufacturer. They have not reflected what we may term the external costs to society.

Damage stemming from pollution is a prime example of an external cost that has often been ignored in the past. Manufacturers have had little incentive to compute these costs and individual consumers lacked the ability to make buying decisions based on an evaluation of total costs. The only realistic method for assuring consideration of total production costs has proven to be government intervention. Government, acting on behalf of society, can require producers to give adequate consideration to external costs by internalizing them through regulation.

The second factor which has lead to increased government involvement in environmental affairs, and which has focused that involvement at the Federal level, has been that pollution problems are not confined by any local, State, or even regional political boundaries. The nature of the problem is such that what happens in one State or municipality may likely impact the citizens of another. What is produced in one

region is often shipped to the consumers of another. The proverbial river that is used as a recipient for one city's municipal and industrial sewage may serve as the supply of drinking water for a town 1,000 miles later in its course. Similarly, the pollution that is spewed into the air over New York City may eventually cause unacceptable air quality in Connecticut, Rhode Island, or Vermont.

The need for the Federal Government to play a part in fostering the overall improvement of our environment is, therefore, very real and unavoidable. The degree of involvement necessary, however, is less easily determined. It is, in my mind, quite appropriate to ask: How much protection is enough? What is the Federal role?

Pollution control and abatement traditionally have been State and local responsibilities. Many States managed significant air and water pollution control programs long before the Federal Government began playing a very active role in the 1970's. Particularly in these States, but to some degree in nearly all States, there has been an understandable reluctance to accept Federal authority, especially when it appeared to be of such a massive nature that it overshadowed the efforts of the States. The threat of a large Federal intervention, moreover, was viewed by many as likely to lead to a lack of concern for particular local needs, problems, capabilities, and priorities. And, I expect, the massive nature of the 1970's Federal intervention did lead, in some cases, to a disruption of ongoing State activities. We at EPA recognize that problem and are trying to correct some past mistakes and to avoid that situation in the future. I'll be addressing this question in more depth later when I discuss the Safe Drinking Water Program.

The basic questions which have faced the Congress in establishing environmental programs, and EPA in implementing them, are: How much uniformity? How much Federal intervention? And how much State or local decision-making is appropriate? The answers have varied in recent years depending on: (1) the type of pollution problem to be addressed; (2) the existing capabilities of State and local governments; and (3) the ability of the Federal Government to impact on the problem, that is, can Federal intervention actually have an impact?

Addressing these three areas one at a time, I would say first that the nature of the pollution problem is most important. The source and the impact of some pollution problems are very localized. Hence, they are more amenable to locally developed solutions. The disposal of municipal refuse, for example, is a localized environmental problem. Other problems are more widespread in their impact or are dependent on actions taken far away from the point of actual impact and will react poorly to local remedies. Emissions from automobiles are typical of this situation. One city's regulation of auto emissions is certainly unlikely to force auto manufacturers to

produce less polluting vehicles. Moreover, thousands of locally developed inconsistent standards would probably work an unbearable burden on manufacturers.

Secondly, the capability of State and local governments to successfully establish and manage environmental programs is a determining factor in identifying the necessary level of Federal involvement. Despite the successful programs in a number of States prior to the passage of Federal water pollution control legislation, for example, Congress felt that many States and local governments lacked the necessary expertise, the required level of funding, or, in some cases, the inclination to manage adequate programs.

Finally, the ability of the Federal Government to impact a program is important in establishing the level of Federal involvement. In developing an automobile pollution control program, it was assumed that the Federal Government has and could utilize the authority to force manufacturers to improve the performance of their products. Because of this, the establishment of mobile source emission standards has logically been made a Federal responsibility. Conversely, Federal management of local water quality planning would probably be inefficient and unresponsive, so the Section 208 Water Quality Management program was established to give this authority to local decision makers.

The level and degree of Federal intervention in the environmental area, therefore, has been based on the nature of the pollution problem, the perceived capabilities of the States and local governments, and the ability of the Federal Government to impact the problem. Perhaps it would be useful to illustrate these points further with a fairly recent example: the Safe Drinking Water Act.

The Safe Drinking Water Act was passed in December 1974 as a result of evidence which suggested that millions of Americans across the Nation potentially might be drinking unsafe water. The threat to the health and welfare of the population was determined by Congress to be sufficiently serious to warrant Federal intervention. Congress, in passing the Safe Drinking Water Act, and EPA in interpreting it, had to go beyond simply decreeing the need for a Federal role. Questions of much consistency, how much involvement and how much State and local decision-making had to be answered.

The situation that existed at the time of passage of the act quite obviously did not require the same type of response that earlier air and water pollution crises had evoked. Congress and EPA recognized that most State and local governments already operated sound drinking water programs and that significant expertise and experience in dealing with drinking water problems was already available at the State and local level. It was also recognized, however, that serious hazards did

exist in some places; that some utilities, particularly those serving small communities, were not providing water of acceptable quality and that suspected carcinogenic contaminants in many urban water supplies might endanger millions of people. There was clearly a need for some level of national consistency in drinking water quality and some sort of mechanism for solving the newly discovered carcinogenic problem.

The Safe Drinking Water Program as adopted by Congress and as implemented by EPA reflects these considerations. EPA's strategy for the program is to build a strong partnership with the States. For example, EPA has established nationally consistent, health-related drinking water standards, but the programs designed to reach those standards will in large part be established by the States. We will maintain responsibility for certifying (and de-certifying, if need be) the adequacy of State programs, but we do not believe that all States must have identical programs.

The lower profile for the Federal Government in this program can also be seen in the level of funding provided for it. Modest State program grants were established by Congress in the act and EPA intends to utilize them to the fullest extent. These grants, nevertheless, are unlikely to pay for the entire cost of maintaining adequate programs in most States and will provide nothing for either the capital or operating expenses of local drinking water utilities. Instead, States and local governments are expected to draw upon their own resources to finance the majority of the cost of the program.

All of these decisions concerning the Federal-State-local relationships and the appropriate level of Federal involvement in the Safe Drinking Water program represent a conscious effort by the Congress and EPA to give greater attention to determining the appropriate methods of dealing with an environmental problem. We have asked ourselves how much is enough, and who can do the best job, and in the process we have established what I believe will be a successful and effective program. We have recognized that all wisdom does not reside in Washington and have encouraged the States to utilize their own resources, talent, and initiative in developing workable programs. On the other hand, we have not relinquished our responsibility to foster achievement of safe drinking water as a national goal. We will enforce those standards if the States do not. Some might say that the Safe Drinking Water Program is an exception. I hope not. We at EPA have tried to strike the right balance in devising a national drinking water program that is responsive to the law. We analyzed and debated many alternatives before deciding on our present course. Unfortunately, some of our other programs show the results of inadequate analysis and perhaps an insensitivity on our part to the legitimate capabilities of the States.

This change in approach is being reflected in several other programs. We have, for example, attempted to resolve some of the problems in the implementation of the Federal Water Pollution Control Act by supporting the Cleveland-Wright Amendment which would allow the States to use some of their share of construction grants funds to manage the program and encourage EPA to delegate major responsibilities to the States in the construction grants area.

I don't believe that there are any easy answers to the question of how much protection is enough--what is the Federal role? I can say, in conclusion, that we're trying our best to find out. I know that we must be able to ensure the citizens of this country that we are concerned about these questions and willing to change or eliminate the Federal involvement when that is called for.

REMARKS BY

JAMES B. COULTER

SECRETARY OF NATURAL RESOURCES

MARYLAND

Take the first part of the question--how much environmental protection--what should be the Federal role--and two instant reflex answers come to mind. This nation wants more environmental protection than it is getting at the moment. On the other hand, this nation really doesn't want and it will never get the "zero discharge" or the "nondegradation" brand of environmental protection.

There is some food for thought in those answers, but not much. At the best they illustrate the point that if you don't ask the right question, you can't expect the right answer.

Unless an infinite number of answers are permissible, the question should be restated to make it more specific. It would be more productive to consider -

> How much environmental protection do we want in the United States at this time?

A woeful failing is the absence of reference to time and place in the consideration of environmental protection. Maybe that is because we are a wonderful, disrespectful, generous, conceited generation.

> Wonderful because we have at our disposal wealth, energy, and technology beyond the fondest hope or wildest dream of any of the countless generations that went before us;
>
> Disrespectful, because we find it easy to blame past generations for leaving us an environmental mess to contend with;

Generous, because we are willing to give liberally of our wealth to clean up the problems we inherited and to pay the cost of taking care of the problems created in our time; and,

Conceited, because we act like intelligence and desire will end here. Thus, we strive for "final" solutions with all kinds of safeguards to prevent future generations from undoing "our" good works.

The truth is that with the resources at their disposal, past generations did a remarkably good job of solving the problems of their time. Furthermore, if we do our job properly, the next generation will be wiser, wealthier, and better equipped to solve the problems of their time.

HOW MUCH NOW?

With appreciation for the past and humility for the future, we should take a searching relook at the question, "How much environmental protection now?" Protection that prevents catastrophic loss of an environment friendly to the human race is a must. If the lunacy of war is avoided, prevention of doomsday is not that difficult, scare tales of pollution politicians to the contrary.

In what must be civilization's success story of the last century, in the United States, the environmental health battle has been won. Constant vigilance is required, but public health is no longer the ultimate objective. In all truth, public health can be protected at a lower level of environmental protection than the nation desires.

What then, protection of the economy? Perhaps there is a reason to worry about protection of the economy from over protection of the environment. But, in general, the economic trade-off between polluters and users fails to give an acceptable level of environmental protection.

There are transfer costs to be reckoned with. The waste from one industry can increase the cost of other industries. Fair treatment demands that pollution control be incorporated as a cost of doing business but, in many cases, the test of economic efficiency as the business man would apply it, is not enough.

The money spent for pollution control to protect the oyster industry in Maryland far overshadows the dockside value of the crop. The expense of treating polluted Ohio River water early on was shown to be far less expensive than the cost of treating the industrial waste going into the River.

A Department of Interior official once pointed out that economic efficiency was best served by letting each person on the Colorado River

use water in the quality and quantity that reached his location. He would then use the water for the highest and best use and discharge it back to the river without treatment. The next downstream user would adjust his enterprise to the quantity and quality that reached him.

So it went all down the line until the River flowed into Mexico. When the water reached Mexico, it was too salty to use. Even so, Mexico could be paid for damages and the cost would be less than that of pollution control.

Economic efficiency for practical purposes cannot be the final answer. Too often the net result of that test is to write off environmental quality that can't be measured by the cost-benefit yardstick.

Back to the question then. At this time, with available resources - How much environmental protection? Enough to prevent catastrophic doomsday events. Enough to protect public health. Enough to prevent measurable economic loss.

And more, enough to protect valuable fish and wildlife and specifically designated beneficial uses of land, air and water. If this generation did that, it would make a proud record for itself. It might not solve all of the problems for all time, but it would solve our problem in our time. It would give the next generation a good base of operation to work from. It would present a difficult and challenging goal. It would make a goal that is reachable without curtailing the standard of living and without regimenting democracy out of existence.

What good will it do us to make the environment virgin pure if in the process we reduce our well-being and forfeit our human liberties?

In the United States at this time, the legal requirements for environmental protection should be: the prevention of catastrophic changes that would endanger human existence, the protection of public health, the prevention of economic loss, the protection of valuable fish and wildlife, and the protection of specifically designated beneficial uses of particular land areas, watersheds, and air masses.

That doesn't mean that cleanliness should stop there, but it does mean that the legal requirement for environmental protection should have a practical limit. Actions beyond the legal boundary should be on a voluntary - willingness to pay - basis. It is predictable that consumer product oriented activities will provide additional cleanliness if the cost is small and if the product's public image is enhanced. Likewise, it is predictable that basic industries will not spend one penny more than they are required to unless some other self-interest makes it worth while and that's the way it should be.

HOW MUCH HERE?

Public policy should work to the benefit of the public - the human public that is. A few tough-minded ecologists might argue that other animals have as much right to this earth as do human-type people. But, confronted with a choice between a rat and a baby in the same crib, almost all of them will come to the defense of the baby. Therefore, while protection of most of the plants and other animals is very much at stake, the ultimate objective of environmental protection is to improve the well-being of human beings living in a particular place.

The place is important. People in a developing nation fighting to raise the average standard of living above the poverty level must put first things first. A developing nation has a right to draw heavily on its resources, including a temporary drain on environmental quality, if it will help put them over the economic threshold.

"Zero discharge" is for very rich and very foolish nations only. As other nations achieve a higher standard of living, more of their productive capacity will be diverted to protect the quality of their environment. Stringent environmental controls are possible only when a nation enjoys high standards of living.

If environmental protection in any country of in any part of any country, including the USA, causes the standard of living to drop, then an over-compensating lowering of environmental protection will occur.

While it might be argued that the protection is the same, there are several good reasons for different standards at different times and in different places. Take for instance, salt. Salt poisons trout. Rock fish get along fine in salty water. Why make us pay the cost of removing salt from wastewater going into the ocean just because it is desirable to remove salt from wastes going into a trout stream?

If the cost of waste treatment is the same, a salt producer would be indifferent and might locate where it isn't wanted, on a trout stream. Its presence there would be a hazard because a treatment process might fail. On the other hand, if the standard was lowered for ocean discharge, the industry would be tempted to go where we want it to go. Furthermore, the cost of treatment would be lowered which should make all of us happier.

However, for reasons not clear to me, it doesn't work that way. National environmental groups get all upset at the thought of an industry in one location paying less for pollution control than the same type of industry located in a less favorable waste discharge location. Environmentalists scream that it isn't fair and Congress passes a uniform standards law. I scream that it's unfair because it is costing us too much money and because it is messing up sensible pollution

control programs. Congress pats me on the head and does nothing to change a stupid requirement because bureaucrats don't compile environmental grade cards on Senators and Congressmen for periodic release to the public.

For water pollution control, there is another reason why standards should change from place to place and season to season. The reason is so far afield from the Federal Water Pollution Control Act that it is almost unlawful to mention it.

Waste residuals should be discharged in a controlled fashion to produce optimal water quality in the receiving waters.

That objective requires that we learn what the optimal concentrations of such things as fertilizers and trace metals are for the enhancement of such things as oysters and eels. If waters were deficient and a handy source of residuals would cure the deficiency, less costly waste treatment might be used to allow the waste material to get into the water where it could do some good.

Test that thought against a national law that defines anything and everything as a pollutant and then proceeds to outlaw the discharge of any pollutant into the waters of the nation.

WHAT SHOULD BE THE FEDERAL ROLE?

The federal role should be based on good law. Unfortunately, it isn't. The Water Pollution Control Act, for instance, is a silly law. For all of its good intentions, for all of its good parts, the water pollution control law is fouled up. You can't do a good job of pollution control if you are working with a polluted law.

How can that be, taking into consideration the fact that the 1972 Amendments passed by an overwhelming majority? The vote was 74 to 0 in the Senate and 366 to 11 in the House. Knowing how complicated its provisions are and knowing how hard it is to read, I wonder if the vote doesn't merely reveal that only 11 Congressmen read the Act before vote was cast.

In his book, "Pollution, Prices and Public Policy", Allen Kneese offers two reasons for the outcome. "One was the fear by those senators and representatives who considered themselves defenders of the environment that they would suddenly be outdone by someone proposing completely clean air or pure water. After all, how could they be caught settling for "slightly dirty" water. The other factor seems to have been dedicated and highly effective work by a small number of conservationists advocating zero discharge."

There is no such thing as "zero discharge" and this nation could go broke in the effort if it seriously attempted to achieve that goal

by 1985 or any other date. No one can define in a satisfactory operational way what Congress means by putting forth the objective to "restore and maintain the chemical, physical, and biological integrity of the nation's waters".

Congress said at the beginning of the Act that it is national policy to minimize paper work. Then in the next 87 pages it went on to saddle the nation with the greatest burden of paper work the world has ever seen. The Act has insured full employment for thousands and thousands of highly intelligent paper shufflers. What a waste of human talents to say nothing of the energy and natural resources usurped to manufacture the tons of paper needed to implement the Act.

The planning provisions are a disgraceful hoax. All across the country, states are struggling to complete voluminous 303(c) river basin plans. Designated regional agencies are gearing up to produce 208 plans. Consulting engineers have a new source of employment in the 201 plans. In all, there are a dozen or so conflicting, often contradictory, planning provisions in the Act.

And for what purpose are the planning mills grinding out these reams of paper? Only to comply with the law and insure eligibility for grant funds. In the decisions that count, the river basin plans are brushed aside and the crucial decisions depend on construction grant applications, cost effective determinations and environmental impact assessments prepared under the National Environmental Policy Act.

Section 404 illustrates a grave danger in this type of law. In Section 404 most people thought that Congress was settling a jurisdictional issue between EPA and the Corps of Engineers. Most people thought that the Corps was to retain control over its traditional activities regarding disposal of spoil dredged from navigation channels.

In a lightly contested court action, the judge ruled otherwise. The effect of the ruling is to give the U.S. Army control over any activity that might affect even the smallest tributary in the waters of the nation. Thus, the Army through its Corps of Engineers, now governs small everyday activities of individual citizens.

If any other country took that action, we would call it a military coup. Environmentalists support the action on the basis that it now "gives the country a nationwide wetlands law". They rationalize that not every state like Maryland has a wetlands law, thus the end justifies the means. Is that democracy in action? The truth is that many people are contemptuous of the democratic process when it comes to protecting the environment.

I, for one, urge Congress to pass the Breaux Amendment. At the same time, I urge Congress to pass a true nationwide wetlands act. One that is considered by committee after testimony and debated in both houses. One that has the constitutional safeguards, definition

of responsibility, spells out the role of the states if any, and provides for funds and personnel to implement a wetlands program in a dependable fashion.

I am not opposed to a wetlands act. I am certainly not opposed to the Corps of Engineers. The Corps is a good organization with a proven record in its handling of civilian works. What I support is environmental protection by law properly enacted by Congress.

In closing, the federal role should be based on an honest assertion of the federal role. The Water Pollution Control Act asserts that the primary responsibility lies with the states.

That is not so. The broad interpretation of the commerce power gives Congress at least concurrent jurisdiction over all of the waters of the nation. Further it is clear that no state can pass a law that burdens federal exercise of its commerce power. While the Water Pollution Control Act gives opening lip service to the primacy of the states, it then goes on in the next 88 pages to mandate how EPA will run the program.

I believe that primary responsibility for environmental protection should and, infact, does lie with the federal government. That belief, I am sure, will earn me the "boo of the week" from my counterparts in other states. Nevertheless, it is true and much of the bickering and overburdening of citizens as a result of duplicating control programs could be eliminated if Congress addressed the issue with honest firmness.

There is a role for the State, but it is not the primary role. If the federal government played its rightful role, it would provide national direction and takes its presence out of country court houses. In a supporting role, state and local governments could provide services to their communities within the framework of national law without bumping into federal agents at every controversial event.

REMARKS BY FRANK A. NEMEC

PRESIDENT, LYKES CORPORATION AND

CHAIRMAN, YOUNGSTOWN SHEET AND TUBE COMPANY

Over the past quarter of a century the Federal Government has assumed a dominant role in the protection of our country's environment. This assertion of Federal Regulatory authority in a field that previously had been largely a domain of the states has wrought many changes in our national life, some for the better and some which give cause for grave, and rising, concern. So broad are the regulatory powers that still other changes in the making are as yet poorly defined and their ultimate effect on state and local governments, on American business and on the individual citizens may not be known for years.

This enlarged Federal participation has brought into being new and growing bureaucracies--at Federal, State and local levels. The corporate paperwork associated with environmental legislation and regulations--not to mention the countless hours spent at internal meetings and public hearings--imposes heavy burdens on the highly-skilled manpower capable of dealing with it. A year or so ago, the steel industry had more than 20 concurrent studies being made of its environmental activities, practically all of them demanding detailed investigations and reports on tight deadlines.

When we look back at the deteriorating state of the environment in the post World War II years, it was almost inevitable that the Federal Government would move in. The first major legislation in the water quality control field was enacted in 1948. That brought the Federal Government for the first time into an activity that had essentially belonged to the states--although it also recognized the role of the states in implementing and enforcing water pollution control requirements. The water legislation was successively strengthened and expanded in 1956, 1965, 1966, and 1970 as the Congress responded to mounting public concern on environmental issues.

In air quality, Federal legislation was enacted in 1963 and 1967. But in both water and air, the national and local initiatives undertaken in the late 40's, the 50's and the 60's were dominantly piecemeal kinds of legislation and it remained for the 1970's to bring the full force of Federal action into existence.

The Clean Air Act of 1970 was the most comprehensive air pollution control legislation ever enacted. It provided for the establishment of national uniform air quality standards for six common air pollutants (sulfur oxides, particulates, photochemical oxidants, carbon monoxide, hydrocarbons, and nitrogen oxides) and while alloting to the states and to local authorities the responsibility for development of emission standards and implementation of regulations, it also more clearly defined and strengthened the role of the Federal Government.

This growing movement to subject state decisions to Federal approval got a further boost 2 years later with enactment of the Federal Water Pollution Control Act Amendments of 1972. The 1972 act required source discharges to achieve effluent limitations, replaced existing authorities with new authorities and set up a new regulatory framework, based on the wastewater discharge permit program.

At that time, the Environmental Protection Agency already was in existence. It got its start in life in December 1970. It was formed to merge into one agency the major Federal programs dealing not only with air and water pollution but also solid waste disposal, pesticides regulations and environmental radiation.

In the light of its enlarged legislative mandate EPA has grown. For fiscal 1971, its operating and programs budget was $300 million. By 1974, the budget was $696 million. By 1975, it was $743 million. It is currently operating on a budget of $771 million. And while the President's budget request for the coming fiscal year has narrowed this to $718 million, Congress may adjust this upward by as much as $100 million.

These figures do not include huge sums that have been voted by Congress for grants to states and communities for municipal wastewater treatment plants. In fiscal 1971, that figure stood at $1 billion. It was up to $2 billion in 1972. Currently, the figure is about $18 billion, of which $9.6 billion has been obligated. Mr. Train has stated that no new funds were requested this year for the grants program because available unobligated funds should be sufficient to meet 1977 needs. Congress, however, may choose instead to increase authorized funds.

Another measure of the Federal Government's expanding financial role in pollution control is provided by President Ford. He reported to the

Congress that the Federal Government increased its pollution control outlays from $751 million in 1970 to an estimated $4.5 billion in the 1976 fiscal year. This, of course, doesn't begin to show the grand totals of environmental control spending if Government and business expenditures are combined. The President in the same report estimated that over the next 10 years, Government and industry will spend more than $22 billion annually to meet Federal pollution control requirements, compared with more than $15 billion in 1975. Expenditures of this magnitude may help fuel anew the fires of inflation.

If all this seems to indicate that pollution control is a fairly recent phenomenon--well, it doesn't. In my own industry, steel, environmental quality is not a new story. In the late 19th century, dust-catchers were installed on blast furnaces, one of the earliest forms of air quality control. And the American Iron and Steel Institute had a water conservation research project underway in the 1930's through a grant to Mellon Institute in Pittsburgh as an outgrowth of individual steel company research programs. The AISI undertook its first coordinated industrywide research to explore the field of air quality control in 1951. In the same year, the first electrostatic precipitators used by a steel mill in the United States were installed on four open hearth furnaces.

There was progress of a sort in those days. It was largely voluntary and it was not as rapid as it might have been. The Federal presence has speeded us along the way to a cleaner environment faster than otherwise would have been the case. Industry accepts this presence and has no desire to turn the clock back, even if it could. But it also believes that the time has come to ask and get the answers to many questions--has the Federal effort expanded too swiftly in compliance with political pressures? Have proper priorities been fixed for the allocation of national resources? Has it failed to recognize the economic problems that industry faces? Have objectives been set without the necessary consideration of technological factors--and the feasibility thereof? Is there too much overlap between Federal, state and local jurisdictions? Are the standards too stringent? Has zealousness to clean up the air and the water prevailed over common sense? In short, has there been overkill?

While I do not agree with an observation I heard that the environmental situation has progressed from apathy to over-reaction to chaos and then back to apathy, I do believe that public sentiment is moving in the direction of a true balance between the need for a better environment, the need to maintain the economic health and growth of American industry and the need to conserve energy.

This sentiment was expressed tersely early last month by Senator Frank Moss in proposing an amendment to the Clean Air Act now being considered by the Congress. On April 13, Senator Moss stated--and I quote directly from his statement:

> "Our concerns for the environment must be basic and longlasting. However, environmental concerns of the Congress have matured to the point where it is now imperative to weigh the indirect effects of our policies of preservation and protection against competing national interests and priorities. We must have clean air to breathe, and we must protect crops and wildlife from harm. To some extent, however, protecting against the last increments of air pollution must be considered a luxury when compared with possible adverse effects on required economic development, expansion of employment, and development of energy resources. When pollution control becomes an end in itself, rather than a means to the end--that of contributing to the 'good life' for the community--then perhaps it has gone too far."

And continuing from the Senator from Utah--

> "I can only conclude that the best interests of the country suggest that we develop more precision in our measuring, monitoring, and interpretative capability before we impose the results of that capability on an industrial sector struggling to overcome some very serious effects of our recent recession and long-term energy shortage." (End of quotation)

Specifically, the important question today is how should the Federal Government move while still maintaining the initiative that has helped bring about what the Council on Environmental Quality describes as "some encouraging progress" in water quality and a "great improvement" in air quality?

Another serious problem is related to the overlapping jurisdictions of Federal, state and local governments, involving ambient air standards, emission limitations and enforcement policies. Here the Federal Government should help define more clearly the respective participations of government so that the role of each should be exclusive within its area of interest.

The establishment of ambient air quality standards should continue to be the responsibility of the Federal Government. But the standards should be reviewed by scientific authorities to determine, first, whether the standards set are indeed necessary to protect the public health and welfare; second, whether they are attainable under present or foreseeable

technology; and, third, whether they are justified in terms of overall social, economic, and environmental impacts.

It is unreasonable and wasteful to permit state or local governments to adopt tighter ambient standards than those set nationally, for this requires industry to make expenditures to achieve a higher level of air quality than is required in the public interest.

One major failing in the Clean Air Act is that it does not permit a proper balance between the benefits of a clean environment and the other needs of the country that can be sustained only by economic growth.

For example--the act effectively forecloses economic development in areas which have not yet attained satisfactory ambient air quality standards, and these areas include many of the very urban regions where economic development and job creation are most urgently needed.

In the more or less "pure air" regions, business and employment growth is limited by the concept of "nondeterioration," a concept whose consequences are not easily understood, have not been thoroughly studied, and may be even more difficult to apply in an even-handed manner.

Thus, the question arises--where will industry go if the air in one region is too pure and in another region not clean enough. It is a dilemma of particular significance to the steel industry which in order to remain strong and competitive and able to supply National needs must expand its production capacity by about 30 million tons during the next 8 years.

The appalling situation is that, short of remedial legislation by the Congress or short of a new and balanced approach by regulatory authorities, these developments are well on their way without even as much as the establishment of an overall national policy that considers in their totality the environment, employment, energy, capital shortages, international competitiveness, and rising social expectations for goods and services.

In the steel industry we can agree wholeheartedly with Senator Moss' observation that protecting the nation against the last increments of air pollution must be considered a luxury when compared with possible adverse effects on the economy and energy. These last increments are largely those so-called fugitive emissions which are impractical or impossible to control with conventional equipment. They are intermittent, they are mostly esthetic, and they have no measureable effect on air quality. The cost of controlling them is far disproportionate to the benefits, and the benefits may often be negative.

An example is an open hearth furnace which has controls taking away 99 percent of the dust. To collect that remaining 1 percent would cost, per pound collected, some 150 times more than the cost of installing the main cleaning system. The energy consumed in the process would be several hundred to 1000 times greater per pound collected. And not only that. The generation of that energy, even in power plants meeting Federal standards, would send into the air more than twice as much pollution as would be collected at the steel plant.

The present system of enforcing environmental regulations is often as confusing as the regulations. The system permits multiple enforcement and being subjected to it is a harrowing experience. What might seem to be compliance at one level of government turns out to be non-compliance at another level. This duplicative enforcement results in confusion, delay, and unnecessary expenditures. It involves not only the EPA at the national level but at its 10 regions across the country, and to hundreds of cities, counties, and other political subdivisions. Attempting to satisfy three or more regulatory bodies on a single issue is not uncommon among steel companies.

Enforcement of standards should be the exclusive job of the states, with the exception that when the EPA is convinced a state is not properly enforcing the standards, it could, after a determination made at a public hearing, take over the enforcement. This would provide safeguards against lax efforts by the states and at the same time protect industry against multiple standards of enforcement. In the same vein, if a state should decide to delegate part of the enforcement effort to a county or municipality, the state should remove itself from enforcement activity--while providing that the county or municipality could not enforce standards tighter than the state's.

In water as in air, there are multiplying signs that a sense of balance is coming into the public and political discussions of the effects of not only current regulations but of the objectives themselves.

A case in point is the goal stated in the Federal Water Pollution Control Act of achieving "zero discharge of pollutants by January 1, 1985." This, of course, was stated only as a goal and from the beginning it has been generally recognized as a practical impossibility. But it is reassuring just the same to know that the National Commission on Water Quality in its recent report to the Congress has recommended that this goal of elimination of discharge of pollutants be redefined to stress conservation and reuse of resources.

Major water quality legislation will not be considered by the Congress in 1976 but will be next year. This should allow time for thorough public discussion and political debate on the merits of the National Commission's report. We think that the recommendations make eminent good sense but are well aware that they are controversial and that they already have brought severe criticism from environmental groups, and the EPA itself.

Industry's experiences with the water quality law have been filled with the same difficulties, confusions, and uncertainties that have marked its experiences with the Clean Air Act. Progress is being achieved but again the question must be asked--Are the potential benefits worth the cost?

The steel industry already has put more than $1.5 billion into water quality control facilities and faces huge additional expenditures to meet the standards now set for 1977. When we reach those standards, we will be removing about 96 percent of the total contaminants from our streams. But the Federal Water Pollution Control Act as it now stands will require us to meet even tighter standards in 1983. Going beyond the 96 percent level of control would mean that the incremental cost per pound would be 12 times greater than the cost estimated to meet the 1977 standards. Because of inadequate controls on major sources of water pollution resulting from natural runoff and sewage, it is highly questionable that the effort would bring much noticeable improvement to the nation's water quality in general.

Against these obstacles, the recommendations of the National Commission on Water Quality are a shining light. Regardless of their outcome, they point the way to a changing Federal role in the effort to make our waters cleaner.

In most particulars, the recommendations support the positions of many American industries, in that they recognize the impossibility of achieving "best practicable control technology" requirements now set for July 1, 1977; the need for further studies on water quality improvement before the July 1, 1983, requirements for "best available technology" are implemented, and the need to decentralize the regulatory and administrative functions of the national program.

As in the case of air, the Federal Government's role in the setting of discrete water standards should prevail but where enforcement by other bodies such as the states is designated, those other bodies should enforce the national standards but should not impose more restrictive standards. And the permitting authority of the EPA should be revised to assure that permits once granted, and now ranging up to 5 years, should be for the useful life of the control equipment.

The task of improving our environment is a joint one that should involve the best efforts of government, industry, agriculture, transportation, and state and local governments.

It is a tremendously expensive responsibility and industry will find it most difficult to bear the financial burden while still maintaining economic strength and growth. Between now and 1983, the steel industry alone will need to spend about $5 billion a year for capacity expansion, the replacement of existing facilities and environmental quality control. About 30 percent of that total capital investment must go for essentially nonproductive environmental control facilities.

The Federal Government should help to alleviate this burden through economic incentives, and among these should be support for capital formation and accumulation through a higher investment tax credit, more rapid depreciation, and rapid writeoff of pollution control facilities.

These incentives--combined with a more reasonable approach to the setting, implementation, and enforcement of standards, would create a true partnership that will enable the environmental goals of our Nation to be attained without lasting damage to our standard of living and our economic well-being.

We must in all respects put behind us or moderate the adversary climate that has developed all too often. There is every reason for hope. Over recent years, the steel industry and the EPA have had a continuing dialogue which while not always successful from the viewpoint of either side, has brought a measure of progress. Industry now recognizes, as does EPA, that the desirable objectives of a cleaner environment will not be achieved without a clear understanding of our mutual problems and full cooperation in their solution. We are going to have to work together for a long, long time to get the job done in a truly and effective manner.

In the environmental field, as in many others, I am confident the General Accounting Office and the Comptroller General will perform their usual valuable task of assessing program effectiveness for the Congress and that the public interest will be well served by your impartial assessments of our National priorities and progress. In this endeavor, we pledge you our wholehearted cooperation and full support.

REMARKS BY TOM STOEL, ATTORNEY

NATURAL RESOURCES DEFENSE COUNCIL

The first question we are supposed to address is: How much environmental protection? I do not think any of the other panelists would disagree, and I gather Mr. Train, Administrator, Environmental Protection Agency, did not disagree this morning, that we are going to have more environmental protection. The growth in economic production, which Mr. Nemec (President, Lykes-Youngstown Corporation) believes is so desirable and I think we all believe is inevitable, and the related rise in resource consumption, are exponential. However, the ecosphere on which all living things on earth depend, is finite. It follows, then, that there is going to be a continual need for more environmental protection as the demands on the ecosphere increase because of increased resource consumption and pollution discharges.

Therefore, the need for environmental protection is going to rise as the general level of pollution-causing activities goes up and there is more and more interaction between pollution-causing activities. I do not think there is any real disagreement that we are going to have more environmental protection.

The basic question is: By what methods, and how much of a tradeoff do we have to make between resource consumption and pollution causing activities and protecting the environment? Jim Coulter (Secretary of Natural Resources, Maryland) says that maybe we ought to slow down--maybe we have gone far enough in environmental protection. That is arguable. I happen to think that he is defining the meaning of the life of humankind a little too much in economic terms, at least for Americans in the 1970's and on to the year 2000. However, the question of how much environmental protection is a political question. It is going to be the result of a political judgment people make based on the overall quality of life they want.

I happen to have grown up in the State of Oregon, which may be one of the reasons why I am an environmentalist. Out there people seem to put a rather high priority on environmental protection and it has interfered to some extent with economic growth in the State. I think that the people of Oregon have made their choice quite deliberately and that it is likely to be the way the rest of the United States is going to go during the rest of this century.

The surveys that have been conducted show that Oregon is rated one of the two or three top States in the country as desirable place to live. Furthermore, the polls of the general public on what issues they think are most important have repeatedly shown that environmental protection ranks among one of the top two or three issues along with inflation. The polls also indicate that the public is willing to spend even more in tax dollars on environmental protection than it is right now. It may be that we have reached the crest of the environmental protection wave, but it seems that more and more people define the quality of their lives in terms of the quality of the environment they live in as much as in terms of what they are able to consume. Time will tell whether we are going to slow down the rate of growth of environmental protection, so to speak.

Mr. Nemec also raised some questions about cost-benefits, especially with respect to air pollution. As you at GAO know, I am sure, there have been some studies of these questions. The National Academy of Science has looked at various air pollution standards and has generally concluded that the benefits from enforcing these standards are just about equal to the cost of enforcing them, and that we ought to stay pretty much on the course we are on now. It may be that more studies are justified, but the fact is that most of those that have been conducted on a national scale indicate that we are at about the right place.

I am also a little baffled about why Mr. Nemec thinks that States should not be allowed to set higher standards than the minimum standards that the Congress has set, at least in the area of air quality. It seems to me that as long as industry has sufficient advance warning of the standards the State is likely to set, the people of a particular State--but not a locality because that is probably impractical--should have a right to establish higher air quality standards than the country as a whole. They are better informed about the cost of doing that, and if they prefer cleaner air to more rapid economic growth I do not see why the rest of the country should not allow them to exercise that judgment.

There has been a theme that we have enough environmental protection, that everything has been done, it is time to stop, or perhaps even to set back the clock. I would like to say a couple of things about how far we still have to go.

The health studies that have been conducted indicated that air pollution in particular is still a major cause of illness and death in metropolitan areas. These studies are not conclusive; they are still going on.

Those which have been conducted show that many types of air pollutants do have severe health effects, and these are pollutants that are still in the air.

Particularly worrisome are the small particulates which many think have among the most severe health effects and which, despite the air quality standards we have now, are being emitted into the atmosphere as much as ever because the types of air pollution control we have are not capable of removing the small particulates from smokestacks. This is something that pollution control technology has not yet caught up with. This is an area where Federal Government and industry ought to be spending a great deal on research because it is a major health threat.

Another rather scary health aspect is that recent studies, about which I expect we have all read, indicate that 85 percent of all cancers in the country--and cancer is now the second leading cause of death in the United States--are caused not by heredity but by environmental factors of various sorts, including food additives. There is little question that an increasing number of cancers are coming from pollutants in the environment. So it may not be time to slow down, or stop, or turn back the clock on environmental protection if we value public health.

In another area, it is a sad fact that most parts of the country still do not have effective land use planning. We are still proceeding on an ad hoc basis with land use in almost all parts of the country. With the exponential rate of growth of land use, as with everything else, we are going to run out of land before very long, as we already have in many areas of the country. Some kind of effective land use planning in every State in the country is very much overdue.

We now turn to the second part of the question before the panel: What should be the Federal role? There seems to be a fair amount of agreement on the panel that the Federal role must be primary. Even Mr. Coulter, who is a State official, does not believe States and localities are capable of doing the primary job in most areas of environmental protection. Many would still argue and probably rightly, that the States and localities can take the primary role in the area of land use, but in the areas of air pollution, water pollution, and control of toxic substances, there is little question that it is going to be the Federal Government that takes the lead.

I would like to talk a little bit--in light of Mr. Coulter's remarks--about the Federal Water Pollution Control Act amendments of 1972. The Natural Resources Defense Council (NRDC) has been a leading litigator under the Water Pollution Control Act and a number of my colleagues would disagree with what I am going to say--I am saying this on strictly personal terms.

I happen to agree with many of the criticisms that Mr. Coulter made. I think that the study that he referred to by Allen Kneese and Charles

Schultze of both the air and water acts--primarily the water act--is an excellent study. It is entitled: "Pollution, Prices and Public Policy," and it comes out basically recommending an effluent fee system, rather than the present system of regulatory controls that we have. I personally happen to think that would be a better system than the one we have right now and would get the water just as clean if properly designed, as pointed out by Kneese and Schultze.

Furthermore, I would agree with Mr. Coulter and Mr. Nemec that the "zero discharge" of water pollutants concept does not seem realistic if it is regarded as more than a goal. As Barry Commoner pointed out, everything has to go some place, including water pollutants. Logically, if they do not go into the water, they have got to go either into the air or be disposed of on land, and both of those alternatives have some drawbacks. The goal of completely eliminating discharges into water does not seem realistic, and I am not sure that the Congress ever intended it as an actual as opposed to a theoretical goal.

Mr. Coulter commented on the section 404 of the Federal Water Pollution Control Act amendments of 1972 which has been interpreted by the court to give the Army Corps of Engineers power to control discharges to present wetlands. I would like to point out that this was a lawsuit that was brought from our organization, but I was not personally involved.

This is an example where the democratic process is operating perfectly well. The Congress enacted what was admittedly an ambiguous statute; an environmental group brought suit in court to determine the meaning of the statute; the court interpreted it in what lawyers would consider a reasonable way; and it was brought back before the Congress for clarification. As Mr. Coulter pointed out, the Congress may take that jurisdiction away from the Corps of Engineers; but, as I think Mr. Nemec pointed out, a key question is who the Congress is going to look to if that power is taken away from the Corps.

Mr. Coulter says we have to look to a national wetlands act since wetlands are one of our key resources in a number of ways. I would rather wait until we see a national wetlands act in sight, before we take the power that presently is in the Corps, and which the Corps if happy with, and leave the wetlands to the mercy of developers.

To conclude, I would like to point out some of the needs we have in environmental protection that I do not think have been met. First is the question of control over the public lands. As I am sure you know, the Bureau of Land Management, Department of the Interior, controls the majority of the public lands in this country, close to 500 million acres. However, the Bureau does not have effective authority to impose environmental protection or other controls on that land. It is operating under antiquated authorities which date from 1850 and even before. We badly need the Bureau of Land Management Organic Act which is currently being

debated in the Congress. We have to have an act that will give the Bureau effective control to degradation of these public lands, many of which are being very badly harmed in the West.

Second, and another very serious problem, especially in light of the information that has come to light about environmental pollution as a cause of cancer, is the need for a Federal toxic substances control act. I do not think that anyone would argue that control of toxic substances can be elsewhere than the Federal Government for some of the same reasons that have been stated with respect to control of auto air pollutants. With industry producing thousands of new toxic substances every year, and the cancer threat what it is, we very badly need that kind of authority in our Federal Government.

Third, as I mentioned previously, we need land use control generally. The role that has been suggested for the Federal Government here is basically one of offering a carrot to the States in the way of planning subsidies. Despite the fact that land use legislation has become a political issue that is probably dead for this session of the Congress, the need is not going away but getting more severe every day, and I hope we will have land use legislation by the end of this decade at least.

The final area in which I think we badly need more Federal action is in the area of planning and forecasting. When I used to be at the Office of Management and Budget, it was painfully obvious that in the Federal Government to say that no one is looking ahead more than a couple of years. This has to do with our political system.

Presidents serve for 4 years, congressmen serve for 2 years, and senators for 6 years. No one really looks beyond a couple of years. Yet many of our environmental problems are problems that are mounting year by year, decade by decade. If we could see a little way down the road where we were heading, we could see much more clearly what we ought to do now.

It is significant that in the area of worldwide climatic change, a report was released recently which contained some very disturbing conclusions about climatic trends. Who was it released by--the Central Intelligence Agency? It is a sad thing that we have to rely on a secret intelligency agency to look ahead just a few years at environmental trends which may have an effect on the lives of everyone in this room and on our children.

The time is long overdue for the Federal Government to set up some kind of organization or office that would get the best minds in the country thinking in a systematic way about what lies around the corner, because we will be around that corner in a very short time.

SELECTED QUESTIONS AND ANSWERS

Q: Some comments were made about allowing the States to go higher than the Federal standards for air and water. Should the Federal Government pay for this, or if the States wishes to spend more, should the people of the State pay for their desires? A specific example of this might be advanced waste water treatment.

A: Let me answer your question from both a matter of principle and then from a practical point of view. The former is easy, the latter is a little more difficult. It has been a traditional role of State and local government to wield the policy power to protect health and welfare and that concept has been grafted into all environmental laws, the Clean Air Act and the Federal Water Pollution Control Act. But, State and local governments have the right to establish more stringent standards than the Federal standards. As a matter of Federal-State relationships, it would be a very severe mistake to preempt that requirement. The Federal preemptive requirements tend to deal with products sold in interstate commerce, like automobiles and associated products and noise standards and the like. There are federally preemptive standards dealing with particular products.

In terms of a particular ambient quality, that should be up to a State or local government. In terms of paying the costs, traditionally the funds from the Federal waste treatment construction grant program have been available to meet the cost of higer levels of treatment than, say, secondary treatment. The administration has recommended an amendment which slightly alters this relationship. It is an extraordinarily complex amendment and I will not even try to describe it here. But even so, if a State decides that it wants a certain use of water, say for drinking water, then Federal funds would be available, assuming that that was the most cost-effective way to achieve that particular use. In general, State and local governments should have the right to set higher standards than the minimum threshold levels of the Federal Government.

Q: The question was raised about not having the State set such high standards. What is your feeling toward enforcement of these higher standards? Do you feel that it is a Federal role or is that under the powers of the particular State?

A: Let me hit this act by act, because it is hard to generalize. In the Clean Air Act, there have been some States that have set higher sulfur oxide limits than would be necessary to achieve the ambient air quality standards. We have been willing to work with the States

to set limits that would only be necessary to achieve the standards, assuming that other values could be protected. In terms of enforcement though, the standards become Federal-State standards and they would be enforceable by the Federal Government. In other words, we would allow reducing the air standards, but if the State refused, we would enforce them.

In terms of the Federal Water Pollution Control Act, this problem tends to be more theoretical than real. I do not know of any case, there may be some, where there is any dispute between the Federal Government and the State government about the level of the standards. It could happen. In any case, those are Federal-State standards again, and they would be enforceable by EPA if the State failed to take action.

A: Let me elaborate on that part, because a very important point was made. In our strategy in Maryland, we have attempted to adopt one set of standards for one set of water and have both Federal and State law endorse a set of standards as Federal-State standards. The principle is that a single citizen should be approached by a single Government agency on a single subject. To have dual standards is disruptive. Both Federal and State agencies in our State, at least, have worked to adopt a single set of standards that is at once both Federal and State standards enforceable by Federal law or State law. The authority for issuing water pollution control permits and carrying out initial enforcement activities have been delegated by the Federal Government--i.e., the Federal concurrent jurisdiction has been delegated--to the State with an oversight role for the Federal Government so that if we do not do the job the way they want, then the Federal Government can do it.

I have taken a very hardheaded position that they will not exercise a case-by-case recall of their responsibility. You can see the obvious difficulties there on both sides, but from our side it seems better to say either we are coming up to the general level of performance in doing the Federal job as their agents, or we are not and so we have had quite a few tough discussions over whether on a case-by-case basis--especially where there is some glamour and a lot of controversy, etc.--the Federal agency should come on in. We have taken the attitude all or none and even talked about delegating back to the Federal agency, if that is possible, the responsibility for enforcement of State laws. We have not found a way to do it yet.

Q: Would you comment on environmentalists' veto power over most major public works projects?

A: I had better choose my words carefully. It is true that it is quite frustrating to go through literally years and years of planning, of working within the constituted forms of government--the count commissioners, county sanitary districts, county government, State government--go through planning processes that dictate local plans incorporated in State plans, etc., and get to the final issue of action and find that some dissident person or persons who have had their day in court, who have gone through the procedure, who have made their views known and their views have been considered, still have recourse in the way of coming back through and blocking the whole governmental action. Maybe this is just growing pains.

I, for one, do not want to take away any of the safeguards of citizens' suits or citizens' inputs or safeguards to make sure that this environmental thing is open and clean and that anyone with a legitimate complaint can get into the action and has a meaningful way to pursue that action. But we do have, I'm sorry to say, a large number of people haters loose in this world and the present system makes it possible for a determined people hater to really carry out and vent his spleen on the rest of society. It is something that we will probably overcome as we become more mature in this business of environmental control.

A: I will start out by indicating that I am a people lover. When one talks about stopping projects, you are probably talking about the procedures of the National Environmental Policy Act of 1969. That act requires the preparation of an environmental impact statement and allows for public comment as well as for comment from State and local and Federal governmental bodies.

The significance of that act to me is not only its role as a mechanism to protect the environment but to actually allow citizens to have a say about events that are affecting their lives. It strikes me that part of the problem of the credibility of government right now in this country is that citizens see the government as an overpowering force that can affect their lives without their having very much to say about it. The results of the National Environmental Policy Act (NEPA) have been (1) to get citizens involved in decisions affecting their lives; and (2) to make governmental bodies plan better to protect the environment and plan better to involve local citizens and governments in the decisionmaking process.

I would agree that in some cases, objections have been raised that are not meritorious. But overall, however, NEPA has really had a very positive effect on the planning of governmental programs and the involvement of citizens in the development of those programs and the implementation of them.

A: I would like to disassociate myself from the people haters, too. I agree that it is the National Environmental Policy Act that has spurred the majority of lawsuits that have succeeded in delaying major projects. Federal agencies are learning how to comply with NEPA at least on paper, and the number of successful lawsuits has shown a marked decline in the past year. Unless agencies really go off the reservation, the day of stopping major projects is probably over.

Perhaps the leading example of delay in a major project is the trans-Alaska pipeline. I was one of the counsels for the environmental groups that were responsible for delaying the pipeline. It sort of amuses me to have had testified 3 years ago that we should have built the Alaska pipeline across Canada because we were going to have too much oil on the west coast. A recent report from the Federal Energy Agency says that we are going to have 400,000 or 500,000 barrels of oil a day too much on the west coast and therefore, we will have to build a pipeline from Seattle or Los Angeles to Chicago. So, that old debate could still go in if there were any point in it. Maybe had the National Environmental Policy Act been better complied with in that situation rather than Congress essentially amending it for that case, we would be in a better situation today.

A: I am not a people hater and yet I do want to say that I fully agree with your question that environmental groups do have a veto power beyond their force and effect and beyond the natural limits of that which should be legitimate. This is being compounded by lawyers who tend to work in this area. It is amazing that when 20 lawyers being paid on an hourly basis get together--some representing environmental groups, some representing company interests, some representing city, State and national authorities--nothing ever seems to get done. They are interested on reflecting on how many angels can sit on the head of a pin and have absurd discussions as to the atomic weight of each of those angels and what their halos look like and under what circumstances they are to be removed and put on, etc.

My own fear is and I have seen this happen in other pendantic agencies, and this is a relatively new area--that as time progresses, rather than as Tom optimistically things are going to get worse. The history of regulatory agencies bears this out. Look at how long it takes to process a case through the Federal Trade Commission, the Federal Power Commission, and certainly the Interstate Commerce Commission (ICC). Until a new law came along, it took 12 to 15 years to process a merger application through ICC. If you did it in 8 it was a tremendous accomplishment. There is no question that in the past 4 or 5 years, there have been enormous delays to programs that have been exceedingly important to the national welfare of the United States. These delays have been unnecessary. Part of them are attributable to a lack of

discipline or understanding of the problem by Federal agencies. They ought to process cases timely and establish guidelines to simplify the proceedings. My fear is that unless simpler, more realistic approaches are established, this cancer tends to grow on itself and the encumberances tend to increase rather than decrease.

Q: You pointed out that expenditures on pollution controls create jobs. That is true. You did not point out that the same expenditures somewhere else would also create jobs. That is also true. The question is: Is it better to create jobs in pollution control than create jobs elsewhere?

A: That depends on whether pollution control is productive enough. How can you tell if pollution control is productive enough without cost/benefit analysis? Pollution control is productive up to a point. You get to the point where a dollar invested in pollution control gets you more than a dollar's worth of benefits. If you go beyond this point, if you get less than a dollar for every dollar you put out, then pollution control is nonproductive.

We can only go as far as to the point where the marginal benefits equal the marginal cost, that is, for each dollar invested brings you at least a dollar's worth of benefits.

A: Your view expresses very well my view and I think the area of fugitive emissions is a perfectly fine example of the lack of adequate studies of the type you are talking about. As a Nation, we certainly have to look at productive effort. I want to emphasize again that industry in general and certainly the steel industry is committed to cleaning up the environment. It is that last inch that last one, two, or three percent that we object to and object to very strongly because we say that on balance, this is a totally nonproductive national effort.

A: Let me just comment briefly. I have been wound up to the point that I am unwindable. I do not disagree with the basic conceptual framework that you laid out. The problem is that marginal benefit/cost analysis is simply that, very marginal. What you have to deal with is the whole set of values and how the Government puts a value on it, what is a life worth, what is a certain amount of sick days worth. The measures that we use are crude at best. I do believe that we have got to give a lot more attention to cost/benefit analysis. In its state of development, it is simply not adequate to make marginal decisions, if indeed to even make aggregate decisions.

Q: Concerning the effluent fee system as an alternative to the present regulatory system, I wonder if I could get some of your views on the advantages and disadvantages of going that route.

A: We tried to write a State law that would put an effluent charge into effect. However, the technical difficulties of metering and estimating the effects on water and air quality and relating that back to the proper charge, was impossible to overcome so we backed away from it.

A: I am a lawyer and not an economist. Some of the theoretical advantages of effluent fee systems are very obvious. Some of the analyses that have been done allege that the practical problems could be overcome at least in the area of water pollution control. My understanding is that in the Ruhr Valley in Germany, there is a system that works. But I would not try to be an expert on this. A lot of my thoughts come from Kneese and Schultz and other people. The fact is I do not know of any that have been proved workable in the United States.

A: There are an awful lot of very difficult technical problems to work out with effluent fees. If one assumes that (a) pollution is a homogeneous product and (b) that the plants are spaced so that they do not affect other plants, then an effluent fee concept is a lot more practical in looking at the real distribution of plants and pollutants. Selectively, though, there are things that can be done right now.

There is a sulfur oxide emission tax that has been before the Congress since 1971. This particular proposal deals with only one pollutant, sulfur oxide, and is a feasible approach. The proposal would require after 1979, the imposition of a fee on firms not complying with the Clean Air Act requirements. The fee would be equivalent to what the cost of treatment would have been.

There have also been a number of economic incentives to encourage more resource recovery and recycling. There have been suggestions of a recycling tax credit for firms that use secondary materials in their production. There have also been incentives proposed that would set a tax on use of certain virgin materials as an incentive to use secondary materials and to pay for the cost of collection.

There is increased interest in the Congress and elsewhere to look at alternatives to regulation. This is healthy, very healthy. But, there are some very difficult practical and technical problems that are going to have to be overcome.

COST/BENEFIT--HOW MUCH PROTECTION AT WHAT PRICE?

SPEAKERS' AND PANEL MEMBERS' PRESENTATION
AND RELATED QUESTIONS AND ANSWERS

STATEMENT

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COST BENEFIT ANALYSIS IN ENVIRONMENTAL DECISIONMAKING

1. Overview

There are three separate but interrelated concerns in environmental protection.

1. How to set the ambient standards for water and air, i.e., how to decide on the best permissible level of pollutant concentration. These decisions should be based on an understanding of the costs involved in clean-up and on the benefits which can be gained from a cleaner environment.

2. Achieving the desired standards means abating the pollution coming from a variety of sources. How best to do this, i.e., at the lowest cost, is an exercise in cost-effectiveness analysis. The benefits no longer enter in, since they have already been considered in the setting of standards.

3. A final consideration has to do with equity, i.e., with who pays and who benefits. As far as possible, one would like them to be the same people or the same group. Since this is almost never the case, value judgments and political judgments now enter into environmental decisionmaking. To a certain extent, these judgments feed back into the abatement of pollution and into the setting of standards.

The present paper deals primarily with the first topic. We discuss the problem of standard setting by showing how costs and benefits must both be considered in arriving at the optimum amount of pollution for the environment. We try to answer such questions as: How clean is clean? How do we strike a balance between spending funds for a clean environment and spending funds for other things that contribute to the welfare of people? What fraction of our GNP should we devote now and in the future to achieving and maintaining desirable levels of environmental quality?

In the ideal world, this kind of problem is solved by cost-benefit analysis; in the more practical, pragmatic world, we know that we cannot measure costs very well, and we sometimes cannot even define all of the benefits.

Nevertheless, cost-benefit thinking is a very valuable way of looking at the problem. It teaches, for example, that environmental quality is not priceless; by definition, "priceless" means an infinite price; and this means there can only be one priceless thing in the world. Instead, environmental amenities should be priced and can be priced--although not very precisely. When that point is recognized, then it becomes immediately obvious that zero pollution is not the optimum amount of pollution.

Before entering the details of the discussion, it might be useful to clear up some other misconceptions about cost-benefit analysis.

Suppose the cost of a project exceeds the benefits that can be derived from it: Does that mean that we should not undertake it? It all depends. If someone else pays for it and you benefit, then it clearly makes sense for you. But before you dismiss this example as irrational, consider the "somebody else" to be the next generation. Are we not behaving in this way in many respects when we pollute Lake Erie and cause eutrophication to take place? Are we not deriving benefits today and placing the costs on a future generation? It is precisely this kind of reasoning which has led us to recognize finally that there is an environmental problem both of an immediate kind and of a kind which can affect a future generation.

Plan of this Paper

Suppose, finally, that the benefits to be derived are greater than the costs, and suppose also that both benefits and costs accrue to the same people. Should we undertake the project? Again the answer is not obvious. Even if the benefits are greater than the cost this is not a sufficient condition, only a necessary one. A major part of this paper deals with this problem under the heading of "marginal" analysis.

Cost-benefit analysis appears to be called for in the National Environmental Policy Act. Following a legal digression, we describe the basis of C/B analysis, and then apply it to the specific problem of automobile emission standards. Finally, we shall discuss the methodology further and indicate how dynamic cost-benefit analysis is carried out, again with application to the automobile pollution problem.

Not discussed in this article are such topics as how to achieve the desired standards, whether by regulation or by taxes. Nor do we discuss the advantages and disadvantages of Government payment for pollution control equipment, of grants for the construction of sewage treatment plants, of tax write-offs for industrial pollution control equipment, and of Government support for R&D. These topics, while important, do not fit into the subject matter suggested by the title of this article. The impact of costs and benefits on different sectors of the population, and the longer-range economic impacts, form an important, but separate topic.

2. The Requirement for Cost-Benefit Analyses

Since the National Environmental Policy Act (NEPA) went into effect on January 1, 1970, more than 6,000 environmental impact statements (EIS) have been prepared according to section 102(C) of the act. During 1974 alone, the cost to the various Government agencies alone was well in excess of $100 million.[1]

Some 6 years later it may still be too early to draw up a balance sheet on NEPA and on environmental impact statements. On the one hand, they have improved decisionmaking in the Federal Government. Without an EIS the Alaskan pipeline would have been constructed according to its original design with possibly deleterious consequences. On the other hand, the delay has jeopardized our oil security, permitted the Arab producing countries to mount an embargo, and thrown doubt and confusion into our long-term energy planning. In many cases environmental impact statements have been used by opponents of a project simply to create delays and obstructions. It has also thrown the courts into the business of making final decisions regarding the legality of a multitude of Federal actions. "NEPA in the Courts," a legal analysis and review of litigation by Frederick R. Anderson, published by Resources for the Future in 1973, offers a substantial review of the 150 cases which had been or were being litigated in the first 3 years.

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[1] DOT estimates its cost at $37 million, Interior at $14 million, Forest Service at $27 million, Nuclear Regulatory Commission at $15 million, and so on. This does not include the costs involved in the various court cases, nor does it include the indirect cost of project delays.

There has sprung up an industry based on environmental statements, consulting firms which make it their business to put together the substantive material and the boilerplate required for an EIS, sometimes amounting to thousands of pages and leading to tomes weighing tens of pounds. One assumes that a corresponding effort has gone into the reading and analysis of the material. The main criticism has been with the cost of the process, the delays which it imposes, the quality of the analysis (which leaves much to be desired), and its relevance.

The act is reasonably clear about what is required. Section 102(C) states that all agencies of the Federal Government shall:

> "(C) include in every recommendation or report on proposals for legislation[1] and other major federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on -
>
> (i) the environmental impact of the proposed action,
>
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
>
> (iii) alternatives to the proposed action,
>
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
>
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented."

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality, and to the public as provided by section 552 of Title 5, United States Code, and shall accompany the proposal through the existing agency review processes.

A plain reading of the text would suggest that proposals for legislation include not only those coming from the executive branch, but also from the Congress. This is not the case, however; and subsequent

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[1] Italics added.

legislative history has largely exempted EPA from the requirement of filing an EIS. Nevertheless, this section has had a powerful effect on decisionmaking of Federal agencies. To quote Joseph L. Fisher, former President of Resources for the Future, and now a U.S. Representative from Virginia. ". . . some innocuous-appearing procedural language can become . . . a powerful engine for change once the public and the courts have access to it."

Of greater interest to me is section 102(B) of the act, which deals with a more substantive matter--as opposed to 102(C), which is more procedural and simply explains how to draw up an impact statement. Section 102(B) reads as follows:

"All agencies of the federal government shall:

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by Title II of this Act, which will insure that presently unquantified[1] environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations."

A plain reading of the text leads to the following conclusion. In making a decision, whether an investment decision or project decision, the decisionmaker considers economic and technical aspects. Usually he will make a rate-of-return calculation or equivalently, a cost-benefit analysis. The Congress is now saying that this is still the primary consideration, but let us be sure that we include environmental costs and benefits which have up until now not been included because they have not been quantified, i.e., because they have not been expressed in the same units, namely, in dollars. What the Congress is therefore asking is that we develop methods and procedures which will assign dollar values to environmental amenities so that these can be considered on the same terms and along with other economic returns and benefits.

Now this is a very sensible idea, and one which has a goodly amount of precedent in other kinds of Federal project decisionmaking. For example, in planning a reservoir and dam, one normally takes into account the benefits from flood control, from water supply, from hydroelectric power, but also the recreational benefits which have only more recently been quantified. To be sure, the incentive to quantify previously unquantified benefits came because it added to the total of the benefits and therefore made the project more attractive. What the Congress is saying now in NEPA is that environmental benefits as well as environmental losses must also be considered quantitatively along with the rest of the economic benefits and costs.

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[1] Italics added.

In a recently published volume, Kneese and Schultze make some interesting suggestions.[1] They point to the fact that Congressmen by and large are lawyers or law-oriented and are concerned with the political process, as are their staffs. Therefore, the authors would assign the responsibility for program evaluation and technical analysis to an agency like the General Accounting Office or to the Legislative Reference Service of the Library of Congress. For example, the GAO could perform the two technical assistance functions of providing cost-benefit analyses corresponding to various environmental quality levels and of estimating the economic impact which results from the setting of standards.

This is an important point which should be expanded further. Unlike public works projects where the funding comes from the Government, and where the economic impacts are perhaps more readily apparent, in the case of pollution standards, the economic impacts fall mainly upon non-Federal entities, on industries, and ultimately on the consumer. It is important that these economic consequences be at least roughly estimated. Various kinds of large-scale economic models can be used to gauge the effect of alternative policies for air and water pollution control on the prices, costs and investment requirements of particular industries, and on individual communities, river basins and air sheds. Such analyses should be done before the policies are enacted. Kneese and Schultze also recommend that the development and application of these large-scale models not be undertaken by congressional staffs themselves but by outside private or governmental institutions.

3. Marginal Cost-Benefit Analysis

We start with three assumptions.

1. That the costs and benefits involve roughly the same group of people so that there are no major inequities whereby, say, one group of people receives all the benefits and another group pays the costs.

2. The costs and benefits can somehow be determined in dollar values to a satisfactory degree of accuracy.

3. If there is a time stream of costs or, as is more usual, a time stream of benefits, then a social rate of discount, i.e., an interest rate, can be arrived at so that the present value of both costs and benefits streams can be calculated.

Finally we want to compare the benefit and cost values so arrived at from two points of view. (i) We can calculate a benefit-to-cost

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[1] Allen V. Kneese and Charles L. Schultze, "Pollution, Prices, and Public Policy," The Brookings Institution, Washington, D.C., 1975.

ratio; or (ii) we can calculate the difference between benefits and costs which is termed the net benefits (in a business venture it would be termed the net revenue or sometimes the profit).

The two concepts are not the same and, applied indiscriminately, will lead to different conclusions.

To explain this point further, we need to understand the difference between "indivisible" and "divisible" projects. An example of an indivisible project is a major dam. It can be built only according to a certain size or not at all. The cost is not adjustable. In this case we can look at the benefit, calculate the benefit-to-cost ratio, and compare this ratio with that obtained in some other project, not necessarily a dam. In case there are a number of possible projects, they could be rank-ordered according to benefit-cost ratio, and only those having the highest B/C ratio would be selected.

An example of a divisible project would be a highway in which the number of lanes are adjustable, or an airport in which the number of runways are adjustable. In the environmental areas, the ambient standards are adjustable and, in principle, can be varied in very small steps between certain limits. For example, we might have carbon monoxide standards of x parts per million where x can be varied in very small steps.

The matter can be explained by turning to Figure 1. It is assumed here that the degree of pollution control can be changed smoothly and that both costs and benefits vary smoothly depending on the percentage of pollutant removed.[1] The cost-benefit curves are rather typical, showing that the cost increases greatly as one tries to remove the last bit of pollution, while most of the benefits are achieved when the initial bulk of pollutants are removed.[2]

From Figure 1 it can be seen that the benefits are equal to the cost at the origin and again at the point of intersection which may or may not exist. The origin is a trivial case but if benefits are equal to costs

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[1] In fact, this assumption does not hold when applied to a specific project, because the introduction of different technologies introduces "breaks" in the curve. But, if averaged over many projects, the breaks can often be smoothed out.

[2] These curves are of course highly idealized and do not consider the presence of other polluting sources. For example, if another overwhelming polluting source is present then cleaning up this particular source may incur only costs but no benefits whatsoever. This point should be kept in mind in view of our later discussion of dynamic cost-benefit analysis.

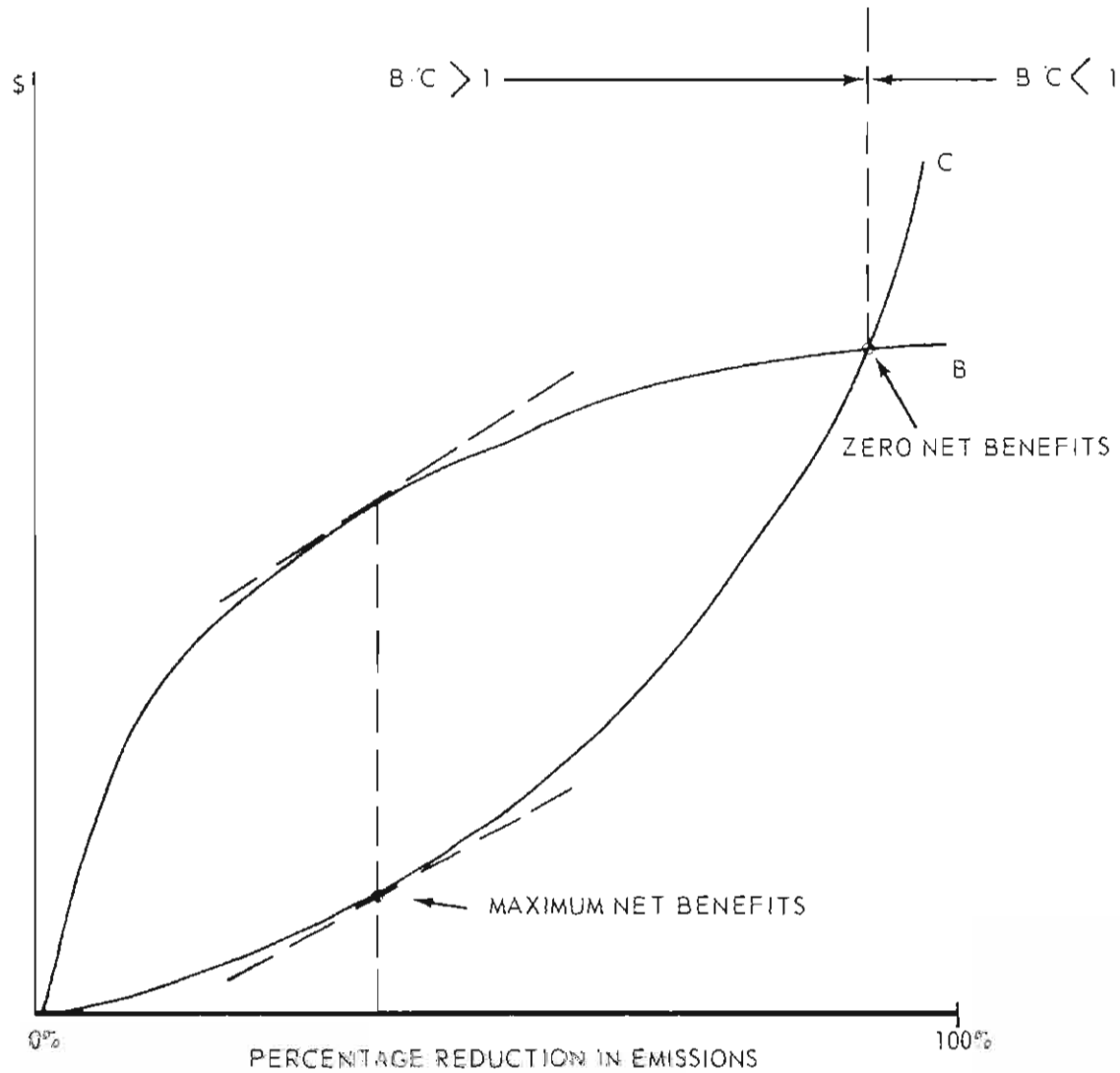

FIGURE 1

BENEFITS AND COSTS PLOTTED VERSUS THE DEGREE OF POLLUTION CONTROL (FOR THE INTERESTING CASE WHERE BENEFITS EXCEED COSTS OVER A RANGE OF VALUES). NOTE THAT THE POSITION OF MAXIMUM NET BENEFITS CORRESPONDS TO THE CONDITION THAT MARGINAL BENEFITS = MARGINAL COSTS; TO THE LEFT OF THIS POSITION MB >MC. THE MAXIMUM OF THE RATION RATIO B/C OCCURS ELSEWHERE IN GENERAL.

at some degree of pollution control, then we can say a good deal more about the situation. At that point the net benefits are clearly equal to zero. That is, we get just as much benefits in dollars as we expend in terms of costs. At that point also the B/C ratio is equal to one. At every point to the left of the intersection the B/C ratio is greater than one. The maximum B/C can occur anywhere, however, depending on the exact shape of the curves. On the other hand, the point of maximum net benefits is well defined. It is shown clearly in Figure 1, and it occurs at the place where the slopes of the benefit and cost curves are equal to each other, as shown. This proposition can be proved mathematically as follows: If we label the abscissa as x then we have the following relations:

$$\text{Net benefits} \quad NB = B - C$$

$$\text{To maximize NB, set} \quad d(NB)/dx = 0$$

$$\text{Then} \quad \frac{d(NB)}{dx} = \frac{d}{dx}(B-C) = \frac{dB}{dx} - \frac{dC}{dx}$$

But this last statement just expresses the equality of slopes of the benefit and cost curves at a particular value of x.

What should we do? Should we use the B/C ratio or the net benefit concept in deciding how to design a project and optimize it? The answer now is reasonably clear. For an indivisible project there is no choice. Only the B/C ratio can be used. For a divisible project, such as shown schematically in Figure 1, the net benefit concept can be used. At the point of maximum net benefit a certain improvement in pollution control may cost a dollar and we receive exactly one dollar's worth of benefit for it. One should therefore not operate to the right of this point where B=C, a dollar spent on more pollution control might buy only 5 cents worth of benefits, the exact figure depending on the relative slopes of the two curves at the point of intersection.

One can, however, operate to the left of the maximum net benefit point. In that case, not all the money will be spent on pollution control and some of it will be available for other purposes. It can be invested in public projects which also produce benefits. The overall optimum is obtained if one can, by investing a dollar in each project, obtain the same amount of benefit from each project, with each benefit being greater than one dollar. The question is whether there is a limit to the funds one can invest in various kinds of projects or not. The existence and size of the limit then determines the optimum strategy and the eventual payoff from investments in different projects.

4. An example: Control of Automobile Emissions

The National Academy of Sciences[1] has conducted a cost-benefit analysis of automobile emission controls. It is one of the most comprehensive cost-benefit studies ever done in connection with environmental problems, took over 1 year and cost $500,000. Although enough data were obtained to carry out a marginal analysis, it was in fact never articulated. The primary result, as stated, was that the total benefits derived from achieving the statutory standards were commensurate with the costs (this is another way of stating that the net benefits were zero). In Volume 4 of the study it was pointed out, however, that if the standards were relaxed, a sizable saving in cost could be effected which would be greater than the resultant loss of benefits. (This statement amounts to a quasi-marginal analysis.)

As a matter of fact, it is possible to carry out a crude marginal analysis from the work presented in Volume 4 of the NAS study. The results are shown in Figure 2, which uses only the data presented in the NAS study. According to this study, the benefits are linearly related to the degree of emission control put on private cars. Low and high estimates of benefits were made, but an intermediate estimate was adopted as the "best value." The costs vary discontinuously as a function of the degree of removal since different technologies and different scenarios are brought into play. (Dollar costs and benefits are given for a 1985 scenario where all cars are assumed to be emission controlled.) In the NAS study, the control of emission of carbon monoxide, hydrocarbons, and nitrogen oxides are all assumed to be of equal value; we have adopted the same procedure in calculating an effective degree of removal of pollutants.

From Figure 2, it can be seen immediately that the maximum net benefit is obtained well below the level of the statutory standards (which correspond to a 94 percent reduction in emissions). When plotted as marginal benefits and marginal costs, i.e., when the slopes of the curves in Figure 2 are plotted, the optimum is obtained at about a 50 percent reduction in emissions, i.e., corresponding to a set of standards slightly more relaxed than the 1975 standards.

As a matter of fact, both the benefit categories and cost categories of the NAS study need to be reexamined and amended. In the benefit category,approximately half the benefits are due to a proxy technique which may account for the abatement of automobiles rather than for the abatement

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[1] Air Quality and Automobile Emission Control, A report by the Coordinating Committee on Air Quality Studies, National Academy of Sciences, National Academy of Engineering, Serial No. 93-24, U.S. Government Printing Office, Washington, D.C. 1974.

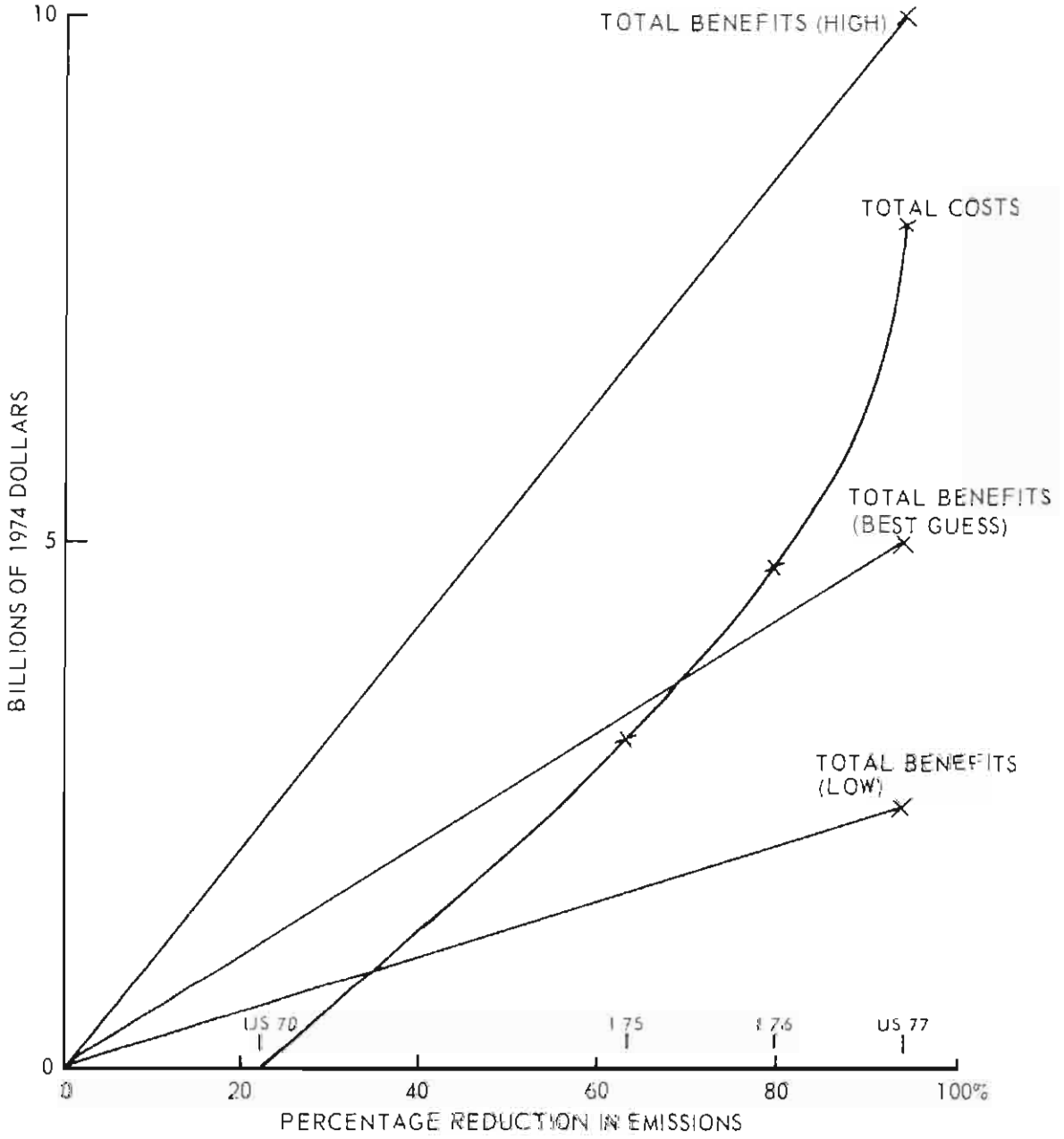

FIGURE 2

TOTAL COSTS AND TOTAL BENEFITS (IN BILLIONS OF 1974 DOLLARS) AS A FUNCTION OF THE PERCENTAGE REDUCTION IN EMISSIONS. DERIVED FROM DATA OF THE NAS REPORT[V]. NOTE THAT ONLY THE HIGHEST ESTIMATE OF TOTAL BENEFITS EXCEEDS THE TOTAL COSTS AT THE LEVEL OF THE STATUTORY STANDARDS, CORRESPONDING TO A 94% REDUCTION.

of automobile pollution. I have attempted some crude corrections and plotted the new benefit curve in Figure 3. As far as costs are concerned, I have added three cost categories which were not considred in the original NAS study, as follows: (1) inspection and maintenance costs, to make sure that the pollution control equipment is functioning, (2) abatement of the sulfuric acid mists which are created by the catalytic converter used to abate the CO, HC, and NOX; and (3) costs ascribed to the delay and uncertainty introduced by the attempt to impose the rather strict statutory standards with a very short lead time. The final result can be seen in Figure 3. The statutory standards now lead to net benefits of -13 billion dollars per year, a rather considerable loss. The net benefits are zero somewhere corresponding to the present 1975 standards. The optimum appears to be a set of standards more relaxed than the present standards. This conclusion, incidentally, offers hope that a basically nonpolluting engine can be built which will work without the addition of pollution control equipment and will therefore presumbably be troublefree and cheaper to attain.[1]

There is no question then, that even crude efforts at marginal analysis can be useful in estimating the outcome of different pollution control strategies and indeed in pointing to an optimum strategy.

5. A Dynamic Approach to Optimum Pollution Control

As a general philosophical point, it is evident that the optimum control program must depend on the path which is taken; i.e., the final standards depend on the starting point as well as on the interim strategies adopted. This optimization requires a dynamic cost-benefit caclulation, rather than a calculation involving comparative statics, which merely compares two alternative final situations statically.[2] The dynamic calculation may involve a time path of intermediate standards; it must, of course, take account of technological developments and technological evolution, of the gradual disappearance of uncontrolled automobiles, of the gradual elimination of other anthropogenic pollution sources, and of the costs of uncertainty and changes, as well as of the time value of money.

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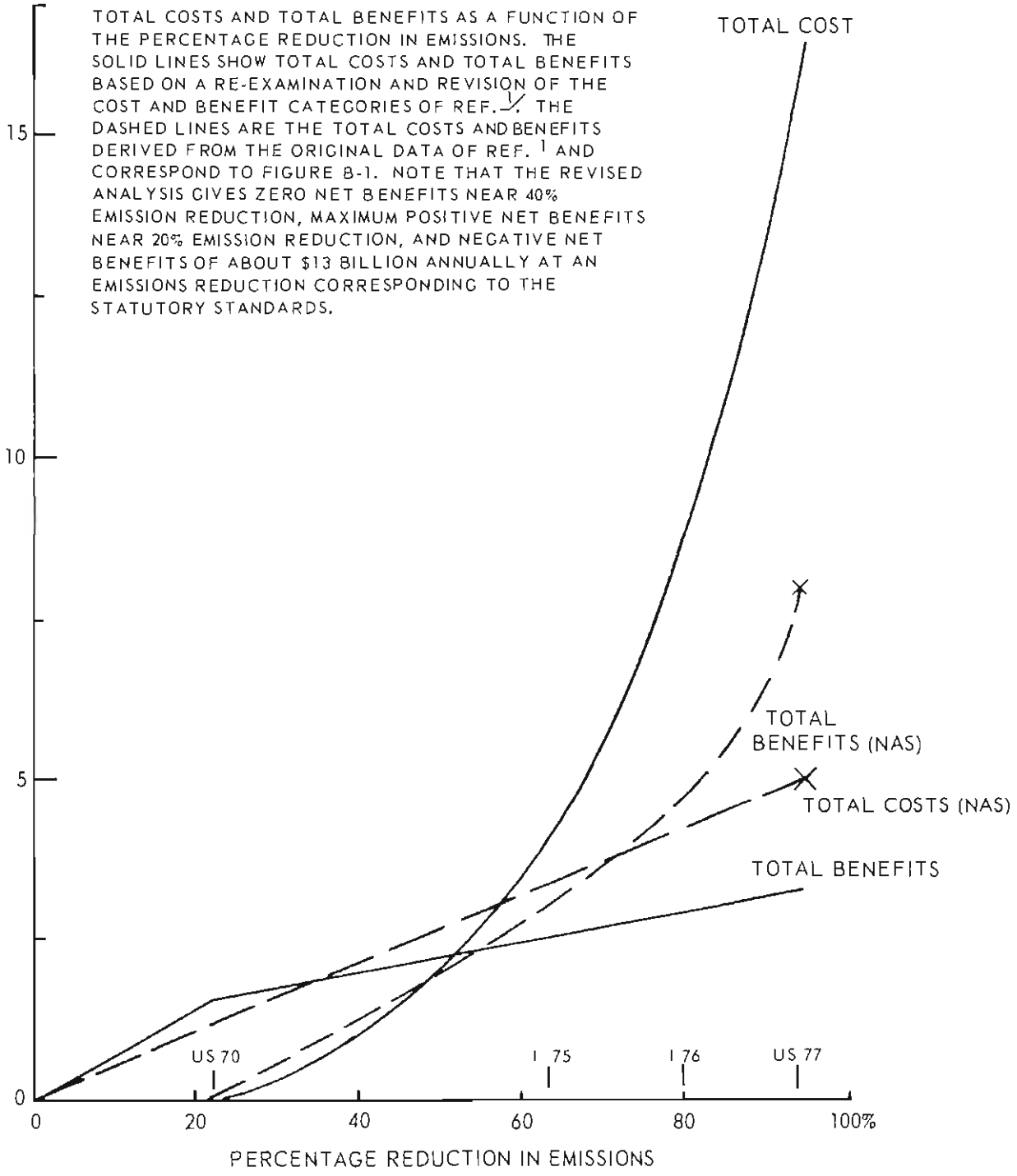
[1] Three likely candidates are a Diesel engine, the "lean-burn" engine being developed by Chrysler, and the "stratified charge" engine. All of these engines would also permit sizable savings in fuels, of the order of a million barrels per day, as compared to the use of catalyzers to meet the statutory standards.

[2] Note that in the preceding marginal analysis (Figs. 2 and 3), the NAS Study (and we) calculated the "1985 scenario" costs and benefits assuming that after 1985 all cars would be controlled.

FIGURE 3

TOTAL COSTS AND TOTAL BENEFITS AS A FUNCTION OF THE PERCENTAGE REDUCTION IN EMISSIONS. THE SOLID LINES SHOW TOTAL COSTS AND TOTAL BENEFITS BASED ON A RE-EXAMINATION AND REVISION OF THE COST AND BENEFIT CATEGORIES OF REF. 1/. THE DASHED LINES ARE THE TOTAL COSTS AND BENEFITS DERIVED FROM THE ORIGINAL DATA OF REF. [1] AND CORRESPOND TO FIGURE B-1. NOTE THAT THE REVISED ANALYSIS GIVES ZERO NET BENEFITS NEAR 40% EMISSION REDUCTION, MAXIMUM POSITIVE NET BENEFITS NEAR 20% EMISSION REDUCTION, AND NEGATIVE NET BENEFITS OF ABOUT $13 BILLION ANNUALLY AT AN EMISSIONS REDUCTION CORRESPONDING TO THE STATUTORY STANDARDS.



Application to Automobile Problem

Three major strategies exist for reducing costs, i.e., relaxing the emission standards, a "two-platoon" system, and delay in implementation of standards in the hope of achieving a technological solution of emission control which is essentially costless.

The outline of an optimum strategy to emission control emerges here. Adopting a two-platoon system, where 37 percent of the automobiles, i.e., those in congested urban areas, are controlled, and the rest are not, lowers the cost in more ways than one. It eventually allows 63 percent of all new cars to be uncontrolled, a considerable cost saving. But it also creates an immediate market for uncontrolled older cars. Thereby it avoids the whole problem of retrofit, which would be an extremely expensive proposition. Yet without retrofitting the older cars, it would take 15 years or more before really substantial air quality improvements are obtained! The emissions from the older cars will dominate, even if they constitute a small percentage of the total car population.[1]

An alternative to retrofit is to transfer the older cars with uncontrolled emissions to the countryside, where they have little impact on the ambient air quality. This single feature can speed up by 10 years or more the attainment of higher quality air in the urban areas. It may require only some incentive mechanism, such as a higher tax for an old car if registered in an urban area. Conceivably, one could also levy an increased tax on a new car registered in a nonurban area, thus further speeding up this transfer of the car population.

Until the problem of uncontrolled older cars is settled, and until the emissions from other polluting sources are under better control, it obviously does not make sense to move to a final set of statutory automobile emission standards. Instead, one should strive to adopt standards that can be met at reasonably low cost for an interim period of, say,10 years. One further bonus of such interim standards is that it would allow the development of a nonpolluting engine capable of meeting these standards. Such engines are already in existence, for example the diesel engine, the "lean-burn" engine, and the stratified-charge engine. In fact, their performance could probably exceed the interim emission standards; to the extent that they do, this provides a natural guide to the setting of the final statutory standards.

In a full quantitative treatment, in addition to the optimal standards,one would also want to calculate the time value of money, the gain

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[1] Using the data of the NAS Study, 8 percent of cars are still on the road after 15 years. Assuming these are uncontrolled, they will emit 25 times the CO per mile compared to statutory standards. Hence the effective CO emission will be (1 - .08) + .08 x 25 = 2.92 times the statutory emission.

to society from postponing the capital investments--all the time assuming that an ongoing control program gradually reduces emissions from other pollution sources. These include industry and utility boilers, as well as trucks, buses, tractors, lawnmowers, motorcycles, all of which have an increasingly important impact as the major sources--private automobiles and boilers--are reduced.

It is possible to at least conceptualize the kind of dynamic marginal-cost-benefit analysis described above. In Figs. D-1 and D-2 we show schematically the ambient air quality in a "typical urban region" as a function of time for two specific pollutants, (i) for CO where automobiles contribute the largest anthropogenic component, and (ii) for NOx where the contribution of private automobiles is small compared to the contribution from other pollution sources, especially industrial and utility boilers. In each case we have indicated the effect of a two-platoon system which involves a transfer to non areas of uncontrolled cars having large emission factors. As can be seen, this transfer speeds up any effect of the introduction of the 1975 standard. It is further assumed that 1975 standards are either held in force ("frozen") for 10 years (this is marked "lo"), or that the statutory standards are adopted by 1978 (and this is marked "hi"). Detailed calculations can establish the exact shape and numerical values of these curves which are only exhibited schematically. This would be the first step in the analysis.

The second step consists of calculating both costs and benefits along the "hi standards" path and along the 'lo standards" path, and perhaps along an intermediate path, if there are to be intermediate standards. The full benefits and costs must be considered, including the disbenefits of sulfates created by the introduction of oxidizing catalysts in order to obtain the hi standards. The third step is to reduce the time streams of costs and benefits to present values. At that point, a marginal cost-benefit analysis is applied in which the present value of net benefits (benefits less costs) is maximized.

As discussed earlier, even this represents only a partial analysis, since it does not consider alternative uses of the money for improving public health, or for speeding up the control of nonautomotive pollution sources.

The calculation of this dynamic cost-benefit path is a subtle undertaking, involving a good deal of judgment concerning the probably development of technology. Obviously one cannot investigate all possible paths, but must select from the universe of possible strategies those which appear to be optimal candidates as dictated by technical judgment.

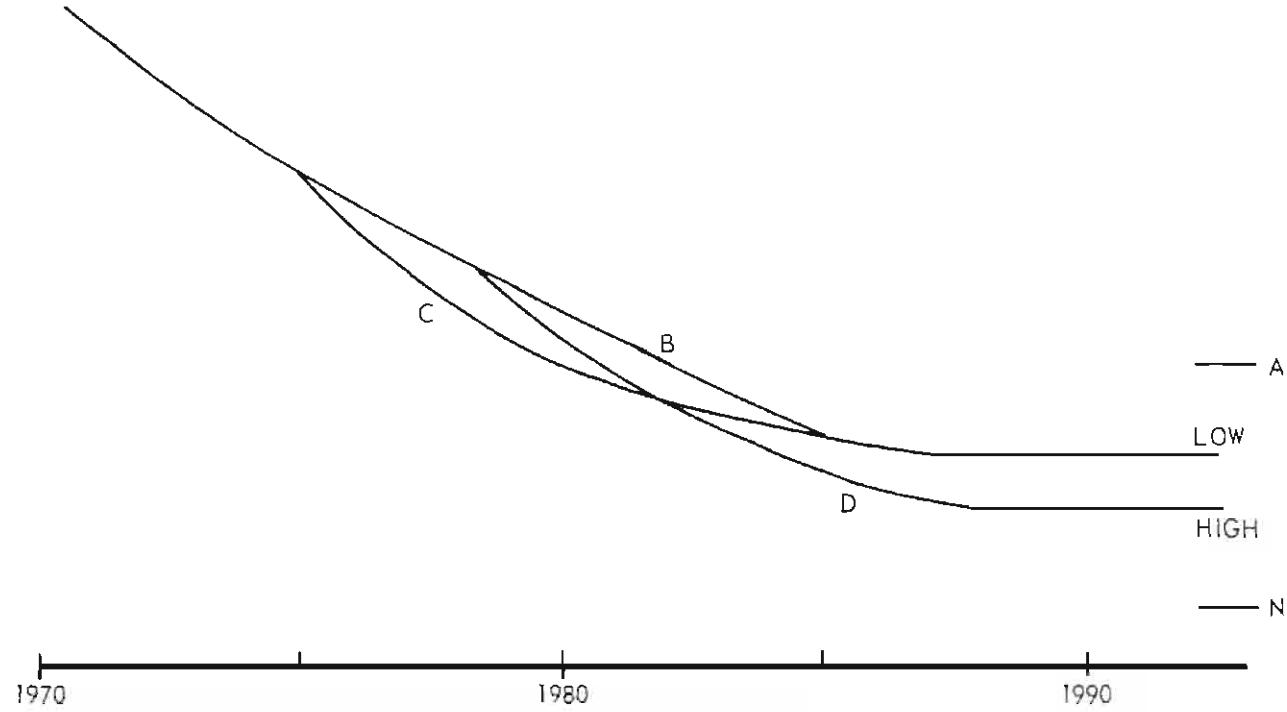

FIGURE D–1
SCHEMATIC SHOWING THE TIME VARIATION OF AMBIENT CARBON MONOXIDE IN URBAN AREAS UNDER THE ASSUMPTION OF DIFFERENT STRATEGIES: B – LOW EMISSION REDUCTION; C – LOW EMISSION REDUCTION, PLUS "TWO-PLATOON" SYSTEM, WHICH TRANSFERS OLD CARS OUT OF THE URBAN AREAS; D – HIGH EMISSION REDUCTION. THE LEVELS LABELED A AND N DENOTE THE MANDATED AMBIENT STANDARDS AND THE NATURAL AMBIENT STANDARDS, RESPECTIVELY.

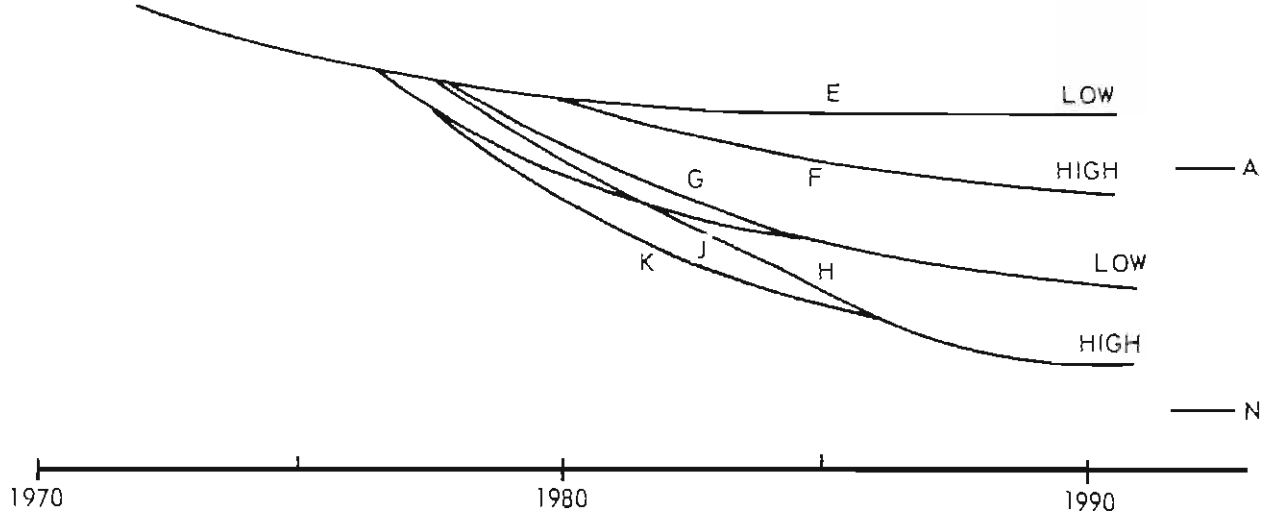

FIGURE D–2
SCHEMATIC SHOWING THE TIME VARIATION OF NITROGEN OXIDES IN URBAN AREAS UNDER THE ASSUMPTION OF DIFFERENT STRATEGIES: E – LOW EMISSION REDUCTION; F – HIGH EMISSION REDUCTION, G – LOW EMISSION REDUCTION, PLUS SIMULTANEOUS REDUCTION OF EMISSION FROM STATIONARY SOURCES; H – AS IN G, BUT WITH "TWO-PLATOON" SYSTEM ADDED, J – HIGH EMISSION REDUCTION, PLUS SIMULTANEOUS REDUCTION OF EMISSION FROM STATIONARY SOURCES; K – AS IN J, BUT WITH "TWO-PLATOON" SYSTEM ADDED. THE LEVELS LABELED A AND N DENOTE THE MANDATED AMBIENT STANDARDS AND THE NATURAL AMBIENT STANDARDS, RESPECTIVELY.

Selected Questions and Answers

Q: Why isn't cost/benefit analysis done routinely and used by decisionmakers?

A: Good question. It is being applied routinely, of course, by such agencies as the Corps of Engineers and other agencies that are in the public works field such as the Bureau of Reclamation.

In the case of environmental decisionmaking and pollution control, it has not been applied. Why? Partially because of the idea that the environment had some special value that could not be quantified--it is priceless. That is not a very sound way to proceed. Also because of the idea that the political process dominated very much the way in which the standards were set and applied. We find now that the reaction is setting in. We find that people are concerned about the employment effects, about the growth effects, and about the energy effects of unreasonable environmental legislation.

Senator Hart put it very well and he certainly is no detractor of the environment but a defender. He said in 1973 and I am quoting by memory now. "If it is ever discovered that we have wasted billions of dollars or tens of billions of dollars in pursuing unreasonable and uneconomic environmental objectives, it will set back the whole environmental movement."

I agree with him. The reaction is now setting in and I hope it does not go all the way. I hope the pendulum does not swing all the way back. I do not think it will. I'd like to see it settle down somewhere in the middle--somewhere where people consider the environmental amenities in a quantitative way.

Q: I am real interested by your statement which said that you have different automobile emission standards for the city and different standards for the country. How could you ever enforce something like that? Would you paint cars in the city red and the ones in the country green? How would you ever go about doing it?

A: I, of course, am in the fortunate position of not having to worry about how to do it. However, one way to do this is to be rough about it and let it be determined by where the car is registered. After all, the same kind of question occurs for automobile insurance. I live in Charlottesville. I have a really low rate--you wouldn't believe how low the rate is. The insurance company thinks I drive my car in Charlottesville. But actually, I walk in Charlottesville and drive my car in Washington. But the system for automobile insurance works.

Q: Relative to cost/benefit analysis when you get into things like quantifying the value of human life and quantifying the value of illness and other things, it seems to me that there are lots of different kinds of assumptions that can be built-in and there will always be a way to question the assumptions.

A: You have raised a very important and very difficult question about the value of human health and particularly human life. Fortunately, I do not have to get into this and I say this because it is a difficult and controversial area. All I had to do was to reexamine what the National Academy had done, and sort of take what I like of their work and add some other things to it. I did not mess around with their evaluation of human health and human life. I left it just the way it was.

But your question is an important one. There is no accepted methodology for evaluating human life. However, it is generally recognized that even human life is not priceless and this is judged by the fact that juries award certain amounts of money for human life and that decisions are made all the time. For example, in traffic safety, should we install a new bridge or should we install a traffic light to protect human life? People in deciding this say that human life is worth so much. Whether they do this or not doesn't really matter. Implicitly, they put some kind of value on human health and human life by the kinds of decisions they do make.

It is a very tricky area and my recommendation would be that the Government not get involved in it because it is emotional. Instead the Government should use the judgment of unbiased and generally impartial experts who do publish in this field. The Government could simply quote this work as a reference, and say that according to authority so and so, this is the value of human health and human life that should be used.

REMARKS BY

FRANK SCHAUMBURG, HEAD

DEPARTMENT OF CIVIL ENGINEERING

OREGON STATE UNIVERSITY

Thus far at this workshop, we have learned about economic costs and environmental benefits. Well, I am not anadvocate of that approach, even though I am an engineer steeped in a tradition of cost effectiveness. In fact, in all my writings and speeches and consulting activities I purposely shy away from considerations of dollar cost, not because they are not important, but because they raise red flags and quite often bear very little real value. In fact, we could ask the question: Is a million dollars too much for a treatment facility? If you say no, then how about $10 million? Well, how about $100 million; is that too much? In the Reserve Mining case, it is $270 million; is that too much?

It is a little bit hard, even with marginal cost/benefit analysis to make such a comparison. In fact, I prefer to compare environmental gain, shown by waste treatment technology and waste management, with the environmental and resource cost, because these are also costs associated with treatment technologies. I am not advocating this as the approach, but I am advocating it to you as an approach to consider in your various types of analyses.

My interest in this topic came about the same time the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) were passed--in fact, it got me going in high gear. During the last 3 years, I have been quite a vocal critic of this law. I have written articles in technical journals and in the popular media which has helped to vent my concern, and although I am not as vindicitive as Mr. Coulter was yesterday towards the law, I nonetheless believe the law to be scientifically unsound, economically unrealistic, and technologically impossible to implement. Other than that, it is a pretty good law.

I believe it represents a classic attempt by the Congress to amend some basic laws of science and nature, most notably the first and second laws of thermodynamics, and I do not believe our seemingly omnipotent Congress will achieve this goal.

Today I am going to point to two major shortcomings of the law and these deal with its scientific and technological shortcomings. I wish I had the full 2 hours because I could go on and talk about many other shortcomings.

Number 1, this pollution control law is a water law. It is not an environmental law. In fact, we have never had an environmental pollution control law in this country nor do we have any type of a comprehensive environmental control agency.

I gave this speech one time to a group of EPA administrators and told them that they really were not an environmental protection agency because the water people never talk to the air people and the air people never talk to the solid waste people. After my speech was over, one member from the water branch came up and said, "What do you mean, the people in the water branch do not even talk to each other?" I think that is probably true.

The second fundamental weakness of the law is the fact that it is totally dependent on technology to save the environment--100 percent technologically based. As an engineer, I ought to be smiling from ear to ear when I see that technology is going to save the environment. But in order to understand these limitations of the law, we have to return to some very fundamental concepts.

The first of these, and it is a very fundamental law of nature, says that all of man's activities generate residue. The food you eat, the clothes you wear, the car you drive, the very act of breathing generates residue. In fact, the second law of thermodynamics predicts that all systems, including living systems, must generate residue to function. Therefore, to keep the earth the way it was in the last century or to keep status quo would deny life. So if you hear some so-called environmentalists, because they really are not environmentalists, advocating no change in the environment, they are advocating no life and we suggest volunteers to begin with them.

We have this dilemma of generating and disposing of its residue in a natural sink. The residue must come to rest; it cannot stay suspended in outer space. Where can it some to rest? One place is the air--which is not an ultimate sink, it is only temporary. The others are the land and the water. Well, I have named three places and now you name three. There just are not too many other logical places for residue to come to rest.

The air must be canceled out because the Clean Air Act of 1970 says that by 1985 you cannot discharge residues into the air. What about the water? Public Law 92-500 says that by 1985 you cannot dump residues into the water. There go two of our sinks. That means that after 1985 all residues of mankind must be dumped onto the land.

So far we have only heard from our equatic ecologists, but there are a group of people known as terrestial ecologists that are becoming quite upset about the concept of putting all the sludges of mankind on our land. The Congress is working on land use legislation, so I think that will be taken care of very soon. We will not have to worry about land pollution either!!! (in jest).

The pollution control agencies of the States of Washington and California have shown great concern over the growing problem of what to do with solid wastes. The State of Washington is asking its engineering groups to try to minimize the amount of land used. They say that the biggest problem facing the State of Washington in the future is solid waste. I agree that it is a tremendous problem especially if EPA attempts to implement Public Law 92-500 literally. So then how are we going to dispose of our residues?

When I go out and ask the man in the street: "What are we going to do with these residues?" and I have ticked off the three places, where waste can be disposed of, he says, "You forgot one thing--treatment as a way of dealing with the waste." Glory be, I went to college for 9 years and studied environmental engineering and I forgot treatment. Now why did I forget treatment? Unfortunately, treatment is not the total answer either. I view waste treatment technology simply as a politically expedient panacea for all our pollution problems.

It was very interesting to hear Russell Train (Administrator, Environmental Protection Agency) say yesterday that environmental protection goals are going to be met with new technology. That is the myth of the century. I have been hearing that from congressmen, I hear it from Environmental Protection Agency (EPA) officials--they are all talking about <u>new technology</u>. If you read Public Law 92-500, it infers that new technology is what is going to achieve these goals.

But who is developing new technology and where is the money coming from? There is not 1 cent allocated through that law or through the EPA budget for <u>new technology</u>. The only money being used right now that is technologically oriented is what is known as demonstration grants and that is demonstrating existing technology--just changing the pipes around.

Unless we get a bit wise and begin allocating money and start looking at the technological advancements, we are not going to have any. The technology that we have today is the technology of tomorrow, because <u>no one</u> is working on new technology.

Now, what is wrong with technology? Well, this man in the street said he had just been to South Lake Tahoe. He went down there to gamble and lost all his money the first night. On the second day he said, "What are we going to do?" He was told that there was a free tour of a sewage treatment plant. He had nothing better to do and his plane did not leave until that evening so he went out to the treatment plant.

This is a world famous sewage treatment plant. It is a classic treatment plant. In fact, the film of this advanced waste water treatment plant was shown on the first trans-Atlantic flight of a 747. (I don't know what they showed on the Concorde. If there is something beyond tertiary treatment, maybe they showed it on the Concorde yesterday, or maybe something on noise abatement.)

But the interesting part of this story is that the guy walked into the plant and he saw this obnoxious looking material called sewage going into the front end and then he took a tour around to the back of the plant and he saw this man drinking some of the effluent. He said, "That liquid is sparkling clean; it went through that building and it came out sparkling clean; we need to have one of those in our city!" The Governor of Oregon went down to South Lake Tahoe and after touring the plant, indicated that a facility like the Tahoe Plant should be built in every city in the state." Heaven forbid!

Now, let us see what is wrong with this "treatment" approach. Why can't technology save us? Well, the man on the street forgot a couple of laws of thermodynamics. The first one says that you cannot destroy matter. In fact, matter and energy are conserved. And if you cannot destroy matter, then that building must be getting awful full by now, because that residue has got to go somewhere. A graduate student and I took a look at what happened in that building. We found that technology not only consumes a lot of resources, but it also produces a considerable quantity of residue that has to go somewhere else in the environment for ultimate disposal. We started counting those up, and it is amazing what we found.

For instance, the plant--the size to serve a city of 30,000 to 40,000 people--uses seven tons of lime a day in treatment. Well, at first glance that does not appear to be polluting because the lime truck just pulls up and drops those sacks of lime and takes off. But we traced the truck all the way back and found that it came from northern California and you should see the lime plant where it came from. We calculated the amount of pollution created at the lime plant and the amount of energy it takes to make lime and prorated that back to Lake Tahoe's treatment plant because some of the pollution at the northern California lime plant is the responsibility of Tahoe, if you look at it from a total environment perspective.

We did that with all the chemicals; alum, chlorine, and acid. We also went to the energy-producing plant in Reno, Nevada, where Tahoe gets it energy to operate that plant and found that there is pollution caused by power generation. We prorated that pollution back to Tahoe and found that Reno is getting just a little bit dirtier to get Tahoe a little bit cleaner. Someday I would like to talk to the Reno Chamber of Commerce and show them what good people they are to clean up Tahoe.

If you cannot destroy matter, what does treatment do with it? Treatment simply relocates residue in the environment. Period! It can do just two things. It can either concentrate residue or it can disperse residue; it can do nothing else. Therefore, engineers, scientists, regulators, lawmakers, and others must look at treatment strictly as a technique of putting residue where it does the least amount of harm in the environment. That's what we should use it for. Not as the end in itself. And I have to admit that people in my own profession are designing treatment plants thinking that is the end.

For example, I reviewed some of EPA's diagrams on tertiary treatment. They showed water coming in dirty and water leaving clean with 99 percent removal. But if you look at the diagram closely they have a little arrow going off the top saying sludge for suitable disposal. You must account for that sludge before you take into account cost effectiveness. They also show air emissions and say with proper air emission control devices you can control air pollution. Do you know how much electricity it takes for electrostatic precipitators? An enormous quantity of energy. The production and use of energy, remember, produces pollution.

We find that the use of technology really is not the answer because it just moves materials around. We also know that all technology, including pollution abatement technology, uses energy and natural resources as a driving force; that's the second law of thermodynamics. And it also follows that production and use of the chemicals and energy produces pollution. There is no such thing as a pollution-free source of energy, nor will there ever be, whether it be sun power or wind power. I keep hearing people say, "What about wind power?" in Oregon. They talk about wind power, and say, "Gee, a windmill isn't polluting." But do you know how many windmills it would take to operate one of these treatment plants? Probably a hundred acres of windmills. And I think one windmill on a broken-down farm in Kansas looks nice, but not a hundred acres of windmills. There's also the lubricant problem which causes pollution problems as well.

As we apply more and more sophisticated treatment, we find that a very high level of pollution removal can be achieved. (You cannot achieve zero.) You will notice though that an enormous environmental price must be paid because of the residue which enters the environment.

For example, if we were to start with an industrial plant with a high level of pollutants in its waste water, we would start adding treatment and as we add treatment, the amount of pollution in the water goes down and down and down. But also bear in mind that it must go somewhere; unfortunately, it must be conserved and it starts to build up somewhere else in the environment. If you really are interested, you can find it. If you're not interested, you can start drawing arrows off diagrams and say you're not interested. But I'm interested in what are we going to do with residues from these treatment plants. That's part of the total environmental package that you're paying for and it's an environmental cost, not a dollar cost.

How can you use this concept in management? If you have an area like in Seattle, where their discharge of secondary effluent can go into Puget Sound, the ability of nature to accept the residue is very, very high. Therefore, perhaps primary treatment is adequate. At Lake Tahoe, which is one of the five clearest lakes in the world, its ability to accept residue is very, very low. Therefore, you would put in a very high degree of treatment and just have to accept the liability of the extra energy and resource cost.

What needs to be done? First the Congress needs to enact a comprehensive environmental protection law which looks at the environment as a system. Second, a comprehensive environmental protection agency needs to be developed that considers the total pollution problem and not just one part, such as water pollution. Third, we must make an environmental and resource impact analysis prior to making environmental decisions. Fourth, the concept of uniform regulations nationwide must be eliminated because it's too costly, in terms of environmental price, when viewed in terms of the "net environmental effect." Fifth, we need more direct technical and scientific input into the environmental protection policy and decisionmaking process.

In closing, I refer you to my National Observer article where I pointed out how our policies are made by lawyers, how they're implemented by lawyers, and how they're enforced by lawyers. I have nothing against lawyers, but those eminent personalities in authoritative positions should not just give keynote speeches at technical workshops and scurry away to make another technical decision. They should pause long enough to receive technical input so as to provide a basis for their next decision.

Finally, our political leaders at all levels of Government need courage and public support to vote properly on proposed environmental legislation. A "yes" vote for a bad piece of environmental legislation may win an election but it will surely lead to a defeat in our strategic war against environmental pollution.

REMARKS BY

HENRY PESKIN, FELLOW

QUALITY OF THE ENVIRONMENT DIVISION

RESOURCES FOR THE FUTURE

I plan to discuss very briefly a project called the National Accounting and Environment Project and discuss some data that we have generated from the project that give some idea of what we know about the costs and benefits of U.S. environmental policy. I will then criticize the data; show how bad it is; and suggest why it is bad. At the same time, I shall give a little critique of the Federal Government's research on the costs and benefits of its environmental policy.

The National Accounting and the Environment Project is a project being conducted at the National Bureau of Economic Research, with assistance from Resources for the Future. The objective of the project is to expand the national economic accounts by putting a value on the services that are generated by the environment and at the same time account for damages to society that are necessarily a consequence of enjoying these environmental services.

In the course of trying to develop the numbers for this project, we've developed quite a lot of ancillary data. We feel that this data is probably the most complete set available on environmental damages and costs of cleanup. We have collected what there is, analyzed it, and corrected the obvious errors.

Let me give you our estimates of the gross totals of costs and benefits of U.S. environmental policy. These numbers are all in 1970 dollars, and they assume a 1970 world: That is an economic activity and population of 1970. We estimate that the capital cost of the air pollution control program as currently envisioned by the Clean Air Act of 1970 is approximately $50 billion. The cost of the water pollution control program is about $14 billion for achieving the required best practicable control technology by July 1, 1977. Since this figure is much lower than you may be familiar with, we will come back to it in a minute. The 1983 best available control technology requirements are estimated to cost about $24 billion, so that the total capital cost for the entire program for industry is about $38 billion. If you add on another $22 billion for municipal treatment to comply with the 1972 amendments, you get a total capital cost of the water policy of about $60 billion in 1970 dollars. In sum, the pollution control policy costs $50 billion for air and $60 billion for water.

There are also annual operations and maintenance and annualized capital costs of about $21 billion dollars per year for the air pollution control policy. All these estimates assume that the policies will be fully implemented.

For a cost-benefit analysis, the only meaningful procedure that I can see is to compare annual costs with annual benefits. As we noted the annual cost for the air policy is about $21 billion and we estimate that--using figures that had been published by EPA--the benefits, in 1970 dollars, from the air policy if fully implemented is about $20 billion annually. A rough EPA estimate of the benefits from the water policy if fully implemented is about $10.5 billion annually.

If you simply look at total policy costs and the benefits, it appears that the cost of the air policy is in line with the benefits; for the water policy, the costs exceed the benefits. While this is a comparison of the total policy to the total cost, I know that Professor Singer makes the point that you really should look at marginal costs and benefits. That is, while it might appear that the air policy is not buying us anything, these figures do not say anything about half of an air policy or a quarter of an air policy; that is, some lesser degree of control. However, I wanted to focus on the total cost-benefits of policies for purposes of discussion today.

We've been able to do some research on distributing these totals geographically and to income and racial groups using a complicated procedure which I won't go into right now. If one does this distribution you see with regard to the air policy--we have not done this yet on the water policy--a great disparity between individual air pollution damage and the benefits of cleaning up; a great disparity depending on where one lives.

For example, if you live in Jersey City, New Jersey, there would be a benefit of about $900 per person from cleaning up the air. If you lived in New Haven, Connecticut, it would only be about $182. And if you lived in the non-SMSA areas of Montana, it would be more like 84 cents. The gross totals therefore mask a rather important point--how beneficial these policies really are depends on where you live. This result may argue against the uniformness of these policies.

For example, because of the automobile policy of uniform emission standards, you have situations in places like Alaska where per capita costs approach $50 to $60 annually with virtually no benefits. What this amounts to, is that people in rural areas are in effect subsidizing people in heavily populated urban areas. Maybe this is as it should be but it's one of those things that may not be perceived by the general public.

We also have some figures on costs and damages by industrial category that also show some interesting disparities. Certain industrial practices are apparently causing relatively small environmental damage,

yet are rather expensive to control in order to meet EPA regulations. The agricultural sector is a case in point. In other sectors the situation is reversed. Primary metals, for example, creates a much larger damage that it would cost to clean up the industry. These disparities, I think, may have important policy implications.

The benefit data that we do use is defective for many reasons and I'd like to run down real quickly what the defects are. In the first place, while there exists a lot of techniques for developing benefit infromation, they generally have been poorly applied in the environmental area. A survey of water studies that was done by Dennis Tihansky of EPA has shown that less than 30 percent of the published estimates had valid theoretical basis.

Secondly, there is grotesque double-counting in a lot of numbers: a tendency to estimate a number for health and recreation benefits and then add it to a number on property values, forgetting that property values might reflect the health and recreational quality of the environment.

There also are some theoretical problems that are quite serious. One of the more knotty issues is determining the present value of the environment of future generations. We learned in project analysis that it's a good idea to discount future values because if you don't then any project with a continuing benefit stream will always look good from a cost-benefit point of view, providing the costs are finite. If you just wait long enough and accumulate all the benefits without discounting, eventually they will exceed the costs. But the trouble with discounting is that it means that you are implicitly, as a planner or as a government representative, valuing the preferences of future generations much less than those of present generations. This has severe ethical implications and is one of the problems for which a lot more theoretical work has to be done before it can be solved.

One can also criticize the cost estimates too. One preceives that EPA and others feel that cost numbers are somehow hard numbers, while benefit numbers are rather soft numbers. Thus there does not seem to be as much concern about the validity of the cost numbers.

Yet, these cost numbers generally are based on engineering methods, most of which tend to forget about the substitutability that can take place in industrial processes. Frequently, the engineering estimates are very naive and often they are very high. Furthermore, the cost estimates fail to distinguish social cost--that is, the cost to society from the pollution policy--from private cost--the cost to the individual enterprise or firm. Something that was rather costly from the standpoint of a particular industry might not be relevant for any sort of cost-benefit comparison. What's relevant is the cost to society. Finally there's often the failure to really measure the cost of the <u>policy</u>--that is, the true incremental cost. This is one reason why the cost estimates tend to be high.

A good example are the cost estimates for the BPT guidelines. We estimate that it will cost, in 1975 dollars, about $24.4 billion for industry to meet the BPT guidelines. The National Commission on Water Quality has estimated $44.3 billion, a considerably higher number.

If you try to analyze the differences industry by industry, you find that a lot of the numbers are for the cost of equipment that happen to have been in place for years. That is, they are attributing to the law cost for equipment, while consistent with the law, in no way could be said to have been caused by the law.

I'm going to finish my comments here by making a few brief critical remarks about government research programsin the area of cost and benefit analysis. My remarks are not going to be directed just at EPA because I think it's more relevant to see what the government does as a whole. Our nation is spending about $7 billion in the current fiscal year for environmental protection. The R&D program is supposedly $1.2 billion of that $7 billion. However, if you look at the R&D program closely and try to see what comes under that label, you will find that a lot of it has to do with spending on developing control technology. This spending implicitly assumes the validity of the control policy to begin with. It says, "We don't need to do the cost-benefit analysis; we already know that we have to do something." When you try to see how much money is really spent on developing better benefits and cost numbers and on trying to resolve some of the problems that I was alluding to rather briefly in these remarks, a generous estimate is only about $200 million for such research. In other words, we are spending about $200 million to justify a $7 billion program.

If you look at EPA's research program, policy research is placed on the same organizational level as technical research. That is, if you try to map their research program on an organizational chart, you would see research on estuaries, research on health effects, and policy research on the same line. And it will be competing with maybe 40 other kinds of research projects. However, from the standpoint of intelligent policy-making, policy research should be guiding the technical research. It should not be put on the same line with it.

In any event, it is unlikely that EPA will be sponsoring good policy research in the near term. At EPA, research is often guided by technical people, people who have experience with pollution control technology. Often they are engineers. Yet there is nothing in the standard engineering education, to my knowledge, that necessarily prepares an engineering graduate to be a researcher. The assumption that if somebody is very knowledgeable about an activated sludge unit he can also do research in the use of activated sludge as a pollution management strategy is an assumption that really should be questioned.

Finally, there is a lot of myopia in research. A case in point is this: We were having a conference the other day with representatives

from the Department of Transportation and EPA on relationships between air pollutants and health. We were talking about short-term effects--about various correlations between polluted air, asthma, stinging eyes, and all sorts of complaints. The question was raised: On those days that you seem to get some correlation between the bad air and health effects, isn't the pollen count likely to be quite high? Answer: Yes, the pollen count is probably pretty high.--Well, isn't there a possibility that the pollen count might in fact be causing some health effects that are being attributed to the poor air?--Oh, yes, there's a possibility.--Well, what's the pollen count data look like? Have you tried to do some correlations there?--We don't collect pollen count data.--Why don't you collect pollen counts?--EPA officials feel we can't control pollen. It's a natural thing.

The response might be valid, although there is some question about it since New York City actually once did try to control it. Nonetheless, let's assume that that's the case, that it's completely uncontrollable. However, from the standpoint of doing research, you have to go beyond what in fact is the precise letter of agency's legal authority in order to try and understand the phenomena that is going on. If in fact it's necessary in order to understand the air pollution-health relationship to collect pollen counts then you should collect these data. At the same time, you should collect data on weather conditions and temperature and on the socio-economic status of the individuals who seem to be complaining. Many of these factors have been ignored by the agency responsible for the research and I think that the research suffers accordingly.

STATEMENT

BY

WILLIAM L. WEST

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REPUBLIC STEEL CORPORATION

The concept of cost/benefit analysis of environmental control laws and regulations is probably the single most important and the most widely ignored facet in our Nation's quest for environmental quality. The issue is important since it is widely recognized that zero emission and zero discharge are not technically and economically feasible for all sources of air or water contaminants. In fact, few industrial or municipal sources could continue operations within some semblance of economic viability if zero limitations were imposed. We are therefore presented with the difficult task of determining "How much protection at what price?"

As a starting point in answering this question, we must initially differentiate between two distinct classes of environmental benefits--health and welfare. Environmental controls necessary to protect public health, based upon irrevocable scientific data, should not and must not be compromised. In fact, environmental regulations should, similar to the Clean Air Act of 1970 have a priority of identifying and controlling pollutants that affect public health. Unfortunately, environmental regulations adopted pursuant to both the Clean Air Act and the Federal Water Pollution Control Act do not always recognize this distinction and the general public is not aware that the most stringent environmental controls for both air and water are not to protect public health. In the case of air, the secondary (welfare) standards for most air pollutants are more restrictive than the primary (health) standards. A similar situation exists in water pollution control as water quality standards for protection of aquatic life are usually more stringent than those for public water supplies. Since the more stringent public welfare standards require costly environmental control technology beyond that necessary to protect

public health, it would appear prudent that careful examination be made of the resultant social benefits before enormous expenditures for environmental controls are committed. For example, the report by the National Commission on Water Quality stated that the total capital cost of achieving the 1983 requirements of the 1972 Amendments could exceed $670 billion dollars while the quantified benefits would increase only $5.2 billion annually. Even the quantifiable benefits are questionable since population and recreational patterns are more influential than water quality in this determination. The same report shows clearly that the costly environmental step from the 1977 to 1983 requirements would show only marginal environmental benefits because of the impact of diffuse sources of pollution. A similar study of the identifiable benefits from the control of air sources to achieve the secondary (welfare) standard would in all probability show similar results.

The question then becomes how can the benefits from pollution control facilities be maximized at the least cost to the American consumer and taxpayer? For water pollution control, the most cost-effective program cannot be determined on a national basis. The complex interactions of the hydrological characteristics of streams and the various sources of pollution--industrial, municipal, agricultural, combined sewers and urban runoff--dictate that streams be classified according to uses which are economically achievable. Unfortunately, for the 1977 Phase I of the water clean-up program, the U.S. Environmental Protection Agency, as a matter of policy, has pursued the classification of all streams as suitable for protecting indigenous aquatic life and secondary contact recreation. Additionally, the EPA has made little effort to determine if the 1983 goal for fishable and swimmable water is "attainable." Until such a determination is made for each watercourse, billions of taxpayers' and consumers' money will be squandered in pursuit of elusive goals which may have been unachievable from the start. The National Commission on Water Quality recognized this problem when they recommended that the Congress stay the 1983 technology goals while retaining the "wherever attainable" water quality goal. Additionally, the Commission recommended that the Congress give to the States more authority in implementing the act which could possibly allow the States more flexibility in eliminating the pursuit of unattainable water quality goals.

The Cuyahoga River in the Cleveland area is a prime example of massive expenditures in quest of unattainable goal. The river suffers from the same maladies that beset most streams which flow through large urban and industrial areas. The very hydrological nature of the stream makes it near impossible to maintain conditions suitable for aquatic life. At low flow conditions the Cuyahoga is essentially a stream of treated sewage, impacted both by combined sewers and urban storm water runoff. The Cleveland Regional Sewer District is presently planning improvements and expansion for the Southerly Sewage Treatment plant that discharges into the river. The proposed facilities will approach the limits of demonstrated technology for sewage treatment at a cost of several hundred

million dollars. When and if these facilities are completed in the next decade, these facilities will not improve the Cuyahoga River to a condition suitable for aquatic life.

Yet the Federal Government has pursued a policy of reducing the discharge of industrial wastes to the river to protect aquatic life. By 1974, Republic Steel had completed a multitude of waste water treatment facilities in our Cleveland District at a cost of approximately $31 million. In the same year, Republic was forced by the Federal Government to commit itself to additional waste treatment facilities; this program will eventually cost Republic over $40 million more for waste water treatment in our Cleveland District, in pursuit of the elusive aquatic life conditions. These expenditures will be made by Republic even though people in the scientific community agree that the river will not be capable of supporting aquatic life, the regulators' unrealistic goal.

Similar situations exist in the control of air pollution. The Clean Air Act allows the States to adopt implementation plans subject to Federal EPA approval to attain and maintain the national ambient air quality standards. To assist the States in their determination of appropriate control strategies, the Federal EPA lists Emission Limitations Attainable Through Reasonably Available Technology in 40 CFR 51, Appendix B. Although Appendix B contained a disclaimer that "these control technologies are not intended, and shall not be construed to require or encourage State agencies to adopt such emission limitations," these limitations have been, in many cases, adopted into State Implementation Plans without any demonstration of necessity. Many States with their limited resources and manpower have simply copied the control limitations in 40 CFR or those of other State or local agencies. The question of costs and benefits are simply ignored in the preparation of State Implementation Plans. In many cases, State Implementation Plans require stringent controls for air contaminant sources in areas that have never exceeded the ambient air standards. The air clean-up effort has therefore, like its counterpart in water, been relegated to a technology for technology's sake policy. Any cost/benefit analysis is lost as State after State adopts SIP in almost total disregard for existing air quality.

A good example of a regulatory approach to air pollution control in the absence of demonstrated impact is the opacity or visible emission regulations which were contained in 40 CFR 51, and subsequently in most State Implementation Plans. While the elimination of visible emissions may be desirable from an esthetic viewpoint, there is little or no correlation of visible emissions to ambient air standards. In fact, there are strong indications that the control of visible emissions in some cases may be counterproductive. The abnormally high energy requirements for control of some visible emissions may result in more air emissions at the power generating station, than would be captured at the source by the additional pollution control equipment.

In the latter part of last year, Region V of the USEPA proposed a sulfur dioxide strategy for the State of Ohio to achieve and maintain the national ambient air quality standards. A former plan of the State had been withdrawn as the result of a court case. Surprisingly, the EPA strategy contained specific control limitations for process and fuel burning sources in several areas of the State where the ambient air quality standards for sulfur dioxide have never been exceeded. It is apparent that there was no attempt to determine a cost/benefit of these regulations.

Some type of cost/benefit analysis must be used in determining pollution control strategies. The tremendous burden placed upon the American taxpayer and consumer demands that we do no less. While the indiscriminate requirement of the best available technology for pollution control may be administratively more attractive to the legislator and regulator, it is very clear that the remedy is not commensurate with the problem. The problems, in fact, may still exist when the regulators have had their day and the taxpayer and consumer are left with the bill. It seems strange that a country such as ours, with its outstanding record of scientific and technological excellence cannot adopt a more reasonable and rationale approach to solving its environmental problems. We owe the American public more reasonable options than existing environmental laws and regulations contain.

REMARKS

BY

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FOR PLANNING AND EVALUATION

ENVIRONMENTAL PROTECTION AGENCY

About 2 weeks ago I was talking to a group at Brookings about regulatory reform. It was a mixed group of businessmen and Government people involved with regulation. Dick Dunham was there (Chairman of the FPC) and he and I constituted a two-man panel to discuss regulatory reform issues. The general flow of comments from the audience with respect to EPA and some of our programs was not unlike what we have had this morning, and Dick came up afterwards and said that he would appear on a panel anywhere with me because I would always take the "heat." The comments this morning indicate a certain consistency here. Perhaps at least some of these comments are warranted.

I do have some prepared remarks that I would like to make. There are a number of significant points I would like to make, which would be helpful in understanding EPA's programs. Perhaps in the question and answer session we can address some of the questions and concerns that were raised by Frank and Henry.

I would like first to summarize the cost and economic impacts of the environmental program and then summarize the state of the art of benefits analysis. Then I will discuss the ideal approach to weighing cost and benefits in environmental decisionmaking and the problems encountered in implementing such an approach. And finally I would like to wind up describing how this balancing is actually carried out, or how we try to carry it out at EPA given the kinds of problems I will talk about.

Let me start then with cost and economic impacts. The Council on Environmental Quality forecasts that the Federal environmental program will cost about $218 billion over the 1974 through 1983 decade. In a recent survey by the Department of Commerce, U.S. Industry reported capital investment for pollution control of about $6.5 billion for 1975. These costs are unquestionably large in absolute terms. In order to put them into perspective, however, it is necessary to look at what their impacts are on the national economy, the consumer, and the effect on the employees in GNP industry.

Let me briefly describe the effects on prices, employment, GPN, plant closings, and individual industries. A recent analysis of the inflationary impact of environmental expenditures by the Chase Econometries Associates, which was sponsored jointly by EPA and CEQ, estimated that pollution programs would add an annual average of about .3 percent to the consumer price index over the period 1974 to 1983. The same Chase study looked at effects on employment and projected that there would be an initial stimulant to employment in the next several years above the levels otherwise prevailing due to the increased investment for pollution control equipment.

Unemployment was estimated to be .4 percent lower in 1975-1978 due to pollution control expenditures and this would be offset by about a .4 percent increase in unemployment by the end of the 1974-1983 decade. In fact there would be very little impact on the average unemployment level for that 10-year period. These aggregate employment effects represent the combination of jobs created as a result of investment in pollution control equipment, jobs lost as a result of higher prices reducing demand and production as a result of diversion of capital from other uses, and as a result of plant closings and curtailments.

The job creating effects are substantial as each billion dollars in investment in building municipal sewage treatment plants creates about 20,000 construction jobs onsite and an equivalent number offsite. This means that over a 100,000 jobs are currently filled as a result of the construction of these facilities. An ADL study has estimated that in the pollution control equipment industry, about another 75,000 additional jobs would result from Federal air and water legislation. Job losses from plant shutdowns and curtailments are tabulated by EPA for all actions involving 25 or more employees from a firm which is impacted by Federal, State, or local environmental regulations. Since 1971, we have estimated that 81 such plants have in fact closed or have curtailed production--this involved about 17,000 to 18,000 jobs.

The effect of environmental expenditures on economic growth is also estimated by Chase Economitries Associates to involve a very small increase through 1976 relative to the level which would otherwise prevail followed by very small relative decline, with practically no difference in GNP by 1983. This slightly cyclical effect results from the stimulative effect of heavy capital spending for pollution control in the early years involving some diversion of capital from other investment along with some increase in total capital expenditures, followed by a slightly depressing affect on demand due to higher prices reflecting the pollution control costs. It should be noted that these relative effects on GNP ignore the improvements to the quality of life resulting from environmental improvements because these benefits are not measured by our GNP accounts.

All in all, I would summarize these macro-economic impacts resulting from pollution control costs by saying that they are noticeable but are not alarming. In fact in some respects as I noted, they have a somewhat favorable effect in the early years. As a result of this, we tend to think that the primary focus of attention in any discussion of economic impacts of the environmental program should be on specific industrial and regional sectors of the economy which may be significantly impacted by environmental programs even if the impacts do not have large effects on overall nationwide rates of inflation, growth, or employment.

The strongest argument against environmental regulations, at least in an economic sense, is that certain industries such as steel, paper, and perhaps chemicals, must expand capacity to meet the next peak demand in order to lessen the inflationary pressures, and that EPA regulations divert capital away from this necessary capacity expansion. We know that this is not likely to be a problem throughout the economy as there has been no suggestion of a large scale deferral of capital spending for expansion and modernization due to pollution control.

In fact, 1974 capital spending for nonenvironmental projects match previous industry forecasts while environmental capital spending fell far short of industry forecasts. Nonetheless, we must be concerned with this problem on a case-by-case basis as we set standards. It may not be a problem with an industry which generates enough funds through retained earnings to finance investment in both capacity expansion and pollution control or for an industry which has low capital needs for expansion. But clearly it could be a problem for industries facing high capital requirements, high capital costs, high pollution control expenditures, with relatively low profit. Identification of these problem areas requires careful analysis in each individual case.

EPA has responded in several ways to this economic problem. We perform economic analysis of the impact of our significant actions and we have used the result of these analyses to modify our regulations in many situations. In addition to the normal analyses of economic impacts, EPA is currently assessing the combined impact of all our regulations upon six industries most seriously affected by pollution control regulations, as well as examining the effects of our regulations upon capital markets and the cost of capital for these industries. Hopefully these studies, which are nearing completion, will help us identify the tradeoffs I mentioned earlier between expenditures for pollution control and for capital expansion.

Now that I have talked about the costs and economic impact of our programs, I want to turn to economic benefits. Unfortunately, there is not nearly as much to talk about here, due, in my opinion, to the rather limited state of knowledge in this field. Much has been written about theoretical approaches to evaluation in dollar terms of reduced health risks, death delay, reduced property damages, increased crop yields, and improved aesthetics. But if you ask the hard question, is the benefit estimate good enough to base significant public policy decisions on, in my opinion, the answer must be no in almost every case.

We do have some benefits estimates, as Henry mentioned. EPA's Office of Research and Development published a report in 1974 which reviewed the previous benefits work, and identified total national benefits of cleanup from 1970 levels of sulphur oxide and particulate emissions from stationary sources to be $11 billion to $11.5 billion. The National Academy of Sciences in a 1974 report identified potential benefits from the cleanup of auto emissions ranging from about $2.5 billion to $10 billion. As Henry mentioned earlier, he is heading another major effort to look at this question in a broader, hopefully more systematic manner.

I would also like to touch upon some of the problems Henry talked about with respect to benefit analysis. First, there are very significant methodological problems in translating environmental effects into dollar terms. Most of the standard techniques which exist to identify benefits from reduced illness or property damage exclude very important benefits which are hard to measure--such as aesthetics effects. Attempts to include such effects by adding assessments of property value differences result in overestimation to the extent that property values also reflect differences measured by other techniques and in underestimation to the extent that property buyers do not realize the differences in environmental quality that exist or the full effects of those differences.

There are also significant methodological, if not philosophical, problems inherent in current approaches to valuing human life and relief from illness. These are generally valued only in terms of medical costs and lost wages. Even if we had perfect techniques for translating environmental effects into dollar terms, we would still face enormous problems in accurately identifying the environmental effects in terms of deaths, illiness, material damage, etc. These difficulties are at least as significant as the methodological problems involved in translating the effects in dollar terms.

Furthermore, whether dealing with environmental effects or dollar benefits there is a problem in separating aggregate effects into specific effects useful for decisionmaking purposes. For example, if we accept the $11.2 billion estimate in benefits, which would result from cleaning up all stationary source air pollution, how much is it worth just to eliminate sulphur oxide damages? The problem is not as simply as it may seem because of synergestic effects between pollutants and incomplete data on effects of individual pollutants. This is the kind of problem Henry talked about briefly.

Let me not mislead you by this enumeration of problems into thinking that we cannot identify the positive effects of environmental regulations. We know, for instance, that average levels of sulphur dioxide and particulates have declined by about 32 and 17 percent, respectively, since 1970 and that the declines will lead to improvements in the incidence of various respiratory and cardiovascular diseases and to reduced property damage and increased crop yields. We also know that water quality is improving in most of our major rivers and waterways with respect to oxygen demanding loads, chloroform bacteria, and certain harmful chemicals. The conversion of these measurable improvements to terms comparable to available cost

information is for the aforementioned reasons beyond the current state of the art, in my opinion, of benefits analysis.

Let me turn now to the cost-benefit analysis and development of regulations. In an ideal world without the shortcomings we just talked about, environmental decisionmaking can fit a very simple model. For each regulatory decision available alternatives would be identified with costs and benefits assessed for each alternative level of control. Regulations would be set only if benefits exceeded costs, and more specifically only where marginal benefits exceed marginal costs for given alternatives in comparison with the next most costly alternative. This decision model is really identical to the standard economic determination of supply and demand that all of you are very familiar with. Since the benefits, and sometimes even the full cost of pollution control, cannot generally be estimated in a form comparable with cost, the ideal world is not practicable for environmental decisionmaking. The best available estimates of the quantitative costs and benefits must be identified and compared for alternative levels of control. Then if quantifiable benefits exceed costs for a given level of control, that level is generally acceptable. Where costs exceed benefits, it is necessary to turn to all available information on environmental effects in nondollar terms. A judgment must be made as to whether the nonquantifiable benefits exceed the quantifiable cost benefits difference. In practice, the state of the art of benefit analysis has been so weak that the comparison which I just talked about generally winds up taking the form of a comparison of dollar costs with nondollar benefits.

Because of the deficiencies in our ability to utilize cost benefit analysis, another economic consideration is frequently introduced into the decisionmaking process. That consideration is economic impact. We frequently ask how much can be afforded. This approach tries to put costs into perspective by looking at effects on prices, output, employment, plant viability, etc. By looking at these impacts, we tend to minimize the disruptive effects of the regulations but we take the risk that in our judgmental comparison of cost and benefits that if our judgment of cost and benefits is imprecise we may overcontrol or undercontrol as a result of using this approach. But in lieu of little more complete information, such an approach probably places reasonable constraints upon environmental decisionmaking. We also realize that by looking at these impacts, we tend to minimize shortrun transitional effects of our actions such as avoiding unnecessary plant closings while a strict benefit comparison would result in more emphasis on long-run effects.

Having described first a rather ideal decisionmaking approach which requires perfect information, then a more practical approach utilizing imperfect information, I should point out that it is EPA's governing legislation which frequently determines the criteria that are used in setting standards. I think Frank mentioned several aspects of that earlier. These pieces of legislation vary with respect to exact criteria to be used, reflecting different perspectives on the appropriate weights to be placed

on cost, benefits, impacts, and effects. I think several examples will serve to show you the range of criteria used for environmental decision-making.

At one end of the spectrum are emission controls on automobiles. These are effectively stipulated by Congress in the Clear Air Act itself which requires a phasedown of emissions from new cars until ultimately new emissions will be reduced by 90 percent from the levels of 1970 and 1971 cars. EPA effectively has no control over these levels so there is really little balancing which can be done. The standards are based entirely on expectations of technological feasibility and on the scientific need for controls to protect public health. Of course changes in these requirements such as those the Congress is considering now can be made based upon the balancing of economic and environmental concerns. Toward the same end of the spectrum are primary ambient air quality standards under the Clean Air Act. These standards are required to be set based on scientific data so as to protect public health. Although EPA has flexibility to determine the levels of the standards, the law in essence prohibits the introduction of economic consideration into that determination. Economic concerns can be used by the States though in determining how these standards will be met.

The Clean Air Act provisions for new industrial sources and the Federal Water Pollution Control Act provisions for industrial sources provide for more consideration of economic factors than do the previous acts. Both statutes require that the best available pollution control technology be used with determination to be made on an industry-by-industry basis. However, EPA must consider the cost and economic impacts of these standards in the decisionmaking process.

Finally, a different kind of example is the use restriction of pesticides under the Federal Insecticide, Fungacide and Rodenticide Act. EPA action to restrict the use of individual pesticides must be preceded by elaborate processes which involves the balancing of environmental risk against the economic impacts on users and consumers of reducing the use of that pesticide.

Let me close then by summarizing in a few sentences the major points I have tried to make this morning. While the costs of pollution control are hard to identify and agree upon, they are much easier to quantify than are the accompanying economic benefits. Rather than to directly compare costs and benefits in a quantitative way, we are forced to make such comparisons in a qualitative or judgmental way within the constraints imposed by the applicable statutes. While this approach is much less precise and leaves much room for value judgments, it can be, and is supplemented by economic impact analyses. Certainly anyone involved in environmental programs should be concerned with insuring that any individual environmental goal be met with the lowest possible cost and economic impact. Thus far, we must rely on judgment more than we may like to. EPA develops its regulations with an open process of public comment, interagency

review and consultations with the affected parties, not to mention the possibility of judicial review. At least in my opinion, I think that this process helps to ensure that the judgments made by EPA are made with a full knowledge of all viewpoints on how the economic environmental balancing should be done. Hopefully, this process ensures that environmental decisions are made as well as possible in practice in view of the tremendous complexity and lack of desirable information.

SELECTED QUESTIONS AND ANSWERS

Q: We heard here this morning as well as in prior sessions of the symposium that uniform national air emission and wastewater effluent standards are a problem. What are the panelists' thoughts on this?

A: We probably all have different feelings on this but I believe that we cannot go b-ck to the 1966 concept of water quality standards. We need a combination of water quality standards and national standards.

We are not managing the environment under the present pollution control laws--it is a legislative process, a regulatory process. One reason why we have uniform standards is because it is the easiest administratively to deal with. There is no effective management, however, when everybody must do the same thing.

A: I agree that the uniform standards are not necessarily the most efficient way of handling environmental problems. I would like to discuss exactly why we have uniform standards. I agree that partially it is because of ease of administration. That is clear. But I would also like to suggest that we have uniform standards because this is what industry really wants and they essentially have a lot of influence in the way these laws have been written.

If you were going to take an optimal cost/benefit view of these problems, it is quite clear that some industries would not have to do any clean-up in a particular area. But on the other hand, industries in another area would have to do a heck of a lot of clean-up. The problem is that the Congressmen from these areas do not want to see their industries have competitive disadvantages with respect to industries and plants located in other regions of the country.

A: Before we go on, I just have to comment on this because it makes my hair raise. Every place I go, I hear the concept that we must make pollution control costs equal for pulp firms in Alaska, in Maine, and in Minnesota. The cost of environmental control, however, is only one factor. For example, the cost for labor in Alaska is about five times what it is in Maine. If Congress really wishes to be totally equitable, should we not also control wages in both places?

A: Let me address that, from a slightly different point of view. With respect to steel companies in Mahoning Valley in Ohio, EPA has undertaken a study in the past year and a half addressing this precise question: Can these eight steel mills meet uniform standards for water and still remain viable in that particular valley? EPA did a

study which showed in fact that for these eight mills they deserved and were given relief from the uniform standards. Since that time, however, the State of Pennsylvania is asking why we gave those particular mills in the State of Ohio relief when other steel mills 15 miles away in the State of Pennsylvania were not? The State and others claim that the mills in Ohio now have an unfair competitive advantage.

The concern is not only that of unfair competitive advantages, but that the State of Ohio has less concern about the environment and that industry will tend to locate there rather than in Pennsylvania with the obvious economic and employment impacts.

A: First of all, I would like to anser the question as to how does the industry stand in relation to uniform applications of control technology? It has been the position of the American Iron and Steel Institute that there should be some minimum level of treatment for the steel industry everywhere. Anything beyond that should be tied into water quality taking into consideration not just our discharges, but the discharges from municipal plants, other treatment plants, urban run-off, combined sewers and things like this, so that when we develop a goal to achieve a certain use or classification of a stream that we take in the total environmental concept before we make those decisions. In other words, do not have industry try to attain a goal which will remain elusive because there are other factors that were not considered when those determinations were made.

Further, industry does not want to take credit for the clean air act or the clean water act. I do not think we lobbied to get them, but I do think that there is some minimum level of treatment.

Q: One of the problems mentioned is the fact that the pollution control laws have been basically written around air, water and solid waste. Organizationally, EPA has established that as their organizational structure which does not recognize the multimedia pollution problem such as the fact that air pollution generates waste that ends up on the land. What has EPA done to try to correct this organizationally within EPA?

A: Well, that is a good point. If you go back a little bit in history here, EPA was initially formed in 1970 in an effort to try to come closer to addressing the various environmental or media concerns in a more coherent manner. So the first step was to try to put it into one agency. I tend to agree that if you look at the environmental concern broadly at all, we do run into problems of air, the water and all the media being related.

It is a tough thing to address because most of our regulations are in fact mandated by media by different laws which tends to drive an agency apart in addressing that question. We have several areas in the office or in the agency which try to look at it more broadly. To some extent, Research and Development in a different context tries to do it although there frequently too, you get splits.

The issue really comes down to how best to organize to do the things mandated by our legislation which tends to drive you into groups versus how do you organize to sort of more effectively address the environmental problem as a whole when we probably are not organized as well as we might be to address it as a whole problem. Somebody made comments earlier about no one talking to one another within the same group. Clearly, there is some of that. But I would like anybody to show me an organization of 10,000 people where everybody communicates with everyone else as the ideal world would suggest. But I think that we recognize it and try to move in the right direction of compensating or doing away with that particular issue. You are correct though in that there may be better ways to organize than we currently are to address the overall environmental problem.

ENERGY/ENVIRONMENT--WHAT ARE THE CONFLICTS AND HOW SHOULD THEY BE RESOLVED?

SPEAKERS' AND PANEL MEMBERS' PRESENTATION
AND RELATED QUESTIONS AND ANSWERS

REMARKS BY

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ENVIRONMENTAL PROTECTION AGENCY

GAO put together this symposium and the good news was that they wanted to explore the issues or conflicts between the environment and energy and the bad news is that they have asked us to tell how these conflicts should be resolved. My talk today will have two parts: first, I am going to repeat the set of issues that have already been given and add a few others that I see as conflicts. I would like to talk a little bit on the second, more difficult subject of how these things might in fact be resolved.

New sources of fossil fuel energy are going to be used as supplies of natural gas and oil used up. Both domestic supplies of natural gas and petroleum--soon to be followed by world supplies--are following the precedent established by the reserves of gold ores in California and Nevada. They are soon going to run out. And that, as I see it, is the major source of the conflict.

These new fuels and energy cycles are more expensive in themselves than our earlier cheap and clean fuels; and there is every possibility that the new fuels will have even a greater expense or cost in terms of the environmental damage that they endanger. While the Nation is facing an absolute rise in the price of energy (which had been a very cheap commodity), it is also facing an increasing cost for environmental protection. The increment in the cost of pollution control technology is certainly going to be greater than what had become standard when oil and gas were plentiful.

I would like to make two side comments on the issues of energy and environment. The first one is that in EPA we operate essentially under two acts: the Clean Air Act and the Federal Water Pollution Control Act. EPA does play a role in the nuclear issue, but it is a minor role and we are certainly not as involved in this as we are in fossil fuels. My research program, for example, has eliminated all work on the effects of radiation. That is now over in ERDA. So, I am not going to talk about nuclear development except to reference some of the mining problems and land use problems associated with it.

The second energy/environment conflict which has also been mentioned by a previous speaker is the energy cost of pollution control and the environmental protection. It is true that advanced technologies for processes like sewage treatment, stack gas scrubbing, and industrial waste treatment, all have an energy penalty. I see that we do not have a member of the Department of Commerce on the panel today, so I thought that I would at least recognize the energy penalty of pollution control technology as one of the sources of conflict. Now I can get back in my role as the EPA representative.

First, I would like to run through, very briefly and very generally, the environmental problems associated with this transition from oil and gas to other fossil fuels. We are currently pursuing less environmentally desirable locations for sources of energy. Oil and gas extractions from land in Texas and Oklahoma had a minimum of environmental damage. The energy to operate a 1,000 megawatt power plant using light water nuclear reactors requires a land use or land change in the mining operations of approximately 100 acres a year. Appalachian coal requires a strip mining of 2,000 acres a year. Western coal because of the difference in seam depth requires 500 acres a year.

The numbers themselves are not all that important and, they vary considerably depending upon the specific characteristics of the mining operation. What is important is that in land disturbance and in other environmental inputs, the new energy sources will have increased potential to damage and change our environment. Strip mines are a very visible example of this potential for environmental degradation.

Development of western energy does not have the water for reclamation that there is in the east. We are now going to the Arctic and the other continental shelfs for oil and gas. These locations are more vulnerable to environmental degradation than are the lands of Texas and Oklahoma and the difficulties of preventing accidents are greater.

In addition, the processing of coal and oil shale carries with it a set of environmental conflicts and environmental issues. The refining of petroleum and petro-chemical complexes that grew up around refineries were and are a major source of environmental problems in air and water quality. The coming technologies for using coal or oil shales and the refining of these materials into liquid or gaseous fuel also

will have a set of problems. The pollution problems of petroleum and "coal" refineries will be much the same. The removal of dirt, salt and sulphur--all of these, if not controlled properly, are potential environmental problems. The milling, sizing, and grading of both coal and uranium ore also present environmental problems which didn't exist with oil and gas. Coal conversion to liquid or gaseous fuel is a process essentially involving incomplete combustion. Potentially, the products of incomplete combustion are nitrogenated, nonsaturated organics and these can have carcinogenic and other human health effects.

There are residuals associated with the use of these other fossil fuels such as ash and scrubber sludges. These residuals and their handling and disposal all require land and they all have potential problems for the environment in terms of cencentrating the toxic materials in the original fuel.

These are some of the generic problems of the fuel cycles. In addition, the Nation is facing some system problems in the development of its energy resources. The systems questions which will either implicitly or explicitly demand decisions concern where to mine and where to burn; what to import and where; and how much to mine and how much to burn?

Another set of systems decisions will be the nature of the future fuel cycles--coal to electricity, coal to synthetic fuels or coal to synthetic fuels to electricity. The nature of those cycles actually developed will have a large effect on the environment.

Now we come to the harder question--not what are the generic nature of the environmental/energy conflicts--but how do we resolve them? I want to talk in a fairly general way about my views of how to get them resolved. There are two different approaches to environmental problems. The first one is environmental protection, pure and simple. The approach establishes ambient or environmental standards which are to be achieved and maintained independent of all other considerations. The program for achieving these standards is called implementation planning. Generally, implementation plans are a set of source regulations both for existing and new sources which will guarantee that certain standards for air quality, water quality, etc., are maintained. I prefer not to focus on the current requirements of any particular piece of Federal legislation, but the general idea of establishing, if you will, environmental barriers which are not to be passed by an action on the part of society. This concept of ambient air quality standards is central to the nonautomotive portions of the Clean Air Act and has evolved and changed form slightly through all versions of the Federal Water Pollution Control Act. The approach has certain problems, as is now obvious to anyone acquainted with the field. First, from an environmental point of view, it assumes that protective standards can be written. That in turn, assumes a tremendous amount of knowledge on the

part of the doctors, ecologists and biologists of the Environmental Protection Agency. The concept presupposes the ability to write down a set of numbers for pollution concentrations which are of protective human health. More important, it assumes that these standards can be achieved without forcing enormous dislocations in the society and the economy of the country. I guess everyone knows about the history of the transportation control plans. It is my belief that although it was never published, the first draft of the transportation control plan for Los Angeles called for 108 percent reduction in the amount of vehicle use.

The second approach, which is now current, specifies that all practicable or available control technologies should be used. In its philosophical underpinnings and in the actual form of the Federal Water Pollution Control Act, this approach says to do what can be done independent of judgments as to the importance of particular environmental problems. This approach, which is the 1977 requirement of "best practical control technology" and the 1983 requirement for "best available technology economically achievable" in the Federal Water Pollution Control Act, shifts the balance of power into the hands of the regulator. It says that the idea of proving damage to the environment and protecting health will be subservient to doing what is practicable. The consequent economic inefficiency inherent in universally applicable requirements is given lesser emphasis. If this approach is used simply, it requires the same degree of treatment of a power plant located in the middle of New York City as it does of one located in Four Corners. Even more simplistically, the same degree of treatment is required of a municipal sewage facility's discharging to the deep marine waters off of California, as of one discharging to a lake in the middle of Minnesota.

The way to resolve some of these conflicts is really not through either regulatory tool. Environmental regulation is a process--it is the public policy process and the best example that I know of is NEPA. You have already heard a great deal about NEPA, but what it does is assure that environmental thinking is incorporated into public policy decisions. This in turn assures that if there is an environmentally acceptable and preferable solution, which is in some sense economically viable or competitive, then that solution will be preferred. Now, I would like to give you very briefly my view--and if I can I will speak more as a private citizen--of what is happening. My experience with both the National Commission on Water Quality and with the Office of Research and Development in EPA is that the fundamental idea that what is "doable" is gaining recognition as the underpinnings of the environmental movement. EPA, in a situation which is not free of controversy, has said you can remove sulphur dioxide at a reasonable cost and is attempting to require the use of sulphur oxide scrubber technology for this purpose. The ruling, I think, that there are technologies which should and can be used is coming to be legitimate in the eyes of many

of the environmentalists, the regulators and the regulatees. The use of electrostatic precipitators is now widespread and no one argues with their requirement now. In strip mining, for example, requirements to retain and replace top soil on reclaimed land could be required and would be accepted. Many States are successful in doing just that, although it is not a Federal requirement. These sorts of requirements, which are practicable, can be written down, can be supported, can be implemented.

More extensive measures which actually change the way in which processes are done or procedures are followed are not finding success. For example, the determination that a model predicts that coal can't be burned and that natural gas is required, simply cannot prove effective in the long run. To write a transportation control plan to take the people out of their cars in Los Angeles will never find success as a regulatory approach.

However, the degree of success that is being achieved is occurring through a political process. A public discussion, such as that was held on the Alaskan pipeline or on leasing policies for the outer-continental shelf, is in fact modifying the way in which decisions regarding energy development and the environment are taking place.

These procedures involve a political process and are therefore more legitimate in a very fundamental sense. I find that the base of practicable technology, although not without controversy, is becoming accepted practice. Administrative bodies are establishing a record of what the trade-offs in energy and environment are and that the political process at all levels--local and State government and Congress--are making the hard decisions of how much energy we will have and where it will be developed. This is evident in the Alaska pipeline decision, the SO_2 scrubber decisions and in State strip mine reclamation programs.

That is the end of my talk except that I wanted to mention a few of the specific issues that are coming up now under the Clean Air Act and in other areas.

The first one is the oxides of sulphur. It is the Court's interpretation that the Clean Air Act requires the removal of sulphur dioxide as a pollutant from utility steam-electric plants. EPA supported this interpretation of the Clean Air Act and believes that dilution, i.e., a highstack, is not the proper way to go. The argument comes down on the fact that the ambient air quality standard is established on oxides of sulphur and not sulphur dioxide, per se. It is fairly well recognized that sulphur dioxide is not the form of sulphur that has the health impact. Rather, it is some oxidation product of sulphur dioxide, e.g., sulphuric acid or ammonium sulphate which causes adverse health effects. We believe that allowing an increase in sulphur dioxide emissions across the country will move the problem further away from the stack, but will in actuality, accelerate the human health problems associated with sulphur in the atmosphere.

The second issue that has been mentioned is non-degradation. This is sometimes posed as "Did Congress or did EPA back into a national policy on development through the requirements under the non-degradation decision?" I had a fairly interesting view of the development of the non-degradation policy. I talked to our lawyers about the suit from Sierra Club and they assured me that EPA would win; that there was no way that the Clean Air Act would force a requirement of no significant deterioration. I read both briefs and it was clear that the Sierra Club lawyers were better than EPA's.

The present EPA policy on non-degradation has three major features. The first requires best available technology in all clean air areas. The second is to set allowable increments for ambient air quality for clean air areas. The third is to try to produce a zoning decision process to assure a degree of local option in deciding where development should occur. As probably everyone knows, the present EPA policy is a mixture of all of these now. The basic goal of the non-degradation policy is not to prevent reasonable growth or development. The goal is to assure that development can occur, but that the emissions from new sources are minimized. For a given change in air quality, this will maximize the number of sources.

The last problem I want to talk about is water resources in the west. In the Colorado River basin; for example, the salinity at imperial dam on the Mexican Border is now 870 ppm. Water development in the upper basin, be it agricultural, municipal, or industrial, has the potential for pushing that salinity over 1300 ppm. If you drink the Colorado River water now, you can taste the salt. People who have salt water retention problems have trouble with the water. Development in the upper basin led by energy will aggrevate the problem considerably. Energy development will add salt and will remove good quality water effecting a net increase on salinity in the lower basin. The movement in the west now is to try to do something about increasing salinity. The States have gone to a "no salt return" policy from energy development and the Bureau of Reclamation is developing salt removal projects. This kind of activity and the environmental concern anticipating energy development in the west, is the result of a political process. This process now recognizes the trade-offs between maintaining your natural resources of water and air and the demand for new energy sources.

REMARKS BY

STANLEY D. DOREMUS

DEPUTY ASSISTANT SECRETARY FOR

PROGRAM DEVELOPMENT AND BUDGET

DEPARTMENT OF THE INTERIOR

I thought it might be interesting after having heard as you have this afternoon a wide-ranging discussion of what the conflicts are between energy and the environment, to talk a little bit about the kinds of conflicts in the specific area that we encounter everyday in the Department of the Interior. I think that anyone who successfully fills the role mandated by law for the Secretary of Interior, would benefit from being midly schizoid, because within his own department he has such difficult inherent conflicts that they appear to be almost unresolvable without saying anything about the conflicts that arise outside the department that the department has responsibility for.

The Secretary is responsible for the care and keeping of the national parks, a major role in the well-being and development of fish and wildlife resources and at the same time is playing a major role in energy development both offshore and onshore and in almost every form. We are looking very hard today in the department at problems associated with coal, with outer continental shelf oil and gas development, geothermal energy, and oil shale. Each one of these forms of energy hold a special promise or a unique role in the future and each have their own peculiar array of environmental problems and conflicts.

With regard to coal, as you have all heard before, we have vast supplies of coal, much of which is publicly owned--federally owned. One estimate is that coal accounts for 93 percent of the Nation's energy resources reserve at the moment, although that is an arguable point, and as Steve Resnek (Deputy Director, Office of Energy, Minerals and Industry), EPA said: "Numbers aren't important." Significant coal reserves occur in many states, but the two most prominent areas where

problems exist are the Eastern bituminous fields and the Western subbituminous deposits.

In the Eastern fields, the environmental conflicts arise from the need to contour mine-thin coal seams on moderate to steep slopes; the pirite content of the coal combined with abundant water, leading to acid drainage; residual hazards such as subsidence burning coal seams and unstable spoils. These problems are being addressed by updated State laws regulating surface mining and reclamation practices, and by Federal laws on water quality discharge, design and maintenance of coal spoil banks, and mine safety.

The Bureau of Mines research and demonstration projects are correcting known hazards, but there is a good deal of debate about how much more ought to be done. We regularly find, added to our appropriations acts, for instance, money that we did not ask for to do additional work in the coal fields in Pennsylvania, for instance, where communities are suffering severe problems of subsidence of old mine shafts.

In the Northern Great Plains area, which was mentioned earlier as the largest source of future coal production in this country, there are extensive problems with regard to the impact of development on communities. As you know, those areas are sparsely settled by our standards and they are going to have great difficulty absorbing the kinds of influx of people and facilities that will be required to utilize this coal. Further

--lack of rainfall and shallow topsoil is making reclamation difficult.

--there is competition for water supplies between energy, agriculture, industry, and human use.

--land ownership patterns are a problem because much of the land is divided between the ownership of the surface and the subsurface which causes some very difficult issues on how to resolve ownership problems.

--the emphasis on surface mining results in reclamation problems.

--communities involved in development will eventually collect some tax benefit but in the early years of development are going to have to pay very heavily in terms of additional facilities such as schools, hospitals, etc.

The Federal Government through its retained mineral rights has a major role in co-leasing and development in the West. Our co-leasing procedures as well as mining and reclamation requirements are being completely revised and updated with extensive public review and input.

A good example of that and a good example of the resolution of some environmental problems is the fact that the Department recently published final regulations on surface mine requirements including land reclamation and protection of water supplies. As you know, it is a highly controversial subject, one on which Federal acts passed by the Congress have twice been vetoed in recent years. But I am glad to say that when the Secretary announced the promulgation of these regulations, he was also able to say that both the Chairman of the Council on Environmental Quality (CEQ) and the Administrator of EPA supported these regulations as being sensible and workable and in the public interest.

That resolution, however, did not come easy. I don't know whether Steve Resnek was involved or not, but in the last week before those regulations were promulgated, some very late oil was burned and some very heavy negotiation took place among EPA, CEQ, and ourselves until we were all satisfied that we had something that would stand up and that would permit development and at the same time give us a defensible level of environmental protection.

Our coal development in the West will proceed on what we think is a sensible basis under these new regulations and new procedures and will be preceded by a series of regional environmental impact statements which hopefully will provide a major avenue of public input to the process of both selecting areas for leasing and assigning priorities to those areas for an end within those areas.

Oil and gas supplies at the moment satisfy something like three-fourths of the present national energy need, but again as was mentioned earlier, domestic production is declining, and we are increasingly dependent on imports. We have several problems in this area. First because imports put us at the mercy of those countries from which we buy the oil both in terms of price and supply--as we all know, the price of imported oil quadrupled in recent years--the Department is pushing ahead as quickly as we can reasonably do to develop the Outer Continental Shelf, although our critics do not agree that we are reasonable, in developing oil and gas resources.

Severe environmental conflicts, however, do arise. Although we have been leasing and developing with reasonable success in the Gulf of Mexico for 20 years, the areas that we are now going into present quite different problems in terms of occupational safety because of weather and water depth and in terms of potential environmental impact because of marine life and fisheries' activities.

We have recently come across another example of unresolved environmental problems within the Federal Government to sort of offset the example of the surface mining regulations in which we had splendid unanimity, when the Secretary announced his decision in February to hold an oil and gas lease sale in the Gulf of Alaska. Both EPA and CEQ were quick to

announce that they disagreed with that decision. That conflict has not been resolved and probably won't be for some time. The sale was held, but of course it will be a number of years before that resource is developed if indeed any is discovered. We are, however, attempting to proceed in a responsible way on OCS development.

We have again modified our procedures considerably to provide a number of opportunities for public participation in the process. Not only do we have the environmental impact statements that are mandated by NEPA and the public hearings that go with them, we also have national regional advisory boards, and development plans that are reviewed by States and communities as provided for in our regulations. In our recent sale in Alaska, we went even further than that and required that the successful lessees provide to the adjacent communities and to the State their plan for the development of exploration and the requirements that they would levy on those areas for onshore facilities. I suspect that that requirement will carry over into the rest of our sales.

We are expecting to have lease sales off the Atlantic coast, the first one probably in August of this year, and we are in court because two counties in Long Island have sued us to try to stop that particular sale. The State of New York keeps making noises as though they may join that suit, although they have not done so yet.

The process in painfully slow, although President Nixon announced in early 1974 that we were going to lease 10 million acres a year off the coast for our oil and gas development. It did not take too long for us to discover that is totally impossible. We are now dedicated to the proposition that we will have six sales a year and that we will have had one sale in each of the so-called frontier areas which are now the Atlantic Coast and Alaska by the end of 1978. We may make it. But, we may not because of the litigation that arises in almost every one of these sales. I should say though that when the Secretary comes to make a decision on an OCS sale or a coal lease or any other energy matter, he does indeed receive a great deal of information on both sides of the issue. He does hear strong debates within his own department. He exposes himself to the proponents and opponents deliberately of these actions. He listens to everybody and he has to make some sort of a balancing judgment. It is easy enough to make cost-benefit studies of a lot of issues. It is not easy to make cost-benefit analyses and decisions with regard to the environment.

We have not yet developed very sophisticated processes for reducing environmental or translating environmental values into dollar and cents terms that make it clear which way you ought to go. We have an interesting case before us right now of an oil company holding a Federal lease off Santa Barbara who has discovered oil and is ready to develop his lease by putting in an oil platform. But the State Coastal Zone Commission of

California has refused to grant permission to the company to construct the onshore facilities that the company believes are required in order to utilize that oil. It is a very curious case of environmental conflict.

The State Coastal Zone Commission takes the view that they should do anything in their power to reduce the amount of tanker traffic in the Santa Barbara channel, for two reasons. One reason is that most oil spills into the ocean are traceable to tankers; no question about that, everyone agrees. But there is another reason and that is that when oil is transferred from a storage facility or from a pipeline and into a tanker, there is significant effect on air quality in the area. Hydrocarbons evaporate, get into the air and air quality deteriorates. So the State Coastal Zone Commission has told this oil company that they can only bring their oil ashore if they will agree to build a pipeline from the point where they bring it ashore and carry the oil to Los Angeles.

That is fine and takes care of Santa Barbara's problem--nothing gets into the air and there is little chance of any spills. It does not recognize the fact that the pipeline is economically infeasible from the standpoint of a single oil company or from the standpoint of this particular lease. Nor does it recognize the problem, unfortunately, that once the oil gets to Los Angeles, there isn't much you can do with it except put it in a tanker and take it someplace else, and the air quality problem in Los Angeles is a lot worse than it is in Santa Barbara.

Because it is a Federal lease, we get into the act. Because oil and natural gas will come off this lease, we are very interested in seeing that it is developed. We are right in the middle. We are trying to work out a compromise between the company and the Coastal Zone Commission. We have an out--we can if we wish, permit the company to utilize an offshore treatment facility in Federal waters that the State cannot touch. What that would consist of is a converted tanker into which the company would pump the oil coming out of the lease, they would process that oil, get rid of the sea water and separate the gas and oil, then they would transfer it to tankers and ship it away. But you see what happens is that precisely the objective that the Coastal Zone Commission wants to avoid is exaggerated by that solution. Yet, that may be the only way to get that oil out of the ground and into the economy. I hope it is not.

Referring back to my statement earlier about the difficulties of assessing cost-benefits of environmental quality, we tried to do so in this particular case in order to try to convince the Coastal Zone Commission and the company that they have common ground on which they ought to negotiate, but I don't know how successful we are going to be. My question is if we are unsuccessful, should the Federal Government go ahead and permit the oil company to develop its resource so as to get the benefit of the oil for the country, or should we not permit that treatment because the State does not want it.

California is a peculiar place for these kinds of problems. You are all probably aware of the recent controversy over the proposed Kaiporowits power plant in Southern Utah; the 3,000 megowatt coal-fired plant would have been the biggest in the country. I say would have because the sponsors who are a group of utilities, two big ones in Southern California and one in Arizona, recently dropped their applications for the plant and have at least for the time being given up. But there was one where the issue in rather simplistic terms was should the Federal Government permit the air quality of Southern Utah to deteriorate, as it surely would have, with attendant effects difficult to measure on seven units of the national park system including the Grand Canyon so that people in Southern California could have electricity in 1985.

The alternative for Southern California may be additional oil-fired plants or additional nuclear plants and I think that some of you know that on June 8 California is going to vote on a nuclear referendum which if passed in the opinion of a lot of a knowledgeable people, will foreclose nuclear power for California for some time. That is a conflict that the Department, maybe fortunately, did not have to resolve because the companies withdrew the application.

I can tell you frankly that the Secretary's reaction when he was told that they had, was to say thank goodness, that would have been a tough call. It was a no-win situation.

Oil shale is a major potential resource although not probably economically viable today. Maybe someday in the not too distant future, it will be. It is essentially an oil bearing rock and it may be possible to mine it and to refine it in the ground in which case environmental impacts would be minimized. That is unproven as yet. But if it has to be processed above ground, i.e., mined and processed above ground, there are going to be severe environmental affects, massive waste disposal problems, water quality problems, competition for water, air pollution, competition with alternative land uses such as agriculture, etc.

This program is in very much a prototype stage. We won't know for a number of years whether or when we will be able to develop oil shale in a useful way.

Geothermal energy is another possible source in certain localities for energy and heat, but it also has some peculiar problems associated with it, particularly water pollution, noise and land use conflicts, and possible hazard to blow-outs; this resource is again being developed rather slowly. It may offer us a useful energy source at some time in the future but we are not quite sure of that.

Essentially, to wind up a long story, we at Interior find ourselves on both sides of all these questions at one time or another. I have mentioned the Kaiporowits power plant and the OCS. The Secretary was

recently praised to the skies by some environmentalists for his effort to declare the new river in North Carolina wild and scenic, thereby presumably foreclosing the possibility of the construction of a hydro-electric power plant on the river. This sounds and seems odd, at least in a place where energy development is reputed to be the watchword of the day. I can only assure you that the Department is attempting to address its responsibilities reasonably and do not always find ourselves on the side of the diggers. But we like everybody else, would benefit a great deal from a lot more research and a lot more thought on how these conflicts can best be resolved because the impact of what we do today is not going to fall as heavily on you and me as it may fall on our children and their children.

It takes years and years, maybe decades, to develop some of these energy resources that we are talking about. It gives me a good deal of pause to realize that the decisions we are making now will have such far ranging effects and I do feel the need for a good bit more knowledge and thought and a great deal more public education on what the issues are.

REMARKS BY KENNETH R. WOODCOCK

DIRECTOR, OFFICE OF ENVIRONMENTAL POLICY

FEDERAL ENERGY ADMINISTRATION

I certainly appreciate being here and having this opportunity to talk to you.

I would like to primarily focus on the interrelationship between the Clean Air Act and a broad range of energy considerations; but first, I would like to say a few things about the Office that I direct within FEA, and the responsibilities that we have in terms of looking at the balance between environment and energy considerations. The organization is called the Office of Environmental Programs, and is the environmental policy office within FEA. We handle three areas of activity. One is to assess the energy and economic impacts of environmental protection requirements--primarily EPA's authorities under the Clean Air Act and the Federal Water Pollution Control Act. We have analyzed such issues as intermittent control systems vs. scrubbers in the use of coal; significant deterioration; and issues regarding energy penalties from thermal guidelines for the electric utility industry. Our impact on energy/environmental policy is made through direct discussions with EPA as well as through the Energy Resources Council, where a number of these important energy and environmental policy issues are considered. EPA and CEQ are also represented on that Council.

Second, the Office assesses the environmental consequences of FEA energy policies. As you know, FEA has been proposing for the last 2 years a variety of energy policies. We have the responsibility to assess and comment within the Agency on the environmental concerns that might be associated with such policies. This gets us involved in coal leasing, outer continental shelf oil and gas leasing policies as well as some site-specific issues, such as the Blue Ridge project and a variety of others.

Finally, the Office is responsible for assuring compliance with the National Environmental Policy Act (NEPA). We coordinate and manage the

NEPA program within FEA for the energy programs that are being implemented by the Agency, which include, for example, the ESECA coal conversion program for converting power plants from oil and gas back to coal, the emergency petroleum storage program where the goal is to store up to a billion barrels of crude oil, and energy conservation programs. In the last 6 months or so, we have begun to examine and make decisions on the NEPA requirements relative to programs which reduce the consumption of energy. Furthermore, we coordinate the NEPA decisions for the crude oil pricing and allocation program in FEA.

I would now like to provide a brief historical perspective on the Clean Air Act and energy.

I thought last night back to the late 1960's in regards to how much energy considerations have been factored into Clean Air Act policies and decisions. Back in 1967, when I was a Commissioned Officer in the U.S. Public Health Service, we began to look at the economic impact of controlling air pollution from the grey iron foundry industry. At that point in time, there were few thoughts of the energy implications of control requirements that would be required of the industry. There was a big clean up job ahead, and we attempted to identify some of the costs at that point in time. All efforts were focused on the big pollution control job that the Nation had before it.

A few years later, before the 1970 amendments to the Clean Air Act were enacted, the national emissions standards study was conducted. The environmental protection organization at that time was known as the National Air Pollution Control Administration. The Congress in 1970, prior to the amendments, had the following estimates on the economic impacts relative to the utility industry. The projections indicated that the capital requirements for the utility industry would be in the $2 to $4 billion range. The annual costs would only be about $1 billion or so. All of those were recorded in 1967 dollars, and they were only for plants in existence at that time. There was no mention whatsoever of the energy consequences of the Clean Air Act. The point that I am trying to make is: What impact information did the Congress and the public have before them prior to the very important Clean Air Act decisions were made in the late 1960's?

A few years later, model implementation plans were being developed for stationary sources in urban areas at the same time they were being developed for the rural regions of this country. At that point in time, we were using a model called the implementation planning model, which predicted air quality changes, costs and control requirements for various control strategies in urban areas. However, the resource implications for implementing the requirements of the Clean Air Act at that point in time were not assessed either. Every time the implementation planning model was run to try to solve the problems of the urban areas of the country, particularly for sulfur dioxide, all the model would do

is come up and say "use natural gas, use natural gas." It was a clean fuel and at 19¢ per thousand cubic foot--it was the best buy around. There were no trade-off considerations at that time. At the time that those State implementation plans were put together, there was not much of a focus on national energy needs. The national relationship between the demand for clean air and the availability of clean fuels and controls was not addressed.

Just one more incident that followed a bit later--I was then working with EPA and with the attorneys on Appalachia Power vs. Ruckleshaus, which involved the setting of new source performance standards for coal-burning power plants. EPA had set those standards, many suits followed, and we had the difficult chore of explaining to the Court how EPA set the sulfur dioxide standards at 1.2 lbs. per million BTU for coal-burning power plants. I recall that there were two scrubber projects that were used as a basis for the standards. One was the limestone injection plant at Union Electric Company's Merrimack Station and the other was a limestone slurry system at the Kansas City Power's Laurence Station. Beyond those two demonstrations, EPA justified the standards on the availability of low sulfur coal that could meet the new source performance standards requirements.

Well, the Courts bought EPA's argument at that time. Yet, in 1973, major questions remained relative to the adequacy of flue-gas desulfurization systems. Since that time, there has been, as you are well aware, a dramatic shift to the use of low sulfur coal in new coal-burning power plants.

I would now like to turn to the energy situation as we see it at this point in time. FEA released a few months ago the second project independence report--called the 1976 National Energy Outlook. We updated FEA's original energy forecast in this document. I'd just like to touch on a few of the important statistics as they relate to some of the Nation's environmental problems. The Nation's energy growth prior to 1973 was at the rate of about 3.6% per year. In 1973, there were 73 quadrillion BTU's of energy used. The national energy consumption forecast for 1985, after some conservation programs are in place and changes in prices have occurred, is approximately 98.9 quadrillion BTU's used. This represents a 2.8% annual growth in energy consumption, which is fairly different from 3.6% that preceded 1973.

With regard to the petroleum situation, domestic production is still declining. Since there is an increase in petroleum demand, the import problem is still with us. Oil imports are currently in the 6 to 8 million barrels a day range and during March of this year, 50% of petroleum consumption was from imports. We hope to reduce that import level to about 6 million barrels a day per year by 1985 with some of the proposals which the President has made.

In the coal area, we see a dramatic increase in coal consumption. Coal production is projected to increase to over a billion tons a year in 1985 and to about 1.3 billion tons by 1990. Some of the regional environmental impacts from the coal development pattern could be significant. There is expected to be a 380% increase in the development of coal resources in the northern Great Plains areas by 1985.

With regard to the Clean Air Act amendments that are currently being reported out by the Committees in both the Senate and the House, I'd like to touch on just four issues, some of which have received extensive debate over the last couple of years. We feel there are some very serious issues in the Clean Air Act that need to be addressed.

The first one is the policy for controlling sulfur dioxide from existing coal-burning power plants. Everyone in the Administration recognized that sulfur dioxide requirements were not going to be met by the 1975-77 time frame. There are about 170 existing coal-burning plants that are now out of compliance with State sulfur dioxide regulations. Some 50 to 90 of those plants are candidates for intermittent control systems. Essentially, the Administration proposed a phase-in strategy for the control of those plants by emphasizing the immediate control of urban plants, while at the same time allowing for up to 10 years for the use of intermittent controls in rural locations where intermittent controls would be reliable and enforceable. EPA studies have shown that such a strategy would postpone capital expenditures for the utility industry of about $3.6 billion from the 1975-80 period to the 1980-85 period.

As you probably know, that policy has not been accepted to a great extent on the Hill, but we believe it is a way of phasing-in controls by focusing on urban areas first, where the impacts on health are the greatest and leaving to a later time the control of rural power plants.

Some have raised the sulfate argument, which you may be familiar with, as a reason against the use of intermittent control systems.. We had a consulting firm, Tabershaw/Cooper, look at the basis of the sulfate work that has been done by EPA. It was pretty much concluded that, whereas a regulatory program on sulfates might be appropriate 5 or 10 years from now, once a technical basis is established, we really don't have enough information and technical data at this point in time to support a viable public policy for controlling sulfates.

Turning to new coal-burning power plants, the significant deterioration and best available control technology issues are clearly the most widespread and important ones that are being considered by the Congress at this time. These issues are important from both an environmental point of view; and from an energy point of view. As I mentioned before, we are trying to increase coal consumption to about 1 billion tons a year by 1985 and to 1.3 billion tons by 1990, in order to reduce

dependence on foreign crude oil. In October of last year, EPA and FEA jointly released a study that looked at the implications of significant deterioration policies, that were currently in the House and Senate bills, on the siting of new coal-burning power plants. This study showed that significant areas of the country would be constrained from the development of coal-burning power plants. Impacted areas were illustrated by buffers on maps that we distributed at that point in time. EPA more recently has released an economic analysis of the significant deterioration policies that indicated that significant deterioration will cost about $12 billion in capital requirements to the utility industry between now and 1990--that is, about a 33% increase in the projected air pollution control costs for the utility industry of about $35 billion between now and 1990. Furthermore, the significant deterioration and best available technology requirements would require scrubbers on most, if not all, plants while under existing authorities we project about 50% of the plants would only use low sulfur coal. The other plants would be using some form of sulfur removal. National Economic Research Associates (NERA) also completed an analysis of the impact on the utility industry. Their numbers are not significantly different from those of EPA. More recently--in fact, it was only last week--FEA completed a study where we used the Project Independence Evaluation System (PIES) to look at the same questions that had previously been looked at by EPA and NERA. The advantage that we have with PIES is that PIES can look at the affect of interfuel competition after the cost of increased controls are placed on coal-burning power plants. We addressed the same time frame of NERA and EPA--that being 1975 to 1990. The findings of that study indicated that we would have about 1 billion barrels a day of increased oil consumption in the electric utility sector by 1990 as a result of the significant deterioration requirements--about a 35% increase in projected utility oil consumption. This would result from the incremental costs of coal utilization in certain power plants in the country. It was determined that the use of a $13 dollar oil in certain eastern plants would be less costly than the use of high sulfur coal plus scrubbers. We found that particularly in cycling and peaking plants, competitive forces are at work which result in some oil consumption. Accordingly, national coal production would be reduced by about 150 million tons a year from the projected levels for 1990, and utility capital costs would be up about $6 billion a year between now and 1990. The obvious question is raised--If FEA had authority under the Energy Supply and Environmental Coordination Act to assure that new facilities burn coal, how would the above-described impacts be changed? The point here is that FEA's current coal conversion authorities do not allow us to assure that coal is used--particularly for cycling and peaking plants. Another option was therefore analyzed assuming that you couldn't build new gas turbine or new cycling plants that burned oil. In that case, there was naturally no increase in oil consumption; there was no decrease in national coal production projections through 1990. However, the capital costs increased for the electric utility industry from

$6 billion to about $16.5 billion because they would be required to build more coal-burning plants. Those numbers bracketed the $12 billion estimate of both NERA and EPA.

We have also looked at some scenarios where we assumed that the use of low sulfur coal and scrubbers might be required in the east. We also looked at a nuclear moratorium case. As you can imagine, the costs for meeting those requirements increased substantially.

The significant deterioration/BACT issue is being debated at a time when the National Academy of Sciences projected a doubling and a tripling of the amount of sulfur dioxide air emissions for 1980 and 1990. If that trend was likely, I would think that a fairly substantial strengthening of the Clean Air Act would be needed to be sure that increased sulfur dioxide emissions are not emitted into the atmosphere. The fact is that the recent analyses by the EPA and the FEA indicate that under the current Clean Air Act requirements, the nationwide sulfur dioxide emissions predicted to be released would be decreasing between now and 1990 by 10% to 15%. What we are really talking about in terms of the authorities the bills contain right now, is decreasing nationwide levels of sulfur dioxide even further--to possibly a 30% or 40% reduction from existing sulfur dioxide levels. Naturally, the public policy question is different when you are addressing a declining rate of national sulfur dioxide emissions as opposed to a large increase in projected emissions.

Another study we just recently completed addresses the problem of fugitive dust from new strip mines in the west. We have examined the dust from such activities and it appears that ambient air quality standards would be violated up to about 2 miles away from the fence post of a new strip mine in the Colorado/Wyoming areas, the Class III significant deterioration increment in the House bill would be violated up to 2.5 miles away and the Class I increment about 10 miles away. The Clean Air Act will not prohibit coal development in the west, but this is an energy/environmental issue within the Clean Air Act that needs to be addressed before a final decision is made.

The final major Clean Air Act problem that we are looking at right now--and I think it will be a big issue--is one that has not been fully addressed during the last year and one-half. This is the issue of expansion problems in nonattainment areas: those areas where ambient air quality standards are currently being violated. The Clean Air Act of 1970 says that new facilities can only be located in areas where attainment and maintenance of ambient air quality standards can be assured. Historically, over the last 3 or 4 years, EPA has not reviewed each new source that has been constructed to assure that they are being located in an area where ambient air quality standards were violated. They are, however, now moving on that point, and there are a number of serious areas. The steel industry was successful in getting an amendment

in both the House and the Senate bills to deal with their particular problems of expansion at facilities that currently have ambient air quality standards violations around steel plants. The broader question that we see is that there are widespread violations of the oxidant and ozone standards in this country at a time when new petroleum facilities--not only refineries but terminals and storage tanks--are destined to be sited in such areas. The oxidant standard is frequently exceeded by a factor of 3-5 times. We are looking at two or three areas right now, one being the Los Angeles/Long Beach area where up to 1.6 million barrels of oil a day will be coming down from the Alaskan pipeline. Also, down on the Gulf coast, some of the major proposed petroleum facilities are also in areas where the ambient standards are going to be violated.

We are in no way implying that the Clean Air Act should be discarded. This is not the answer, and that is not good public policy. Yet,this is a major issue in the Clean Air Act.

Previously, positions have been taken that such facilities should just site elsewhere. Well, there are some environmental trade-offs with that option. I'll put my environmental hat on and say: Should such facilities site in Puget Sound or other pristine areas up and down the east or west coast? In the alternative, should some additional health risks be taken in the Los Angeles/Long Beach areas? Do we want areas where there are existing petroleum facilities to be the areas where new siting takes place? Or do we want to put new growth in pristine areas--areas which some people feel should be preserved? This substantial issue has not been fully addressed.

What we need is some good public policy analysis. I do not think any of us would say throw out the ambient air quality standards. However, we will need additional energy facilities and we need a good policy which takes into account all of the Nation's energy and environmental needs.

In closing, FEA has been looking at a number of public policies in an attempt to balance energy and environmental concerns. We believe that both energy and environmental concerns can be compatible. It is becoming obvious, however, that there might be some trade-offs we will have to deal with. In the early 1970's, some absolute and idealistic goals were considered acceptable in terms of legislation. Now, at this point in time, you see both environmentalists, as well as industry, looking at this problem from a more sophisticated viewpoint.

I think only by good public policy analysis are we going to be able to lay out the range of viable options. We have passed the time when the "best solution" is available, and we are going to have to look at second best solutions which take into account a number of social needs.

This is the role FEA hopes to play in order to provide economic, technical and legal analysis to develop the range of options for consideration both within the Administration and before Congress. We want to lay out those options, get public debate on them, and hopefully get the type of solutions that take into account both energy and the environment.

SELECTED QUESTIONS AND ANSWERS

Q: In light of energy/environmental tradeoffs, should environmental requirements be relaxed in areas of high environmental quality?

A: This is a complicated question. To relax environmental requirements in areas of high air and water quality, you would have to prove that the dischargers do not substantially degrade air and water quality. That could be a real Donnybrook because I do not know how you could prove it one way or the other.

Q: What are some of the concerns both of the coal producers and the environmentalists with respect to surface mining regulations?

A: The environmental concerns are fairly apparent and most of you are aware of them. The strict environmentalists' view of strip mine regulation would be to restore original contour, to revegetate in almost exactly the same manner as the original vegetation, and to avoid entirely any adverse effects on water quality. That is a nice approach but does not seem to be terribly realistic in terms of actually mining coal.

On the other hand, the coal industry believes that the regulations are going to put them to a great deal of additional expense. They also believe that the regulations may prevent them from mining at all in some areas, as indeed may be the case because proposed requirements are reasonably strict.

From the Department's point of view, I find it rather gratifying that we are being criticized from both sides. If it were all from one side, I would be worried. But I think we must have come out reasonably near where we ought to be if both sides are unhappy with us. We ought to note that we are not only talking about surface mining regulations, we are also talking about diligent development requirements which in effect poses a problem to the lessee. If he does not develop to a certain degree his Federal lease within 10 years, he stands to lose it. Those time requirements are a major source of industry concern and were a source of long debate within the Department before the decisions were made.

On the one hand, we do recognize that, in modern practice, developing a large mine is a slow business, not only because of the regulatory processes, but because of the time requirements to obtain the type of equipment that is involved, the need to make the transportation arrangements that are necessary (sometimes you have to build your own

railroad), etc. On the other hand, we are faced with the nasty fact that we have 16 billion tons of Federal coal under lease, much of which shows no kind of development whatsoever. We have no handle on those leases until they come up for renegotiation. It was our belief that we had to try to arrive at some equitable mid-point at which the public would be reasonably guaranteed that coal would be leased so that it would be developed as against giving the industry a reasonable time to develop in a sensible way. Now whether we have arrived at that point, only time will tell. I suspect we will be finding that out over the next 10 years.

Q: Has EPA given consideration on how environmental quality will be obtained as new forms of energy are developed?

A: That was the point of my remarks. These new forms of energy that we are thinking about, at least the short term, have potential for doing a great deal of environmental damage, both in the mining, fuel processing, fuel burning and residual disposal when compared to natural gas and oil. These environmental impacts, if unregulated or uncontrolled, will be enormous compared to the older, cleaner fuels. Offshore oil is an example. It is harder to insure safety and prevention of oil spills. When they do occur, it will be harder to clean up. That is the trend as you begin to use up the cheap and abundant clean fuel resources. Nevertheless, it is not all gloom and doom. With proper control and with proper attention, you can develop these new fuel sources and still protect the environment.

Q: What are the conflicts between States and the Federal Government?

A: In the area of air pollution control, the Federal Government established national ambient air quality standards; primary standards for health and secondary for welfare. If we were to simply look at each power plant in the country and note its particular impact on the national ambient standards, there would be considerably less controversy. The sulphur oxide limit that is killing us is not the Federal limit but the limits set by the States. We can live with the national ambient limits in most cases.

It is those cases of overkill that is hurting. If a 2% limitation on sulphur emissions was good, States said let's make it 1%--that's even better. A lot of regulations in this country were written just that way. It is easy to write them that way and put them in State implementation plans but it is a lot harder to change that plan and make it more relaxed.

EPA is looking at the overkill in some State implementation plans so that they can be relaxed and still meet national health and welfare standards.

A: The question of State authority is one that has had a long history throughout the environmental movement and it is one that is very important. It involves an overview activity on the part of EPA in terms of being relatively open with the qualities of State environmental programs. Where State governments are providing funds and people to run their own environmental program, then there is certainly no reason for involving the Federal Government. But you find there are wide variations across the country such as States like California which has a larger percentage of budget devoted to these issues and do a better job than at the Federal level. While other States have a very small amount of effort going into environmental protection and the institutional structure of either the Government or the State law prevents such an environmental control program. There is no simple formula that says either federalize it or don't federalize it. Obviously, the Feds have become more active in the game and maintains a level of activity which is higher than the historic level.

Q: With all the problems noted by the panel and some of the possible solutions, how close are we to mandatory Federal conservation measures?

A: As you know, some conservation measures are pending in Congress such as building standards for new homes; retrofitting homes of low-income people with installation, requiring automobile efficiency standards of 20 miles per gallon by 1980 and 27.5 miles per gallon by 1985.

However, I do not believe we are close to mandatory standards, not because they might not be effective, but because as individuals we would find many of them unacceptable lacking a demonstrable crisis. When the next oil embargo hits, I suspect we will have quite a few.

NATIONAL ENVIRONMENTAL POLICY ACT--SHOULD IT BE AMENDED?

SPEAKERS' AND PANEL MEMBERS' PRESENTATION
AND RELATED QUESTIONS AND ANSWERS

STATEMENT

BY

THE HONORABLE RUSSELL W. PETERSON

CHAIRMAN, COUNCIL ON ENVIRONMENTAL QUALITY

Ladies and Gentlemen: I appreciate very much the opportunity to join you tonight, to be here with you ombudsmen and ombudswomen to talk about the National Environmental Policy Act (NEPA).

If ever there were a time that called for objective, independent analysis of what we are doing and where we are going, it is now--and you people have a tremendous responsibility in that area. From where I sit, I think the country should be proud of what you are doing. We just hope you'll continue to stay in there fighting for objective analyses as you have been doing.

The Comptroller General told you about the League of Conservation Voters, how they supported a number of conservationists and fought against those who weren't in sympathy with the environmental movement and had a great batting average. I have an example of a failure. They supported me in my re-election for Governor and I got thrown out.

In his letter of invitation, Comptroller General Staats suggested that my remarks this evening address one question--is there any need for legislation to refine the scope of the National Environmental Policy Act, especially as it relates to the preparation of environmental impact statements? My answer is no.

Thank you very much. Since you paid for my dinner tonight, however, and since some of you probably want to differ with me, I ought to amplify that answer a little bit. The reasons for my answer are three. First, NEPA's scope is appropriately broad, for we are concerned about the human environment as a whole, not merely one aspect of it. Second, the steps necessary to make environmental impact statements effective and

efficient are all possible under the laws that now stand. Third, the really troublesome issues related to NEPA have virtually nothing to do with legislation, and hence cannot be solved by legislation. They can only be solved by learning to look at the Federal decisionmaking process in a markedly different way.

Most of the discussion about NEPA concerns not so much the act itself as its most visible manifestation, the environmental impact statement. It is important to note that NEPA, court decisions, Council on Environmental Quality (CEQ), guidelines and agency regulations require environmental impact statements (EISs) on any actions which significantly effect what NEPA calls "the human environment." Consequently, agencies must analyze impacts on human health, housing and community growth, as well as impacts on the natural environment. In cases on transportation, energy, water resources and many other Federal projects, these human impacts may be an agency's major concern.

It is only natural that such a wide-ranging act, affecting decisions by more than 70 Federal agencies, should provoke criticism. The most common objections to the EIS are these: it delays projects; it increases project costs; it stimulates litigation; and it is a cumbersome document, expensive to put together and requiring staff effort badly needed elsewhere. More broadly, NEPA's critics claim that the act inflates environmental concerns way out of proportion to their practical value; and, in so doing, retards economic and technological progress.

Let me begin by examining the assertion that NEPA and the EIS process delays projects. In the first year or two after NEPA was passed, this was often the case. Virtually any new policy entails some delay, as Federal managers adapt additional procedures to change rules. But this predictable pause for the shifting of gears was prolonged in the case of NEPA, because Congress did not insert a grandfather clause in the act. This meant that agencies with projects well into the planning or even construction phase had to halt work on any that would have significant environmental effects and prepare an EIS on each of them in a very short time.

In 1971 alone, for example, the Department of Transportation filed 1,293 draft environmental impact statements, the great majority on projects authorized or undertaken before NEPA was passed. Last year, by contrast, the Department of Transportation filed only 229 draft EIS's, about one-fifth the number of the peak year.

In 1971, Federal agencies filed a total of almost 2,000 draft EIS's - twice the number they filed last year. This sudden workload, imposed on agencies that had little opportunity to staff for NEPA, created a backlog that undeniably did lead to delays in project approval. But the lack of a grandfather clause exempting well-advanced projects from NEPA requirements also created a more subtle

problem, one that hampers the effective operation of the EIS process to this day.

First of all, it led to bad habits - Federal managers who had already invested considerable time and money in a project wrote their EIS's to justify decisions that had already been made. Second, it prohibited any genuine questioning from an environmental perspective of the economic and technical assumptions on which a project had been based. Thus, the delay occasioned by EIS preparation seemed doubly useless, and the EIS acquired a reputation in those early days for being an irrevelant exercise in meaningless, expensive paperwork. It has not entirely outlived that reputation. These days, the initial backlog of EIS's is virtually gone. Those submitted now are overwhelmingly for actions proposed after NEPA was passed. Nevertheless, the criticism of NEPA-occasioned delays persists.

Because CEQ is charged with supervising the EIS process, and thus has an interest in making it work properly, we looked into this delay question in depth. We asked Federal agencies to estimate the time required to prepare a draft EIS. As you can imagine, given the variety of projects undertaken by Federal agencies as disparate as the Department of Health, Education, and Welfare (HEW) and the Soil Conservation Service, the times varied greatly--from a minimum of one month for several agencies to a maximum of several years for others.

The crucial point to be made about these periods is this: In a properly run agency that takes NEPA seriously, the preparation of an EIS does not add months to those necessary for the normal planning process. Rather, environmental analysis proceeds in tandem with technical and economic analysis. It need not be an addition to normal planning.

This point was brought out rather well, I think, in testimony before Congress last September by Brigadier General Kenneth McIntyre, the acting director of the Corps of Engineers. From our survey, we had learned that the Corps spends an average of 9 months on preparing a draft EIS and another 10-1/2 months on review and revision prior to filing a final EIS: a rough total of 20 months. Adding time for review of the final EIS takes another 4 months for a total of 24 months to complete the EIS process. This is obviously a substantial period, and if it all represented delay, it would be an extremely costly one.

But General McIntyre testified that the average length of time required for a Corps project is 15 to 16 years. Of these he indicated only about 5 years would go into actual construction. The rest would go into the initial study of the feasibility of the project, followed by requests for project authorization and funding by Congress, and planning and design work prior to construction. Finally, General McIntyre testified, since the passage of NEPA, the Corps places EIS

analyis among the matters to be considered first, as part of the feasibility study, rather than leaving it until after the project meets other criteria.

"After 5 years and over 2000 statements," reads a Corps document entered into testimony before Congress, "the key lesson was the necessity for handling the environmental factors as an integral part of the overall planning process. The EIS must not be made the end product of itself. Environmental data must be provided in a timely manner to the decisionmaker so as to be considered at the same depth of understanding and detail as the economic and engineering concepts and information."

To repeat, then, environmental analysis need not delay a project, if it is undertaken as an integral component of the planning necessary for any Federal action. There are, however, other causes of delays related to NEPA and the EIS process. One of them has been the tendency of some agency heads not to take NEPA seriously, and this attitude is passed on down the line, either explicitly or by executive osmosis, to project managers. Not all managers accept this point of view. Indeed, in many cases, we have found middle line managers trying very hard to live up to NEPA in the face of indifference or even hostility from the top. But if managers adopt an indifferent or hostile attitude toward NEPA, they often wind up creating delays. Theyconclude, following a parody of environmental analysis, that a proposed action will have no significant impact, and hence no EIS is necessary. Sometimes agencies decline to prepare an EIS simply because the action does not seem to be controversial. Frequently, as I will point out later, such decisions lead to litigation and in the end, a court order to prepare the EIS. In that case, the project is halted, not by NEPA per se, but by attempts to bypass it.

Another reason for delay is changing public preferences for certain kinds of projects. Twenty years ago, dams, highways, and airports were popular items and the first flight of the Concorde to the United States might have been greeted by large numbers of cheering citizens, instead of the smaller number of critical reporters as was true today. These days, any such projects are greeted skeptically, not because of NEPA, but because of our experience with the unanticipated side effects of seemingly worthy activities.

Finally, some projects ought to be delayed--some permanently. Complex projects with potentially far-reaching impacts on the environment deserve a thorough look and are often improved as a result of comment and even opposition by the public or by other Government agencies. According to the oil industry, environmental analysis of the trans-Alaska pipeline forced a delay of 5 or 6 years in the first transmission of oil from the north slope. Yet just last March, Thornton Bradshaw, President of the Atlantic Richfield Company commented, "On balance I would say that the experience in Alaska was worth every penny it cost

and every day of delay because it demonstrated that this Nation's energy demands, as great as they are, can be met without ripping the land or fouling the water or leaving the air unfit to breathe. For this, the country is indebted to the environmentalists, who said that the old ways of developing energy were no longer good enough. In a sense, they lifted our eyes to the hills and we are better for it."

In fairness to Mr. Bradshaw, and to keep him out of trouble with his colleagues in the oil industry, I must put his remarks in the proper context. He believes that the regulatory pendulum has swung too far toward environmental protection and has to be brought back to the middle. That's a legitimate point of view--part of the debate that should surround any use by private parties or Federal agencies of public resources. In the past, though, such uses have often been determined by Federal agencies without adequate environmental analysis and without giving the public an opportunity to comment on the uses of their land, their air, their water, their coal, their oil, and their safety.

As part of our survey on NEPA, we also checked into the amount of litigation that has arisen in connection with the EIS process. There is no doubt that NEPA stimulates some litigation. If it did not, it would be a pointless, toothless piece of legislation. But the claim that NEPA related suits interfere with the timely execution of a substantial number of Federal actions simply does not wash.

In the 5-1/2 years between January 1, 1970, and June 30, 1975, a total of 654 actions had been brought, alleging a NEPA issue. During that same period, Federal agencies initiated tens of thousands of projects. In 1975 alone, agencies assessed more than 30,000 projects for environmental impacts.

Since 1970, about 6,000 draft EIS's have been submitted. Only 291 (less than 5 percent) were challenged in court as being inadequate. Our analysis indicated that of 333 cases completed by June 30, 1975, about one-third were dismissed at the trial court level. Roughly 60 percent resulted in temporary injunctions which ranged from a few weeks to the time required to prepare an adequate impact statement. Only four cases resulted in permanent injunctions and not even in these was the agency precluded from proceeding with its project or program after it complied with NEPA.

Now let's look at the EIS process itself. This is probably the most criticized document since Internal Revenue's Form 1040. I'm not a bit surprised. In my capacity as Chairman of the Council on Environmental Quality, I have read a few EIS's. That has been painful enough. I'm appaled at the thought of actually having to write some of the gargantuan EISs brought into us.

Not long ago, I received an EIS on the Arctic gas pipeline. It occupied 17 volumes, plus an executive summary, totaled 9,750 pages, stood 23-1/2 inches high and weighed a little over 40 pounds.

There is no need for such encyclopedic EISs. The CEQ guidelines specifically state that the EIS should be a concise, nontechnical document focusing on the impact of the proposal and its reasonable alternatives. I told one of the Secretaries of a major Department that if somebody brought in an EIS like that to me, I would tell them to "Get out of here--take it back and redo it--bring it back in a form that I can understand; it is supposed to be an aid to my decisionmaking."

In particular, decisionmakers should be interested in these questions. First, what are the goals of the project and the need for them? Second, what is the extent of the environmental damage it will cause? Third, can agency goals of the project be met through some alternative path that would cause less damage? And fourth, if there is no feasible alternative, what steps will be taken to minimize environmental damage?

Perhaps out of a desire to prove they are taking ecology seriously, agencies frequently give us long lists of birds, bugs and plants--often in Latin as well as in English. Sometimes on the urging of their attorneys, they try to anticipate every possible objection that might lead to a court case, raising the suspicion--to paraphrase Hamlet--that the agency doth protest too much. Sometimes, it is clear that well-intentioned agencies equate the bulk of an EIS with its adequacy.

As a general matter, few EIS's need to be more than a single volume long. The EIS should distill the information produced by environmental analysis into statements that focus on the relatively few questions crucial to deciding the acceptability of a project. Detailed information and exhaustive analysis are essential to the preparation of a good EIS, but this supporting material should be placed in appendices, or in other ways made available to the public. Such material is like the footnotes in a book. They are there for the reader who questions the source of an assertion, but they do not interrupt the main thrust of an argument for the reader.

Further, the excessive length of many EISs militates against their proper use. The EIS is intended as a guide in decisionmaking--a document that highlights the choices. It is hard for Government decisionmakers or the public to determine what those critical choices are unless the EIS plucks them from the surrounding data and puts them in italics. Good things come in small packages, including good environmental impact statements.

In arguing as I have that NEPA and the EIS do not warrant the criticisms that have been levied against them, I do not want to disparage

the efforts of those governmental and private officials who are coping with this policy and this process. Building environmental considerations into decisionmaking is still a relatively new assignment for all of us. NEPA forces us all to think in unfamiliar ways, and such transitions are not easily made. A considerable amount of confusion or misdirected effort, and even waste, were inevitable in implementing NEPA. To the harassed Federal manager trying to accommodate a new directive with little or no expansion of staff, NEPA has undeniably proven to be a royal pain in the agenda.

Now, more than 6 years after the passage of NEPA, it seems to us at CEQ that the responsible officials are getting a better handle on their obligations under the act. They are learning to place environmental analysis on the same plane of importance as technical and economic analysis, and learning that none of these factors in itself is overriding. They are learning, in sum, to live with NEPA.

But the most important question remains--is learning to live with NEPA worth the trouble and expense? Do environmental factors deserve the same intention as technical considerations, or is NEPA little more than a politically motivated genuflection to the eco-freaks who, whatever the state of their mental health, nonetheless have the right to vote?

Here is the hub of the matter, and it is not easy to answer this question with the degree of persuasiveness everyone will accept. One of the objections to the Kaiparowits power plant in Utah, for example, was the amount of air pollution the plant would produce. Health effects were not a major issue. The air in southern Utah is cleaner than in most other places in the United States, and from the standpoint of human safety alone, it could withstand some degradation. One of the environmentalist's objections, rather, was that the pollution would obscure some of the most magnificent terrain in the Nation.

What is that worth? I don't know. I suppose a good CPA could add up the money spent by tourists who come from around the Nation to visit the national parks in the area around Kaiparowits, and produce a dollar figure. But even such a figure would be totally inadequate. There is no way to quantify, with any convincing precision, the worth to all of us to have some of our Nation preserved in its raw, undeveloped splendor.

Rather than laboring that question, however, let me go on to point out that many types of environmental impacts do have major economic effects. The draining of wetlands in order to produce more farmlands seems to be a favorable economic tradeoff. It gives something useful to man in exchange for something that to the unitiated appears useful only to migrating ducks. But a failure to understand the decisionmaking policies of the earth itself has led, in North Dakota for example, to a serious transformation of the Souris River. Once a tranquil river that watered adjoining farmlands, it has--because of expensive wetland

draining upstream--overflowed its banks in 5 of the 7 years, flooding people out of their homes and causing extensive financial losses--some of it to be made up by taxpayers across the Nation, under the emergency aid provisions of various statutes.

Clear-cutting great patches of timberland is a cost efficient method of producing timber--or so it would seem; unless the clear-cutting is carefully managed, however, it leads to the erosion of fertile soil, the blocking up of streams and the destruction of fish habitat.

These are all items that can be measured with more or less precision in dollar terms. The completion of the Welland Canal on the St. Lawrence Seaway cut the cost of transport from the Atlantic Ocean to the Great Lakes. It also permitted the entry into the lakes of the sea lamprey, a voracious predator, whose eating habits unbalanced valuable ecosystem. Within a few years, the sea lamprey devoured virtually all the commercially valuable fish in the lakes and stimulated a population explosion in a commercially useless species called the alewive. Without going into detail, I will simply say that the increase in alewives cost Lake Michigan's tourist industry millions of dollars and forced the shutdown of electric utilities and steel plants whose water intakes were periodically clogged by dead fish.

I could go on with this recitation indefinitely. The point is that when we are talking about environmental impacts, we are not talking entirely about aesthetics. We are talking about the continuing ability of our Nation and of our globe to support human life. We depend on four resources for our very existence: air, water, food and sunlight. We can go on nibbling away at these resources little by little in the name of economic growth and technological progress. At a certain point, however, the nibbles become large bites and the cumulative impacts each of them financially justifiable if you look at it in isolation--start adding up to massive and sometimes irreversible damage.

Man has been damaging his earth and its life support system from the moment of his emergence on this planet. In the past, however, the capacity of our species to damage the earth was relatively insignificant in comparison with the size of our globe and its ability to bounce back. But these days, the size of our population, the devastating power of our tools and the incredible complexity of the substances we are pouring into our air, water and soil have begun to exceed the resilience of our planet. For the first time in the history of man, we really do have the capacity to spend our earth into bankruptcy.

From a hard-nosed, no nonsense point of view then, when we talk about environmental impacts, we are not only talking about unspoiled scenery and endangered toad. We are talking about deficit spending of the most grievous and final sort--and if and when we run out of biological money, we will have no machine to print more. The earth owns the only press of that kind.

NEPA is indeed a pain in our agenda. Like any pain, however, this one reminds us that something is wrong and needs attention. For right now, the National Environmental Policy Act is just as flexible and comprehensive as it should be. Let's not limit it or change it--let's learn to live with it.

Selected Questions and Answers

Q: We hear a lot of criticism that NEPA does in fact cause project delays. On the other hand, we also hear that the reason for the delays is that the Federal agencies are not using NEPA as a decisionmaking tool but that they are in fact preparing the statements after the decision is already made and that is one of the causes of the attacks on it.

A: We hear many complaints about delays. The President raises heck with us about it; we get calls from Governors, Senators, and Congressmen, bringing the matter up rather frequently. We have a standard technique that we use. We say that we are anxious to learn about it, please help us get the data so that we can dig into this. Most of them evaporate at that point. But we pursue and get back some examples. Recently, we put on a big drive to get Congressmen to submit to us examples of delays caused by NEPA. A letter which we sent out resulted in zero responses. You should understand that there are State laws, county, and city regulations that projects must adhere to, many of which can cause delays.

The biggest problem with NEPA is the one that you referred to: Managers do not start working on environmental considerations back at the beginning. When they do, they find it an aid, not a handicap. But you can imagine how any one of us would be irritated if we were running a project--we had decided it was a good one, we want to run with it, we were moving--and then somebody came along and said, "Hey, what about the environmental impacts?" You would have to hold up until you found out about them--this is a natural irritant. But if at the beginning, you ask that question and you decide it has too many serious impacts and want to try a different approach, then you will consider it an aid to your decisionmaking.

That is what the Corps has been saying. They have informed the Congress of some examples of projects which were killed before they ever reached an environmental impact statement level. Their own assessments said that the project was not going to fly. And I think that is what NEPA is all about. We have to teach the decisionmakers to actually consider this prior to making a decision, not after the fact. Some of the agencies have had real problems with continued resistance to doing this. Others are strongly in favor of it. One big plus is that most agencies now have a substantial staff of people who know about NEPA and who really believe in it. They are teaching their bosses about the importance of it. I think that in another few years, this will be true in nearly every agency.

Q: Do you think it would help if most agencies received separate funding for its implementation of NEPA or absorb it among their ongoing programs?

A: Yes it would help. Certainly it would have helped when NEPA was first passed, because as you know, every agency is convinced that every dollar they are spending is critical and they need more people than they have.

Now all of a sudden they have a new assignment that costs a lot of money and requires considerable staff. But, today, as a result of the budget process--the fight for additional funds and staff coupled with establishing priorities--they have arrived at the point where the requirements of NEPA will be weighed into the overall budget-making process, so I would not recommend a special category for it.

Q: There has been some talk recently about an economic impact statement which I assume would be the counter to the environmental impact statement. Would you agree that in a lot of respects the term EIS--environmental impact statement--is somewhat of a misnomer and a good environmental impact statement will also include data with respect to the economic impacts of a particular action?

A: We have always had an economic impact statement--the budget process. That is one thing that we have always concentrated on, economic impact. Why do we have an environmental impact statement process? Why is that selected for special attention? Because we ignored it for so many decades and finally the people said, "We are going to put an end to that"--particularly the young people who started it and then their parents joined with them and had overwhelming response. NEPA was passed saying that we aregoing to require Federal managers to write an impact statement before they undertake a project. It would seem to me that a decisionmaking document ought to be available considering all the factors and the day will come when that will happen. But because of our negligence in not facing up to environmental considerations, that was singled out for special attention.

I would be worried if we had an all-encompassing document today and got rid of the environmental impact statement because it would start to be ignored. We need a few more years to get conditioned and trained in this field so that people will properly pay attention to it in the future. But I see an evolutionary process where we have an official document made available to the public that weighs all of the factors in the decisionmaking. Many people resist such a document because they do not want to expose their economic considerations, etc., to the scrutiny of the public.

Q: I have heard it argued that we might need an administrative court to do what you're talking about and maybe we are imposing a burden on the Federal courts that they are really not prepared to assume--they are being asked to make judgments on environmental considerations against all the other considerations. Do you have any reaction to that?

A: It would seem to me to have some merit. I believe the complexity of some of these considerations is such that it takes a degree of specialty or expertise to cope with it and a judge covering every kind of problem in the community might not be expected to have that degree of expertise that a special court might have. But that is just a top of my head type of comment. What do you think about it?

I have heard a number of judges express the view that they are being given a function that they should not be asked to perform. They are not equipped with the technical expertise, the issues are not really issues of process as much as they are issues on trade-offs--environmental concerns against other concerns. I was happy to hear you say what you did--that it isn't a question of environmental impacts or economic impacts--the question is the totality of the impacts.

I think any decisionmaker worth his salt ought to come to that conclusion, don't you think so?

I think that the problem is that EPA is not regarded as an impartial body, its regarded as an advocate body that is concerned primarily with the environmental concerns and not with the totality of the impacts.

And that is not surprising, is it? They have been beaten on from every direction as they tried to implement new complicated environmental laws with little scientific data to backup many of the decisions.

Q: There was an article several weeks ago which claimed that environmental impact statements are filled with a lot of shoddy science. What is your reaction when looking at statements--do they stand up to your review?

A: Yes, many of them do. Like the other aspects of this program, there has been a marked improvement from 1970 to today. That editorial, however, was an irresponsible crack at the EIS "boondoggle" as he called it. There are many problems that arise today where you can bring scientific judgment to bear because there is scientific data available. There are other areas where data is lacking but where you can bring to bear social value judgments in making decisions.

For example, in the case of carcinogens, there is solid evidence that a particular chemical will cause cancer in man and on that basis you can be straightforward in arriving at some kind of regulation.

There are other areas where we know that a chemical will cause cancer in mice but it has never been demonstrated in man. We know that most of these things take 10, 20 or 30 years from exposure to the time cancer develops. So what are you going to do about trying to regulate or raise questions about these chemicals if you do not know for sure whether it would cause cancer in man?

Q: Can you tell me how compatible economic growth is with environmental quality and if it is not compatible, how do you think its effects will hamper economic growth?

A: Cleaning up the air and the water is completely compatible with our economic growth. We have created a new market in America (in the world, for that matter) for people to develop pollution control products in which they can invest and make a return, products that can lead to jobs. In fact, we had a $15.7 billion market last year for this in the United States.

I worked with DuPont Company and one of my responsibilities was in charge of the division responsible for getting DuPont into new fields. We had tremendous research labs and we bought up patents from people around the world, and there were all kinds of ideas for new ventures. One of the approaches was to try to judge what the people of a country was going to need 10, 20 or 30 years from now, so that we could invent something to fulfill that projected need.

We were not smart enough, however, to see that the people of our country would want clean air and clean water. But some other people were. Inglehart Industries, for example, had some people working on catalysts and some of their people said, "We ought to be able to sell the catalysts to the automobile manufacturers to put in their exhaust systems to finish burning the fuel so they would stop polluting the air." But they were naive; they could not sell that idea. There was no market for it. Along came the Clean Air Act and immediately there was a market for devices to put in automobile exhausts to clean up the air. Inglehart had a highly profitable business and was selling catalysts all over the world.

Obviously, there is a limit to how much money we can spend in any one of these areas. When we spend $15.7 billion cleaning up the environment, that is $15.7 billion we do not spend elsewhere and obviously the law of diminishing return applies as in nearly every other place.

Obviously none of us would be in favor of spending more money to get zero benefits from cleaning up the air or water than is necessary. That is why people got so exercised when Congress said that the goal for cleaning up the water was zero discharge. Scientists are right over that, because they know that is an impractical target.

Q: There has been some commentary that CEQ being located organizationally where it is in the Executive Branch cannot be completely objective in commenting on issues of public policies, such as offshore drilling and the development of coal. Would you comment on this?

A: There are some pluses and some minuses. Obviously, we are an advisory group and if our advice is going to mean very much, it has got to be used by the decisionmakers. If we are close to the decisionmakers in the Executive Branch and if they are willing to accept our advice, then organizationally we can be more effective than elsewhere.

We have been courageous enough to speak out even when we knew our bosses were opposed to what we were saying. The record shows that pretty well. But what counts is what the people perceive to be the case. People perceive an organization like our to be more effective if we were not right in office we are advising. However, you may need a group such as ours in the Office of the President and a group like GAO to make an objective analysis from several vantage points.

REMARKS BY BRIGADIER

GENERAL KENNETH E. McINTYRE

DEPUTY DIRECTOR OF CIVIL WORKS

U.S. ARMY CORPS OF ENGINEERS

As the professional auditors for the U.S. Government, I am sure you do not often hear someone tell you that he welcomes an opportunity to talk with you. In the rare case where that might happen, I am sure you immediately become suspicious of that person's motives. Nevertheless, I intend to risk my creditability with you by beginning with the statement that I am pleased Roy Kirk asked me to participate on this morning's panel about NEPA.

The U.S. Army Corps of Engineers has had a great deal of experience with NEPA which Steve Jellinek can verify. The Corps has submitted more EISs to the CEQ than any other Federal agency, with the exception of the Department of Transportation, and covered a greater variety of engineering undertakings than any other agency. As of January 1, the Corps had on file with CEQ 611 draft and 857 final EISs for a total of 1,403. This figure, however, does not quite tell the story, since each draft replaced by a final EIS is dropped from CEQ's filing system. So, actually the Corps has produced a total of 2,215 separate statements since the passage of NEPA.

That number should dispel any doubt that the Corps is one of the most experienced agencies in terms of implementing NEPA. Speaking sincerely, the Corps regards the EIS as a key document in our decisionmaking process. We feel that NEPA gave us a mandate to give the environment proper consideration in making our own decisions and also in forwarding our recommendations to the Congress. Were it not for such a mandate, the Corps would not have had the justification to expend as much effort as it has in trying to identify all of the effects produced by our proposed actions.

That means both the beneficial and adverse effects. This identification procedure is the first step in eliminating as many adverse effects as possible at the earliest point in the planning of a project.

NEPA also has encouraged the Corps to attempt the nontraditional alternative as a solution to any water resource problem, that is particularly vexing. We recognize that every problem does not call for a man-made battle against nature. NEPA also has encouraged us to extend ourselves further into the arena of public opinion. Public participation has become a reality for the Corps. We have had to work more closely with environmental and civic groups, elected officials, and the public in general. In the process, our own concepts and procedures have been modified. The proof of this is the fact about one out of every three active projects has been modified because of environmental factors that were brought to our attention through the EIS or a public comment.

I think it has become clear to you by this time that the Corps has no quarrel with NEPA as it is presently written. We do not favor any amendment of NEPA.

We believe that NEPA is a useful and beneficial law. In addition to the reasons I just gave, NEPA provides us with an expression of national policy on the environment and places the burden on Government agencies, such as the Corps, to carefully consider, evaluate and place before the public the environmental impacts of all of its proposed actions.

Possibly even more important, NEPA provides each citizen who would be affected by a Government action the right to challenge that proposal in court. We are very familiar with this aspect of NEPA, having had a goodly number of experiences with the courts.

To date, we have had 65 major lawsuits filed against 56 different Corps projects. All of these involved one or more environmental issues. Fourteen of these were against one particular type of Corps project which has caused considerable anguish for some environmentalists--that is the dredging of our inland waters and harbors. Of the 65 lawsuits filed since enactment of NEPA, 27 have been dismissed, leaving us with 38 active cases. Of these 38 active cases, 14 resulted in injunctions against us--meaning we have had to stop work on those projects.

While we do not favor changing NEPA itself, we certaining would like to see the EIS made shorter, more succinct and, therefore, more useful to the decisionmaker. We agree that environmental statements have grown much too long. It is not unusual to see statements 3 or 4 inches thick and containing hundreds of pages. Some of the more outstanding, from the point of view of size only, have been up to 3 feet thick with thousands of pages. Obviously, that size is a giveaway that many of the pages are merely laundry lists of essentially raw data--frequently lists of the species of flora and fauna found in the area being surveyed.

I could speculate on several reasons why environmental statements have grown so long. One is an attempt by agencies to create environmental statements that are litigation proof. This is done by listing every conceivable bit of archeological, biological, historical and economic data available. Another reason is that the final version of that statement must include every single comment made on each draft version as the EIS moves through the planning process.

We recognize that thick EISs containing these extensive lists of species and volumious comments are of little use to decisionmakers, most of whom are laymen in relation to the subjects being presented. We are just kidding ourselves if we think that the typical decisionmaker in any agency in Washington has the time to read a document several hundred pages thick. If we can do something to make these statements more useful to the decisionmaker, I think we will have done something that will better serve the general public as well.

CEQ has put out a good statement of the subject of overly long EISs. Chairman Peterson sent a memorandum to all Federal agency heads on February 10 calling for a shorter EIS with emphasis on the analysis of the alternatives being presented in the document. This memorandum also recommended that the "laundry list"type of data, usually available in other project documents or in the peripheral literature, be incorporated by reference only. We intend to do our best to achieve these goals.

To return to my earlier statement, I do not believe that amending NEPA will help us achieve these goals. It is just not practical for the Congress to incorporate specific instructions such as maximum length or format for environmental statements, in a piece of legislation. The Congress has very properly, I believe, set broad goals for us and left it up to CEQ and the agencies to fill in the gaps with more specific regulations. We cannot expect any more from the Congress, if for no other reason than the variety of proposed actions being taken from agency to agency. An inflexible NEPA would not work under these circumstances.

Let me give you an example from my own experience. The Corps prepares EISs on water resource project feasibility reports, projects that have been authorized, projects that are in operation, and also on the applications we receive for permits to do certain types of work or to engage in dredging or filling in navigable waters. The characteristics of the EIS prepared for each of these purposes varies according to the specific needs of the decisionmaker.

Since we are against changing NEPA, you are probably wondering how we envision making any improvements in reducing the size of the environmental statements. Well, we are seriously considering changes in our internal procedures for publishing these statements. For our preauthorization studies, for example, we propose to publish the draft EIS in a manner that will treat the most viable alternatives equally instead of

featuring a single proposed action. This EIS would be used throughout the decisionmaking process, starting with the District Engineer under whose jurisdiction the action would take place. From the District Engineer the same EIS would be forwarded to the Division Engineer and then on to the Board of Engineers for Rivers and Harbors and to the Chief of Engineers. This type of EIS would prove more useful, we believe, to each successive layer of decisionmakers in making their respective recommendations.

This procedure would facilitate the possible selection of an entirely different alternative by a higher level decisionmaker, because this type of EIS would treat all the viable alternatives equally insofar as their environmental impacts were concerned. The result would be a thinner EIS incorporating the project feasibility report by reference only, as Chairman Peterson has recommended in his memorandum. The project feasibility report, which could be several volumes long, would contain the engineering, economic and environmental data in detail. This report is currently the principal decision document for the Corps.

The EIS, I am proposing, would be filed by the District Engineer with CEQ prior to the formulation stage public meeting in the public participation process. This draft EIS and a summary project report would be provided to all interested agencies, public groups and individuals on the mailing list compiled for that project by the Corps. The more detailed and technical documents, however, would be available only upon request.

At the end of the public participation process, the final EIS would be filed when the Chief of Engineers made his recommendation on the proposal and would identify the specific Federal action proposed. Recommendations from each preceding decisionmaker would be contained in the documents accompanying the formulation reports.

The advantage of following a process such as the one I have just described is that it compels everyone involved to make a more careful consideration of the environmental impacts related to each of several alternatives. It should attract comments directed more toward the merits or lack of them for each alternative solution put forward to accomplish the elimination of the water resource problem that prompted the proposed action, rather than encouraging reviewers to make remarks on the quality of the EIS itself.

Most important, this type of EIS would offer the decisionmaker a range of options on the environmental impacts, with all of the options treated equally. Then, if a higher level decisionmaker comes up with a different recommendation, it would not be necessary to rewrite the draft EIS and file it all over again with CEQ.

We know we are not going to be able to do this alone. We will need the cooperation of other Federal agencies, principally, that of CEQ--which I hasten to say has been assured by my colleague, Steve Jellinek--and the cooperation of the environmental community. Thus far we have had some informal discussions with Washington level staff members of various environmental organizations, and their initial reactions have been favorable.

This is not to suggest that everything will be smooth sailing once this new procedure is adopted. There will be continual instances of litigation that will allege some form of noncompliance with NEPA as long as there are groups of citizens in opposition to a Government action for one reason or another. Let us face it! It is relatively easy to find some environmental factor which one can argue has not been properly considered in an EIS. For this reason alone, it will more than likely take a number of years before the trend toward the long EIS begins to noticeably reverse itself.

Something of related interest to you, perhaps, is the recent study conducted by the Water Resources Council at the suggestion of the Congress. The purpose of that study was to determine the feasibility of using a project feasibility report prepared under the guidance of the Principles and Standards published in 1973 as a means of satisfying the EIS requirements of section 102(C) of NEPA. We thought this would be possible because the Principles and Standards require equal treatment of the beneficial and adverse effects that come under the twin labels of national economic development and environmental quality. Much of the data and the analysis of that data required in any report prepared under the Principles and Standards duplicates that required by NEPA.

The Water Resources Council task force concluded that it was feasible to do this, if some additions or modifications could be made. We are working toward the idea of eventually including this concept in our procedure that I described earlier for preparing and distributing a draft EIS that would contain multiple alternatives.

This procedure appears more reasonable than attempting to amend NEPA. Drafting a statute that would presume to prescribe the size, the format and the content of a document that would fulfill the requirements of section 102(C) of NEPA for the range of actions our Government takes that significantly affect the quality of the human environment would be an almost impossible task. Although the Corps feels strongly that we need flexibility within the statute itself, we would like to see CEQ consider making their implementing guidelines somewhat more explicit on the subject of the multiple-alternative EIS. We consider this a better approach than amending NEPA.

REMARKS BY

REBECCA W. HANMER

DIRECTOR, OFFICE OF FEDERAL ACTIVITIES

ENVIRONMENTAL PROTECTION AGENCY

EPA has a dual responsibility under NEPA. We probably have a larger review program than almost any other Federal agency, because Section 309 of the Clean Air Act specifically requires us to review environmental impact statements and other Federal actions and to make comments on them. If the Administrator determines that a proposed Federal action would have an unsatisfactory impact on public health, welfare, or environmental quality, then section 309 mandates that EPA refer the action to the Council on Environmental Quality. (The section stops there and doesn't say what CEQ is supposed to do with EPA's referrals.) In summary, we have a substantial review role and in carrying out that role, we have a broad sense of what environmental impact statements are like.

EPA also has some responsibilities for complying with NEPA in its own actions; this has been a very controversial issue over the years. In particular, there has been a lot of discussion about whether or not environmental impact statements must be prepared on environmentally protective regulatory actions. There have been several court cases on that subject and in each case, EPA has prevailed, based on the theory that our environmental statutes require analyses akin to an environmental impact statement, and thus the environmental impact statement is not necessary. I think the reasons that our enforcement people have been so concerned about that point are two. One is that NEPA does not speak to significant adverse effects but merely to significant effects, and we feel it is very difficult for us to argue that any of our water cleanup or air cleanup programs are not going to have significant effects. The other is the potential of dischargers using NEPA to delay having to meet EPA enforcement conditions.

To clarify the matter, the Federal Water Pollution Control Act Amendments of 1972 included a section 511(c) which addresses the scope

of the impact statement requirements of Section 102(2)(c) of NEPA with respect to EPA's actions under the water law. Section 511(c) says that all actions of the Administrator are exempt from NEPA in the water area except for issuance of new source water discharge permits and approval of waste treatment works construction grants. The issue also has arisen time and again under the Clean Air Act, and in the Energy Supply and Environmental Coordination Act (ESECA) of 1974. The Clean Air Act was amended to exempt all actions of the Administrator under the Clean Air Act from the impact statement requirement of NEPA. Despite the second exemption and the fact that EPA has been upheld in court on several occasions on this matter, the Administrator issued a notice in October of 1974 volunteering to prepare environmental impact statements on several kinds of regulatory actions, including promulgation of new standards under both the Clean Air Act and the Noise Control Act. EPA also has a regulation and a program for preparing environmental impact statements routinely for its construction grants program.

Some people say EPA has had a record of avoiding the actual EIS requirements, but we place the responsibility for preparing environmental assessments on the prospective grantee (or permittee). We work with the grantees to mitigate the adverse environmental effects that are associated with construction grant projects and as a result, we prepare somewhere between 20 and 30 actual environmental impact statements a year, which works out to be about 5 percent of the construction grant money. The rest of the projects receive negative declarations. An environmental evaluation is prepared and is made available to the public for all of our negative declarations.

We are just getting to the point where we are beginning to have new source discharge permits under the section 402 permit program. EPA doesn't have much experience in this area yet. We are preparing several environmental impact statements. We also have prepared several environmental impact statements under the voluntary regulatory EIS system.

In the regulatory area, the impact of NEPA on our decisionmaking has been extremely interesting. It has definitely strengthened the interdisciplinary review of our standards. If you take the long-term approach, you might see that doing an interdisciplinary review of a water standard, air or noise standard (in which you analyze the costs and benefits of that standard and find that if you're going to take waste out of one sector of the environment, you might move the problem to another sector of the environment). The impact of NEPA could actually be to moderate the strictness of some of our unilateral air, noise, or water quality standards because of impacts on other sectors of the environment.

In our construction grants program, there is no question that NEPA has greatly increased the analysis of the growth impact of interceptor

sewers and waste water treatment projects. This has had a major impact on the program and has actually led to program changes and substantial modifications in a number of construction grants because of the potential adverse impacts of growth that is stimulated by construction of sewers. I think that the early experience with NEPA illuminated a number of weaknesses in our waste treatment works facility planning process, which we have started to strenghten, and in that way has also had a programmatic impact on our activities.

NEPA has fostered new procedures for early issuance of waste water discharge permits and better coordination with other Federal permitting agencies. We recently completed a memorandum of understanding with the Nuclear Regulatory Commission in which we indicated that we would actually issue our discharge permit for a nuclear power plant which is normally issued just prior to operation, prior to construction in connection with a joint environmental review that we would conduct with the NRC. This is the kind of one-stop shopping that we think regulatory reform is all about, and there is no question that it is NEPA that has stimulated this kind of thinking and has given us a mechanism for looking at a nuclear power plant from some of the same perspectives as other agencies do.

NEPA has also greatly strengthened EPA's ability to conduct environmental reviews of new developments at a time when the problems can best be dealt with. This should lead to better EPA decisions on new air and water source approvals.

I'd like to spend the rest of the time I have going over some of the really controversial issues that have come up under NEPA and giving you our views on how they affect EPA and whether we think NEPA needs to be amended. Its a very broadly written law. Because of its scope and impact on Federal programs, there have been a number of conflicts in court interpretations of the act. In general, EPA does not favor any large scale amendments of NEPA. I'm not even sure we favor any minor amendments of NEPA, but there are some issues that are worth talking about.

Delays

The issue that has stimulated a lot of concern over the years and a great deal of criticism of EPA's review process, I might add, is the issue of delays caused by NEPA. This has been a major problem for some agencies, notably caused by the lack of a grandfather clause in the law when it was originally passed. Projects which were planned or underway, and which were stopped for compliance with NEPA, suffered substantial delays in some cases. According to reports given to CEQ, this problem has been largely alleviated. It has never been a substantial problem of any of EPA's programs. We have never suffered any long delays because of NEPA; some heartburn, but never any long delays. We do not favor any amendments to NEPA which would legislate timetables for completion of the NEPA process.

Flexibility is needed to integrate NEPA into a variety of agency planning and permitting processes.

Definition of "Major" and "Significant"

Another controversial issue over the years has been the definition of a major Federal action and its significant impact on the environment. There has been some public criticism of the variations among Federal agencies in defining these terms. EPA is viewing with great interest the deliberations of the Supreme Court in Hills v. Scenic Rivers Association which addresses whether a full disclosure requirement under the Interstate Land Sales Act is a major Federal action subject to 102(2)(c) of NEPA. An affirmative decision on this part would have a major effect on the current scope of Federal agency compliance with NEPA.

In general, EPA believes that the flexibility in the law, especially regarding the definition of "significant effect," is appropriate because of the tremendous variation in Federal programs. I would say the definitions do need to be better spelled out in some of the agencies' NEPA regulations and, as I mentioned, EPA has had a very difficult time with the fact that "adverse" does not modify "significant" in NEPA. Of course, there are many issues that can come up over whether an effect is adverse or not, and these are occasionally value judgments.

Our NEPA regulations indicate that we will give priority to writing EIS's on projects with significant adverse effects. We actually have never been challenged on that point and we don't go beyond that to indicate whether or not we'd ever write an EIS if there were significant beneficial effects. We've been silent on it and so far it hasn't been a problem for us.

Economic Analysis

A recurring concern by some members of Congress is that NEPA has gone too far in protecting the environment at the expense of economic and social interests. To redress the balance an amendment to NEPA has been proposed to add a requirement for economic impact statements. EPA strongly opposes such amendments. The current scope of EPA's concern for the quality of human environment provides for consideration of economic and social impact as well as physical and environmental impact. According to the Calvert Cliffs decision, NEPA mandates a balancing of these considerations with other relevant public interest issues. Economic analysis is performed in many Federal programs in a variety of ways, and is obviously a major factor in the decision process, whether or not such analyses appear in the NEPA statement.

There is room for improvement in the agencies socio-economic analyses (including EPA's) and there is also a need to strengthen the analysis of

secondary impact. These are administrative areas of improvement, however, and are largely matters of internal agency deficiencies.

State Delegation

The first amendment to NEPA itself was enacted last year to provide for substantial delegation of the EIS responsibility to State-wide agencies which receive Federal grants. This basically ratified a Federal Highway Administration practice under NEPA since 1971. The responsible Federal agency must still furnish data and assistance in preparing the analyses, and must independently evaluate the impact statement before its formal enactment. In our view, this amendment does not significantly alter any current practices and the EPA program is not affected. We do regard that amendment as more a qualification of the original act than a change in it.

Currently at issue is whether EPA must continue to prepare environmental impact statements on new source water discharge permits even after EPA has approved a State's permit program and the State is issuing the permits. EPA is currently taking the position in our proposed regulations that environmental impact statements will not be required for permits issued by the State. Should the legal decision go the other way, then EPA will probably want to assure maximum State participation in the EIS process where the State is issuing the permits, and there might be a question whether the new amendment to NEPA which specifies State agencies which receive grants might constrain delegation of NEPA work to State permitting agencies. I think we are a long time off from having to face that issue.

Strengthening CEQ's Role

EPA's EIS review under section 309 of the Clean Air Act, as I mentioned earlier, may lead to a determination by the Administrator that a proposed action is unsatisfactory from the standpoint of public health or welfare or environmental quality. In such a case, we refer the matter to the Council on Environmental Quality. EPA would support a strengthening of CEQ's role in considering EPA referrals; but again, we do not believe that amendment of NEPA would be necessary to do this. In thinking of other ideas of how CEQ's role in this area might be strengthened, we might consider such things as a mandatory hearing on a project that EPA rated as environmentally unsatisfactory or requirement that CEQ make recommendations to the President. At any rate, we think that there is ample opportunity within the structure of the program to achieve a strengthening of CEQ's role.

Followup on EIS's

Many agencies, including EPA, have poor programs for followup on environmental impact statements to make sure that the commitments for

mitigation of environmental impacts are met, and to evaluate the validity of the forecasts that were made in the environmental impact statement. Here is an area where I think major administrative improvements are needed, and again it is an area where the individual agencies are primarily responsible for getting off the dime.

Scope of EIS's

Agencies have used a variety of approaches to define the scope of environmental impact statements, and there is a need for better guidelines for area-wide or program environmental impact statements and better relationship to individual project environmental impact statements. This is not a matter that is specifically covered in the law itself and it is a matter which has been subject to administrative and court interpretation. It is an issue which is presently before the Supreme Court, and we are anticipating that better administrative guidelines will come out of this process.

EPA is not an agency that would have to prepare any great number of area-wide environmental impact statements, but when we have new source discharge controls for coal mining, EPA will actually find itself, I'm afraid, in the strip mine reclamation control business in the Eastern United States. What we understand is that many of these mining operations are very rapid, fly-by-night sorts of things, and by the time it takes us to issue some of our permits, the guy has done his work and moved on to another place and abandoned his corporation and set up a new one. At any rate, how to get a handle both on the permit and particularly on the environmental impact statement type of analysis for these kinds of Eastern coal mining operations is something that is bothering us quite a bit. We will definitely have to go to some kind of area-wide study to do this. EPA has already initiated an area-wide environmental impact statement preparation process on the central Florida phosphate mining and processing operations.

Substantive Effect of NEPA

I think that part of the controversy over the pressure on agencies to do area-wide environmental impact statements is the fact that environmental groups are pressing for NEPA to make up for the lack of viable planning and land use protection programs at the State level. I know that that is going to be a problem for us in the mining area because people will be seeking EPA to use its NEPA authority to make up for the lack of strong enforcement of strip mine reclamation laws by the States. This brings me to the point that concerns us the most at this time, and that is the question of the substantive impact of NEPA. Is NEPA really a full disclosure law or does it alter or supplement an agency's statutory decisionmaking authority? The case law, especially a recent case

EDF v. Mathews--its what we call the plastic bottle case--concerns the Food and Drug Administration's authority to regulate the use of plastic bottles.

This decision supports the view that NEPA does convey substantive authority to an agency to protect the environment, so long as a balancing of the various public interests is made and there is no direct statutory conflict. In EDF v. Mathews, the court found that while the Food and Drug Administration's law does not speak specifically to protecting the environment, it also does not preclude the Food and Drug Administration from considering environmental matters in its decision-making process. In other words, it laid out minimum criteria to be considered rather than maximum criteria and, therefore, the Food and Drug Administration did have the authority to take an action based on environmental quality grounds if it did not conflict with the basic statutory law. The implications of this view for EPA are pretty substantial. We have in our granting programs conditioned grants on environmental grounds beyond the conditions that would be required to protect water quality. I think we accept this as a perfectly reasonable thing to do.

When it comes to the area of permitting private activities, conditioning permits on environmental grounds which go far beyond EPA's statutory authority becomes a very controversial issue. We have in our proposed regulations for our permitting authority indicated that we will condition or deny permits based on significant adverse environmental impact beyond that which would be associated with the water discharge itself. This is based on our assumption that NEPA requires us not just to look at the discharge from a facility (such as a power plant) but to look at the entire facility and its effects. This has been an extremely controversial feature and we have received volumes of adverse comments on our NEPA regulations in this area.

Considering the substantive impact NEPA actually provides EPA with an extremely useful way of integrating the water statute, the air statute, the noise statute and some of the other environmental laws. We have been using NEPA as kind of a glue to stick these things together. We are contemplating, for instance, a discharge permit for a coal-fired power plant which would contain conditions relating to the need for studies if they change the type of coal they were using because of sulphur emissions. We might look at things like herbicide use in the transmission line corridor. This is to give you an idea of how different conditions on permits might be under NEPA than they might be under the water law, where we would limit ourselves strictly to the effluent limitations and the water quality standards in the receiving water body.

Many of our people feel that the Supreme Court will address this issue in the Scenic Rivers Association case that I mentioned earlier,

the one dealing with the HUD Interstate Land Sales Act, because if you take the proposition that a full disclosure requirement under that act is a major Federal action for the purpose of NEPA, then the next logical question is: Does that alter HUD's decision-making authority? The Interstate Land Sales Act says that HUD does not have the authority to approve a land development. All they're doing is receiving the documents from the land developer which they will make available to the public. The law specifically states that HUD is not in a position of approving. Well, again, if there is a substantive weight to NEPA, you might say that this would alter HUD's decision-making authority and give the Secretary of HUD the ability to hold up a housing development based on NEPA. We are very much in hopes that the Supreme Court case in the Scenic Rivers Association case does not get to this point. We think that a case based more directly on NEPA statutory authorities such as the EDF v. Mathews would be a much better case on which to judge the substantive impact issue. We don't particularly have a problem with how far we may have to go in the permitting area; from the standpoint of environmental quality, to have a court decision that says NEPA is merely a full disclosure law would have a significant adverse impact on us, I think.

Section 103

In connection with this question, I would like to mention Section 103 of NEPA which nobody has talked about since 1971, which required that agencies examine their statutory authority in their regulations and determine whether or not they were consistent or inconsistent with NEPA. Well, I can tell you that back in 1971 we really didn't know a lot of things we know today. I was one that prepared the 103 report for my agency, and we have a great deal more knowledge about the relationship, for instance, of NEPA to the Water Pollution Control Act than we had in 1971. The only thing we brought up in 1971 was the fact that under our construction grants program we had not been giving any money for landscaping at the sewage treatment plant, so we thought, well, under NEPA we better let them do a little landscaping. At any rate, I think that the section 103 study should be repeated. I think it could be done administratively and would not require change in the law.

NEPA and Other Environmental Laws

Finally, I'd like to mention something that Roy Kirk and I talked about, and that is that the use of NEPA and the environmental impact statement as an umbrella for other environmental laws such as the Historic Preservation Act, the Fish and Wildlife Coordination Act, the Endangered Species Act, and the transportation planning and park protection requirements of the Highway Act. It makes good administrative sense to combine these environmental reviews with the NEPA review, so that the whole thing can get done at once. However, this practice

increases the legal complexity in terms of the sufficiency of the environmental impact statements, and may cause delays and controversy for which NEPA is blamed. The impact of meeting statutory requirements such as endangered species protection or historic area protection on the NEPA process is something to be aware of when you are studying agencies' NEPA programs. It might be well to study the feasibility of refining some of these other statutory requirements to recognize explicitly the NEPA connection and the interrelationship of these environmental reviews.

REMARKS BY

JAMES W. SPENSLEY

COUNSEL, SUBCOMMITTEE ON FISHERIES AND WILDLIFE

CONSERVATION AND THE ENVIRONMENT

HOUSE COMMITTEE ON

MERCHANT MARINE AND FISHERIES

With some deference to the time, I made some notes anticipating that I would go last this morning but being finessed by Mr. Jellinek (Council on Environmental Quality) who came late this morning, I see that I'll have to make a few more extensive comments. I guess turn-about play is fair, since when they come before our committee, we usually ask them to go first and then we comment on their testimony. My speechwriters are on vacation this week, so I put together a few notes about the subject of the seminar this morning. I wanted to mention, as already was mentioned by Mr. Kirk (General Accounting Office), that our subcommittee has jurisdiction including oversight responsibility over the National Environmental Policy Act. In the past 6 or 7 years, we have held three oversight hearings. We try to hold an oversight hearing every 2 years to look into the agencies' success in implementing or administering the National Environmental Policy Act. The last hearing was held by the committee in September, at which time we attempted to focus upon four specific issues with which we were concerned.

The first issue was the use of the "policy" or "program" environmental impact statement. We invited the Environmental Protection Agency, the Corps of Engineers and Bureau of Land Management to testify on that issue. Secondly, we looked at the question of delegation of environmental impact statement preparation from the Federal level to the local or state level. We considered the problem of the expanding length of environmental impact statements, something which General McIntyre referred to a little earlier with respect to the question of legal sufficiency of the statements. And finally, we investigated the general questions of integration of NEPA in the decisionmaking process.

The committee developed from those oversight hearings recommendations which will soon be published, I hope within the next week. I'd like to just go over very quickly those recommendations because I think they have some bearing on the future task that faces you in terms of evaluating agency responsiveness to NEPA.

The first recommendation to the Federal agencies and the Council on Environmental Quality suggests that CEQ work in cooperation with the agencies to refine their agency guidelines with respect to when an impact statement should be prepared, in what manner and for what purpose. The testimony presented to the committee in September indicated that many of the problems that agencies were having in implementing NEPA stemmed from the fact that they had not specified in their own agency guidelines under what factual conditions or pursuant to what threshold criteria impact statements should be prepared. I think, as most of you probably know, the agencies have promulgated sketchy guidelines for their own agency which merely parallel the general guidelines which have been promulgated by the Council on Environmental Quality.

The second recommendation that came from the hearings dealt with the question of the use of "program" environmental impact statements. The statute requires an impact statement on specific proposals or projects, or at least it has been interpreted in most judicial cases as being a singular action as distinct from a large group of actions, although some court cases have read it in the plural sense as well. The hearings focused specifically on the effectiveness of the agencies to guide their various bureaus and field offices in preparing program impact statements. We found, of course, that most agencies do not have guidelines or directives for implementing program statements or even defining what a program statement is.

The third recommendation from the committee is directed to the Council on Environmental Quality requesting that an analysis of the delegation of impact statement preparation to others other than the Federal agency. There are two examples that readily come to mind concerning this issue. One has already been mentioned, where the Department of Transportation since 1971 and particularly the Federal Highway Administration has been delegating the preparation of statements to State agencies. The more recent case was the Community Development Grants Program in Housing and Urban Development that now delegates the entire environmental review process, not just preparation of the environmental impact statement, but the entire process to the local level. We have asked that the Council prepare an analysis of the effectiveness of these delegated NEPA responsibilities so that the committee and the Congress can examine whether it comports with the purpose of the law.

Finally, the last recommendation is that the Council undertake a review of existing Federal programs designed to train agency personnel involved with NEPA decisionmaking. This stems primarily from the fact

that much of the testimony received in these hearings and in past hearings indicated that preparation procedures and methodology are not always adequately transmitted to the field offices. Although the Federal bureaucrats know what the process is and how it works, there is a significant turnover in many of the field offices and there is not sufficient training and guidance in order for these Federal field offices to prepare adequate impact statements.

Now, with respect to the specific question of whether NEPA should be amended, I believe the answer depends upon to whom the question is posed. The Committee recently held a workshop that was hosted by the Congressional Research Service of the Library of Congress in December of this past year. We invited to the workshop a group of what we considered to be the "fathers" of NEPA, the ones that were most involved in the development of it, including Dr. Lynton Caldwell from Indiana University who testified on the Senate side, and is given at least some of the tribute for having created 102(2)(C) process; Robert Cahn who was one of the first members on the Council on Environmental Quality; Frederick Anderson who is the Chief Editor of the Environmental Law Reporter; Dick Andrews, University of Michigan who has done quite a bit of writing on NEPA; and Dr. Richard Carpenter from the National Academy of Science. These gentlemen acted as a steering committee and put together a 2-day workshop where we invited interested participants from all over the country who had been involved with National Environmental Policy Act in one sense or another. In the opinion of this group of experts, NEPA did not need to be amended. I'd like to read just one paragraph from the conclusion of that workshop that I think is interesting and perhaps characterizes NEPA in a way that most people don't see it.

> "As a statute, the National Environmental Policy Act was a distinct departure from the norm. It was not a specific regulatory body of law, but a statement of general principles and goals, combined with the establishment of mechanisms and institutions designed to bring about the espousal of principles throughout the Federal government and the eventual achievement of the goals. Can such a statute work?"

It sounds a bit like the description of the Constitution. Although some people have suggested that NEPA was born toothless, it acquired teeth through the courts; and it may be ironic that in the next couple months the Supreme Court may just remove those teeth and we'll all be gumming over the results. We do recognize that the force of NEPA was created by judicial decisions. As evidence of that fact, when you hear agency people talk about NEPA--including the Corps--you will hear them recite how many lawsuits have been filed, and how they have been either successful or unsuccessful. I think that for the large part, that is not a criticism at all. Rather, I think it is an indication of the fact that NEPA has provided an important handle for many disgruntled citizens, public and state agencies and other people who are concerned about the planning and implementation of our Federal programs.

If you ask the National Governors who testified at our hearings as to whether we ought to amend NEPA, I think the answer would be a resounding "yes." Many of the state representatives who testified were very concerned about the impact of NEPA in that it did, in their minds, delay and contribute to the cost of implementing programs at the state level. I think that if you were to ask most Federal agencies if we should amend NEPA, most of them would probably say "no" as I think both the Corps and EPA have indicated here today; perhaps more because they'd be afraid of the results than because they think it needs to be amended. If you ask Congress generally as distinct from our committee, I think you'd find a variety of interesting answers. We have had and I'll just run through very quickly the subject of several NEPA amendments that have been offered; I think that this list will indicate to you some of the problems that particular members see with NEPA.

One amendment would waive the application of all new regulations promulgated by NEPA to projects where an environmental impact statement had already been filed. To give you a personal example of the concerns this suggested amendment addresses, for about 3 years I worked with a consulting group that was engaged in transportation work where many of the larger projects had a planning life of at least 2 or 3 years. On one project, we drew a graph of the 3-year planning period and found it to be intersected with new environmental regulations about a dozen times before the end of the project. Questions were asked about each of those regulations concerning their retroactive application; do we have to do our work over again to find out if we have a product that will be acceptable ultimately to the court rather than the decisionmaker.

Another suggested amendment that's been mentioned already would add the word "economic" everywhere that you find the word "environmental" in the Act. I think Becky already spoke to that point. I believe that many of the agencies as well as our committee regard NEPA as a "balancing act" i.e., economic and environmental trade-offs must be balanced. We believe its implicit, if not explicit, in the preparation of environmental impact statements.

Another legislative proposal was to allow for attorneys fees to be collected under any NEPA suit. Perhaps that one was suggested by someone who had a lot of environmental constituents.

Another amendment introduced, one that may have come from a district where there was a great deal of highway building, would place a 3-year moratorium on the application of NEPA to any highway projects.

Another amendment would have required that separate findings be set out in the impact statement and subject to direct review by the Court of Appeals, in lieu of what is now available under the Administrative Procedures Act in the District courts.

Another creates a National Environmental Policy Institute. Another allows for the filing of supplemental impact statements which I might note is already a procedure that is provided for in the CEQ guidelines. There is one that would require one to comment on the draft statement in order to permit later court challenges when they file a final statement. Finally, a "statute of limitations"--type amendment which would require the filing of lawsuits within 2 or 3 months after the final environmental impact statement has been made available.

I think you can see from these examples that there is a wide variety of concerns and interests on the part of Congress to amend NEPA. I think if you were to ask our Committee, the answer you would find would be "no." First, I think that we should recognize that there's only been one substantive amendment to NEPA since its enactment, substantive in the sense that it was more than a simple authorization for additional monies. That amendment was made this past year to allow limited delegation of the preparation of impact statements to State agencies.

The Committee has a tendency to avoid amending statutes which they feel are, for the most part, doing the intended job. Once special interest groups begin tinkering with NEPA, the result is usually bad, i.e., simple word changes in the operative section 102(2)(C) might result in additional litigation and more conflicting judicial interpretations. I suspect that with a Committee of the same makeup in the next Congress or with the majority of the same members, it will be very difficult to amend NEPA unless we get a disasterous Supreme Court decision in the next few months.

What's the future of NEPA? I think that again I found the workshop that we held with our "experts" of NEPA to be very enlightening on that point. NEPA was written very broadly and as was described earlier was a statement of general principles and goals more than a regulatory scheme. One of the other concerns of our Committee which I want to tie into that statement is the problem of growth and its implications for the future. One of the handles on the growth issue that we, our Committee, has been involved in is looking at the ability of agencies to do long-range strategic policy planning. We are finding that we don't have a mechanism in our Federal government to do coordinated long-range policy planning. It seems to me that the impact statement process offers a unique tool for the government to get a handle on the long-range impacts of their particular actions. Section 102(2)(C) of NEPA requires that the long-range adverse impacts and the long-range irreversible and irretrievable impacts of a particular action be considered. For the most part, I don't think agencies know how to respond as evidenced by the fact that most of them have not responded very well at all. I recall when we were preparing highway impact statements, the only irretrievable and irreversible impact that

was considered was the one time use of sand and stone in making cement. You know, that was the kind of thinking that went into the irreversible and irretrievable impact section.

So, I believe that NEPA as a tool has great potential if we can get people to realize that it does provide a vehicle that cuts across all agencies to provide a mechanism to examine and anticipate future problems. Finally, in that regard, we are finding that NEPA and the procedural provisions are being better understood and accepted and utilized, but again, the substantive provisions, the policy provisions have not yet taken effect to the extent that perhaps someone would argue that they should have or that they could. I think that well considered future amendments to NEPA will probably deal with this policy question and not with the procedural aspects of the law.

REMARKS BY

STEVEN D. JELLINEK

STAFF DIRECTOR

COUNCIL ON ENVIRONMENTAL QUALITY

I'm happy to be here, although it started out as a bad morning. In the first place, Russ Peterson stole my thunder on Monday night; in the second place, I was late; in the third place, Skip exposed my strategy. So, I am not sure whether I ought to stay up here or not.

I must say that Russ did express, in speech form, the Council's essential position on the basic question here this morning--whether NEPA ought to be amended--and from what I can tell, Ken, Becky, and Skip have fleshed a lot of that out. There is very little that I heard this morning that I would disagree with. Frankly, coming here as an official defender of the faith, it is always good to hear agency and congressional people say the kinds of things that we would agree with. It has a lot more credibility.

As Russ said on Monday night, we do not think that the scope of NEPA needs to be modified by legislation. In fact, we wonder whether that would be possible to do in a helpful way, it might just raise more complications for environmental lawyers to litigate over. It has been suggested by some people within the executive branch that the real problem with NEPA is the language concerning the human environment; after all, everyone knows that environment is only about birds and bunnies. These critics would amend NEPA by taking out the word "human" and substituting for it the word "natural." I do not believe that would solve the problem. Frankly, I cannot think of many ways in which narrowing or better defining the scope through legislation would solve the problem or would be in the national interest. The way to get at that issue as far as we are concerned is for CEQ and the agencies to do a better job of trying to figure out what are major Federal actions and what are actions that have significant impact on the environment. I believe that to the extent that we can do so in earnest and in good faith, we can avoid problems. We think it can be done.

We also think that some of the major problems with NEPA are management problems. They can be solved by appropriate management commitment. Agencies that have shown such a commitment, including the Corps, the Forest Service, and the Federal Highway Administration have, as a general rule, been able to integrate impact statements and the impact statement process into their regular planning and decision-making practices and programs. They have done so with relatively little strain, although there was a lot of strain indeed in the first couple years.

Finally, we think that the really troublesome issues--those that are bothering people--are not subject to legislative solution. One of those that has received some discussion this morning is the delay issue. Projects can be delayed by impact statements at three stages in the process: at the preparation of a draft EIS, at the preparation of a final EIS, and after the final EIS is filed, if someone should bring a lawsuit. The first two stages are capable of being handled administratively, through good planning, good management in the preparation of the impact statements and good coordination, after a draft is filed, between the action agency and other agencies, the public, or political or community interests. Delays of the third stage are really out of the hands of the agency management. As I think Ken or Becky said, there is no way to stop someone from at least bringing a suit on an impact statement. You cannot write the litigation-proof impact statement. You can, however, through a careful and well thought out good-faith process, and through preparation of a decent EIS, make sure that that litigation will not go very far. Indeed, this has been the history of litigation under NEPA over the last 6 years. The overwhelming number of lawsuits brought in the early years were on the failure of an agency to prepare an impact statement. In recent years, lawsuits on the adequacy of impact statements have generally been resolved in favor of the agency.

Monday night Russ said that NEPA does not need to be amended. That is,indeed CEQ's official position. But Skip and Becky have raised a couple of issues which may lead us to change our position in the future. The experience of the past 6 years--including CEQ guidelines, district and circuit court decisions, agency practice procedures--has resulted in NEPA implementation becoming instutionalized along certain lines that are fairly well understood by practitioners and policy makers. Within the past year, however, a couple of lawsuits have reached the Supreme Court. In the SCRAP decision it was very apparent to many of us that the Court did not demonstrate an informed understanding of NEPA and its implementation over the years.

However, the SCRAP decision was related to a very narrow regulatory decision by the ICC and has not been particularly damaging to broader NEPA implementation by Federal agencies. Two cases now before the Court, could result in findings on both the definition of a major Federal action and on the concept of program impact statements that could be not

only distressing to those of us who are NEPA supporters, but troublesome to agencies that will still implement the law. It is possible that the court could throw out the whole concept of program statements, which has evolved over the years with CEQ's support (but without as much CEQ guidance as we should have given). This type of EIS has been extremely useful for agencies for practical reasons and has also been in the national interest from a policy standpoint.

For example, on the one hand, the Interior Department is appealing a lower court decision that would require a program impact statement on a four-State area of the northern Great Plains, yet on the other hand Interior is planning to prepare a number of regional program impact statements on smaller areas in the West. The Department believes that such EISs provide an important way of getting at the policy implications of developing parts of the West, and also a substitute for separate impact statements on individual mining plans.

Thus there are good reasons for program impact statements from a policy and from an administrative standpoint.

We are concerned about how the Court will come out, and we are watching it very closely. An amendment to NEPA may be required if the Court rules against the program statement concept. Other possible amendments that should also be considered if the act gets opened-up. One that Skip mentioned toward the end of his remarks would be to reaffirm NEPA's substantive reach. We certainly have interpreted NEPA as having substantive requirements for agencies to look at decisions in ways which they might not do without NEPA. Most agencies have embraced that approach. An outstanding example of it is the Corps' recent decision to deny a permit to subdivision developers in Marco Island, Florida. But I think that would be a possible strengthening amendment to NEPA.

The question of giving CEQ more authority over other agencies is more difficult. On the one hand, we believe that agencies really know what makes the Government work and agencies have to process themselves to internalize NEPA. Authorizing an outside executive agency--such as CEQ--to tell them what to do or to veto their actions, as some environmentalists have proposed, is just not good government. If it takes 15 years for agencies to internalize NEPA so that they do embrace its substantive goals and they do carry out their responsibilities in good faith, then that's worth the investment in time; that commitment will indeed become part of the fabric of the institution. If you set up some separate executive agency as a watchdog with veto power, the result will be constant battling probably at the sacrifice of the goal for agencies to internalize. There may be, however, some room for clarifying what CEQ's role should be in the case of major interagency controversy or conflict. One example is when EPA determines that a proposed action is environmentally unsound and refers it to CEQ under section 309 of the Clean Air Act. So far, we have been building a process from

scratch. When we receive a 309 referral we convene a meeting between EPA and the action agency and hold a "hearing". During the administrative proceedings, we review the issue on the merits and make recommendations to both the action agency and EPA and, if necessary, to the President. It has worked fairly well and is good enough in the absence of any specific statutory direction; but I think some statutory direction would be helpful.

Another major possibility for legislative clarification is the issue of whether NEPA applies to environmentally protective actions. That applies not only to EPA but also to agencies such as the FAA, which has regulatory responsibilities over aircraft noise regulations. Why should FAA do impact statements on environmentally protective noise regulations if EPA does not have to do impact statements on environmentally protective water quality regulations? That is the simplistic way to look at it. The more sophisticated way is that even actions which are environmentally protective have alternatives that can be more or less protective; they have environmental implications, as Becky pointed out so well, and if the concept of environmental impact assessment is a sound concept in law and in policy then I personally, and CEQ officially, really question whether or not any agency should be exempted from that requirement. We think that should be considered anew. But we do not think any of these possible amendments reflect major problems at this point, and certainly not major enough to open up the act to amendments. Most of them can be handled administratively and EPA, for example on its regulatory actions, is indeed voluntarily doing impact statements or analyses that are like impact statements. As a practical matter, these are not major problem issues and indeed we do not think there are any at this stage of the game that require legislative solution, although we do think that there is an awful lot of room for improvement administratively.

We are about to publish a report which distills the experiences of our year long study of agency NEPA implementation. It is at the printer now and will be on the street in June. We will be inviting industry, labor groups, environmentalists and professional groups to comment. It does review, in some detail, most of the administrative issues and problems related to NEPA implementation and has a series of recommendations in it which I hope you will find interesting as well and we would be delighted to have anyone's thoughts or views on it. With that, I am going to close and I expect you have some questions.

SELECTED QUESTIONS AND ANSWERS

Q: Could you address the issue of how effective States and local governments will be in preparing environmental impact statements?

A: You are probably referring to the Housing and Community Development Act delegation which in essence created a system of block grants to local communities for support of local community development projects. This was a substitute for an earlier system which was a categorical grant program where HUD had final say over what kinds of projects and actions would go into these communities. The choice with the Housing and Community Development Act between not having NEPA apply at all to those community development programs or transferring the NEPA responsibilities to the local officials. It is going to be a major problem to get decent environmental analyses from local agencies when you consider that even the Federal Government has had so many problems getting geared up over the last few years.

One of the arrangements that HUD made is to provide technical assistance to the communities in preparing impact statements and just as at the beginning of NEPA itself, we are seeing some that are not bad and others that are pretty bad in terms of quality. It's going to be a process of growing and learning and developing just as it was with the Federal agencies.

A: I would like to comment on that. HUD presented some testimony on their delegation of the NEPA process under the community block grant program and said there were advantages. One was that the impact statement gets better reviews at the local level.

Further, we are tending to decentralize more of our decisionmaking from the Federal level for whatever reasons you think that may be happening. But as long as we understand that NEPA was intended to make the Federal agencies and decisionmakers responsible for the Federal actions and the money, then the ultimate responsibility still has to remain at the Federal level.

A: One more comment to make it clear to those of you who are not familiar with it. Under HUD delegation, the local decisionmaker is subject to being sued in Federal court as if he were the Federal official under NEPA. Moreover, you do not have Federal mission oriented officials pushing categorical programs and an increasingly large proportion of the programs funded by communities under the block grant program have been rehabilitation programs as opposed to razing areas and new construction programs. There has been an awful lot of what they call

neighberhood conservation, that is renovating and rehabilitating and preserving areas in the city as opposed to knocking down and putting up new buildings. Therefore, fewer impact statements will need to be prepared.

Q: In preparing environmental impact statements, Federal agencies spend ample time looking at the effects on nature, but not on the human environment; economic and social. For example, for one Corps' project, there were several environmental engineers taking a look at the environmental impact, but only one social "expert." Another example was an EPA financed interceptor sewer line in Portland, Oregon, which was going to cost several old people between $5,000 and $8,000 each. This is more than the value of their homes and properties. I believe that the general public is not aware of or involved in what you call "public hearings." I do not know how many firends and neighbors of yours go to public hearings, but not many of mine do. Shouldn't environmental impact statements require sophisticated surveys of public concerns and socio-economic needs?

A: I was going to make this point anyway in response to the question that one of the factors and maybe one of the problems in Corps' decisionmaking is that the environmental impact statement is only one of our decisionmaking documents. We present virtually all of our engineering in other documents. We present most of our economic evaluation in other documents although some of that should show up in the environmental impact statement.

In more recent environmental impact statements, this is not universal, Social-economic issues are better addressed.

Very frankly the reasons that social assessments have not been done and still are not being done very well is that we do not know how to do it. I recall working on Federal Highway impact statements where we had to decide whether we were interrupting the cohesiveness of the neighborhood. It would be interesting to get many different people's opinions about what the cohesiveness of a neighborhood is and how you determine it and how you measure it. There are certainly a lot of scientific studies on that sort of thing, but you don't have people preparing impact statements who can make those kind of determinations.

A: In general, I would say that the agencies have not done a thorough job in terms of socio-economic assessment, in part, because of its nebulousness. You are getting into some fairly heavy value judgments. I assume that the dollars you were mentioning were probably dollars to hook up to the sewer system. I have heard of some very expensive treatment plants that EPA has funded sitting there unused because people cannot afford to hook up to them. Generally, EPA usually does

a broad brush, back of the envelope kind of estimation of what the significant social-economic impacts are in a given area. Where we have identified the social or economic impacts as the major impacts, then I would have to agree with you that we should do some sophisticated studies.

A: CEQ's guidelines are really ambiguous on this issue and this is one area where we have to do a better job. We intend to do so. To give you some aspect of some of the complexities, there are socio-economic impacts and then there are socio-economic impacts. The kinds of socio-economic impacts that every agency and certainly any reasonable observer would agree to are the growth impacts induced by Federal investments, Federal developments, Federal licenses and Federal permits. Where EPA is going to lay an interceptive sewer line through vacant land and the developers are just on the end of their chairs waiting to develop that land, the sewer is going to be the main factor in their decision. Clearly, EPA ought to analyze not just the digging up of the trench and laying it across stream beds, but the development that sewer is going to induce and what that will mean in terms of traffic congestion, air pollution, the need for more sewage or water quality treatment, the whole business. Those are the kind of socio-economic impacts induced by the Federal Government.

You also have what are considered the purely social impacts which have come to focus more in the area of defense base closures than just about anything else, and have caused a real public policy conflict as well as a question of how NEPA is defined.

On the one hand, most people in the executive branch would agree that they are trying to trim the defense budget or at least make the defense establishment more efficient and this is a laudable public policy goal. One of the ways to do this is to close bases or consolidate bases. On the other hand, assessing the impact of Federal actions is a laudable policy goal. But when the only measurable impact is the fact that you are going to have a purely economic impact on a city or town that is generated by this Federal action and you do not have an environmental impact per se, it really raises questions as to whether or not and how NEPA applies.

Our bias is toward NEPA applying, but once again, toward establishing kinds of threshholds that are reasonable in terms of triggering the NEPA action. If, for example, you should consolidate Andrews Air Force Base in Washington, D.C., cut it by X percent and transfer those people to some place in Texas, would that have a significant impact on the city of Washington and its economy, even though it may have a very significant impact on some individuals? The answer there is probably no. However, if you are going to close Loring Air Force Base in northeastern Maine, which is in an isolated rural community and represents a major proportion of the town's economy and will probably have secondary and tertiary impacts on the town, then that is a different story and that probably would require an impact statement.

These are difficult issues. Most agencies agree that the economic and social impacts induced by major Federal investment or major Federal licensing programs should be covered by the impact statement requirement.

AGENDA

SYMPOSIUM ON
ENVIRONMENTAL PROTECTION ISSUES

SPONSORED BY:

UNITED STATES GENERAL
ACCOUNTING OFFICE
COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

MARYLAND INN
ANNAPOLIS, MARYLAND

MAY 24-27, 1976

AGENDA FOR GAO-SPONSORED ENVIRONMENTAL PROTECTION SYMPOSIUM

MONDAY, MAY 24, 1976

5:30 p.m. Registration and Reception — Room: Anne Arundel

7:00 p.m. Dinner — Room: Duke of Gloucester

8:00 p.m. Opening Statement

The Honorable Elmer B. Staats
Comptroller General
of the United States

Recent Environmental
Protection Trends

Dinner Speaker

The Honorable Russell W. Peterson
Chairman, Council on Environmental
Quality

National Environmental Policy Act--
should it be amended?

TUESDAY, MAY 25, 1976

SESSION 1 - MORNING PLENARY SESSION — Room: Duke of Gloucester

Chairman:

Mr. Henry Eschwege
Director, Community and Economic
Development Division (CED)

9:00 a.m. Mr. Wilbur D. Campbell
Associate Director, CED — What we expect from Symposium

Mr. Roy J. Kirk
Assistant Director, CED

10:00 a.m. Keynote Address

The Honorable Russell E. Train
Administrator, Environmental Protection Agency

How much environmental protection--What should be the Federal role?

11:00 a.m. Mr. S. Fred Singer
Professor, Department of Environmental Sciences
University of Virginia

Cost/Benefit--How much protection at what price?

12:00 Noon Lunch

SESSION 2 - HOW MUCH ENVIRONMENTAL PROTECTION— WHAT SHOULD BE THE FEDERAL ROLE?

Chairman:

Mr. Brian P. Crowley
Assistant Director, CED

1:00 - 3:00 p.m. Panel: Mr. Alvin L. Alm
Assistant Administrator for Planning and Management

Room: Duke of Gloucester

Mr. James B. Coulter
Secretary of Natural Resources, Maryland

Mr. Frank A. Nemec
President, Lykes-Youngstown Corporation

Mr. Tom Stoel
Attorney, Natural Resources Defense Council

3:00 - 5:00 p.m. Individual Workshops

Air Pollution

Room: Duke of Gloucester

Session leaders:

Mr. Robert E. L. Allen, Jr.
Assistant Director, CED

Mr. Richard Hebert
Site Senior
Atlanta Regional Office

Mr. Frederick C. Gazzoli
Site Senior, CED

Water pollution — Room: Anne Arundel

Session leaders:

Mr. Sam A. Madonia
Audit Manager, CED

Mr. Nicholas Carbone
Assistant Regional
Manager, Boston

Toxic substances and hazardous wastes — Room: King of France Tavern

Session leaders:

Mr. Frank Polkowski
Audit Manager, CED

Mr. Ronald G. Morgan
Audit Manager, CED

Mr. Joseph McGrail
Project Manager
Philadelphia Regional Office

WEDNESDAY, MAY 28, 1975

SESSION 3 - COST/BENEFIT—HOW MUCH PROTECTION AT WHAT PRICE?

Chairman:

Mr. Wilbur D. Campbell
Associate Director, CED

Room: Duke of Gloucester

9:00 - 11:00 a.m. Panel: Mr. Frank Schaumburg
Head, Department of
Civil Engineering
Oregon State University

Mr. Henry Peskin
Fellow, Quality of Environment
Division, Resources for the
Future

Mr. Paul Brands
Deputy Assistant Administrator
for Planning and Evaluation
Environmental Protection Agency

Mr. William L. West
Associate Director
Environmental Control
Republic Steel Corporation

11:00 - 12:00 p.m. Individual Workshops

Air pollution Room: Duke of Gloucester

Session leaders:

Mr. Robert E. L. Allen, Jr.
Assistant Director, CED

Mr. Frederick C. Gazzoli
Site Senior, CED

Water pollution Room: Anne Arundel

Session leaders:

Mr. Sam A. Madonia
Audit Manager, CED

Mr. Charles S. Mosher
Project Manager
Seattle Regional Office

Mr. Joseph McGrail
Project Manager
Philadelphia Regional Office

Noise pollution: Room: King of France Tavern

Session leaders:

Mr. Ronald G. Morgan
Audit Manager, CED

Mr. Keith Fultz
Site Senior, CED

12:00 Noon Lunch

SESSION 4 - ENERGY/ENVIRONMENT--WHAT ARE THE CONFLICTS AND HOW SHOULD THEY BE RESOLVED?

Chairman:

Mr. J. Dexter Peach
Deputy Director
Energy and Minerals Division (EMD)

Room: Duke of Gloucester

1:00 - 3:00 p.m. Panel: Mr. Steve Resnek
Deputy Director, Office of Energy, Minerals and Industry
Environmental Protection Agency

Mr. Stanley D. Doremus
Deputy Assistant Secretary for Program Development and Budget
Department of the Interior

Mr. Kenneth R. Woodcock
Associate Assistant Administrator for Environmental Programs
Federal Energy Administration

Mr. Joe Mullins
Vice President
National Coal Association

3:00 - 5:00 p.m. Individual Workshops

Oil — Room: Duke of Gloucester

Session leader:
Mr. F. Kevin Boland
Assistant Director, EMD

Coal — Room: Anne Arundel

Session leader:
Mr. Dave Cahalen
Audit Manager, EMD

Nuclear — Room: King of France Tavern

Session leader:
Mr. Ralph V. Carlone
Associate Director, EMD

THURSDAY, MAY 27, 1976

SESSION 5 - NATIONAL ENVIRONMENTAL POLICY ACT— SHOULD IT BE AMENDED

Chairman:

Mr. Roy J. Kirk
Assistant Director, CED

Room: Duke of Gloucester

8:30 - 10:30 a.m. Panel: Brig. General Kenneth E. McIntyre
Deputy Director of Civil Works
Corps of Engineers

Ms. Rebecca W. Hanmer
Director, Office of Federal Activities
Environmental Protection Agency

Mr. James W. Spensley
Counsel, Subcommittee on Fisheries and Wildlife Conservation and the Environment
House Committee on Merchant Marine and Fisheries

Mr. Steven D. Jellinek
Staff Director
Council on Environmental Quality

SESSION 6 - FIELD/WASHINGTON INTERFACE IN COVERING ENVIRONMENTAL PROTECTION ISSUE AREA

10:30 - 11:00 a.m. Speaker: Mr. Henry Eschwege
Director, CED

Room: Duke of Gloucester