

526

ECONOMIC ANALYSIS AND THE EFFICIENCY OF GOVERNMENT

HEARINGS
BEFORE THE
SUBCOMMITTEE ON
PRIORITIES AND ECONOMY IN GOVERNMENT
OF THE
JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES
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PART 6—Economic Incentives To Control Pollution

JULY 12 AND 19, 1971

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ECONOMIC ANALYSIS AND THE EFFICIENCY OF GOVERNMENT

MONDAY, JULY 12, 1971

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON PRIORITIES AND
ECONOMY IN GOVERNMENT OF THE
JOINT ECONOMIC COMMITTEE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m., in room G-308, New Senate Office Building, Hon. William Proxmire (chairman of the subcommittee) presiding.

Present: Senator Proxmire.

Also present: Loughlin F. McHugh, senior economist; Courtenay M. Slater, economist; and Walter B. Laessig, economist for the minority.

OPENING STATEMENT OF CHAIRMAN PROXMIRE

Chairman PROXMIRE. The subcommittee will come to order.

This morning, the Subcommittee on Priorities and Economy in Government is continuing its investigation of Economic Analysis and the Efficiency of Government. The particular question to be discussed today is the use of economic incentives to control pollution. Before introducing this morning's witnesses, I would like to announce that an additional hearing on this subject has been scheduled for next Monday, July 19, at 10 a.m., in room 1202 of the New Senate Office Building. On that day, our witnesses will include Representative Les Aspin, of Wisconsin, and David R. Zwick, editor of the Nader task force report on water pollution, "Water Wasteland."

Our subject this morning is not new to this committee. During the first sessions of this subcommittee's study of Economic Analysis and the Efficiency of Government, in September 1969, we heard testimony from Mr. Allen Knéese, of Resources for the Future, concerning the application of economic analysis to water pollution control programs. More recently during our June 1971 hearings on priorities, we heard testimony on this subject from Mr. Robert Haveman of the University of Wisconsin. I would like to ask unanimous consent that Mr. Haveman's testimony on June 4, 1971, be incorporated in these hearings and be printed in the record at this point.

(The information follows:)

PREPARED STATEMENT OF ROBERT H. HAVEMAN* BEFORE THE SUBCOMMITTEE ON
PRIORITIES AND ECONOMY IN GOVERNMENT, JOINT ECONOMIC COMMITTEE, U.S.
CONGRESS, JUNE 4, 1971

It is appropriate that the question of government imposed user charges be considered in the context of national economic priorities. Basically, the problem of economic priorities concerns how the this society allocates its national resources. If these resources are devoted to uses which are of high value to the people, economic priorities are well ordered; if they are devoted to low-valued uses, economic priorities should be realigned.

In our economy, we rely on prices—which are nothing but user charges—to keep resources from being diverted to low-valued uses. Because each commodity has its price, we have some assurance that people are willing to pay at least as much for the commodity as value of the resources which go into making it. Thus, because of prices, we feel confident that \$10 worth of resources are not being devoted to the production of a 10¢ candy bar. Similarly, because of prices we know that people who value 10¢ candy bars at only 5¢ will not be using the resources which go into their production. The incentives generated by prices keep our private sector economic priorities well ordered.

User charges established by government for resources not priced appropriately by the private economy can serve the same purpose. Because they are able to keep national resources from being diverted to low-valued uses, such user charges are essential to achieving well-ordered economic priorities in the public sector.

The important role of user charges and economic incentives can be vividly illustrated by focussing on the problem of environmental quality—in particular, the use of government administered prices to achieve improved water quality.

Numerous reasons have been offered to explain why we have an environmental problem. Some say it is because we have too affluent a society. Because we produce so much, we have so much to dispose of. Others say that we have a problem because we produce the wrong things—too many automobiles, for example, relative to mass transit or too much primary paper relative to recycled paper. Still others tell us that it is the managers of large industries who are at fault because they not only supply us with packages and cans which have to be disposed of but they also pollute our rivers and our skies in the process of making these cans and packages.

While all of these explanations contain some truth, they miss the central and basic cause of the problem of environmental pollution. At its heart, the environmental problem is an economic problem. It exists because the market economy fails to place a price on the use of environmental resources—public watercourses, the air mantle, and public lands. Labor services have their price; capital has its price; land has its price. And because of these prices, the system tends to do an efficient job of allocating these scarce resources to the production of outputs which are of the highest value to people. However, environmental services have no price. As a consequence, they are treated by everyone as free goods. There is no cost to a person who overuses, misuses, or abuses environmental resources.

Consider, for example, the case of water pollution. Because the market system fails to price the waste assimilative capacity of rivers, waste dischargers are provided these services cost-free. That people living downstream are abused in that they can no longer fish or swim in the river or that during periods of low stream flow the river becomes anerobic and smells does not really affect the polluters. They are not required to bear the costs which their actions generate. To them, environmental services are a "free lunch," but as we all know, to society as a whole there is no such thing as a free lunch.

If the failure of the market system to price environmental resources is indeed the root cause of the problem, then it follows as a corollary that, to be effective, environmental policy measures must seek to correct this failure. Legislation must enable government to establish appropriate prices or charges for use of the environment and impose them on those who wish to use these services. In this way, environmental resources can be brought back into the economic system. The incentives which induce efficiency by rationing the use of labor, land, and capital can also be used to manage the environment. In addition, those of us who are now bearing the costs of the "free lunch programs" for industrial and municipal polluters can be compensated for our losses.

*Professor of Economics, University of Wisconsin, Madison, Wis.

Until now, Federal government policy has failed to recognize the economic nature of the pollution problem. This is nowhere better illustrated than in the development of Federal water pollution control policy. After nearly two decades of policymaking, the waste assimilative capacities of rivers remain free goods. Government has eschewed the use of prices to keep these resources from being diverted to low-valued uses. Instead, a dual policy of rule enforcement and subsidy has been adopted to achieve improved water quality.

Through Federal grants for municipal waste treatment facilities, and tax subsidies for industrial pollution control equipment, we are, in effect, allowing waste discharges to generate and dispose of whatever amount of waste they desire—free of charge—and then using taxpayers money (at a current annual rate of about \$1 billion) to clean-up after them. By requiring states to set water quality standards in order to qualify for Federal subsidies, it is hoped that, they can be induced to secure reductions in the waste loads of industrial and municipal polluters through negotiation, litigation, and moral suasion.

This policy strategy has been a dismal failure. After a detailed study of several rivers, the General Accounting Office found that even though \$5.4 billion had been spent to construct waste treatment plants, the level of industrial pollution has continued to grow and the quality of the nation's rivers has continued to deteriorate.

With little effective constraint on the generation of industrial waste and with rapid economic growth, the burden on the environment will sky rocket in the coming decades. One recent study showed that the *annual* costs of applying secondary treatment to an unconstrained flow of residuals would be \$18 billion in 1973, \$27 billion in 1980, and \$55 billion by the year 2000. The continued spending of taxpayer's money to clean up after polluters—along the lines of the current strategy—is going to be an enormously expensive and relatively fruitless venture.

Federal efforts at regulation have been equally ineffective. In testimony before Congress earlier this month, Comptroller General Elmer Staats stated that existing regulation and enforcement efforts have been "slow and cumbersome." "A minimum of 58 weeks is required by law between the time EPA decides to call a conference and the date EPA can refer the case to the Attorney General for court action." And, as is well-known, tactics for delaying final court action are part of the training of every good lawyer. The primary incentive in the existing strategy is the incentive provided industrial polluters to hire lawyers in order to delay administrative and legal efforts to secure reductions in the waste discharge destined for public waters.

In addition to the failure of the existing strategy to secure improvements in water quality, it has induced a number of other inefficiencies and undesirable effects. Let me mention a few of them:

Because the existing program subsidizes only "end-of-pipe" waste treatment activities, it artificially biases decisions against alternative abatement activities, many of which are less costly than the construction and operation of waste treatment plants. These activities include changes in internal production processes, the storage (ponding) of wastes until high stream flow periods, the segregation of particularly harmful discharges, the avoidance of accidental spillages and leakages, and the augmentation of the assimilative capacity of the stream through instream aeration and other devices.

States have failed to target Federal grant funds on the municipalities with the most serious waste discharges. As a result of this lack of planning, grants have secured far less improvement in water quality than was possible. The allocation of grants within a state have been based on the state's priority list. In turn, this list depends upon which communities are "ready to go." An allocation of budgetary resources based upon careful economic analyses of the effectiveness of alternative uses would, with little doubt, yield greater increases in water quality than those yielded by the existing program.

In part, because of the lack of effective priorities by which to channel grant funds within states, Federal funds have been concentrated on smaller, largely suburban communities. The large cities with the most significant concentration of pollution have received a disproportionately small share of the allocation. For example, communities with populations of less than 10,000 population, and containing less than 18 percent of U.S. urban popula-

tion, have received nearly 40 percent of Federal grants. Cities with populations of more than 500,000, containing 25 percent of U.S. urban population, have received about 6 percent of Federal grants.

Current policy emphasizes the attainment of Secondary waste treatment for *all* municipalities along a watercourse. The drive for uniform secondary treatment results in excessive treatment at some outfalls and insufficient treatment at others. An optimal basin-wide plan would relate the degree of desired municipal treatment to streamflow conditions and downstream uses (among other variables). In this optimal plan, some municipalities may require tertiary treatment while others may require only primary treatment.

Federal grants for municipal waste treatment plant construction provide an indirect subsidy to industrial and commercial waste sources. By subsidizing the capital costs of municipal treatment facilities, the existing policy tends to reduce the sewer charges imposed on industrial, commercial, and domestic waste sources connected to the sewerage system. The resulting charges, then, fail to provide "full cost" incentives for process change and other forms of abatement which can be undertaken by residual generators. Because approximately 50 percent of the wastes handled by municipal treatment plants is from industrial sources, the size of this subsidy is substantial.

The grant program often subsidizes treatment facility construction in municipalities with combined sanitary and storm sewer systems. With such sewer systems, the existence of a treatment facility provides little assurance of improved effluent. In periods of high run-off and high wasteloads, the entire sewerage load by-passes the treatment facility and is dumped, untreated, into the watercourse.

According to a recent GAO Report, numerous treatment facilities constructed with Federal funds are inadequately maintained, inefficiently operated, and subject to only intermittent inspection. To the extent that this performance shortfall exists, the construction program is incapable of inducing water quality improvements.

The program of grants to individual states and municipalities gives little concrete recognition to the economies attainable by managing the river basin as a unit and does little to either encourage the development of river basin authorities or facilitate their establishment. Without such bodies, the implementation of the optimum set of activities to achieve stream standards is remote, at best. Without the planning capability of such a basin authority, the grant program is "hit-or-miss" and its effectiveness is seriously undermined.

If progress toward improved water quality is to be secured, a major restructuring of water pollution control policy is required. Incentives must be established to constrain the waste generation proclivities of industrial and municipal polluters and to keep valuable environmental resources from being diverted to low-valued uses. Such incentives can be created by imposing user or effluent charges on waste dischargers such that the size of the charge is related to the volume of harmful substances which they release into the environment. In effect, waste dischargers should be required to "pay by the pound."

Numerous arguments can be offered in support of this user charge strategy relative to existing policy. The most cogent argument is that it will succeed in reducing waste discharges—not just retarding their growth. The recorded response of waste dischargers to the imposition of municipal sewerage charges provides cogent evidence. For example, after placing such a charge in effect, the city of Cincinnati reported that industrial waste was reduced nearly 40 percent. Similar experiences have been recorded in other cities.

That user charges have induced such dramatic reductions in waste discharge is not surprising. With a price placed on wastes discharged to watercourses, a number of actions which previously looked unattractive to dischargers would become appealing alternatives. These include changes in production procedures within the plant to reduce waste generation, as well as the installation of waste treatment facilities at the plant site. Moreover, such charges would induce research and development efforts aimed at developing new technologies for reducing waste generation or recycling wastes. Without such charges, few costs could be saved by the development and installation of such new technologies. Finally, if environmental services are priced, those commodities whose production imposes large environmental damages will experience increases in their prices relative to

the prices of other commodities whose production imposes minor environmental costs. And, because higher prices imply smaller demands, production would tend to be shifted toward those commodities with smaller environmental effects. This shift in relative prices is most consistent with the operation of the market system, and can be achieved, most effectively by placing a charge on the use of the environment for waste discharge.

In addition to providing incentives for reductions in waste generation, a comprehensive national effluent charge policy would have a second important effect. It would bring public actions into the open and out of the hidden and closed negotiating sessions of enforcement conferences and state-local regulatory efforts. It would greatly reduce the exercise of tactics to delay the effect of policy and to erode its stringency when eventually applied. It would open the process of policy implementation to the scrutiny of the people.

Finally, while the current strategy has placed substantial demands on a tight Federal budget, a user charge strategy would generate revenues. These revenues could be used to finance those environmental measures which municipalities and industrial polluters cannot be expected to undertake. These include basic research and development, the establishment of regional or river basin authorities to manage the use of regional environmental resources, and the construction of installations to artificially reerate streams or to increase stream flows during low flow periods.

To illustrate this impact on the Federal budget of the current strategy relative to an effluent charge strategy, I have appended a table to this statement. This table projects the budget outlays for two versions of the current strategy—the proposals of Senator Edmund Muskie and the Administration—and the net budget outlays for an effluent charge strategy. These projections cover the five years, FY 1972–FY 1976. The total five year costs of the two versions of the current strategy are \$14 billion for the Senator Muskie's proposal and \$12 billion for the Administration bill. The net budgetary costs of the effluent charge strategy—which includes a grant program as large as that of the Muskie bill—is \$4.3 billion.

In evaluating the merits of an economic approach to environmental policy, let me emphasize that appropriate effluent charge legislation will, by itself, be inadequate to insure the efficient use of environmental resources. Comprehensive environmental management requires the establishment of regional authorities with responsibility for planning for the optimal use of and augmentation of environmental resources, undertaking collective investments, setting water and air quality standards and charge levels designed to meet these standards, monitoring discharge levels into both water and air resources, and regulating patterns of regional land use. To be effective in managing the environment consistently with regional preferences, these authorities should be governed by directly elected rather than appointed officials.

Moreover, while the proceeds of the effluent charge could be devoted to environmental activities such as stream flow augmentation or waste treatment plant construction, care must be exercised to insure that the incentive effect of the effluent charge is not substantially eroded by the use of the revenue. As was emphasized earlier, the cost sharing arrangements implicit in existing legislation provide industrial waste discharges with waste treatment services at far less than full costs. To the extent this is so, desired incentives for reductions in waste discharge are reduced.

It is almost legendary by now that some will label user or effluent charges as "licenses to pollute." This mindless cliché should be laid to rest once and for all. Aside from completely and totally prohibiting the discharge of wastes into rivers, all policy proposals envision some optimal level of use of watercourses for waste disposal. The question is: How to obtain that level of use at minimum social cost? Because the effluent charge can be fixed at any level between zero and infinity, a charge structure can be determined which will secure socially optimal levels of water quality. With that charge structure set, individual polluters are free to respond to it in any way they choose. As rational decisionmakers, they will choose the most efficient and effective methods of reducing discharges in order to reduce the tax. Relative to other means of securing equivalent reductions in waste loads, an effluent charge strategy is likely to entail smaller administrative and enforcement costs, be less subject to tactics designed to delay supplementation and erode standards, and by allowing dischargers to frame their

own responses to the charge structure, secure desired reductions in waste loads at minimum social cost. Rather than a license to pollute, user charges are an effective instrument of environmental management based on a clear appreciation of the fundamental cause of the problem.

Although I have concentrated on the use of user charges as a water pollution control strategy, I would emphasize that they are also effective instruments in managing other environmental resources. In this regard, I would draw your attention to current legislative proposals regarding a tax on leaded gasoline, a special tax on industrial emissions of sulphur oxides, and a unit charge on disposable bottles.

In conclusion, let me reiterate the important role which government-imposed user charges can and should play in reordering national priorities. As I have tried to show, major improvements in water quality will not be obtained by simply allocating a bigger slice of the Federal budget to the current program. To do so would be to shift high valued resources from one low-valued use, say the military budget, to another low-valued use. A real reordering of national priorities toward improved environmental quality requires first a major overhaul of the current policy strategy, and then, perhaps, a budget reallocation. The increased use of user charges and economic incentives are central to an appropriate policy overhaul and prior to the allocation of an increased level of public expenditures to this and other pressing social problems.

PROJECTIONS OF BUDGET OUTLAYS FOR 3 PROMINENT WATER POLLUTION CONTROL PROPOSALS,
FOR FISCAL YEARS 1972-76

(In millions of dollars)

	1972	1973	1974	1975	1976
1. The National Water Quality Standards Act (the Muskie bill):					
Waste treatment grant program.....	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500
State and interstate agency grants.....	20	20	20	20	20
Remainder of FWQA ¹	171	233	318	431	582
Total, FWQA.....	2,690	2,753	2,838	2,951	3,102
2. The administration proposals:					
S. 3468 Environmental Finance Agency.....	100				
S. 3470:					
Res. and demonstration.....	125	125	125	125	125
State and interstate agency grants.....	12.5	15	20	25	30
S. 3472: Waste treatment grants.....	2,000	2,000	2,000	2,000	2,000
Remainder of FWQA ¹	52.5	115	195	301	447
Total, FWQA.....	4,290	2,253	2,338	2,451	2,602
3. The Regional Water Quality Act (the Proxmire bill):					
Pollution abatement grants program.....	2,500	2,500	2,500	2,500	2,500
Remainder of FWQA ¹	190	253	338	451	602
Total, FWQA.....	2,690	2,753	2,838	2,951	3,122
Revenues from effluent fee ²	2,000	2,000	2,000	2,000	2,000
Net budget cost.....	690	753	838	951	1,122

¹ Estimate obtained by assuming that annual FWQA outlays other than for waste treatment facilities grants grow by average rate of growth of these outlays from fiscal year 1969 to fiscal year 1971.

² While the bill provides authority for fiscal year 1970 to fiscal year 1972, this authorization is applied to the entire fiscal year 1972 to fiscal year 1976 period.

³ While the bill provides authority for fiscal year 1972 to fiscal year 1974, this authorization is applied to the entire fiscal year 1972 to fiscal year 1976 period.

⁴ Includes estimated outlay for the Environmental Financing Authority.

⁵ It is assumed that the program of grants for pollution abatement will be equal to that of the Muskie bill, but that grants will be made to both municipalities and regional water management associations on a 50-50 basis, as provided in the Proxmire bill.

⁶ It is assumed that a charge of 10 cents per pound of biochemical oxygen demand is imposed on industrial dischargers, and that this charge would induce about a 50 percent reduction in BOD discharges. Because a comprehensive effluent charge strategy would levy fees on the discharge of heat, chemical oxygen demand, and suspended and dissolved solids, and on municipal as well as industrial polluters, this estimate seriously understates the revenue which would be generated under such a comprehensive policy.

Chairman PROXMIRE. Our witnesses this morning represent four major conservation organizations. The contribution which these

organizations are making to the national effort to rescue our environment is well known and widely admired. Several of the individuals who are appearing today are old friends of mine because of the leading role they played in the effort to defeat the supersonic transport. It is hardly necessary for me to state how much I admire the ability and hard work they displayed during that battle. Nor is my delight at their victory any secret.

Our first three witnesses, who will appear together as a panel, are Michael McCloskey, executive director of the Sierra Club; Laurence Moss, member of the board of directors of the Sierra Club; and George Alderson, legislative director of Friends of the Earth. Following their testimony, we will head from Thomas L. Kimball, executive director of the National Wildlife Federation; and Robert K. Davis, staff economist of the National Audubon Society.

Mr. McCloskey, why don't you go right ahead. We will go from my right to my left; from your left to your right. Go right ahead.

**STATEMENT OF MICHAEL McCLOSKEY, EXECUTIVE DIRECTOR,
SIERRA CLUB, ACCOMPANIED BY LAURENCE I. MOSS, MEMBER,
BOARD OF DIRECTORS, SIERRA CLUB**

Mr. McCLOSKEY. Thank you, Mr. Chairman. I am being joined today by one of the club's directors, Laurence Moss, who will present part of our testimony. We do appreciate having this opportunity to present our views on the importance of economic incentives to prevent and abate industrial pollution.

Traditionally, conservationists have been reluctant to consider economic factors in relation to controlling industrial pollution. They have been fearful that shifting the focus to these factors tends to move the discussion into an arena which is basically more favorable to the pleas of polluters. They have tended to associate economics with the efforts of polluters to maximize profit opportunities and to minimize interference in their operations. Believing that polluters are engaging in antisocial conduct, which is also immoral in many cases, conservationists have looked to legal solutions to curb this conduct. When private legal remedies, such as the nuisance action, failed to cope with the onslaught of pollution, they then looked to government to use its police power to devise regulatory schemes to abate excessive pollution, with prosecution authorized and penalties provided.

The schemes that have been developed, which first looked to setting quality standards for air and water bodies, and now look to specific standards for discharges, too, continue to make disappointing progress. Despite years of work and continuing revision of the laws, the overall problems seem to be getting worse.

As a result, environmentalists are taking a fresh look at the relationship of economics to industrial pollution control. They are realizing that economic factors are a real part of the problem that must be understood, and that economic factors can be turned in a way to minimize pollution as well as to justify it. They are also recognizing that a great many distinctions need to be drawn between various economic palliatives that have been suggested. Some of these proposals

offer an opportunity to buttress standard-setting regulations and to provide incentives for obtaining an even cleaner environment than these standards would afford. Furthermore, they may be able to cure the deficiencies of standard-setting schemes that will never be fully effective because of administrative cumbersomeness, spottiness in prosecution, and the delays inherent in litigation.

Economic incentives to reduce pollution cover a wide spectrum. They run from fines, to tax penalties of various sorts, to conferring tax benefits, to offering subsidies, and to charging fees for licenses to pollute. Those at the beginning of this list offer the most hope, while those toward the end are generally unacceptable.

Traditionally the regulatory approach has relied upon the setting of minimum standards to be enforced by criminal or civil penalties. There has been widespread dissatisfaction, however, with the effectiveness of these penalties. Regulation enforced by penalty has been criticized as offering a polluter only the crudest form of economic incentive to stop polluting. Industry pressure on standard setters, lax enforcement by administering agencies, the necessity of individual legal proceedings against each polluter, the low level of penalties imposed, and delaying tactics by industry are among the reasons for the ineffectiveness of the regulatory approach. Other drawbacks include the lack of incentive to reduce pollution below the minimum standards and to research and develop optimum control technology.

The regulatory approach, however, should not be abandoned for substantial improvements are possible, and continuous efforts must be made to strengthen the present system. Penalties should be made sufficiently severe to be noticed on corporate account books; they should exceed the cost of compliance in order to be effective.

Standards should be set at very stringent levels so that pollution below that level would be minimal, and industry would be forced to develop the necessary technology. Continuous effort is needed to simplify and streamline administration, with lengthy delays eliminated. And, hopefully agency attitudes could be changed so that a polluter faces the virtual certainty of enforcement action.

Regulations, though, must be supplemented with other measures designed to reach the economic self-interest of polluters. The withdrawal of various Government-granted benefits and privileges from those who violate environmental law and regulations is one approach which has great potential. For example, disqualifying polluters from doing business with the Federal Government—the largest single purchaser of goods and services—would provide a significant economic incentive to comply with environmental standards. Those violating environmental laws should be ineligible for Government contracts, grants, leases, loans, subsidies, and the like. We commend the Environmental Protection Agency for having recently proposed an executive order along these lines; but hope that the final order will omit certain loopholes that we understand are now contained in the draft.

This principle could be extended to a wide range of Government-granted or regulated benefits and privileges. For example, the Sierra Club's president, Raymond Sherwin, has recently proposed that environmental protection might be enforced through the withdrawal of special tax privileges (for example, the oil companies' depletion al-

lowances, and permission to treat foreign purchases as taxes paid to foreign governments), stock market trading privileges, interstate or international trading privileges, and others. It is eminently just and reasonable to make the exercise of privileges conditional upon compliance with environmental standards, and this would also provide a significant economic incentive for compliance.

Emission and effluent charges, or "pollution taxes," promise to be an effective economic incentive for pollution abatement. Such charges would place financial responsibility directly on a polluter according to the amount of pollution discharged. Thus the costs of pollution would be internalized at the source, rather than imposed on society by the polluter. Pollution taxes could be levied either on a flat charge basis, for example, a certain sum per unit of pollution, or on a graduated scale, with the charge per unit increasing with the amount of pollutant emitted from the source.

If the charges were set sufficiently high so that pollution would cost more than abatement measures, industry would be motivated to seek the most economical and efficient means of abatement. Competitive factors and cost minimizing behavior will ensure in most cases that industries will choose the less costly alternative of abating pollution. A significant advantage of the pollution tax system is that the incentive to reduce pollution remains even after regulatory standards are met, encouraging continuous research and development toward the best long-term means of pollution control.

Though the product may cost more due to increased industry costs, any effective pollution control will cost the consumer more, either in higher prices or higher taxes. And products now are often artificially cheap; good should reflect the total costs of production, including environmental costs. Pollution taxes, by encouraging the most economical means of control, will cause the least increase in cost consistent with pollution abatement.

One other type of economic incentive already in use at both the State and Federal levels is the granting of tax relief to encourage pollution abatement. Included among such measures are property tax exemptions, accelerated depreciation writeoffs, tax credits, and sales and use tax exemptions. These incentive provisions, however, have failed to achieve effective pollution control while imposing a financial burden on the public.

In the first place, they do not encourage the most effective means of pollution abatement. By giving credit for facilities and "hardware," they bias industry toward capital expenditures, often for end of the line treatment, when process changes and related research often would achieve more significant and economically efficient results. Moreover, there is no requirement that the investment actually reduce pollution: Instead of the tax relief being tied to a measured reduction in the actual amount of pollution, the relief is conferred for the mere fact of investing in control equipment regardless of whether it works or not.

It should also be borne in mind that the relief only reduces the cost of the investment; it does not make this investment the most economically attractive course of action, as with the pollution tax.

Even with the tax break, industry is still faced with a net expense for essentially nonproductive facilities. Companies will not usually be stimulated to make unprofitable investments just because the Government promises to absorb part of the cost. Related to this is the fact that most tax plans are drawn so that profitable abatement measures do not qualify. In most States, a facility must be for the "primary purpose" of pollution control, and in some, for that purpose exclusively.

The Federal provision, section 169 of the Internal Revenue Code, disqualifies any property whose costs will be recovered over its useful life, by profits from recovery of wastes or otherwise in the operation of the property.

Though basically commercial facilities should not be given a tax break, still, these provisions may discourage good pollution control programs which coincidentally produce reusable materials or marketable byproducts.

Expenditures necessary to comply with health or pollution laws and regulations cannot be considered public benefits gained through tax incentives. In helping to pay for facilities required by other laws, tax relief brings no gain to the public in exchange for the tax loss, which may be immense.

A further deficiency in the tax relief approach is that it aids only large or wealthy companies, which have the least need for public assistance. It fails to aid small or inefficient businesses without the capital to invest in control equipment.

Finally, the basic objection to this approach is its philosophy of rewarding polluters for refraining from environmental contamination which they have no right to impose on the public in the first place.

Subsidies are another type of economic incentive which has been suggested. These might be in the form of outright payments for pollution control, or could involve low-interest loans or guarantees. If directly related to the reduction of emissions, payments might be more efficient than incentives related only to capital investments, and also could be channeled to financially hard-pressed companies. However, the award payment approach is largely unsatisfactory. It is subject to some of the same objections applicable to the tax relief approach, and also has further deficiencies of its own. Basically, a system that pays polluters to stop polluting is unacceptable. It imposes the burden upon the public, which already has been wronged, and either rewards recalcitrant and antisocial conduct, or distorts our economic system by keeping inefficient units afloat.

Among the types of economic incentives that are unacceptable are permit fees. These most closely fit the characterization of "licenses to pollute." A nominal fee, however, under the new Refuse Act permit system to cover administrative costs, however, might not be objectionable, but it would hardly provide much of an incentive to clean up unless the amount of pollution under the permit is minimal and could be easily abated. If the fee were not a flat fee but graduated in terms of the type and amount of pollution, then it would more closely resemble an emission or effluent tax. Some have also suggested auctioning off a limited number of industrial discharge permits.

In such a case, the auction market would set the price rather than the Government. This approach requires that the total number of discharges be held within permissible limits, and that a competitive market exist to make the auction work. Under such assumptions, the permit price is assumed to rise high enough to induce competitors to reduce their discharges because they cannot afford to bid for a permit or to afford a smaller permit. It is questionable whether these assumptions could actually be met in many cases.

Of all these proposals, the one that has the greatest number of advantages and the least liabilities is the emission and effluent tax. Properly applied, this tax can turn the economic tables on the polluter so that it is to his own self-interest to abate his pollution and to do so in the most efficient possible way. However, to have this effect it is essential that the amount of the tax be greater than the cost of abating the pollution. Moreover, it is essential that the tax be joined with a strengthened standards program which attempts to absolutely prevent all pollution beyond a permissive level. The feasibility of the approach also depends on a number of other carefully defined conditions. These are spelled out in a resolution recently adopted by our board of directors, which sets forth our general policy on this subject:

The Sierra Club advocates the establishment of pollution taxes which would make it less expensive for a polluter to adopt alternative processes or invest in additional equipment to curtail releases to the environment than it would be for him to continue as before. Such taxes would supplement, and not replace, standards on maximum permissible emissions. These taxes should be imposed when the following conditions are found to generally prevail:

(1) For competitive or other reasons, cost-minimizing behavior tends to exist in the company or industry;

(2) The cost of abatement is expected to be significant, both in relation to revenue from sales and in absolute terms; and

(3) The quantity of pollutant released to the environment can be determined with reasonable accuracy, either by direct monitoring of every source, statistical sampling of a small fraction of many similar sources produced by a few manufacturers, or by indirect means. The cost of monitoring should be small in relation to the tax revenue expected in the absence of abatement.

As a first step, a tax equal to 15 cents per pound should be imposed on sulfur contained in fuels intended for combustion (with a rebate given to those who demonstrate that the sulfur was not released to the environment), and on sulfur emitted from smelters, refineries, and sulfuric acid plants. The tax on lead contained in gasoline proposed last year by the administration, should also be promptly enacted. The feasibility of taxes on the emissions of nitrogen oxides, particulate matter, carbon monoxide, and hydrocarbons should be investigated in the next few months, for possible action on these air pollutants; studies should also be conducted on the practicality of similar taxes for various of the water pollutants.

To elaborate further on the case for a tax on sulfur, as a first step in such a tax program, I would like to call upon Laurence Moss.

Thank you, Mr. Chairman.

Chairman PROXMIER. Thank you, Mr. McCloskey.

Mr. Moss.

Mr. Moss. Thank you.

There is one central fact about pollution that everyone concerned with the quality of the environment must keep foremost in mind in devising effective abatement strategies. It is that in almost every case, from the polluter's point of view, it is cheaper to pollute than to stop polluting.

There are occasional exceptions, as when pressures to abate pollution lead to a search for new processes, and one is found which is more efficient than the former process. But these have been few in number, as might be expected in a situation in which industry has refined its processes over the years to achieve something approaching an economic optimum with little or no value attributed to a quality environment. Now, with the environment valued in a way consistent with developing public attitudes, this new factor of the social cost of pollution must be included in arriving at a new optimum. With the exceptions noted, this new social optimum will involve higher production costs for industry.

This is the reason that the leaders of industry generally oppose effective abatement measures. They are not evil men. Rather, they work within a system where their performance and that of their companies is judged by the corporate (and not society's) profit and loss statement. When the corporate self-interest is coincident with society's interest, as it often is, the result is satisfactory. When the two interests are separate, the result desired by society is not achieved.

This unhappy situation, when it exists, is not the fault of industry. It is the fault of society, in not devising and implementing effective constraints and forces to modify the decision-making environment of industry to make it more consistent with society's goals.

The most common form of such constraints and pressures is the imposition of standards and regulations by an agency of Government. This can work well, but normally a number of important conditions are necessary to achieve success. These include:

A practical administrative procedure, with little or no discretion given to regulators on questions of whether or not, or when, to enforce the standard once it is set;

The existence, in each case, of at least one acknowledged and relatively low-cost alternative process or pollution abatement technology, the implementation of which would not radically affect the operating styles of the companies and industries involved;

Adequate funding and staffing for monitoring and enforcement;

A desire on the part of administrative agencies and the courts to assess penalties greater than the costs of abatement; and lastly

Independent access to the courts for individuals and groups seeking to enforce the standard.

The recent example of the abatement of mercury pollution from industry is instructive in this regard. The diaphragm process was an alternative to the mercury-cell process for producing chlorine. Means were readily available to greatly reduce the effluent from other operations in which mercury had been released. The costs were relatively small, compared with the scale of operations of most of the companies involved. The 1899 Refuse Act was available, and the Environmental Protection Agency and the Department of Justice willing to use it, to shut down nonconforming producers. It would not have been credible for a defendant in such a case to plead that the Government was making demands which it was not possible for him to fulfill. Finally, the number of polluters involved, and the staff time and energy required for each, was low enough so that the administrative and legal resources of the Federal Government were not overtaxed. (There are only about

30 lawyers in the Department of Justice handling all environmental litigation for the U.S. Government. Their numbers and capabilities must be drastically increased if recently-enacted and prospective environmental legislation is to be enforced. This is a key test of the intentions of the administration in this regard.)

The net result has been that although the problem of mercury in water has not yet been solved, there has been a very substantial decrease in effluent from industrial polluters.

But contrast the mercury case with that of emissions of sulfur oxides, to pick an example where the standards by themselves are likely to be neither effective nor efficient. Sulfur oxides are emitted in enormous quantities (now about 33 million tons per year, and increasing every year) from powerplants burning coal and oil, smelters, oil refineries, sulfuric acid plants, furnaces burning fuel oil, and a few miscellaneous sources. The cost of significant reductions in emissions of sulfur oxides is likely to be large (perhaps of the order of a few billion dollars per year). The proven technology to achieve these reductions, according to a recent report of the National Academy of Engineering, is not yet available for powerplants, which emit 60 percent of all sulfur oxides. Research and development of abatement technology has long been neglected; even now, after years of discussion of the importance of the problem, and after specific mention of it in the President's recent energy resources message, the efforts of the public and particularly the private sectors to find solutions seem inadequate to the magnitude and urgency of the task. Indeed, one could easily argue that it serves the economic self-interest of industry that solutions not be found.

If they are found, then industry will be obliged to implement them, thereby substantially increasing costs of production and perhaps even drastically changing the way in which business is done; if they are not found—or if Government regulators cannot prove they exist—then industry will be able to present government with a choice of shutting down an activity vital to the economic welfare of the United States or postponing the implementation of the standards. Does anyone seriously believe that EPA in 1975 will shut down all electrical generating capacity within areas having concentrations of sulfur oxides in excess of the national ambient air quality standard, if a substantial fraction of U.S. generating capacity lies within such areas?

And even if EPA pressed ahead, it would be possible for industry to delay effective action for years by spending a small fraction of what would be necessary for abatement on administrative appeals and litigation instead. In short, in a case of this kind, every profitmaking instinct of industry would be oriented toward conducting little research and development, and that primarily for its public relations value; toward not quickly divulging significant results of that research; and toward delaying implementation of the standards by various legal tactics.

Thus a need exists to supplement the conventional regulatory process in these difficult cases, to establish a condition whereby government and industry are similarly motivated, rather than motivated to act at cross-purposes. We believe that pollution taxes will fill that need, by generally making it more costly for industry to continue to pollute.

than to stop. Under such circumstances it would be expected that industry would greatly increase its investment in research and development and quickly apply any promising technologies, if for no other reason than its return on investment by so doing would be higher than that available from competing investments.

The level of the tax should be such that the desired environmental quality—arrived at through a social and political decisionmaking process in which both the measurable and nonmeasurable benefits and costs of pollution abatement are assessed—is attained within a reasonable period. The decision regarding the level of the tax is, in fact, the equivalent of a decision regarding the desired environmental quality. We believe that such decision, both because of its importance and its inherently value-laden—and therefore political—nature, should be made by Congress, in the full light of public awareness.

I have not yet spoken of another important aspect of the pollution tax strategy: its efficiency. By encouraging marginal cost decision-making, it has the potential of achieving the desired level of environmental quality at lowest cost. This is why almost every economist who has studied the problem has become an advocate of the pollution tax approach. Noneconomists should be equally enthusiastic, since it is to everyone's benefit to do the desired job efficiently. For one matter, the social and political consensus that has been reached on the need for improving environmental quality could be jeopardized if large, unnecessary costs are incurred. For another, a greater degree of improvement in the environment can be attained for a given expenditure if it is allocated efficiently. An example of the possible difference in cost is seen in the results of studies by Robert H. Haveman, who has calculated that the net budgetary cost for 5 years of water quality control under an effluent charge system is \$4.3 billion, as compared with \$12 billion for the administration proposal and \$14 billion for that of Senator Muskie.

With specific reference to the case of emissions of sulfur oxides, we applaud the President's endorsement in his environmental message last February, and again in his energy resources message, of a charge on such emissions. We believe that the measure should include the following features:

A charge of 20 cents per pound of sulfur, achieved in full by 1975. This is somewhat greater than the estimated costs of abatement, which for most emissions range from about 5 to 15 cents per pound. It is, incidentally, somewhat less than the measurable health and property costs to society of pollution from sulfur oxides, estimated by EPA to be 25 cents per pound;

Uniform application of the charge in all areas of the Nation, for reasons of administrative simplicity and of avoiding havens for polluters. Those who would permit appreciable degradation of those areas of the country presently with clean air, on the assumption that the marginal social cost of a given increment of pollution is lowest where the air is cleanest, would do well to reflect on the fact that currently the most bitterly contested powerplant development scheme in this Nation is that in the Four Corners region of New Mexico, Arizona, Colorado, and Utah; and lastly

Revenue from the tax to go into the general fund, rather than to a trust fund. The purpose of the tax would be to abate pollution, not to raise revenue. Hopefully, revenue from the tax will quickly decline as effective abatement is achieved. Other environmental improvement programs should be funded on their merits, and not be dependent on this source of funds. Obviously, the administration and Congress should feel obligated to authorize and appropriate enough money for administration, auditing and monitoring, and enforcement of the tax, but the required amount for these purposes will be small in relation to the expected revenue.

In summary, pollution taxes can be powerful instruments in implementing the environmental quality standards desired by society. They are particularly valuable, and fill a present vacuum in the strategy of implementation, in cases where most or all of the following conditions exist: There are no obvious technological solutions available, the industry would undergo substantial change upon implementation of abatement, and the cost of abatement are high. These are the conditions which encourage, under the present system, opposition to and delay of implementation. With a tax set higher than the marginal cost of abatement, this undesirable situation would be changed; industries would find it in their own economic self-interest to abate pollution quickly and efficiently. Candidates for pollution taxes, other than sulfur oxides, might include nitrogen oxides and BOD (the biological oxygen demand the effluent places on water). Pollution taxes and standards can work together, with each contributing in a vital way to the effectiveness of public policy.

Mr. Chairman, I would like your permission to submit a more detailed statement on pollution taxes, that covers some of the points that I have not discussed here, for the record.

Chairman PROXMIRE. Fine. We will be happy to receive it. How long a statement is it?

Mr. Moss. About eight or 10 pages.

Chairman PROXMIRE. That will be printed in the record at this point.

Mr. Moss. All right.

(The information follows:)

TURNING THE TABLES ON POLLUTERS

(By the Coalition To Tax Pollution)

The Coalition To Tax Pollution has been formed to support an effective tax on sulfur emissions. We believe that a tax is needed to stop this serious form of air pollution. The Coalition's proposal has five key points:

1. That the charge on sulfur emitted to the environment be set at 20 cents per pound, and that this level be achieved by 1975. The rate could be set at 5 cents in 1972, and increase by 5 cents every year until 1975. (A 20-cent tax on sulfur is equivalent to a 10-cent tax on sulfur dioxide.)
2. That the charge be applied uniformly throughout the nation, in order to avoid creating havens for polluters, and to keep the tax administratively simple.
3. That Congress, rather than an agency, set the level of the tax, so that the debate is out in the open.
4. That the revenue not be earmarked, so that no program's funding is dependent on a lack of pollution control.

5. That no subsidies be given to industries, but that workers laid off as a result of plant closure receive assistance in the form of retraining, relocation, and unemployment compensation.

President Nixon mentioned in his environmental message in February and again in his recent energy resources message that he favors a tax on sulfur. The details of the Administrations proposal have not yet been announced.

This fact sheet is intended to answer questions about the sulfur tax proposal, the pollution tax concept in general, and what you can do to support pollution taxes.

POLLUTION TAXES

Question No. 1. What is a pollution tax system?

The purpose of pollution taxes is to make pollution abatement in the self-interest of the polluter, by creating a strong economic incentive for industry to stop polluting. A pollution tax system places financial responsibility directly on the polluter according to the amount of pollution emitted. For the tax to be effective, it must cost the polluter more than the expense of abatement.

Question No. 2. Why do we need pollution taxes?

Despite all the public effort and concern, pollution is getting worse. We need to try a tactic that will really work. As things stand now, pollution control agencies have the overwhelming responsibility of policing all violations, yet with their usually inadequate staffs, they are unable to prosecute all violators. The result is selective enforcement, and the big polluters are usually overlooked because of their political pull. Even if enforcement agencies could prosecute all violators, there are so many opportunities for industry to delay compliance with standards that pollution can get much worse in the meantime.

Taxes and standards can and should be used together, to control pollution, but taxes have four significant advantages:

1. The administration of pollution taxes is much simpler: the burden of proof is on the polluter rather than on the enforcement agency. Individual legal proceedings do not have to be brought against polluters; all companies simply pay the tax on all their pollution. Enforcement centers on spot-checking, rather than on proof of guilt.

2. The creative energies of industry are turned inward to determine how to stop pollution, rather than outward to argue with the standard-setters and obtain delays. Industry itself takes the initiative in finding the most economical and efficient way to abate pollution.

3. The incentive to reduce pollution continues even after standards are met, because the last pound of pollutant is taxed just as much as the first pound. This encourages continuous research and development of pollution-abatement technology, to eliminate more and more of the pollution.

4. Under the present mechanisms of pollution control, delay is always to the advantage of the polluters, because in the meantime they can continue to pollute as heavily as before. Litigation is less costly for them than abatement, so they have a strong incentive to go through every legal channel, even if they expect to lose the case eventually. With pollution taxes, there is a strong incentive to avoid delay of any kind, because the taxes keep mounting up as long as the pollution continues. Tax breaks and subsidies have also been tried, but they bias industries to make large capital expenditures on pollution control equipment, often on treatment measures, do not encourage research into more effective technologies to prevent pollution, and do not insure that the equipment will continue to function. Pollution taxes, on the contrary, are "technologically neutral"; they encourage technological progress at all levels, progress measured in terms of how much pollution is reduced rather than on how much money is spent on equipment. A charge based strictly on the quantity of pollution emitted makes industry seek the best long-term means of pollution control.

"LICENSE TO POLLUTE"?

Question No. 3. Won't pollution taxes just give industry a "license to pollute"? Couldn't industry simply pay the tax, pass the cost on to the consumer, and accomplish no pollution control?

The pollution tax system is a way of making the goal of pollution control in the economic self-interest of the polluters. It is not a revenue-raising program, although it grew out of the conviction that the air and water should not be free-

dumping grounds. If the tax is high enough, it will be an unambiguous incentive to abate pollution. It will make pollution control a less costly alternative than polluting and paying for it.

If industry thought it could avoid pollution abatement, simply by passing on to the consumer the amount of the tax, it wouldn't oppose pollution taxes. Actually, if the tax is high enough, competition will force industry to control pollution, for the simple reason that abatement will be cheaper than paying the tax. A firm which chooses to reduce its pollution will have a competitive advantage over those which choose to pay the tax and pass the cost on to the consumer. Most firms will choose the minimum-cost alternative; out of self-preservation they will have to.

Industry has a long history of cutting production costs to gain competitive advantage—substitution of cheaper materials or cheaper labor, for example—there is no reason to expect industry to change the pattern in this case.

Industrialists themselves are telling us that pollution taxes will give them a license to pollute, and using this as a reason to oppose pollution taxes, as if they were unselfishly concerned about effective pollution control. They know, however, that if the tax is high enough, they will have to stop polluting, and that is what they are resisting.

CONSUMERS

Question No. 4. But won't the consumer have to pay more for goods, even if industry chooses to stop polluting?

If industries choose to stop polluting instead of paying the tax, they will still have to pay for abatement, although this expense will be much less. This cost will be reflected in consumer prices. At the present time, goods that are produced in polluting processes are artificially cheap; part of their true cost is expressed in the form of environmental deterioration. Pollution taxes, by locating the cost of pollution and pollution abatement exactly at the source, cause goods to reflect more accurately the total costs that go into their production. But *any* effective pollution control will cause increased cost to the consumer, either in the form of higher prices (as in this case) or higher taxes (as in government-subsidized pollution control). Pollution taxes, in that they encourage the most economical means of pollution control, will cause the least rise in consumer costs consistent with pollution control.

Although some products will cost more as a result of pollution control, in the case of sulfur pollution, consumers will actually pay less when the pollution ends. At the present level of sulfur pollution, the Environmental Protection Agency estimates that the health and property damage costs society 25 cents per pound of sulfur emitted. This amount, a conservative estimate, is far more than abatement will cost. Unfortunately, the costs of the long-term effects of sulfur pollution, even though they are very high, are hidden costs, and a rise in product cost will be obvious to everyone. In their fight against pollution control, polluters always cite the fact that consumers will have to pay more for their products. What they never mention is that pollution itself is costing the consumer far more than pollution abatement ever will.

WHICH POLLUTANTS?

Question No. 5. Which pollutants should be taxed?

Pollution taxes can be used on many pollutants, but they will prove particularly useful in cases where abatement will require a significant amount of technological research and development, and where the cost of abatement will be quite high. These are the situations in which, under the existing pollution control regulations, industry has a strong economic incentive to seek delay. These are also the situations in which industry needs the most incentive to carry out the needed research.

Sulfur oxides, one of the most serious and abundant air pollutants, fulfill these criteria. We propose a sulfur tax as a first objective. Other pollutants for which pollution taxes would be particularly appropriate are BOD (biological oxygen demand—a measure of water pollution) and nitrogen oxides (another serious air pollutant). The tax approach has also been suggested for non-returnable containers, for phosphate content of cleaning agents, and for solid wastes.

Question No. 6. Shouldn't there be outright prohibition of some pollutants?

Yes, we might want outright prohibition of pollutants which are very toxic.

But prohibition is a politically workable tactic only if there are few economic benefits to be gained by emitting the pollutant, for example if alternate technology or substitute materials are readily available. However, in cases where prohibition would have a large economic impact, we encounter the same political, administrative, and economic factors which are nearly insurmountable in the regulatory strategy. If industry says it is "impossible" to completely stop emitting a pollutant, the likelihood of actually enforcing or even enacting a prohibition is very small. In this situation, a tax will be very effective, especially when used to supplement stringent standards. A prohibition not backed up by a strong incentive is prone to the same degree of delay, subversion, and avoidance used by polluters when pollutants are regulated by standards.

A SULFUR TAX

Question No. 7. Why is sulfur a good pollutant to tax?

Sulfur oxides are a very serious pollutant, causing severe damage to health and property. There is a well-documented case relating sulfur pollution to respiratory disease. The incidence of emphysema, bronchitis, and lung cancer—and death from these diseases—has been correlated with sulfur in the air. Respiratory disease patients are even required to stay indoors on days when the sulfur level is especially high. It was recently reported in Houston, Texas that between April and July, 1971, 150 people have actually fallen sick in the street from breathing air polluted by sulfur from sulfuric acid plants. This is an example of a serious short-term effect; most of us suffer and will suffer from less obvious long-term effects. Although we may not fall in the street, our sickness and death rates will be higher. In addition to these health effects, sulfur pollution is responsible for damage to property. Houses have to be painted more often, clothes deteriorate faster, and in areas of especially high pollution, property values decline. A conservative estimate of the monetary costs of this damage was made by the Environmental Protection Agency. They estimated that society at large pays about 25 cents per pound of sulfur emitted from the air. This money is not paid by the polluters. It is paid by all of us.

Sulfur abatement technology needs much more research and development, and abatement costs will be high, so industry has little incentive to try to stop sulfur pollution. A tax would provide the needed incentive. In addition, sulfur is emitted from remarkably few sources: nearly all of it comes from less than 1000 fossil-fueled power plants, 262 oil refineries, 64 smelters, and 212 sulfuric acid plants.

There are several techniques for controlling sulfur pollution, but no one method is an adequate solution yet.

LOW SULFUR FUEL

The easiest way to abate sulfur emissions is to use fuel with a low-sulfur content, but low-sulfur fuel is in short supply, so it can be a solution for only part of the problem. In many cases, the use of low-sulfur fuel will be an interim solution.

FUEL DESULFURIZATION

Another method is fuel desulfurization, but this will probably prove to be a more expensive process than a third method, stack gas desulfurization, especially for large plants. Taking the sulfur out after the fuel is burned is usually more expensive than taking it out before. One clear exception to this would be the case of residential heating oil, because it would be impractical to have a stack gas removal system at every house.

STACK GAS REMOVAL

Stack gas desulfurization, limestone scrubbing, is the method with the best long-term potential for controlling sulfur pollution, but it will require more research before it works adequately. A tax on sulfur will provide the needed incentive for industry to perfect and use sulfur abatement technology.

Question No. 8. How much should sulfur be taxed?

A tax of 20 cents per pound of sulfur would provide an overwhelming incentive to abate. (This amount is calculated per pound of sulfur rather than of SO_2 and other sulfur oxides. Since SO_2 weighs twice as much as sulfur, an equivalent tax on SO_2 would be 10 cents per pound.) Estimates of the average

cost of sulfur pollution abatement range between 5 and 15 cents per pound, depending on the specific fuel and process. Another guideline for setting the level of the tax is the Environmental Protection Agency's estimate that society pays about 25 cents per pound on the measurable health and property costs caused by sulfur oxides pollution. According to this estimate, stopping pollution is much cheaper than paying for its damage. The 20-cent tax level could be achieved in several increments, with 1975 as a target for the full level.

Question No. 9. Where should a tax on sulfur be applied?

It is possible to apply a pollution tax anywhere in the chain of supply of the polluting substance and still provide the same degree of incentive to stop pollution. In the case of sulfur pollution that comes from the combustion of fossil fuels, there are two efficient possibilities.

1. The tax could be assessed at the source of supply of the fuel, and a rebate could be given to any later owner of the fuel for the amount of sulfur removed. The overall result is the same as if the tax were assessed on the polluter, but it is easier to account for all the sulfur by assessing the tax before the fuel is distributed. In the case of residential fuel oil, a tax applied at the refinery would give the refiner an incentive to take the sulfur out before he sold the fuel to the dealer. Industrial purchasers will be willing to buy fuel that has the tax cost built in, if they have the means to remove the sulfur and get the rebate later on. Other purchasers will buy low-sulfur fuel, since they won't be able to remove sulfur themselves.

2. An alternative to having the fuel supplier actually pay the tax would be to measure the amount of sulfur in the fuel, figure the amount of tax due on the fuel, and issue a certificate of tax liability. This certificate would be passed on at the sale of the fuel. When sulfur is removed, the amount of tax shown on the certificate is reduced accordingly.

Under both of these systems, sulfur removal must be measured and proven by the company in question. Under the first system, the rebate is given only if sulfur removal is proven; under the second, the tax must be paid on the assessed amount of sulfur, minus the amount removed.

Taxing sulfur at the beginning of the chain of supply has two advantages over applying the tax only at the point of actual pollution, although the end result (cutting pollution) is the same:

1. All sulfur is accounted for, including that in the fuel burned in residential furnaces.

2. The incentive to remove sulfur exists at all points.

Cases of sulfur pollution which do not fall in the above category (such as pollution from sulfuric acid plants) will have to be taxed directly at the point of pollution.

Question No. 10. Who makes the decision on sulfur tax legislation?

The most important step in the legislative process is the discussion that takes place in the Committees of the Senate and the House of Representatives. This is where legislation is discussed and modified. The fate of a bill is often sealed by the committee when it decides whether or not to report the bill to the floor, and in what form. Much legislation never gets out of the committee. Tax legislation, furthermore, is usually not open to amendment on the House floor.

The sulfur tax measure will be discussed in the Finance Committee of the Senate and the Ways and Means Committee of the House. Lists of the members of these two committees are provided here. Most of the committee members have not yet taken a stand on a sulfur tax, and will be strongly influenced by the opinion of their constituents.

SETTING POLLUTION TAXES

Question No. 11. Who should set pollution taxes?

The level of the tax is crucial. The decision on the rate of the charge is the equivalent of a decision on an acceptable level of environmental quality. The debate over the level of pollution charges should be as visible as possible; many values, some not measurable, must be taken into account. Industrial and regional self-interest should have to face squarely society's demand for effective pollution control. Agencies in the Executive branch are much more susceptible than Congress to arm-twisting, since their debates take place behind closed doors by people who are not directly accountable to the public. Therefore, Con-

Question No. 12. Where should the revenue from pollution taxes go?

Since the object of pollution taxes is to stop pollution rather than to collect revenue, any program which depended on the tax revenue for its funding would be dependent on a lack of pollution control. The more successful the tax is, the less revenue there will be. If we totally succeed in stopping pollution, no revenue will be collected. Therefore, what revenue there is should not be earmarked.

Question No. 13. Should pollution taxes be applied uniformly throughout the nation, or should there be regional variations, according to pollution levels and/or economic difficulties?

A variable tax would give industries an incentive to move to the areas where the tax was lowest. Even if they did not actually move, the opportunity to do so would give them leverage in their attempts to lower the tax in their areas. The notion of lower taxes in areas where there is less pollution implies that we are willing to tolerate an increase in the areas that are clean now. On the contrary, citizens in regions of clean air are demanding controls strict enough to prevent any degradation.

In some areas, pollution control may require a shift in the economy. The alternative—keeping the present industry and a high level of pollution—is clearly unacceptable. If the public will is carried out, pollution control is inevitable; no region has to depend on pollution to keep its economy alive.

In addition, one of the primary virtues of pollution taxes is that they are simple to administer. If regional variations were taken into account, this simplicity would be significantly decreased. Regional differences would also complicate the political process which determines the level of the tax, by putting regional interests into conflict.

QUESTIONS FROM POLLUTERS

Question No. 14. Isn't it unfair to collect taxes from a polluter who is complying with the standards?

Polluters have shown that they have little intention of even meeting standards; if the regulatory approach were succeeding in stopping pollution, there would be no need to find other strategies. With regulatory standards, industry knows it can postpone and even avoid pollution control; with taxes it will not be able to.

The pollution charge system provides continuous incentive to cut pollution. If industry responds most economically to the charge, it will always stop pollution to the point where further abatement costs more than paying the charge. As abatement technology improves, as it undoubtedly will, it will always be in the interest of industry to take advantage of new developments, and cut pollution even further.

Intolerable pollution levels have taught us that clean air and clean water are scarce resources. They should be allocated extremely thoughtfully and should not be free for use and abuse. Standards are a step toward regulation of these resources, but they are enforced only as far as present technical developments permit. That is, if the Environmental Protection Agency cannot show that economically feasible abatement devices exist for a given pollutant, the polluters are allowed to continue dumping it into the environment. Therefore, standards should not be considered the absolute definition of acceptable pollution levels. Standards will undoubtedly be made more strict as we learn more about the effects of pollution. Radioactive emission standards, for example, were recently made 100 times more stringent than before. New evidence almost invariably documents the case for greater stringency.

It is consistent with these observations to tax every pound of pollution, especially if this charge provides a continuing incentive to avoid polluting.

Question No. 15. Isn't it too much to ask industry to pay the tax at the same time it is trying to make abatement expenditures?

Pollution taxes give industry the choice of paying the tax or controlling their pollution, and weighs the choice in favor of controlling pollution. We propose a period of grace during which the tax is low, but we believe there should be an incentive to stop pollution right at the beginning, because without the tax, it is always more profitable to delay. Starting the tax at a low level (as we propose, setting 1975 as the target date for the full charge for sulfur) will give industry a chance to spend a great deal initially on abatement, without too much pressure from the tax.

It has been suggested by some that there be a rebate to the taxpaying industry according to how much pollution-abatement equipment was bought. But this arrangement, almost equivalent to a subsidy, biases the industry toward capital expenditures, and does not insure that the equipment purchased is the most efficient way of going about pollution control. The charge system is meant to stimulate abatement research at the most basic level, rather than to encourage capital-intensive treatment programs.

Another reason why the tax should be applied immediately is that money spent on abatement means less money spent in the future on the tax, so that the period in which the tax and the expenditures have to be made together will be compensated later. In addition, the increase in economic efficiency gained by the charge system will mean increased efficiency for the individual firms as well. In finding the point at which it is cheaper to pay the tax than to abate further, they have also found their optimum method of pollution control. In the absence of the tax, industry may actually pay more for less abatement, as has happened under present schemes, if they ever abate at all.

Question No. 16. But don't industries have enough incentive to stop pollution, what with all the laws and public concern about pollution?

Polluters have consistently and successfully avoided making a strenuous effort to stop polluting. Instead of fighting pollution, they have been fighting the public. They definitely need additional incentive; the question is only what form this incentive should take. Economic incentives in the form of pollution taxes, backed up by stringent regulations and enforcement, are necessary.

Question No. 17. If our goods cost more, won't the United States lose out in international competition?

It is true that some products will cost more when we have effective pollution control; one of the effects of the pollution tax is to locate this added cost so that prices of goods reflect the environmental costs that go into their production. This will make some goods more expensive than those of countries which do not control their pollution. However, compared with other factors in the American economy which have made our products more expensive—minimum wage laws, high wage levels, social security, child labor laws, occupational safety regulations—pollution control costs will have a relatively minor effect. It has been suggested by some that the United States place special import taxes on goods from countries which do not control their pollution.

PLANT CLOSURES AND EMPLOYMENT

Question No. 18. Won't some plants have to close? Shouldn't they be subsidized?

The high cost of pollution abatement may cause the closure of some plants. Almost all of these plants will already be marginal operations, able to survive only because of their free abuse of the environment. Pollution control—whether by taxes or direct regulation—will be the last of many factors leading to the closure of these plants. Some will be plants of national corporations able to absorb the loss; others will be one-plant operations. In either case, the loss will be spread among stock-holders. There may also be cases of threatened closure, made by industries because of resistance to pollution control, rather than because of forced closure. There should be a public auditing procedure to determine whether closure is actually a result of pollution control.

To give subsidies to plants so that they can avoid closing would be to keep alive plants whose cost to the environment is too high, either in terms of damage or in terms of abatement costs. Pollution taxes locate the cost of pollution at the source; subsidies to these sources would defeat the purpose of the tax.

Question No. 19. What about workers laid off from plants which close?

Workers left unemployed as a result of pollution control should receive assistance in the form of retraining, relocating, and unemployment compensation, and they should be able to claim in court their right to this assistance. Pollution control industries will provide new employment, and new jobs should be created in non-polluting industries.

Workers laid off for other reasons should be eligible for the same kind of assistance.

Chairman PROXMIER, Mr. Alderson.

STATEMENT OF GEORGE ALDERSON, LEGISLATIVE DIRECTOR,
FRIENDS OF THE EARTH

Mr. ALDERSON. Thank you, Mr. Chairman.

I am George Alderson, legislative director of Friends of the Earth, an international organization of 20,000 members committed to the preservation, restoration, and rational use of the earth. Our Washington office has just occupied new quarters at 620 C Street, SE.

The Joint Economic Committee is rendering a vital service to the Congress and the Nation by holding these hearings to explore the use of economic incentives to curb degradation of the environment.

Friends of the Earth believe that pollution taxes would be a productive new step in restoring the environment. Specifically, we are prepared to support a tax on sulfur emissions as an immediate application of the tax strategy.

During the past several years the public has become increasingly aroused against air pollution, only to find that in spite of our clean air laws, the air seems to be getting dirtier. Implementation of the clean air laws has involved citizens all over the country in hearings, in dealing with air quality agencies and other local officials, and even in elections. In city after city, from coast to coast, people have been devoting their spare time, and even stealing time from their own jobs, to work for clean air in locally based organizations. As a result, there is a cadre of citizens who know the basic technical facts on air pollution, and who know quite a bit about local politics. Clean air now, at least, has a constituency that is organized.

What do we have to show for all this citizen action? Some of the clear air regions designated under present law have got part way through the standard setting and implementation procedures. Some States have been adopting more stringent laws to prevent deterioration of air quality. In fact, even these initial victories have evidently concerned the polluters enough that they are seeking relief, such as through S. 907, the so-called Interstate Environment Compact bill now before Congress. The compact proposed in S. 907 would allow polluters, working through compact agencies, to, in effect, enter collusive agreements to subvert the individual States' air quality laws.

In recalling the tremendous amount of effort our citizens have devoted to clean air, we should also recall that they have been fighting an uphill battle. Citizen groups have had to cope with diehard opposition by industries, all the way through the procedure. Instead of fighting pollution by finding and installing abatement equipment, industries have been fighting the public, trying to water down and delay the tough controls that are so obviously necessary to restore clean air.

In the quest for incentives that would put polluters on a constructive track, the Congress, in the Clean Air Amendments of 1970, took a bold step forward by setting a 1975 deadline for clean automobile engines. Such a deadline is not susceptible to the delays that have thwarted the public at local level; it is supposed to spur the auto makers to develop a clean engine. However, just over the weekend, we have heard that the auto firms are still trying to find some political muscle downtown that will get them out of the deadline. This is typical of the constant battle citizen groups have had to wage. At every decision

point, the polluters are ready to try again, with plenty of influence and with their own captive experts, to argue for laxity.

It is time to turn the tables on the polluters, by instituting pollution taxes on suitable substances. Where the conditions are right, as we believe they are with sulfur, the incentive created by a tax gives the polluter a reason to stop polluting immediately. It also makes delaying tactics ineffective and pointless. Instead of debating clean air groups, the polluter is in debate only with himself, having to decide which alternative will be the most economical for his business.

The tax also exerts a steady pressure to eliminate the last of the pollutant, instead of leaving the amounts permitted by clean air standards to go untouched. The last pound of sulfur, for instance, is taxed just as much as the first pound. This means that there is an incentive for pollution-control devices to be invented and installed that will eliminate the taxed pollutants completely.

Enforcement becomes significantly easier under a pollution tax than under an equivalent standard. The State air pollution agencies, being close to the influence of industries, have a history of laxity in enforcing even the laws the States already have on the books. These agencies have too few staff to prosecute all violators, and the big polluters often have enough influence to get themselves overlooked when the agencies pick their targets. By contrast, the pollution tax is self-enforcing. As long as routine spot checks are done, as with any tax, all polluters have to pay; therefore all feel essentially equal pressure to stop polluting.

Let us bear in mind that the goal is to have no money coming into the Treasury, as Mr. Moss indicated before. If the tax were completely effective, within a few years all emissions of the taxed substances would have stopped. What we actually anticipate is a declining curve over several years' time, with a small amount continuing to come in afterward. The amount will depend largely on the development and use of the new abatement technologies.

As a pilot project to prove the value of the pollution tax, Friends of the Earth support the President's proposal for a tax on sulfur emissions, provided that (1) The tax reach 20 cents per pound of sulfur by 1975, (2) The tax uniform across the Nation, rather than regionally varied, and (3) The receipts not be earmarked for any special purpose.

Before closing, let me suggest that it is essential to avoid getting overly caught up in economic theory in the consideration of pollution taxes. We regard these taxes first and foremost as an effective way to stop pollution. If economists think of them as a means of "internalizing the externalities," or some other catchy economic phrase, that is fine, too. But the real value of the pollution tax that makes it important to people all over the country—and in other countries that may follow suit—will be its effectiveness in restoring clean air. We think it will work, and it is time to give it a try.

Thank you.

Chairman PROXMIER. Well, I thank all of you gentlemen for what I think are three very fine statements. I think you make your position very clear. As I understand it, you argue in spite of the fact we have had almost 2 years now of rather intensive concentration on pollution,

and the President a year ago last January devoted his state of the Union message primarily to pollution, in spite of the fact we have had 2 Earth Days, and as you have, Mr. McCloskey, in part of your statement pointed out, almost every elected official is constantly campaigning against pollution, in spite of all this, pollution is getting worse rather than better. Air pollution is worse. Water pollution is worse. Solid waste is worse. We are not making progress and if we think we are we appear to be kidding ourselves. What you say we need under the circumstances, as I understand it, is a new strategy. All of you seem to agree what we have been doing in the past simply is not working.

In your statement, Mr. McCloskey, you say that of all the proposals, and you go through a number of them, the one that has the greatest number of advantages, and the least liabilities in the emission and effluent tax. To what extent is this view shared in the Sierra Club? You say you have taken action, you have been able to pass a resolution, was it pretty overwhelming, were there different views on it? Was there a feeling on the part of a substantial minority that perhaps this was not the best course, that there are other courses that are more promising?

Mr. McCLOSKEY. As I recall, this resolution had very broad support on our board of directors when it was adopted. However, it did require some study, and an adequate presentation of the context in which it is proposed. This involves the conditions that I set forth (that is, that it be joined with a strong standards program, et cetera).

Chairman PROXMIRE. Yes, I think that is important, frankly. A lot of us have been stressing the tax as the best approach which is most logical for many reasons, but I am delighted you are stressing something to which many of us have not given much recognition and this is not to replace a system of providing permissible standards. The tax would simply supplement that.

Mr. McCLOSKEY. That is exactly right, and it is also important that the tax be high enough to provide a real incentive. I think this is another linchpin of the whole effort. Otherwise it is not going to produce the kind of behavior that we hope it will.

Mr. Moss. If I could add to that.

Chairman PROXMIRE. Yes, Mr. Moss.

Mr. Moss. The vote of the board of directors on this resolution was unanimous. It is worth noting that there was some discussion before the vote on the old saw that a pollution tax is a license to pollute.

The board decided that if the level of the tax is set above the marginal cost of abatement then the desired reduction in pollution will come about, and pollution taxes are no more a license to pollute than is a standard, which allows pollution up to a socially determined level of acceptability, with no incentive or requirement to do better.

Chairman PROXMIRE. As a matter of fact, it is a lot less, it seems to me.

Mr. Moss. Yes.

Chairman PROXMIRE. Is it true you can say of the standard it does allow pollution up to a certain point?

Mr. Moss. Yes.

Chairman PROXMIRE. And I think we can point out that when you put these two together there is a constant disincentive to pollute even up to the standard when you have the tax in effect because you reduce your costs, increase your profits to the extent that you reduce your pollution if you have a heavy enough tax.

Mr. Moss. That is right.

Chairman PROXMIRE. It seems to me that the tax can be calculated in such a way that it can maximize revenue.

I take it the purpose, the use of the tax, however, is to eliminate pollution as rapidly as possible, to reduce it to the lowest possible level.

Mr. Moss. That is right. One curious thing about the tax which, upon reflection, becomes obvious, is that if the tax rate is set very low then the revenue is low. If it is set at some intermediate rate, the revenue, of course, increases. But if it is set at a still higher rate then the total revenue drops to low values again because the high rate of the tax produces the desired behavior in industry, that is the abatement of pollution which decreases the total tax revenue even though the tax per unit of pollution is high.

If you want to maximize revenue then you set the tax at the intermediate rate. If your primary purpose is pollution abatement you set it at the higher value; that is what we are proposing.

Chairman PROXMIRE. One of the things I like about this tax approach, especially, is that we have a tradition in this country I think more than any other country in the world of paying our taxes. Of course, some people do evade tax payment but they recognize if they do they are liable to be prosecuted and sent to prison. We pay our taxes and prosecute tax evaders. This is true of corporations and true overwhelmingly of individuals so this is something that is enforceable.

When you follow the strategy we are following now of trying to provide prohibitions and then proceed in court to prevent it, you invite the corporations to use their very potent legal talent, and their opportunities to delay in the courts, and their opportunities to persuade the prosecutors and the judges and so forth, that after all this is an essential element and, as you point out so well in your statement, you gentlemen, that they can point to a burden that is almost impossible for them to bear and that kind of thing.

But when you impose the tax, as somebody pointed out, Mr. Alderson I guess, the argument ends. If they want to debate they debate with themselves. They pay that tax, and then they have to figure that the one way in which they can reduce their costs is to reduce their pollution. That is why I like your statement, Mr. Alderson, when you start off by saying in almost every case from the polluter's point of view it is cheaper to pollute than to abate pollution. I am sure there is nobody in this country that pollutes for the fun of it. They pollute because water is a free good, for example, and they carry off their waste with water because it is the cheapest way to do it. Water costs very little. It is very expensive for the community, for the country, for the people who use that water, other people who use the water, but it is the cheapest thing in the world for the industry. So what we do by impos-

ing a tax is to change that situation—water is no longer a free good so far as carrying off waste is concerned but something you have to pay for.

Mr. Moss. Mr. Chairman, your comment about delay raises another important point. There are challenges that industry might make to the imposition of the pollution tax although I am confident that these challenges won't be successful in the courts. However, what happens while the challenge is taking place is quite different in the case of a tax than it is in the case of the imposition of standards.

Chairman PROXMIRE. In the case of a tax they pay the tax.

Mr. Moss. In the case of tax their liability is increasing all the time while the litigation is going on and while the matter is being decided. If they lose their case, then they must forfeit all the accrued tax.

In the case of delay in implementation of standards they continue polluting at no cost during all those years, and if they lose the case, they still win, in effect, because they have postponed their capital investment and their higher operating costs to a later period, and as a business strategy that is to their advantage.

Chairman PROXMIRE. You say that there are only 30 lawyers in the Department of Justice handling all the environmental litigation for the entire U.S. Government.

Mr. Moss. That is correct.

Chairman PROXMIRE. And I think that one of you gentlemen pointed to the great difficulty of having the States do the job because they have similar limitations on their prosecuting capability and they also, of course, have competition between States and many other reasons. But did the administration ask for any increase in that budget for the coming year and is that 30 an increase over what it was in the past, do you know?

Mr. Moss. I don't know the answer to that question. Do you know Mike?

Mr. McCLOSKEY. I don't know the answer to that question but I was interested to note recently—I think it was Mr. Quarles of the Environmental Protection Agency who said it—that after some initial prosecutions under the Refuse Act. EPA was now largely going to abandon a prosecution strategy and look toward working with industry again, which reveals again the incredible aversion to prosecution which exists in the standards-setting field. There have been very few prosecutions over the years.

Chairman PROXMIRE. Well, in all fairness I think it is true when you only have 30 lawyers and you are up against so much of American industry with literally thousands and thousands of highly competent lawyers on the other side, you have to pick and choose, you have to make a selection. You have to recognize that maybe 90, 95, or 99 percent of those polluting just can't be prosecuted because you don't have the capability of doing it.

Mr. McCLOSKEY. This raises the question, though, of whether they have few lawyers because they are not much interested in prosecution, or whether they can't prosecute because they have few lawyers. Looking over the history of the prosecution in this field I think generally it is true to say there has been very little inclination to prosecute.

Chairman PROXMIRE. At any rate if we impose a tax we bring into the act several hundred, maybe several thousand, Internal Revenue Service attorneys and agents who enforce the law.

In your statement, Mr. Moss, you mention a very ingenious way that had not occurred to me about the lack of research and development especially by private industry to combat pollution. Lots of talk about it but not much done. You point out that to the extent that you make it profitable for a firm to reduce its pollution then it will spend money in research and development and technology to reduce it.

Now it is not profitable to do so. But the pollution tax would make it that way.

Mr. Moss. That is correct.

Chairman PROXMIRE. I think that is a most helpful thing.

In your statement, Mr. Moss, you argue about, you tell us about not having a trust fund for this. Frankly I am not sure I agree with that. We set up a bill, we introduced a bill, providing for a water pollution tax, for example, with the revenues, and we calculated the revenues to be between \$1½ and \$2 billion, half of those revenues going to municipalities to enable them to improve their water treatment facilities and clean up pollution in that way, and half of it going to regional organizations which would, of course, function in the large area to reduce the pollution in our water basin area because, of course, that pollution often is interstate and usually is regional, and in view of the enormous success of those programs that have been funded by trust funds, although I am very reluctant about trust funds and think we can make a strong case against the trust fund, I think maybe in this case, since we want to put a clear priority on combating pollution, this might be one way of doing it.

Mr. Moss. May I comment on that?

Chairman PROXMIRE. Yes, sir.

Mr. Moss. I should have made a distinction in my statement, which I did not make, and which your question now makes important. There are some programs where the level of desired Government expenditures is indeed proportional to the expected revenue from a pollution tax. In the case of water effluents, as the effluents decrease, and the tax decreases, the required treatment of these effluents also decreases because there are less of them. Therefore, in those special cases I think a good argument can be made in favor of earmarking revenues for treatment purposes.

One would want to examine the situations case by case. In the example of the sulfur oxides, there is no conceivable treatment process—

Chairman PROXMIRE. Yes.

Mr. Moss (continuing). For public agencies to perform. They can't go out and scrub the air. The link between tax revenue and public expenditures on pollution abatement just does not exist.

Chairman PROXMIRE. It is a good distinction. I see you were thinking of it in terms of sulfur oxide especially rather than water pollution.

Mr. Alderson.

Mr. ALDERSON. I think it is especially important to avoid getting into this earmarking of funds except in specific cases like the one

Larry mentioned because it sets up a conflict of incentives. It means someone in the system is going to have an incentive to prevent the pollution from being abated as long as his program is being funded from it.

Chairman PROXMIRE. I am not so sure. That may be the case. I thought about that and I think it is an interesting notion but as long as the purpose is to provide for purifying water, for example, that has been polluted, and it can only be used for that purpose, I would think that you would reduce that kind of pressure, not eliminate it.

Mr. ALDERSON. I think it might be true in the water case, and I have not gone into that detail, but I think it is essential to keep these systems as pure and as streamlined as possible. We had some experience with the land and water conservation fund, and several years ago part of the offshore oil revenues began to flow into the fund, and—

Chairman PROXMIRE. Was that for education?

Mr. ALDERSON. The land and water conservation fund is for acquisition of park and recreation lands. At the time of the Santa Barbara oil spill there was even some muttering to the effect that maybe we should not stop them from drilling in Santa Barbara Channel because think of all the money that we are getting for the land and water conservation fund. So even among people who are genuinely concerned about abating pollution and about oil spills, this big dollar sign, the money that is going to come is from something like this—if it is earmarked for that particular purpose—sets up a real conflict of motivations.

Chairman PROXMIRE. Well, I see that point. Of course, here it is related explicitly and directly to the same purpose as the tax is.

Let me ask you, Mr. Alderson, about your statement, which is something new to me. You say:

In fact, even these initial victories have evidently concerned the polluters enough that they are seeking relief, such as through S. 907, the so-called Interstate Environment Compact bill now before Congress.

The compact proposed in S. 907 would allow polluters, working through compact agencies, to enter collusive agreements to subvert the individual State's air quality laws.

What is the status of that bill now?

Mr. ALDERSON. Mr. Chairman, that bill is before the Judiciary Committee. They have completed hearings on it, and there has been no further action at this point, although they tell us that they are still working on amendments.

At the time of the hearings the administration testified against it. However, apparently the polluters were able to work some kind of influence, because when the Environmental Protection Agency came back with their amendments to it, the amendments were much weaker and did not reflect the strong opposition that the agency had originally testified to.

Chairman PROXMIRE. I am glad you alerted us to this. It is a bill, you say, the principal effect of which would be to subvert individual States air quality laws, negate them, modify them.

Mr. ALDERSON. That would be one of the worst effects because it would be possible to get together in these compacts without individual

consent of the Congress. This is a proposal in which Congress would give blanket preconsent to essentially all compacts dealing with pollution, and without any opportunity for further review.

So we think it is one of the worst threats to the whole pollution abatement system that we now have.

Chairman PROXMIRE. Incidentally you also point out something in your statement, something that I think confirms what Mr. Moss tells us and which is very helpful. You contend that one great value here, in view of the limited finite number of prosecutors to prosecute violators, is that the antipollution tax is self-enforcing so that you economize in the appropriate and effective way. You don't need the enforcers, the amount of enforcement if you impose a tax.

Mr. ALDERSON. Yes; the problem that the State agencies have had in enforcement was beautifully documented in the Nader task force book "Vanishing Air" by John Esposito and Larry Silverman, with a devastating series of case histories of the way that State agencies had failed to go after the most flagrant polluters they had.

Chairman PROXMIRE. Let me ask you about your criticism or evaluation of the President's proposed tax on sulfur emissions. You approve of the President's position on this and then you go on to say you support it providing the tax is 20 cents per pound of sulfur by 1975. Did the administration suggest any level?

Mr. ALDERSON. As far as I can recall they have not gone into detail on these points, so we are hoping that their final detailed proposal will incorporate these.

Chairman PROXMIRE. They didn't indicate anything either about whether it would be regional or nationwide?

Mr. ALDERSON. No, they have been discussing that subject. Perhaps Mr. Moss would like to add something.

Mr. Moss. Well, it is correct that the administration has made no legislative proposal. The President has just indicated his endorsement of the sulfur charge but no details have been spelled out. I understand that discussions are now going on between different agencies of Government in working out the specific details. We hope that they will incorporate the items that we have in our proposal.

Chairman PROXMIRE. Mr. Moss and Mr. Alderson, you devoted the main specific recommendations in your statements to the notion of a sulfur oxide tax, as a means of abating air pollution. Do I take it—apparently this is the case but I want to be sure explicitly—do you favor a similar approach, both of you, for combating, say, water pollution?

Mr. Moss. Yes, for some water pollutants, when the conditions that I have discussed in my statement are in large part met, I think the tax approach—

Chairman PROXMIRE. You mean that it can be measurable, and so forth?

Mr. Moss. Well, yes—for example, if the cost of abatement is high. When the cost of abatement is high, then industry has a big incentive to prevent or delay implementation, so a tax should be used to supplement the standards.

That is an example of the kind I have discussed in my statement.

Chairman PROXMIRE. It would certainly apply to water pollution, would it not?

Mr. Moss. Yes; for certain pollutants where the cost of abatement is high.

Chairman PROXMIRE. Yes.

Mr. Moss. It would not apply to mercury, as I discussed in my statement. In the case of mercury—

Chairman PROXMIRE. I am talking about the great amount of BOD we have been concerned with.

Mr. Moss. Yes; I agree.

Chairman PROXMIRE. How would we arrive at this factor we are talking about? You are a little vague in this testimony so far about what you mean by an appropriate level of tax. How can we assure that each polluter would pay the right amount? What kind of sampling techniques should we provide?

Mr. Moss. Well, first, the decision about the level of the tax.

Chairman PROXMIRE. You are not at all vague on sulfur oxide but I am thinking of other areas.

Mr. Moss. The principle is the same. We make an estimate of the costs of abatement of different industries, different polluting units, for the case of, say, BOD or any other pollutant. We also consider a lot of social values, some of which might be measurable, some of which might be unmeasurable, and we come to some consensus about an acceptable level of environmental quality. Then we set the level of the tax so that it exceeds the marginal cost of abatement at least to the point where the acceptable level of environmental quality is achieved. Now this isn't always a number that can be determined precisely, before the fact. For one thing it may depend upon technological developments which, when they are made, will affect the cost of abatement. But an attempt can be made, an estimate can be made, and we can take a look at the experience after 2 or 3 years of pollution with that level of tax, and if necessary adjust it up or down to get the desired result.

Chairman PROXMIRE. Have you formed any opinion on what the per pound tax ought to be on BOD? Our bill, the bill I introduced—at Mr. Allen Kneese's suggestion we made it 10 cents a pound.

Mr. Moss. I bow to Mr. Kneese's judgment and your judgment on that, because Mr. Kneese has studied the abatement costs of BOD in much more detail than I have, and I suspect that that number is pretty close to the right number.

Chairman PROXMIRE. You gentlemen put a lot of emphasis on the sulfur oxide tax the Nixon administration has called for. Is this enough so far as air pollution abatement is concerned? How about the automobiles? We do have some antipollution requirements in the bill we passed, which some people are trying to postpone, but would those requirements, together with the sulfur oxide tax, be enough to meet the principal air problems that face us?

Mr. Moss. Well, the principal air pollutants are the sulfur oxides, the nitrogen oxides, particulates, hydrocarbons, carbon monoxide, and oxidants. The oxidants are not usually emitted as such by the polluter but form as a result of photochemical reactions of the pollutants in the atmosphere.

We have already talked about sulfur oxides. Automobiles emit carbon monoxide, hydrocarbons, and nitrogen oxides in the largest amounts.

Each of these three pollutants is covered by the 1970 Clean Air Act. The first two are covered in 1975, unless the 1-year extension is granted; the last one, nitrogen oxides, in 1976.

Now, it may very well be that the addition of a pollution tax on effluents from automobiles after 1975 would make it more inevitable that the auto industry does come up with the technology to meet those standards.

Chairman PROXMIRE. Well now, does it? I wonder about that. It may be, but on the basis of testimony this morning and reflecting on this again, I just wonder. Maybe you need an economic incentive here rather than just a flat prohibition. How about that? Is it possible that you might provide some kind of a tax on automobile emissions to supplement the limitation that Congress has imposed?

Mr. Moss. It may be that we will need it. If we do need it, the place to apply it, by the way, is at the level of the manufacturer, taking a random sample of production-line vehicles, not prototype vehicles, that are produced in a given year, determining their lifetime emissions by doing a series of road tests, and then assessing the manufacturers a tax which is proportional to those expected lifetime emissions. Now if that tax is set high enough—and in the case of the standards for automobiles that are going to be, that are supposed to be, implemented by 1975 and 1976 the tax will have to be on the order of at least \$200, \$300, or \$400 per car for the total of these emissions—it could be a very powerful incentive for the manufacturers to meet the standards.

Chairman PROXMIRE. It is an interesting revelation this morning that had not occurred to me and it might indeed be a good enforcing supplement to the law we passed.

Mr. Moss. You talk about other air pollutants. The nitrogen oxides, in addition to being produced by automobiles, are also produced by stationary sources such as powerplants, and I think they probably would be a good candidate for pollution taxes although the monitoring problems currently are a little more difficult than they are for the sulfur oxides. We are just developing precise, fast-acting monitors to quantitatively determine nitrogen oxides in stack gases. Probably in a few months or a year we will have such devices. In the case of sulfur we have those devices already and, in addition, we can determine the amount of sulfur emitted to the environment in most cases by simply sampling the sulfur content of the raw material; that is the fuel burned in the powerplant because now all of it goes up the stack. Incidentally, the utility companies are already required by the FPC to submit this information, so no additional information would be required.

Chairman PROXMIRE. One final question, gentlemen. There have been a number of instances where the effluent tax has been put into effect primarily with respect to water pollution. Otsego, Mich., Cincinnati, Ohio, Springfield, Mo., the Ruhr River in Germany, and I have heard at least as far as the Ruhr is concerned, I have heard various interpretations of that, both those who were in favor of this approach and those not, who discuss it. Do you have any views on

this experience? Can this really assure us that this will work and do we know on the basis of experience that it has worked and worked well in the past?

Mr. Moss. Well, when one discusses the example of the Ruhr it has to be kept in mind that the way in which the tax is set in the Ruhr is very different than what we are suggesting. In the Ruhr an association of the polluters decides on the level of the tax, and the polluters that put the most pollution into the river and, therefore, pay the most taxes have the most votes. Their votes are proportional to their taxes.

Chairman PROXMIRE. Still it has worked pretty well as far as the Ruhr River is concerned, hasn't it?

Mr. Moss. It has worked to the point where fish can live in the Ruhr River.

Chairman PROXMIRE. This is about the most intensely used river by industry in the world, isn't it?

Mr. Moss. Yes, certainly in relation to other rivers of the world where heavy concentrations of industry exist, the Ruhr is of high quality. That doesn't mean it is a good trout stream. But if the tax had been set at a different level, perhaps by the Federal Parliament in that case, then a higher quality could have been achieved for the Ruhr, also in an efficient manner.

Chairman PROXMIRE. In Otsego, Mich., the story as I recall, was after the tax had been put into effect, in a matter of months pollution was reduced by something like 50 percent, just very, very swiftly and quickly.

It really worked and worked very effectively. The same story I think was true in Springfield and Cincinnati.

Mr. Moss. Yes.

Chairman PROXMIRE. I do have one other question the staff gave me to ask you, which is something that is technical but I guess it is very important about enforcement, sampling techniques. What proportion of outflow do we have to sample and how much would this enforcement cost? What sample, first with sulfur oxides?

Mr. Moss. In the case of sulfur oxides, the monitoring problem is not difficult at all. First, there are only a limited number of significant sources of sulfur oxides in the country. There are less than a thousand powerplants that are worth monitoring, that are big enough to bother to monitor.

Chairman PROXMIRE. How often would they have to be monitored and what cost would that represent?

Mr. Moss. Well, in the case of powerplants the monitoring might simply consist of spot checks of the sulfur content figures submitted by the utility to the FPC, and perhaps several hundred or several thousand checks around the country each year would be sufficient for that. Simple chemical analyses would be involved. Later, when stack gas removal devices were installed in some of these powerplants, one would also want to monitor the sulfur that was removed and not released to the air. That again would involve only a simple chemical analysis and, in fact, the industry would in most cases keep books on exactly how much it was removing because the sulfur removed would be sold or recycled.

Even if stack gas monitoring is required, the cost of doing so will not be great, because of the limited number of sources. In addition to the less than 1,000 powerplants, there are only about 64 smelters, 262 oil refineries, and 212 sulfuric acid manufacturing plants in the United States. One could install stack gas monitors in all of them at a cost which would be trivial compared with the benefit received.

Chairman PROXMIRE. How about BOD in water pollution?

Mr. Moss. Well, in the case of BOD the test is a little bit cumbersome because the usual test takes 5 days. That is, you collect the sample and you wait 5 days to get the result. However, the test itself is simple and inexpensive, and one could sample many thousands or tens of thousands of effluent pipes and get sufficient data to audit the data supplied by the industry.

One should not forget that under the 1899 Refuse Act permits are now being applied for by industry. In these applications they are obligated to list the BOD as well as many other constituents of the effluent from their plant. For falsifying information they are subject to stiff fines and jail penalties. One would hope that the Federal Government was already developing a monitoring strategy to check these data, in order to make sure that they are indeed being correctly informed of what is happening in the Nation's waterways. The additional test that would be required for a tax enforcement strategy would not be very significant.

Chairman PROXMIRE. Can any one of you comment on this, this is the last question, if an effluent charge were imposed that was high enough would you agree that it would not be a license to pollute?

Mr. McCloskey.

Mr. McCLOSKEY. Yes, this has been the burden of our comment, that such a tax does not fall in that category.

Chairman PROXMIRE. Mr. Moss.

Mr. Moss. That is correct. It would not be a license to pollute.

Chairman PROXMIRE. Mr. Alderson.

Mr. ALDERSON. Yes, we agree.

Chairman PROXMIRE. Thank you very much. Thank you, gentlemen, very much.

Our next two witnesses are Mr. Robert K. Davis of the Natural Resources Policy Center and the National Audubon Society, and Mr. Thomas L. Kimball, executive director of the National Wildlife Federation.

Mr. Davis and Mr. Kimball, we are very happy to have you gentlemen with us.

All right, sir, we might as well continue from left to right alphabetically. Mr. Davis, go right ahead.

STATEMENT OF ROBERT K. DAVIS, STAFF ECONOMIST, NATIONAL AUDUBON SOCIETY, AND RESEARCH PROFESSOR IN ECONOMICS, GEORGE WASHINGTON UNIVERSITY

Mr. DAVIS. Thank you, Mr. Chairman.

It is a pleasure to be here this morning discussing a very important topic concerning our environmental policy and I would like to say Mr.

Elvis Stahr sends his regards as well as his regrets that he can't be here in behalf of the National Audubon Society.

Chairman PROXMIER. You are speaking of the president of the National Audubon Society?

Mr. DAVIS. The president of the National Audubon Society, Mr. Stahr.

Effective pollution control will cost money. We believe that imposing the costs of environmental cleanup on those who are not polluting the environment will lead to fundamental corrections in our system of prices. This means that the products and services which are responsible for significant amounts of pollution would be penalized by an increase in their prices and that consumers and producers should have to take these changes in price into account in making their decisions to purchase. This should steer consumption away from polluting goods to less polluting goods. The ultimate thrust of the environmentalists' economic concern is toward the total composition of the economy's output. Effective antipollution policy would influence what is produced, the way it is produced, what is consumed, and the manner in which it is consumed.

We do not, however, endorse inefficient environmental controls. It is not efficient for a plant to be forced to clean up its emissions by an amount which is greater than that which is necessary to meet well founded standards of water quality or of ambient air quality. Moreover, the dictates of efficiency suggest that the responsibility for reducing emissions and effluents in an airshed or a watershed should be allocated according to the costs which the different polluters will incur in cleaning up. If a plant with very high pollution reduction costs is required to reduce its pollution to the same levels as a plant with very low reduction costs, then the former plant will have grounds for claiming that it is the victim of an unfair impact and recourse will be justified. Although theoretically possible, there is no practicable way in which Government can assign efficient emission or effluent standards to each point source of pollution.

It is most unfortunate that the concepts behind our antipollution programs today are exclusively based on setting emission or effluent standards and using regulatory powers to enforce them. We have ample and disheartening evidence that regulatory procedures are not working in our water quality programs and although we may have strong desires for the success of the Clean Air Act, past experiences do not give us very high hopes. If present programs were successful in reducing pollution, I am convinced as an economist that the costs would be at least two times greater than need be to achieve the same effect by other means.

It is because we are convinced that new instruments must be tried that the National Audubon Society has gone on record as welcoming President Nixon's initiative in proposing 6 months ago a tax on sulfur emissions, and we have encouraged the administration to bring its detailed proposal forward.

The use of charges or taxes in curing pollution deserves far more attention than it has received to date. Taxes have the virtue of not imposing impossible administrative burdens on government, but rather of placing the responsibility on each individual polluter of de-

ricing precisely how and to what extent he will curb his emissions. Taxes on pollution place reliance on the mechanisms of the market system to achieve environmental cleanup. A pollution tax relieves government of the job of making decisions for each individual polluter, and lets it concentrate on the essential task of setting well-considered standards for environmental quality, of pegging a tax rate that will be effective in achieving the standard, and of monitoring environmental conditions and adjusting tax rates accordingly. I have omitted mention of the tasks of collecting the tax and prosecuting evaders, because the long record of successful tax collection in this country speaks well for this aspect of the pollution tax.

A tax on pollution would seem to have strengths on the very points where regulatory procedures are weak. I know of no tax law which gives administrative discretion by substituting "may collect" for "will collect." Administrative discretion has greatly weakened the water quality program. One writer in Audubon magazine¹ quotes a high official in one agency as explaining inaction in enforcing a pollution law, by saying: "We are dealing with top officials in industry, and you don't just go around treating these people like that."

Regulatory procedure is often stymied where technology is not available for reducing pollution discharges, but technology is not available because regulation cannot be enforced. Pollution taxes escape this trap by making pollution costly to the polluter and giving him the incentive to develop and apply waste-reducing technology. We are told that dozens of processes for removing sulfur from stack gases are known, but only two have come out of the laboratory to a stage of applicability. The reasons are obvious; there has been no incentive. Regulatory procedures suffers from tactical weakness not shared by taxation. The imposition of an enforcement action can be delayed by going to court. A tax case may be taken to court, but I am told by my lawyer colleagues that in many of these cases, taxes continue to be paid while the case is being settled. This means that the costs of losing a tax case are composed of both legal fees and the tax payments, whereas the costs of losing a case over standards consist only of legal fees. In the case of litigation over compliance with standards, a firm could pay legal fees up to the costs of compliance during the time consumed by the litigation and still be no worse off even if it expected to lose the case. This point has probably not gone unnoticed by those who oppose pollution taxes.

I interpret the real opposition to pollution taxes to speak for their highly effective nature. The Industrial Pollution Council² has gone on record as saying: "The environment should never be for sale." Obviously, they intend this to mean that pollution taxes are somehow wicked—a sin against nature. What I interpret this to really mean is that they wish to continue using the environment as a free dump. Pollution taxes would interfere with this.

I am confident that when the leaders of industry accept the fact that we are going to clean up the environment, they will favor the incentive system of pollution taxes as being far more efficient than the imposition of detailed regulation.

¹ Audubon, March 1971, p. 8.

² National Industrial Pollution Control Council, "Council Report," February 1971.

Under any such system of pollution control, industries should be prepared for incremental, iterative, and sequential decisions by government. By this, I mean simply that we should expect flexibility on the matter of tax rates. We cannot know how high a goal of environmental quality we desire until we have much more information on costs. Nor can we know until we have experience with tax rates.

We must not be too moved by industries' pleas for constancy in antipollution programs. The one thing that characterizes the free market is fluidity and change. The participants in our free enterprise system have certainly had sufficient opportunity to accommodate to this aspect of the society, although many obviously look upon it as an inconvenience. The point is, there is no reason to expect that the conditions and costs of our industrial society's use of the environment should not be as subject to fluidity and change as the other aspects of production and marketing.

If we can arrive at an effective antipollution program through taxation, we must then be concerned about the impacts of the program. As a matter of principle, I think we will tend to overestimate these impacts on a beforehand basis. The reasons are simple. In many cases, we are dealing with imperfectly developed technologies for waste reduction. As we move into real action, technologies will improve and costs will be cut. In many instances, waste reduction will result in process cost savings and product improvements.

It is necessary to acknowledge that some plants will be closed because the burdens of pollution control will make them uneconomical, but we need to remember that mortality has always been a fact of life in the competitive world, and that the plants which shut down because of the 5 to 10 percent increase in costs³ which seem likely due to stringent pollution controls, may not be far from dead or perhaps long dead and waiting for an opportunity for the death to be acknowledged.

Our one real concern about the economic impact of pollution control is its human costs in terms of unemployed labor which is not sufficiently mobile to find alternative employment. We disavow the notion that plants or firms as such should receive relief. The writeoff of sunk capital is not a real social cost, and the financial costs will usually be widespread among stockholders who are well able to carry the burden. After all, risk is one of the realities of equity investments. However, unemployed workers—and the concept of worker includes those in management who are also affected—in principle deserve some assistance from the rest of society. There is already ample precedent for this in the Trade Expansion Act, in the operations of the regional commissions active in Appalachia and elsewhere, and in certain aspects of the poverty programs such as the Job Corps. It is humane, as has been suggested recently,⁴ to require a firm or plant to discharge some obligation to its employees if it closes down for any reason. However, it is also humane for the rest of society to also discharge an obli-

³The available cost estimates concerning pollution control are reviewed in Stahr, Davis and Clement, "Anti-Pollution Policies, Their Nature and Their Impact on Corporate Profits," to be published by NYU Press.

⁴Statement of Ralph Nader before the Senate Subcommittee on Air and Water Pollution of the Senate Committee on Public Works, U.S. Senate, Washington, D.C., May 17, 1971.

gation when the closing has been precipitated by our interest in improved environment.

Aside from matters of principle enunciated above, the proposition that outright grants or loans might be given to companies who have difficulty meeting their pollution control responsibilities carries such appalling implications for public regulations of profits that it deserves no serious consideration.

These implications are that the company would have to subject itself to a determination by some public body as to what constituted an acceptable level of profits for this particular company in this particular industry. Surely, it strains credulity to expect to find the requisite wisdom anywhere in abundance. Moreover, propping up the adversely affected would nullify the effectiveness of the pollution tax.

Tax writeoffs or accelerated depreciation for pollution control equipment have been a favored instrument of pollution policy but we ought not be deluded by their apparent advantages. Writeoffs and allowances help only profitable firms. They are of no benefit to the firm with no profits. Moreover, these instruments subsidize waste treatment equipment only and discourage firms from considering the oftentimes more efficient remedies of process change and product or input adjustments.

A final matter which is causing some concern among environmentalists is the prospect that imposition of antipollution programs will cause shifts in the polluting industries from the more heavily polluted environments to the less polluted or even to the unpolluted. There are some real dilemmas in this issue because many of us recognize that some of our urban agglomerations are grossly swollen and that wise policy will curb their continued and uncontrolled growth. But if the growth is not to go to these areas, where is it to go? The answer may be in part that more growth will be allocated to urban areas which still have environments capable of handling growth. Another answer will be new towns and the location of these will be at issue. However, this is an issue that need not be dealt with directly by pollution taxes, but rather with land-use controls and other forms of State and local regulation.

There are really two parts to the regional location issue. One concerns the location of new growth discussed above. The other concerns the possible relocation of existing production because of pollution control costs. Let me say first as an economist that I think it highly unlikely that a plant or firm is going to move away from its markets or its sources of supply simply because of change in the costs of pollution control. The shifts which do occur will be from one urban-industrial area to another and not into the wide-open, unpolluted spaces.

When such areas are threatened, as in the Four Corners area today, it is again more a matter of State and local land-use control rather than national antipollution policy which should be looked upon as the remedy.

There is, however, good reason to ask the pollution taxes be established at uniform national rates initially and until we have time to learn more about unique regional problems. At the same time, we are open to the idea that certain regions may wish to apply a sur-

charge above the national rate in order to achieve a level of quality above the national minimum standard.

The last point I wish to make on the regional issues concerns the timing of the imposition of the full effect of taxes. All sides seem to recognize that pollution taxes must be allowed to take effect gradually in conformity with the true ability of polluters to respond to the incentive effects. What has been slighted in discussions thus far is the issue of uniform rates of application in all regions, as opposed to different timing in different regions. The economic logic of applying different time schedules to different regions has to do with matters of priorities and the fact that nationwide imposition of a set of effluent or emission taxes could create critical shortages of raw materials with low pollution quotients, such as low sulfur coal, and of engineering know-how and pollution control equipment. The results could be chaotic and could mean that the dirtiest regions have to suffer far greater pollution control costs than a more orderly transition which recognized regional priorities in phasing.

It would, therefore, seem prudent to allow initially for some regional priorities in the rate of adjustment to antipollution incentives with the aim of bringing all regions up to a national minimum standard in a 3- to 5-year period and keeping them to that standard thereafter. This would seem to be such a short transition period that there could not really be any interregional relocation accomplished which violated our concerns about adverse interregional effects. At the same time such an approach would satisfy the dictates of long-run efficiency in pollution control.

I am convinced that in the absence of more concern for the problems of economic incentives and efficiency in the design of antipollution programs we will continue to be sadly disappointed and frustrated about the progress of our efforts at improving environmental quality.

Thank you, Mr. Chairman.

Chairman PROXMIRE. Thank you, Mr. Davis.

Mr. Kimball.

STATEMENT OF THOMAS L. KIMBALL, EXECUTIVE DIRECTOR, NATIONAL WILDLIFE FEDERATION

Mr. KIMBALL. Mr. Chairman, I am Thomas L. Kimball, executive director of the National Wildlife Federation, which has its national headquarters at 1412 16th Street NW., here in Washington, D.C. I am testifying here today on behalf of the federation at the subcommittee's request.

The National Wildlife Federation is a private, nongovernmental organization which seeks to attain conservation goals through educational means. The federation has affiliate organizations in 50 States and in the Virgin Islands. These affiliates are composed of local groups and individuals who, when combined with associate members and other supporters, number an estimated 3 million persons. National Wildlife, one of three magazines published by the federation, is read bimonthly by over 2 million persons.

In 1969, the National Wildlife Federation developed the first index of environmental quality which we call our "National EQ." In 1970,

despite increased awareness of environmental problems, the National EQ registered an alarming decrease in environmental quality. Of the six indices comprising the National EQ, air and water quality received the lowest ratings. In a few months, the 1971 National EQ will be published. Preliminary data indicate that environmental quality declined again, although at a slower rate, and that air and water quality are the most degraded.

Continued deterioration of environmental quality is due, in large measure, to the discrepancy between rhetoric and action. A copy of a recent article from National Wildlife entitled "Lip Service vs. Action," which highlights this discrepancy, is attached to my statement. The article points out that appropriations fall far short of authorizations under both the Clean Air Act of 1970 and the Water Quality Act of 1965. Inadequate enforcement programs and bureaucratic paralysis have greatly diminished the effectiveness of both acts.

Failure to reduce pollution cannot be blamed on lack of public concern or will. In 1969, the National Wildlife Federation sponsored two polls to fathom the depth of public concern about environmental degradation. Over 86 percent of the people sampled in one poll indicated concern about environmental problems and 73 percent were willing to pay additional taxes to improve the environment; 68 percent of those sampled felt that air and water pollution were the most serious environmental problems. I might add, Mr. Chairman, there have been two public opinion samples since that time, one last year and one this year. The most recent poll indicated that concern about pollution is now the No. 1 domestic issue in the United States. I don't think we can blame the public apathy as part of the problem now.

As least part of the blame for increasing pollution must be put squarely on the shoulders of legislators who are more responsive to private business interests than they are to the wishes of the public. The National Industrial Pollution Control Council is an example of the predominance of business interests over the public interest. Behind closed doors, representatives of business and Government meet to discuss how much effort businesses must put forth to meet national environmental goals. It is time for the voice of the public to be heard in government councils, along with the voice of business.

Air and water pollution problems arise because businesses, governments, and individuals are able to use the air and water as garbage dumps with impunity. As long as this Nation was relatively small, both in terms of population and production, human waste products were cycled naturally. Today, however, we dispose of far too much waste for natural ecosystems to cycle and, therefore, increases in population and GNP are directly geared to increased gross national pollution.

It is time to recognize that the use of our air and water as garbage dumps is not free—pollution costs each American a substantial sum of money each year. The loss of recreational opportunities, such as the closing of the Potomac River in the vicinity of Washington, D.C., to all water contact recreation, is one type of cost, but there are others that are more easily quantified.

For example, the Environmental Protection Agency recently estimated that air pollution costs Americans \$6 billion per year in terms

of public health deficiencies. Unfortunately, everyone complains about rising medical costs and insurance premiums, but few realize the relationship between those costs and increasing air pollution. Overall, the cost of air pollution is estimated at \$16.1 billion per year, and if my memory serves me correctly, the cost of cleanup was estimated at approximately \$11 billion per year. That would be a net gain of \$5 billion if we could cleanup air pollution immediately.

Some of the most obvious costs of pollution are seldom recognized. A study of air pollution in New York City indicated that the extra cost of painting, washing, and cleaning due to air pollution was over \$200 per person per year. And how many of us stop to realize that we pay for the chlorination of water that we pollute and then pay again for bottled water when chlorinated water becomes too unpalatable. I understand from the press that, even that, bottled water is not too good.

Chairman PROXMIRE. Better to get it out of the tap.

Mr. KIMBALL. That is right, it is better out of the tap.

It is obvious that the disposal of waste products into lakes, rivers, the oceans and the air is not free, yet our economy functions as if it were free. We must recognize that no one has a right to pollute—no one has a right to impose the costs of pollution upon others. This principle is recognized whenever damage to private property is threatened by private or public actions. The law of torts, nuisance, trespass, and condemnation provide remedies for private property owners whenever their interests are threatened. It is necessary to provide equivalent legal remedies for the protection of public rights in the use and enjoyment of clean air and water.

The most effective and least costly way to force polluters to bear the cost of their pollution, and thus to decrease pollution, is by imposing an effluent charge or pollution tax. A pollution tax would require a polluter to pay for using the air and water as a garbage dump. The tax should be set at a level that would encourage polluters to control their pollution—either by recycling wastes or by changing their manufacturing processes. The tax should be assessed at different rates for different types of pollution—a more dangerous pollution being taxed at a higher rate. The higher rate will provide an incentive to put forth more effort to reduce pollution. Society may decide that some pollution is so dangerous that any discharge is unacceptable and the tax may be assessed in terms of years in jail rather than in dollars per pound.

One idea that should be dismissed at the outset is that a pollution tax is a license to pollute. If a business must pay a tax in order to dispose of its wastes into the environment, it will seek ways to reduce that expense. By varying the tax rate, society can induce any level of pollution control effort that it desires and that can be justified.

If a business acts irrationally and continues to pay a tax rather than controlling its pollution, the price of its goods will be greater than its competitor's and it will soon go out of business. In short, the pollution tax, by including the cost of pollution in the price of goods, will encourage businesses to minimize the cost by reducing pollution.

There is no doubt that a pollution tax is effective in reducing pollution. Such a tax is imposed on all manufacturers in the Ruhr Valley in Germany. As a result of the tax, steel manufacturers recycle water

to the greatest possible degree. It takes only 2.6 cubic yards of water to manufacture a ton of steel in the Ruhr Valley as compared to the 130 cubic yards it often takes in the United States. In Springfield, Mo., after sewage charges were assessed on a packing plant, the assessment dropped from \$1,400 to \$225. And in Otsego, Mich., pollution discharges dropped from 1,500 pounds during the first month to 900 pounds during the second, to 733 pounds during the third and to 500 pounds during the fourth month after imposition of an effluent charge.

Empirical studies indicate that it is relatively inexpensive to eliminate the first proportion of any industry's pollution and relatively expensive to eliminate the last proportion. Thus, the imposition of even a moderate tax would encourage polluters to cleanup a sizable portion of their pollution. The tax would provide the incentive that is now lacking.

A pollution tax is a more effective and less costly mechanism to control pollution than either of the currently accepted mechanisms—subsidies and regulated discharges. The effectiveness of the tax system is illustrated by the old adage: There are only two things certain in life—death and taxes. Subsidies are not effective in controlling pollution because they require the polluter to pay part of the cost of waste treatment or disposal. It is always cheaper for the polluter to dump his waste into the air or water because there is no cost associated with that action. Current regulatory systems, requiring reductions in the amount of pollution emitted, are ineffective because of lax enforcement, small penalties, and the relative ease with which the laws can be legally avoided. A pungent example of the last problem is the case of Hopfenmaier's rendering plant in Georgetown. For several years the District tried to require the plant to comply with air quality standards, but the owners were able to forestall compliance by extending the legal battle. It was cheaper for them to pay for lawyers to delay compliance with the laws than it was to comply. In the end, the District purchased the plant for a highway right-of-way and the pollution issue was never decided by the courts.

Pollution taxes are less costly than either subsidies or regulation because they insure that pollution will be decreased where it will be least costly to do so. Empirical studies indicate that it is cheaper to reduce pollution at the plant than it is to provide secondary treatment. The most recent evidence indicates that the total outlay necessary to attain any given level of cleanliness by uniform reductions by all industries is much greater than if variable reductions were allowed.

In Kansas, a study indicated that the cost of variable reduction was one-third of uniform reduction and in Delaware another study indicated that variable reduction was one-half the cost of uniform reduction. A tax is not only cheaper to administer, but it provides revenue with which environmental improvement programs can be financed.

I must make our position abundantly clear: One, the performances thus far convince us that the imposition of standards of quality, accompanied by enforcement, have not done the job necessary to clean up the environment; two, that an effluent tax must be sufficiently high to force a cleanup and not become merely a license to pollute. In the case of water pollution, we also note that a number of industries are

disposing of their wastes in municipal systems where they become public problems for treatment. The Congress should insure that industries carry their full share of the costs of such joint operations, by effluent taxes or charges.

I have focused on pollution taxes as economic incentives to pollution control, not because they are the only such incentives, but because they are important ones. I hope that this committee will be able to discover similar types of economic incentives and present them to Congress and to the public.

Before concluding my remarks, I would like to point out that many disincentives to pollution control are perpetuated by Government policies. For example, pollution could be reduced if we used more recycled metal. However, recycled metal is more expensive than new metal so it is not economical to use recycled metal. In large part, the difference in price between new and recycled metal is due to Government policy. The current Internal Revenue Code allows a 15-percent depletion allowance as a tax deduction and the ICC gives new metal a \$2 per ton freight preference.

I hope this committee will also investigate these and similar Federal policies which are economic disincentives to pollution control. We are endeavoring to develop information on what economic benefits will accrue if the Nation curbs contamination of the environment. If this effort is successful, we shall be happy to supply and share the information with the committee.

Thank you for the invitation to make these comments.

Chairman PROXMIRE. Thank you.

I see you have appended some very interesting material to your statement, an article by Lynn and Jerry Edgerton. Would you like that to be printed in the record.

Mr. KIMBALL. Yes.

Chairman PROXMIRE. I think it is very good and I have had a chance to go over it and without objection it will be printed in the record.

(The appended material referred to above follows:)

LIPSERVICE VS. ACTION

EVERY LAWMAKER IN THE COUNTRY IS TALKING ABOUT AND VOTING FOR BILLS TO PROTECT THE ENVIRONMENT, BUT POLLUTION IS GETTING WORSE. WHY?

(By Lynn and Jerry Edgerton)

(Jerry Edgerton is the Washington, D.C. environmental reporter for McGraw-Hill; his wife, Lynn, covers the consumer front and writes for the Chicago Daily News.)

With a fanfare of press releases and a flourish of laws, the Federal government discovered pollution in the 1960's.

"Landmark" bills littered the Congressional landscape, hundreds of pounds of printed testimony poured forth, and 14 "comprehensive" laws were passed to keep our air, water and land cleaner than clean, as the detergent folks say.

What did all the activity produce—beyond some noise pollution and solid waste disposal problems for the Capitol?

"Not one grain of dust, not one liter of gaseous pollution has yet been removed from the atmosphere of this nation as a direct result of the 1967 air legislation," says William D. Ruckelshaus, administrator of the new Environmental Protection Agency.

"The results to date are skimpy," says Maine Senator Edmund Muskie, the sponsor of many anti-pollution laws, speaking about water quality control.

"The public is being conned," says Spencer M. Smith, Jr., a former University of Maryland economist who has been lobbying for conservation since 1954.

"It hears about all these new parks, all this new pollution machinery, all these White House reorganizations, and it assumes we're galloping forward on all fronts. That's gobbledegook. The programs aren't being funded; the parklands aren't being bought up, and the whole reorganization game is one big stall.

"Everytime you ask Bill Ruckelshaus why a ballyhooed program isn't off the ground, he says, 'What do you expect? We don't even have all our people under one roof yet!' This Administration has caught a new disease—the Under One Roof Syndrome."

Some specific examples of where our environmental efforts have failed:

We are spending roughly twice as much to cut down trees in national forests as we spend to replant them.

The Federal government is threatening to sue three cities for not improving their sewage treatment, even though it is willing to pay less than \$10 million of the \$436 million these cities are eligible for by law to build better plants.

Only 27 Federal lawsuits, at this writing, have been filed against water polluters, and most of them were brought after the mercury scare.

And, after all the environmental sweating and shouting of the sixties, the law that promises the most direct, undelayed action is one written in 1899 to keep the waterways clear for riverboats.

Why such a gap between the sixties' rhetoric and the seventies' reality?

INDUSTRY HAS LAST WORD

"Congress didn't pass any good legislation on the environment until last year because the environment wasn't a political issue until last year," says Senator Gaylord Nelson (D-Wis.). "Before, the industrial people affected by pollution laws, not the people affected by pollution, always had the last word.

"There was no political force supporting the concept of being tough. So we didn't have enough tough laws on the national level, and what we had wasn't vigorously enforced."

When voters got mean—*against* the SST, *against* a lumber cutting increase, *for* the stiffened 1970 air pollution law—Congress listened. In fiscal 1970, environmental shock even stung Congress into quadrupling a budget: the administration asked \$214 million for sewage treatment and construction grants, and got \$800 million.

But the usual story behind all the headlines about environmental "salvation" is a tale of public apathy and corporate energy, a saga of bills weakened through lobbying, of laws and agencies that are *underfunded, understaffed, underenforced, and undersupervised*.

The bureaucrats who take much of the blame, says a Ralph Nader task force member, "are not corrupt men, nor are they eager to abuse the law or see their rivers killed.

"They have learned which requests will provoke the cries of pain from businessmen, which concessions will make conservation lobbyists suspicious. Walking a tightrope . . . they give in most often to the side that pushes hardest, and the history of enforcement conferences shows that the strongest shove always comes from industry."

Most of this industrial muscle is exercised against *air and water pollution control*. It thus took Congress until 1966 to start regulating auto emissions, despite the fact that cars spew about 60 percent of air pollution. Even the bitterly fought new air law will not close in on auto cleanup until 1975.

It took the government even longer to get around to the industries that slosh 75 percent of the pollution into our waters. Until 1970, no lawsuit was filed against an industrial polluter, despite three new water quality laws and 50 "enforcement" conferences.

A flurry of Federal suits has come from Environmental Protection Agency chief Ruckelshaus recently, and all industries using navigable streams must apply for permits by July 1, 1971. But all this vigor was inspired by the 1899 Refuse Act, not the 1965 Water Quality Act.

The reason, Ruckelshaus explains, is that the older act has speed and simplicity; the modern laws lack—it prohibits the dumping of anything into any navigable waterway, and says that any witness can haul the culprit into court.

Our modern major laws against air and water pollution, in contrast, have built-in delays. Before the administrators of the Clean Air Act of 1967 or the 1965 Water Quality Act can get violators in court, they have to lockstep through a series of "conferences," "hearings," and "recommendations" with six-month rest periods that add up to at least a two-year mandatory delay.

1970 CLEAN AIR ACT

The new Clean Air Act of 1970 and the water pollution legislation proposed by both Senator Muskie and the Nixon administration should slash most of this red tape.

But even these laws lack any strong national emission standards to squelch pollution at its source. The states would still distribute Federal money and set their own pollution standards.

"The idea of letting the states set the standards has always been nonsense, but it seemed necessary at the time to get the bills through," says Senator Nelson.

In 35 states, polluting industries have their very own representatives on control boards. Without Federal deadlines, the states dawdled; only 27 have come up with acceptable water standards in the first five years of the program, and no state has an acceptable air plan after three and one-half years of the law.

Federal inspectors even lacked the right to inspect in the past—Union Carbide managed to keep them out of its Marietta, Ohio, plant from 1965 to 1970. (The new air law does permit access and the installation of monitoring devices when directed by the EPA.)

And, according to John Esposito, one of Ralph Nader's Raiders who wrote *Vanishing Air*, "monitoring is not very sophisticated . . . at one enforcement conference, officials had to go out in a rowboat and scoop up water samples."

The trouble, of course, is shortage of money and staff, those chronic ailments of all environmental bodies. The air pollution agency, for example, is 900 employees under par and getting about half its authorized funds. For fiscal 1972, Congress authorized \$350 million, but the Bureau of the Budget allocated only \$28 million. Perhaps the best case of these bureaucratic rickets was found in 1969 at the then National Air Pollution Control Administration. As *Vanishing Air* tells it: "The working staff in surveillance is competent and conscientious.

"His name is Daryl Taylor, and he bears the impressive title 'Chief, Surveillance System, Division of Abatement.'" It seems that the Department of Health, Education and Welfare was too tight to give the chief any Indians."

Yet the air and water agencies are positively wealthy when compared to that Federal orphan, *solid waste disposal*.

The government didn't even "discover" garbage until 1965. "The Senate sort of tripped over solid waste by accident," says a Senate expert. "It was looking at air pollution, found that incinerators were a big problem, and, said, 'Hey! Maybe we ought to do something about solid waste disposal!'"

What the Senate did was establish a Bureau of Solid Waste Management to do research and training, and allow it \$10 million to start the Federal attack on our mountains of rubbish. The appropriations committee thought even less of the task and cut it to \$4 million. (In fiscal '70, the Bureau got \$15 million of its \$32 million authorized.)

And still the garbage grew, while cities tried to bury it. The San Francisco area filled in so much land that its famous bay shrank from 680 square miles in 1850 to the present 400; its last local landfill runs out in 1975, and it is considering hauling its refuse 375 miles to the desert.

The sole answer for these trash traumas has been the Resource Recovery Act of 1970, which promised 75-percent construction grants to governments with "truly innovative" plans for recycling or disposal of waste. The law is toothless, however, and the administration has asked for only \$19 million of the \$150 million authorized for fiscal 1972. The sum can't even finance San Francisco's \$20-million try at recycling.

Why has this oldest and most obvious environmental problem been buried for so long? "It's part of the philosophy of our disposable society" theorizes a Senate aide. "You can always bury it over the next hill. The dump was always out of sight, out of mind."

Is there any chance for a happy ending to this tale of promises betrayed by bungling, stingy budgets, industrial resistance and public disarray?

NEW AGENCY SHOULD HELP

There is some cause for cheer in the coalition of numerous agencies under the Environmental Protection Agency, and in the appointment of prosecutor Ruckelshaus as its chief. Senator Muskie's strengthened air pollution law takes effect this year, and he and the administration are both pushing—and will probably get—a more potent water pollution law as well. Congress has ordered Federal agencies, through the National Environmental Policy Act, to publish the perils of their projects before they act.

And, of course, the Harris poll *did* say Americans thought pollution was our most important problem, and there *is* an election coming next year.

But perhaps the best formula comes from Senator Gaylord Nelson:

"It takes concerned people pushing in the right places. Just look at the new air bill. America's blue ribbon industry, the auto industry, fought like a tiger and lost. A year before they could have waved a wand and beat it."

SOLID WASTE DISPOSAL

Promises:

The Solid Waste Disposal Act of 1965—*sets up a Bureau of Solid Waste Management to do research, training and to provide information to state and local governments.*

The Resource Recovery Act of 1970.—*sets up a program of construction grants to local governments for projects with new technology in recycling, or reuse of waste materials. It directs establishment of Federal guidelines for waste disposal practices.*

Performance:

The Federal government did not deal with solid waste disposal until 1965. Though the crucial link of solid waste to other forms of pollution was clear, only a small program was set up. Authorizations for the program have been only about half-funded. For instance, the 1970 authorization was \$32 million, the appropriation, on the other hand, was only \$15 million.

At the very least, the Federal Bureau of Solid Waste Management was supposed to spur "sanitary landfill," where refuse is crushed and covered with dirt to make parks or golf courses. But of 6,000 sites studied recently, only 14 percent were better than the old-fashioned town dump, and the future, without more funds, is bleak.

The 1970 act puts the current emphasis on recycling—the only potential solution to the problem. But out of the \$150 million authorized for fiscal 1972, the administration is asking only \$19 million and shows little interest in funding the construction grants program, without which recycling is impossible.

Though Federal guidelines are set up, there still is no real Federal control over the condition of dumps.

Prescription:

Give full funding to the new act and do everything possible to encourage recycling in communities. Devise a way to compel or cajole industry to recycle its own waste.

Give the Federal government some control to at least move communities in the right direction—achieving sanitary landfills on an interim basis—and ensure that community disposal activities don't in turn cause air pollution or water pollution.

WATER POLLUTION

Promises:

The Water Quality Act of 1965—*established a program to set up Federal standards to control pollution of the country's lakes and streams.*

The Clean Waters Restoration Act of 1966—*promised a Federal contribution of up to 55 percent of the total cost for local construction of plants which would treat raw sewage.*

Performance:

Under the 1965 act, only 27 states have fully approved water quality standards. Very few have direct controls on industrial plant discharges. Only two suits have been filed by the Federal government under the cumbersome procedures of this act. In crucial cases, reliance had to be placed instead on a 72-year-old law, the 1899 Refuse Act.

Under the 1966 act, Congress authorized \$3.55 billion to aid cities in the construction of sewage treatment plants over a five-year period. Of this amount, only \$2.37 billion was ever appropriated. State allocation programs have given an inadequate share of the money appropriated to the greatest problem areas. For instance, Michigan's total need for new plant construction is \$690 million, of which Detroit accounts for \$500 million. Michigan got only \$33 million from the Federal government in fiscal 1970 and 1971, and Detroit got only \$7 million of that. Nationwide, the Federal government has fallen behind in financing \$1.5 billion in local projects which meet Federal standards and which are entitled to Federal funds.

Prescription:

Set national standards which specify what and how much "effluent" each plant is allowed to discharge.

Raise the Federal funding level to the estimated need of at least \$2.5 billion a year. Give the Federal government more discretion in allocating money to the greatest problem areas.

Cut the red tape involved in delivering the money. Give the Federal government stronger enforcement powers, including the ability to go to court swiftly where a polluter is found to be violating Federal standards.

Bills now before Congress would take some of these steps.

AIR POLLUTION

Promises:

The 1970 Clean Air Act—*improves many of the provision of its inadequate predecessors: the 1963 Clean Air Act, the 1965 amendments to that act and the 1967 Air Quality Act. The new law sets a 1975 deadline for a 90-percent reduction in auto emissions, speeds up the Federal enforcement procedures and sets national standards for overall air quality. It sets deadlines for the states to implement and enforce these standards and stipulates that state plans must include "emissions standards" stating explicitly what and how much each plant may discharge from its stacks.*

Performance:

Under the cumbersome enforcement procedure set up in the 1963 act, only one case—a small chicken feed plant in Maryland—has ever been taken to court. That was won only last year after a drawn-out appeal that went all the way to the Supreme Court of the United States.

Under the program of air quality standards set up by the 1967 act, no state had a fully enforceable program by early 1971.

Of \$748 million authorized from fiscal 1968–1971 to implement and operate the program, only \$362 million was appropriated. Of the \$350 million which the new law authorizes for fiscal 1972, the administration has asked for only \$128 million, with an unspecified request to come later which will not approach full funding.

Of the estimated 1,900 staff members in the air pollution agency needed to implement the 1967 act, only 1,024 were working by fiscal 1970.

It is estimated that the current level of 1,050 employees will have to be increased to 2,900 by fiscal 1973 to implement the new law.

Though standards were prescribed under the 1966 amendments for auto emissions, there is no adequate program of testing to make sure that auto manufacturers comply with the prescriptions.

Prescription:

Fully fund and implement the new law. Beef up the Federal staff. Make sure states meet deadlines for standards and enforcement. Enforce swiftly at the Federal level where needed.

PARKS AND LAND USE

Promises:

The Multiple Use and Sustained Yield Act of 1960—*stipulates that the national forests must be managed not only for timber production but also for recreation, grazing, watershed protection and wildlife habitat. The law says cutting must not exceed growth.*

The Land and Water Conservation Fund Act—*directs that revenues from Federal oil leases and certain other sources be used to acquire parks and other public land.*

The Wetlands Acquisition Act of 1961—directs the Department of the Interior to acquire and preserve wetlands for waterfowl protection.

The Wilderness Act of 1964—sets up procedure for designating Federal wild areas with no tree cutting, no roadbuilding, no motor vehicles allowed.

Performance:

Historically, the main interest of the U.S. Forest Service has been cutting timber in the national forests. Despite the 1960 act, the service itself admits timber is still emphasized. "Clear cutting" is done in certain areas.

Budgets for reforestation are skimpy. For instance, the fiscal 1971 cutting allotment was \$54.5 million, while reforestation got only \$19.8 million despite a \$900 million backlog in needed work. Congress defeated a bill calling for more timber cutting, but the administration will increase the cut 60 percent anyway.

Congress appropriated \$357 million for land acquisition in fiscal 1971, but the administration refused to spend more than \$225 million, despite \$500-million authorized backlog in national park land.

The Wetlands Acquisition Act authorized \$105 million for a seven-year period. Only \$66.8 million was appropriated in that time and less than half the intended land acquired. The National Park Service has fallen far behind schedule in designating wilderness areas, and many conservationists think areas too small.

Prescription:

Increase land acquisition and reforestation funding. Hold cutting to sustained yield level; restrict clear cutting and mining. Designate more wildernesses; get more public input on plans.

Chairman PROXMIRE. Mr. Davis, I very much appreciate the honesty with which you point out that although you favor pollution taxes it is going to mean higher prices for consumers. I think you are absolutely right. I agree with you that the consumer ought to pay the higher prices as well, of course, as the firm which in the first instance will pay it. The ultimate effect, on the assumption you have freedom of entry in a competitive situation in the industry, is that prices will tend to rise somewhat as a greater burden is imposed on the industry that is reducing its pollution. I think that is a very helpful point.

You say, Mr. Davis, that the tax would permit a greater freedom of operation on the part of the industrial polluters than detailed Government regulations. I think this is one of its most appealing aspects. That is why I would think that industry would tend to accept that approach. Why is there this opposition on the part of recognizing it? Of course, it means a burden to begin with but why wouldn't the industry accept it? Industries have accepted it in various cities in this country; they have accepted it in Germany.

Mr. DAVIS. Senator, I can only ascribe industry's current attitudes to the fact, to the perception on their part, that we are not really going to get serious about cleaning up the environment.

Chairman PROXMIRE. After all, everybody has to live in the environment, breathe the air and drink the water. These manufacturers are good men and they are decent citizens and I am sure they want a good environment.

Mr. DAVIS. Well, do they live, the leaders that are making the decisions, do they live in polluted environments? I suspect the answer is you find out where they live, where they recreate, and where they—

Chairman PROXMIRE. It is affecting everything in our country, isn't it?

Mr. DAVIS. Not uniformly; no.

Chairman PROXMIRE. Not uniformly; that is true.

Mr. DAVIS. You can go where it is clean if you can afford it and you can also go to the Virgin Islands.

Chairman PROXMIRE. Where?

Mr. DAVIS. You can also go to the Virgin Islands or east Africa.

Chairman PROXMIRE. There are few places left.

Mr. KIMBALL. Not very many.

Chairman PROXMIRE. In your statement you refer to, let me see if I have got it in your statement here, Mr. Davis—I don't understand your argument about regional discrimination, imposing a differential antipollution tax. It seems to me that would complicate the situation. Say you have a 10-cent-a-pound BOD tax uniformly applied. You say that would be a bigger burden in the areas that are heavily polluted than those areas that are not; what is wrong with that?

Mr. DAVIS. I am thinking not of the long-run situation when the tax is fully operative and everyone affected by it has had time to adjust to it. I am thinking about the transition period when this very effective device is going to come into action, and I think, as I have indicated, there has been some concern for putting the bite on all at once.

Chairman PROXMIRE. But where it has gone into effect it hasn't had such a disastrous impact though, has it, in these various cities and other countries?

Mr. DAVIS. It has gone into effect in regions but not in nations, and in the cities where it has gone into effect I just don't know the details.

Chairman PROXMIRE. Well, it is certainly worth considering. But as I say, it would complicate it considerably if we have to start off—that is the toughest part of any law—if you have to start off with regional discrimination determining what it would be. Of course, you would have all kinds of difficulties and pressures to keep it down in some areas and not have it any higher in others.

Mr. DAVIS. I recognize that.

Chairman PROXMIRE. It is so much easier to make it uniform. Speaking as a legislator it is easier for us.

Mr. KIMBALL. It would be politically impossible to do it.

Chairman PROXMIRE. To differentiate the tax.

Mr. KIMBALL. Yes, by region.

Chairman PROXMIRE. It may well be because of lack of uniformity, there might be constitutional discrimination in some State. You had to have a constitutional amendment to make the income tax legal. We would have to have a constitutional amendment to have this done.

Mr. DAVIS. I think it is important to distinguish between the short- and long-run.

Chairman PROXMIRE. Yes.

Mr. DAVIS. The transition stage during which polluters are adjusting to the effects of the tax will be very crucial and must be managed adroitly.

Chairman PROXMIRE. What you could do, of course, is to start off with a small tax. I would be very reluctant to do that but you could do that. We do that in many laws. You start off with a tax that is maybe 2 cents a pound, 5 cents a pound, then 7 cents a pound and then 10 cents a pound over a period of 3 or 4 years.

Mr. DAVIS. My position is I think we should anticipate when industry does accept the possibility, the real possibility, that we are going to tax pollution they will be in here with many varieties of programs to get over the transition and to stage the effectiveness of the tax so that the burden will not be, what shall we say, unduly harsh and we are going to have to face this, and if we are not prepared and haven't thought it through ourselves I think we may end up the loser.

Chairman PROXMIRE. I think that is an excellent and very helpful warning.

Now, Mr. Kimball, I want to congratulate you on your EQ, environmental quality. It is about time we had something like that. You measure that every year?

Mr. KIMBALL. Yes.

Chairman PROXMIRE. I hope that this would take the same status in our country as the unemployment figure and the consumer price index figures that measure unemployment, measure inflation. I notice that Sylvia Porter had an article just the other day in which she pointed out the economic discomfort index is extraordinarily high because inflation and unemployment are so high, and when you add them together she had a 13-percent figure which is almost a record in recent years. I wish we could add to that, because I think it would be most appropriate to add to that, some kind of an environmental pollution measure.

You say it was worse in 1970 than in 1969, worse in 1971, so far it seems to be from preliminary figures, than it was in 1970.

Mr. KIMBALL. The rate is slowing but it is still worse.

Chairman PROXMIRE. Well, in view of all the effort and all the talk and all the speeches and the commitments by the highest officials in our country that is very discouraging, and it is most helpful to have this reduced to an objective measurable figure.

Incidentally, I think it would be, it is very appropriate that you bring this up before the Joint Economic Committee. We have the responsibility under the Employment Act; we are doing our best to recommend to the Congress policies which will maximize economic growth, employment, consistent with relatively stable prices. It is a tough assignment.

Now you suggest to me another element we might try to crank in here and that is environmental quality because, as you point out, there is a clear clash between our gross national pollution and the increase in the gross national product. Without great change and a painful change in our approach such as an effluent tax and such as other measures, industrial growth will lend to more pollution.

Mr. KIMBALL. This is one of the problems the Nation faces: the tension between economic growth or full employment and pollution abatement. In fact, some polluters are now asking: "Which would you prefer, jobs or pollution cleanup?"

Chairman PROXMIRE. Right.

Mr. KIMBALL. Unfortunately, the public is often not presented with the option of having both full employment and a livable environment.

Chairman PROXMIRE. Maybe we ought to try to modify the 1946 act with an amendment which would provide that we try to seek economic growth consistent with environmental quality.

Mr. KIMBALL. Another thing, Mr. Chairman, that I would like to point out relates to the Government's own priorities. The current level of spending for environmental cleanup and enhancement does not indicate that even the Federal Government is very sincere about environmental problems.

The Office of Management and Budget puts out a very informative little pamphlet that describes the expenditures of the Federal budget by functions regardless of where that function is located in the Federal bureaucracy, and then it lists them in order of the amount that is expended. There are 13 functions listed in that category, and resources and the environment is 13th and dead last.

Chairman PROXMIRE. How much do we expend according to that, do you know?

Mr. KIMBALL. We expend about 2 percent.

Chairman PROXMIRE. About 2 percent of our Federal budget?

Mr. KIMBALL. Yes, on environmental and resource programs and that includes the Army Corps of Engineers reclamation projects, which some of us conclude are not properly considered as positive environmental programs.

Chairman PROXMIRE. This includes polluting projects as well as antipolluting projects.

Mr. KIMBALL. That is right. If you subtract the funds spent for projects that damage the environment, the amount spent on the environment would even be less. The ones we consider to be true environmental programs are the Environmental Protection Agency, the Council on Environmental Quality, and the various agencies of Government that deal in land resource management like the Forest Service.

Chairman PROXMIRE. And the 30 lawyers in the Justice Department who prosecute polluters.

Mr. KIMBALL. Take all of that, add it together and it would probably be less than the 2 percent if you took out—

Chairman PROXMIRE. I am sure it would be.

Mr. KIMBALL (continuing). The multibillion dollar omnibus rivers and harbors bill type of programs which are always included in this 2 percent.

Chairman PROXMIRE. I was also very interested in your observation that the polls showing the No. 1 issue in this country was environmental pollution. How recent is that poll?

Mr. KIMBALL. Well, ours was in 1969. But there have been two recent polls, one each year. The latest one was done by the Public Broadcasting Corp., I believe the Harris survey people did it, and this was in 1971. It shows that pollution is still the No. 1 domestic issue in the minds of the people. That when you talk about domestic issues—

Chairman PROXMIRE. More important than employment, more important than inflation?

Mr. KIMBALL. More important than employment, more important than crime, more important than inflation, more important than any other issue. Pollution problems were more frequently mentioned than any other when people were asked what do you consider—

Chairman PROXMIRE. Yet, it is getting worse in 1971 than 1970, worse in 1970 than 1969, and we are only using a tiny fraction of our Federal resources.

Mr. KIMBALL. That is correct.

Chairman PROXMIRE. I wonder if you gentlemen can give us your views on the difference in budgetary cost. Mr. Haveman of the University of Wisconsin testified before this committee and argued that the Nixon administration antiwater pollution bill would cost \$12 billion, the Muskie bill would cost \$14 billion over a 5-year period, and the effluent charge strategy would cost \$4.3 billion. This would include a grant program as large as that of the Muskie bill. Do you have any comment on those figures? I am talking about the cost of the budget, of course the reason being that so much of the cost would be shifted to private industry and to the consumers who bought the product that is produced by those industries in the process of polluting. Do you have any views on that?

Mr. DAVIS. Well, Senator, yes. I think that Bob Haveman's figures are probably in the right order of magnitude. I have recently seen some estimates which were prepared for the OMB when it was considering alternative approaches to the Clean Air Act and those estimates show that, depending upon the type of instruments you choose, the costs of reducing air pollution to the desired standards, could be 200 to 1,000 percent of the efficient solution, that is, the least costly solution.

Chairman PROXMIRE. Say that again, the costs—

Mr. DAVIS. The costs of reducing air pollution to achieve the standards could be from 200 to 1,000 percent greater than the minimum cost solution as I defined by equating the marginal cost of reduction for all polluters.

Chairman PROXMIRE. Which the tax approach would do.

Mr. DAVIS. Which the tax approach would do by using economic incentives. I have been saying it would cost at least twice that to go the route of administrative regulations and standards.

Chairman PROXMIRE. 200 to 1,000 percent would be twice to 10 times.

Mr. DAVIS. Twice to 10 times the costs and I think if that while we all say we want a cleaner environment, if we are confronted with a bill of that size, many of the American people are going to back off, saying it would cost too much and this would be a great pity because, we would lose for reasons that are not justified.

Mr. KIMBALL. Mr. Chairman, I think, the average person is not an economist, and I think these figures that everybody quotes, and all of them varying, tend to confuse them, and—

Chairman PROXMIRE. It is pretty clear when you say that this system would be from one-half to one-tenth as expensive on the general taxpayer.

Mr. KIMBALL. I think generally that people would, of course, want the least expensive way to clean up pollution. But I submit that we talk too much about costs without including the benefits. I know when most Federal bureaus come before Congress to request authorization for a program, it is presented in the framework of cost-benefit analysis.

Chairman PROXMIRE. It should be but it is not, I agree with you. In some cases they are, but not often enough.

Mr. KIMBALL. When we talk about pollution abatement, we tend to speak mainly of the cost of pollution abatement. We should concen-

trate more on the benefits. Polluters are beginning to argue that when the full cost of pollution abatement is presented to the people, they will lose a lot of this enthusiasm.

Chairman PROXMIRE. So the benefit-cost ratio would be on the order of 10, 12, 14, or 15 to 1.

Mr. KIMBALL. That is right. The best research data we have are on air pollution—I cited that data in my statement. It would cost \$11 billion to clean up air pollution, but the public would be benefitted by \$16 billion. In reality, therefore, there would be a net savings of \$5 billion. So when the public is presented factual material upon which to evaluate Government policy and judgment, that type of information should be presented with it because I don't think Congress or policy makers generally can do this job without continued public support. If we continue to emphasize how much additional taxes or how many additional costs the people are going to bear as a consequence of pollution abatement, there is a good chance that it will dampen their enthusiasm if there isn't an equivalent presentation of the benefits that will accrue. Such benefits should be expressed in actual dollars and cents. How do you measure the aesthetic values attributable to a clean environment aside from the economic benefits? For example, what is it worth to be able to see the Grand Canyon? I would like to ask these economists who come before congressional committees, "How much is that worth?" and have them compute the value. This has never been done, yet we are planning to build six coal fired electrical plants out there. When they are all completed it will be impossible to meet the ambient air quality standards and, at times, you won't be able to see the Grand Canyon or at least to see it as clearly. So what is that worth to the people of the United States?

Chairman PROXMIRE. I am very grateful to you for pointing that out. It is so good because you did a couple of things there in your statement. One thing you did was to give the precise savings involved. For instance, in Springfield, Mo., you said after sewage charges were assessed at the packing plant the assessment dropped from \$1,400 which was a measure of the pollution they were putting in, to \$225; in other words it dropped to one-seventh of what it had been because the effluent taxes made it necessary for them to look for cheaper ways of providing for their waste.

Otsego, Mich., you said it went down from 1,500 pounds the first month to 500 pounds the fourth month; in other words it came down to a third of what it was in only a 4-month period. Then I was also appreciative, you gave a pungent example in the Hopfenmaier rendering plant in Georgetown. At long last it seems that has been brought out. But for years and years that assaulted the——

Mr. KIMBALL. That is one of the reasons why I support the effluent tax, that the examples of where we have been able to actually cleanup something——

Chairman PROXMIRE. Takes so long.

Mr. KIMBALL. The current process of standard setting and enforcement actions against polluters, who really don't want to cleanup, has a very dismal record. While we may not want to abandon that process completely, we certainly should seek other means that would be more

effective. Maybe we still need to have the standard and a vigorous enforcement program, but we ought to be searching for additional ways that would be more effective and, in my view, this effluent tax, pollution tax, is one of the better ones.

Chairman PROXMIRE. Just one other specific question, I have a couple of more general questions for you, but one more specific question, Mr. Kimball, I would like to ask you about your recycled metal approach. One of the hardest things to do in this body, I found, is to change the tax code and make it any tougher, make it more difficult for people. It is understandable, those who are taxed are usually anxious to do all they can to prevent any additional tax, and they work very hard and fight hard to maintain their privilege. You point out in your statement the adverse effect of present taxes on trying to persuade people to recycle their metals because there is an advantage in getting new metals, depletion allowances, and so forth.

On the assumption we can't change the depletion allowance, that it would be too difficult to try to do, maybe can can—

Mr. KIMBALL. Don't change it then, just add greater depreciation allowance for junk.

Chairman PROXMIRE. For recycled metal.

Mr. KIMBALL. Yes.

Chairman PROXMIRE. That was my question, how do you do that?

Mr. KIMBALL. You just do the same thing. Give them a per ton tax writeoff on old metal the same as you do on new metal to provide an incentive to recycle rather than use new metal. If you can't change that one make it more advantageous economically to use recycled.

Chairman PROXMIRE. All right, I see that. What do you do about freight preference?

Mr. KIMBALL. Give them a \$4 per ton freight preference on recycled metal. That would be then an economic incentive.

Chairman PROXMIRE. You will have people pushing that, you know, that is much easier than doing it the other way.

Mr. KIMBALL. I think it is.

Chairman PROXMIRE. Let's get to work on that, fine.

Mr. KIMBALL. I am with you.

Chairman PROXMIRE. Would you work up language, we will get the legislative council to put it in form and maybe get an amendment to it. It is a lot easier to cut taxes than to raise them.

Mr. KIMBALL. I think you are right.

Chairman PROXMIRE. If we should set up a system of effluent charges for water polluters would you impose the charges only on the BOD or would you also prescribe charges for other pollutants, toxins, suspended solids, thermal discharges, or would that be too complex to be workable?

Mr. DAVIS. Senator, I would certainly start with BOD. On the matter of toxins if something is toxic, this suggests we don't want any of it—

Chairman PROXMIRE. Mercury.

Mr. DAVIS (continuing). In the environment, and this would suggest an infinite tax. It may make more sense to prohibit it. This may be one point where regulation is the simplest and most effective tool.

As to the other—

Chairman PROXMIRE. Thermal pollution.

Mr. DAVIS (continuing). Pollutants, thermal pollution, I see no reason why an economic incentive cannot be applied to thermal pollution.

Chairman PROXMIRE. Wouldn't that be pretty complicated? The thing about BOD is it is simple, we tried it before, it has worked and it is accepted scientifically.

Mr. DAVIS. Thermal pollution sounds like a simpler problem than BOD.

Chairman PROXMIRE. Where do you take the temperature of the water?

Mr. DAVIS. This depends upon the people who are scientists, and not economists, who, contrary to my friend Mr. Kimball, who tells us what we should be doing, and people who are telling us what the standards are. How do they define the temperature standard for the water quality? Do they wish to define it at the outfall of the plants? Do they wish to define it 200 yards down stream, 300 feet into the center of the stream? These are complex technical questions that I am not competent to discuss.

Chairman PROXMIRE. I raise my next question: Should Congress set the fee to be imposed or should we just leave it to the Environmental Protection Agency?

Mr. DAVIS. This is one that I think is a moot question. The question of setting goals, environmental goals for our economy, our society, is certainly a matter for Congress. This is the decisionmaking mechanism that we have. The question of setting the tax as a means of achieving a standard, this is more a technical matter. This is a matter of adjusting the instruments to achieve the goal. And I should think that the Congress should, in its wisdom, be able to prescribe the principles by which an executive agency would establish tax rates and let the executive agency then operate in that framework.

Chairman PROXMIRE. Well, what concerns me, I thought we did pretty well, better than I expected we could, fighting for a law that would specifically abate the air pollution by automobiles within 5 years. We got that passed. I would think that if we had had a different kind of provision leaving it up to the executive to do it, that the pressures may have been greater and it may have been extended to 10 or 15 years or some other period, maybe made indefinite if you leave it to another administration or something.

Mr. DAVIS. That is quite true.

Chairman PROXMIRE. The same thing here, if we leave it up to the administration instead of imposing, say, a 10-percent BOD charge it would be subject to great pressures to hold it down to a lot less.

Mr. DAVIS. I think that is true, and here, first of all, I think the Nader Commission has pointed out that too much administrative discretion as written into our Water Quality Act can be a defeating thing. Congress must be able to make it impossible for the administrative agency to escape the heat of the decision.

But let me raise an issue with regard to the automobile emissions standard for 1975. While lauding the action, as I do as a step in the

right direction, I have second thoughts of this sort. Suppose we come to 1975 and we find that the automobile industry is not able to comply with the law or suppose we find they are able—

Chairman PROXMIRE. Increase the number of joggers in that event.

Mr. DAVIS. I would join you.

Mr. KIMBALL. Use bicycles.

Mr. DAVIS. Suppose they are unable to comply because of four or five times what anyone thought it was going to cost, and the implications of enforcing the act, will be chaos in Detroit and elsewhere.

Now, will we back down? If we are forced to back down on the standards then I think this would be a great pity. This is what has been happening. But I don't think any of us can be sure today that the decision to set a 1975 deadline is a wise decision.

Chairman PROXMIRE. Well, at least if there was the maximum amount of pressure for the Congress to back down you would have to have one very powerful case because otherwise the automobile industry would come to a grinding total halt.

Mr. DAVIS. I would just like to point out—

Chairman PROXMIRE. I think the efforts on the part of the Government and others to try to find a way of reducing pollution by this much would be greatly enhanced.

Mr. KIMBALL. You know this same question was put to Senator Muskie when the bill was enacted, and he said:

Well, the Environmental Protection Agency can extend it for 1 year. That does not mean that the automobile industry cannot come back before the Appropriations Committees of Congress and explain their difficulty, and then if it is a legitimate problem or they have done everything they can and still can't meet the deadline, then Congress can consider, reevaluate its position.

I think it is the right approach to have the Congress exercise its responsibility in setting specific goals that require both agencies of Government and segments of our population to meet those objectives. I think that is its real obligation.

Chairman PROXMIRE. As I recall, there were only one or two dissenting votes, if any. Maybe there were none.

Mr. KIMBALL. The distinction between the water law and the air pollution law is significant, too, because in the air pollution law Congress gave a directive to a Federal agency saying "you set whatever standards it takes to protect the public health," and I have heard Mr. Ruckelshaus say many times and before public forums:

If you think our air pollution standards are strict then you blame Congress because they have given a specific directive. All we have to do is to ask medical research what effect various types of air pollution have on public health, and the standard is automatically set as something that is going to reduce that impact.

And he said it is going to change the life style of a considerable number of Americans "and if you don't like that change then we have to have a different direction from Congress," and I am hopeful you would keep that part of it up.

Chairman PROXMIRE. Yes, sir.

Mr. DAVIS. I just wanted to make one further point on the question of taxes versus regulation and that is when you are confronted with a

situation in which regulation would obviously create chaos or impose unreasonable hardships it is a go or no go situation to decide whether to enforce or to back down.

I think the genius of the economic incentive system is that it can be tinkered with, it is not a question of taxing or not taxing but how much. You adjust the tax according to the response that you are getting, and I think this is an important point that deserves more emphasis in my remarks that we must be prepared for a system that can be tinkered with in much the same way that the Federal Reserve does with the discount rate.

Mr. KIMBALL. I hope if we do it that way the tinkering will be on the side of improving environmental quality. Unfortunately our experience in the United States has been that tinkering has been the other way. If the States had fulfilled their responsibility, and that is where it rests initially, to prevent pollution of the air and water, we would not be in the condition that we are today in America. And they do have the basic authority to handle it at the State level. It is because of the breakdown of whatever systems we have had, primarily systems of standard-setting and enforcement, as poor as they might be, that has put us in the present condition.

Chairman PROXMIRE. Well, obviously Detroit can do this. There is no question there are engines made which have at least 90 percent less pollution. Those engines may not be as efficient in some other ways. Maybe they are more efficient. I have heard that they are more efficient, that the fuel consumption costs and so forth are less, the noise is less. Whether they are or not they can do it, but there would be an economic loss undoubtedly involved in that. But I think they are going to have to make one tremendous case to convert a virtually unanimous Congress to convert them from the view to postpone for a year or two or three or four the effectiveness of a law that would prevent pollution that is undoubtedly causing death in our society, thousands of pollutants.

Mr. DAVIS. We will accept that.

Chairman PROXMIRE. Let me ask you about a proposal of mine. I put in a bill to provide for a 1 cent a pound tax on all manufactured items requiring disposal within 10 years of origin, with most of the money to be paid directly to the municipalities. For example, the tax you would have on a Sunday New York Times would be about a nickel.

The tax that you would have on an automobile might be \$25 or \$35.

It costs about that much to dispose of these things.

Now to the extent you can consume them, if you wanted to eat your New York Times you wouldn't have to pay it or if it could be made returnable in some way.

Mr. DAVIS. Or if it would last more than 10 years?

Chairman PROXMIRE. That is right. What would you say, do you have any comment on that kind of an approach?

Mr. DAVIS. Well, it seems to me that again it follows the principle of using an economic incentive. The disposable materials do have a cost which is only being paid accidentally or incidentally by the people who happen to use the disposed material today. I think it deserves serious consideration.

Chairman PROXMIRE. We do two things. We would provide funds to municipalities, which they don't have now, it costs \$24 or \$25 to take a car off the streets of Milwaukee and it costs a little more or less in other cities of our country, and it would enable them to do that and it would put the municipalities in position to recycle the rubber and metals and other things you get off the car and also would provide a clear incentive for the manufacturers to build smaller automobiles or lighter containers so we would have less waste littering our country.

Mr. KIMBALL. Wouldn't you run into some problems though if you based it on the actual cost of cleaning up the refuse? For example, I think I read about a cost study on picking up cans along the highway, beer cans and soft drink cans or any kind of beverage cans. Where the clean up costs exceeded the cost of the item originally.

Now if we are going to impose a tax that would do the job, and to really be effective it would have to be something other than just a nuisance, if you really wanted to do the job—

Chairman PROXMIRE. What you do is you don't tax anything that is returnable.

Mr. KIMBALL. I understand that.

Chairman PROXMIRE. In other words that can be recycled.

Mr. KIMBALL. In other words if you put 1 cent or 2 cents, you are hoping that the manufacturers would then go to returnables rather than—

Chairman PROXMIRE. Returnable.

Mr. KIMBALL (continuing). Disposables.

Chairman PROXMIRE. Lighter materials on what is bought to keep—

Mr. KIMBALL. Now the argument, of course, and this is what you get from the manufacturer, is that "all we are presenting is what the public wants. If they didn't buy nonreturnable bottles we wouldn't manufacture them," and so on. Somehow we must educate the public in this regard as well.

Chairman PROXMIRE. Would you get that argument from the manufacturer if he had the choice of paying the tax or not paying it?

Mr. KIMBALL. Well, I think he would look at it from the economics—

Chairman PROXMIRE. That is right.

Mr. KIMBALL. From an economic standpoint, unless he could sell nonreturnables at a more profitable rate than returnables, he could probably go to the returnable bottle.

Chairman PROXMIRE. That is exactly what you do, you put the incentive on recycling.

Mr. KIMBALL. That is right, that is good.

Chairman PROXMIRE. Well, gentlemen, I want to thank you two very, very much for excellent testimony, most useful and helpful, certainly helping in the fight for a cleaner environment and a higher EQ.

Thank you. The subcommittee will stand in recess until July 19, when we will hear from the National Association of Manufacturers.

(Whereupon, at 12:25 p.m., the subcommittee was adjourned.)

ECONOMIC ANALYSIS AND THE EFFICIENCY OF GOVERNMENT

MONDAY, JULY 19, 1971

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON PRIORITIES AND
ECONOMY IN GOVERNMENT OF THE
JOINT ECONOMIC COMMITTEE,
Washington, D.C.

The subcommittee met, pursuant to recess, at 9:37 a.m., in room 1202, New Senate Office Building, Hon. William Proxmire (chairman of the subcommittee) presiding.

Present: Senator Proxmire.

Also present: Loughlin F. McHugh, senior economist; Courtenay M. Slater, economist; and Walter B. Laessig, economist for the minority.

OPENING STATEMENT OF CHAIRMAN PROXMIRE

Chairman PROXMIRE. The subcommittee will come to order.

This morning the Subcommittee on Priorities and Economy in Government is continuing its hearings on the subject of economic incentives to control pollution.

Our witnesses this morning are Congressmen Les Aspin, Mr. Hendrik Houthakker of Harvard University, Mr. Harold Lumb of the National Association of Manufacturers, and Mr. David Zwick, editor of *Water Wasteland*.

The testimony we have already received during these hearings has contained persuasive evidence that there is an important role for tax policy in the overall effort to control pollution and clean up our environment. The industrial discharge both of sulphur dioxide into the atmosphere and BOD creating wastes into public waterways represent major examples of types of pollutants which can be most effectively controlled by imposing charges on the amount of waste discharged. Tax policy could also be used to encourage the recycling of used materials. This could be done either by imposing extra taxes on new materials or by granting recycled materials the same favorable tax treatment presently granted to certain new materials, especially metals.

Tax policy is not, of course, the whole answer to pollution. Some pollutants should be prohibited entirely and others should be subject to firm regulation. But, unless the regulatory approach is supplemented by taxes and other economic incentives, I am convinced we will develop neither an economical nor an effective policy of pollution control. I do not know if all our witnesses this morning share my view. If they do

not, it is only fair to warn them that they are testifying before a convinced advocate of the much more widespread use of economic incentives.

Our first witness this morning is my distinguished colleague from Wisconsin and my young and dear friend, Congressman Les Aspin. Representative Aspin is a distinguished economist as well as an able legislator. He has introduced several bills which would apply economic incentives to control pollution. We feel very fortunate to have him here this morning. Representative Aspin, you have an excellent prepared statement. The entire prepared statement will be printed in the record of these hearings and you may summarize it for us in any way you wish.

Please proceed.

**STATEMENT OF HON. LES ASPIN, A REPRESENTATIVE IN CONGRESS
FROM THE FIRST CONGRESSIONAL DISTRICT OF THE STATE OF
WISCONSIN**

Representative ASPIN. Thank you, Mr. Chairman. I think I would just like to summarize this prepared statement rather than read it because it is rather long and time is limited.

I want to commend you and the committee here for holding this set of hearings. I think that it is long overdue. It is important that we look at the use of economics in controlling pollution because I think that far too often this whole aspect has been completely overlooked. For some reasons, of course, economics has not always been in tune with preserving the environment. We have had some conflicts, but right now I think there is a lot that economists and economics can say about pollution.

Primarily, this is because, in the pollution area, economics is dealing with something that economists have dealt with before; namely, what is called externalities.

An externality is a side effect, something that happens beyond the market price, something which happens which is not expected or which is not covered by the market price or the market solution.

Now, this kind of externality can be positive as well as negative. A typical example of a positive externality is in the case of education. The price of education reflects the private benefits of education which would eventually accrue to that person in the form of better income and better standards of living. But there are a lot of extra positive externalities in education, a more aware population, better standards of living of the population, higher standards of living, less crime and what not. So the extra benefits to society of having people well educated are well known and we recognize that by helping to subsidize education and therefore paying for the externalities.

When it comes to pollution, that is a negative externality and something economists can deal with, as you, Mr. Chairman, have stated in your opening statement, in the form of a tax. What you are doing in effect is bringing the price of the item in line with the total cost.

The cost of producing an item such as steel, electricity, or whatever, should include not only the private costs of producing that item, the labor, the raw materials, profit, and so forth, but also the social costs

of production such as damage to the water from dumping waste into the river, damage to the air from putting pollution in the air. What you are trying to do by the use of the tax is to bring the total cost in line with the total price. With the tax, people are then able to judge a product based upon a true price which really reflects the total cost of producing that item.

I think there are a couple of things that ought to be pointed out in connection with this approach. Often people believe that such a tax policy is like offering a license to pollute, that you are just giving the person a chance to go ahead and continue to pollute if he is able to pay the tax. But I think that really misunderstands the nature of this kind of a tax.

There are two kinds of taxes which a Government can use. One is a revenue raising tax like an income tax. With it you hope to raise a lot of revenue. But another kind of a tax is a tax which is to encourage people to behave in certain ways. A tariff is such a tax.

You, in effect, hope not to collect that money because what you are really trying to do with the tariff is to discourage people from buying that product. You are trying to discourage imports with the use of the tariff. You are not trying to raise revenue.

A pollution tax would be really very much like a tariff. It is trying to encourage people to behave in certain ways. It encourages industries not to pollute and consumers not to buy products which cause a lot of pollution.

Other critics have said that this kind of a tax will not affect businesses at all, that they will pass it on to the consumer. And I agree. That is probably what will happen a great many times, but I think that is right and that is equitable, and that is what should happen.

After all, the consumer should pay the total cost of producing that item. He should pay not only the private costs of production but also the cost of the pollution that goes with producing that item.

But, second, and I think more importantly, when you do have prices which reflect the total cost of producing products, you are going to change people's buying patterns.

Right now, we are buying things which are subsidized, and they are subsidized to the extent that the environment is paying the cost. We are paying the cost in the form of additional pollution. But if the true cost were reflected in the price of those articles, that would give people a better chance to decide which products they were going to buy and which products they weren't going to buy.

Other arguments people have used against a pollution tax is that if we put on this kind of a tax and foreigners don't, it will make our products less competitive. What this means is that we value the environment and they do not.

If that is the case, then so be it. We should import those goods which cause environmental damage and which will be produced more cheaply abroad, and we will export and produce for domestic consumption those products which can be produced without damaging the environment.

If foreigners do not wish to protect their environment we will in effect be importing clean air and clean water.

Finally, let me just make one other point here, and that is that I think this whole business of economic incentives goes beyond just the tax. You mentioned, Mr. Chairman, in your opening statement, encouraging recycling by the use of the right kind of economic incentives. I think that is important. I think when you talk about economic incentives, I think it is important to talk about the whole range of things that can be done with the use of economics, and I have introduced a series of bills, which would use not only taxes but also other incentives, and I would like to explain a couple of them for you.

First of all, I have an air pollution bill that has been introduced, and I am going to introduce a water pollution bill. These use taxes which is, as we have discussed, one kind of approach.

Another tax bill that I introduced is a bill to put a tax on nonreturnable bottles and cans, and to put a higher deposit on returnable bottles and cans. In other words, what we are trying to do is to offer economic incentives for people to use returnable bottles, and then to return them once they have been used.

So if you put a high enough deposit on the returnable bottles, that means people will use them and then return them; and if you put a tax on the nonreturnable bottles, it will discourage people from using those.

Another bill that was introduced puts a tax on phosphates in soaps. This is a tax which directly hits the consumer. It was in fact a 1-cent-per-pound tax for every percent of phosphates in soap. For example, if you have a 1-pound box of detergent with 45-percent phosphate, that would have a 45-cent tax on it.

Now, the incentives here are two: The first is an incentive to the housewife to buy the soap which has the least amount of phosphate. We go through a lot of trouble trying to educate housewives on the dangers of phosphates in soap, and trying to encourage them to try to buy a soap which causes the least amount of pollution. But if you really want to get housewives to buy a soap which causes the least amount of pollution, put a tax on the soap which causes pollution. The housewife who is very careful about her shopping dollar sees a whole range of different brands offered, all now with different prices on them because of the different tax. She will be encouraged to buy the cheapest product which in turn, of course, is the product with the least amount of phosphates.

Second, this tax offers an incentive to industry to take phosphates out of the soaps. If their products are not going to sell and others are, there is an incentive to find a substitute.

Another way of using economic incentives is suggested in a bill to deal with junk cars. One of the problems for the environment and for beautifying the highways is the problem of the number of junk cars which are just abandoned on the side of the roads.

One of the reasons they are abandoned and not turned in for junk, is that the cost to haul them to the junk dealer is virtually about what you would get for turning them in. You would pay \$15 or \$20 to somebody to come and haul the car to the junk dealer, and then the junk dealer would give you \$15 or \$20 for the car. So there is no incentive.

The way to get around that is to put a \$50 deposit on the car, which would go into the car when you buy it and would be returned when you turned it in for junk. By this, you have an incentive for somebody to return the car to the junk dealer when its life is finished.

One last bill we have introduced as an example of using economic incentives allows cities to put a toll on highways. The biggest source of air pollution is automobiles, but other problems with automobiles are congestion, rush hour traffic jams, no parking space, and so forth.

One way to help alleviate these problems is to allow cities to tax or to put a toll on the commuter. You wouldn't want to put a toll on all day and discourage shopping but you could put the tax on in the morning and evening rush hours. What we would do is encourage people to double-up in cars.

Right now it has been estimated that there are 1.5 people per car among people who are commuting back and forth. What this bill is trying to do is encourage people to double up, to use the cars more intensively, and to encourage people to use whatever mass transportation facilities are available.

However, what I want to say, Mr. Chairman, is that while we have introduced this whole series of bills that have some rather particular solutions to these problems, it is not the particulars of any bill that I am so interested in as the general approach. The general approach of using economic incentives, taxes, deposits, tolls, all of these things is what is important. People behave in economic ways. It is a language that everyone understands.

Pollution is getting to be such an enormous problem we cannot just rely on laws or subsidies. Now we have got to use everything we possibly can, every possible kind of tool that we have, and I think economics is a very important tool.

Thank you, Mr. Chairman.

(The prepared statement of Representative Aspin follows:)

PREPARED STATEMENT OF HON. LES ASPIN

As this is the first time I have had the privilege of testifying before this committee, I would like to extend my deep appreciation for this invitation. I believe you are doing a great public service by holding this set of hearings on economics and the environment.

It seems clear that while all governmental jurisdictions, federal, state, and local are attempting to stop environmental degradation, they have as yet accomplished little. We have a myriad of laws; still the contamination level of our air and water gets worse. I believe that economics and economists have something to say both about the causes and the solutions to some of these problems.

Economists have not always been in tune with environmentalists. Until recently economists wrote little about environmental issues, not because the analysis is extremely difficult; it is not, but the rewards in academe were given for research endeavors in other areas. Pollution, like research in the economics of health and human resources, was pretty well neglected until recently.

Too, there are some real points of conflict between economics and preserving the environment. The economist's obsession with using the gross national product as some measure of social welfare is probably his greatest sin. We keep shooting for higher and higher output forgetting to even concern ourselves with the fact that more output results in higher social cost.

For example, when we open a new power plant we, of course, count the cost of construction, and the value of the electricity generated in tabulating the GNP. But in addition, we incorrectly add to GNP increased costs made necessary by

the pollution generated along with the electricity—people residing near the plant, because of air pollution, paint their homes more often, have higher laundry bills, and maybe are forced to go to the doctor for treatment of respiratory ailments. All these things we add to GNP. Thus, GNP increases—and we say welfare increases. But this is wrong. It is time to stop talking about changing the way we tabulate GNP, it is time to start doing it. Some measure of net output that adjusts GNP for environmental damage caused by production would give us a much better yardstick to measure our accomplishments. Such moves I believe would go a long way toward closing the gap between economics and the environment.

But the reason economists have something to say now about the subject of the environment is that pollution involves something that economists have dealt with before, namely what economists call externalities. Externalities are spillovers or side effects, something that happens which is not included in the market price or market solution.

Externalities come in two types—positive and negative. A prime example of a positive externality is education. The private benefits to those who receive more education comes primarily in terms of higher lifetime earnings and a better standard of living. But in addition there are social benefits or externalities, a spillover benefit to society in general. These occur in terms of higher productivity, higher output, greater tax revenues for the government, less crime, etc. The government has long realized these positive externalities, so education is subsidized and the cost to the student is little or nothing.

On the other hand, the government has been very lax in intervening in the market place when the externalities or spillovers are bad. Simply put, a negative externality occurs when the total cost of production of some commodity is greater than the private cost. For example the cost of producing steel includes the cost of labor, capital, rent, profits, etc. which are private costs. But the total costs of producing steel would have to include some other costs of, for example, additional home maintenance, medical care, laundering of clothes, etc. to those who live in the neighborhood. These are external costs.

The external costs of pollution on the society's recreational areas are immense. Because a steel mill discharges its phenols, acids, etc. into the nearby waterways making them unfit for recreational use, the local residents are forced to journey great distances to find beaches fit to swim in and water where the game fish caught are fit to eat. This is not included in the price of steel, but it is or should be considered a part of the total cost of steel.

The private market place cannot and never will solve this kind of problem. We have never assigned ownership to our water and air; it is communal property, owned by everyone and no one. Clean fresh air and clean fresh water were abundant and free to all. Thus when a producer is faced with the alternative of either dumping his industrial wastes into the river next to his plant at no cost, or paying someone to haul them to a solid waste disposal site, he will do the former. Since he is a profit maximizing entrepreneur he will dispose of his wastes in the cheapest way possible. But because he assumes less than the full costs of production he can charge a somewhat lower price—which means he sells more output—which means he puts more wastes in the river; a never ending cycle.

There are several basic ways to deal with these external costs. Most of them have been tried, but few of them work. The one most frequently tried is direct regulation. Direct regulation is simply a government edict, or order, to a firm to reduce his waste emissions to some environmentally safe level. The Clean Air Act is a prime example. Producers must reduce their emissions to a certain level by 1976. The philosophy behind the use of direct regulation is if something is taking place that the people of this nation do not like—we outlaw that activity. To make the bill politically feasible we set enactment of the new law at a date sometime in the future, giving polluters time to comply.

But there are problems caused by using this kind of approach. First it is necessary to fund enforcement of the bill. We are all quite aware of the many good measures that were passed and then proved useless because someone decided not to fund the enforcement. If anti-pollution laws are to be enforced we must have inspections to see that the standards are met and that takes money. Too often that kind of money is not appropriated.

Would proper funding of the enforcement make such measures preferable to other approaches? I would say not. There are too many other problems inherent in them. There is a need under direct regulation for a good strong enforcing

officer (District Attorney or Attorney General) willing to take on very powerful interests with a lawsuit. Such people are not readily found. There are political problems with direct regulation of deciding what level of pollution standards are acceptable (as with the Clean Air Act) and problems of deciding when they will go into effect (as the law outlawing combustible engines.)

Such problems however do not mean that direct regulation is useless. Direct regulation works best before the fact, as a preventative measure. Direct regulation is a very effective way of stopping new potential dangerous pollutants. The FDA does this for new drugs, EPA can do it for dangerous herbicides and pesticides as well. But in general, direct regulation as a method of stopping polluters once they have started has not proved very satisfactory.

A second major way to deal with negative externalities such as pollution is subsidization. Subsidization involves partial or total underwriting of the cost of pollution abatement by the government in the form of either direct grants or tax credits.

Private industry often favours this approach and would like to see tax credits for abatement equipment adopted. But the costs of such a program, in terms of foregone tax revenues, would probably escape the eye of congressional committees and we would not know what the program is costing us.

Second, the adoption of the use of subsidization would have the effect of introducing a new set of perverted incentives into the pollution attack. The amount of the grant or tax credit would depend on two variables: the level of emissions and the cost of the abatement equipment. There would be a strong incentive to exaggerate the level of emissions before the abatement to show more favorable results, and to exaggerate the costs of control to receive larger payments or tax credits.

Third, the costs of subsidization would be borne by the wrong people, the general taxpayer, and not the right people, the polluters or the consumer who uses the product which causes pollution.

This is not to say that subsidization would not work—it might, but the cost would be high. Nor is it to say that subsidies should be ruled out in all cases—in some cases such as help to municipalities for sewer treatment, subsidies would be a good approach. But in general subsidies should not be the main thrust of the attack on pollution.

On balance I believe that the best method of dealing with external costs of pollution is to internalize them as an economist would through the use of taxes. Through the use of a tax, we can force the producer to pay his total costs of production. Total cost for the producer would then include not only the private costs of labor, raw materials, machinery, etc., but also the external costs, or those which he imposes upon the environment, paid for with the tax. We determine the cost the polluter is imposing upon the environment and then present the polluter with the tax bill.

The use of a pollution tax unlike a subsidy puts the cost of cleaning up the environment where it belongs, on the polluter. Unlike using direct regulation with a pollution tax there is no controversy over an acceptable level of pollution—the tax is set on a sliding scale, the less pollution the less the tax. Too, unlike using direct regulation, there is no controversy over when the regulation goes into effect—the tax is put on immediately and when the pollution is corrected, the tax comes off.

When a pollution tax goes into effect a polluter has several options. First, he might of course stop producing and thereby stop polluting. This would occur in only a very few cases. It is important to remember that this tax would also be imposed on all the polluters' competitors. If people do not want to buy a firm's product when that product's price includes the *total* cost of production, then that product should not be made and the firm should go out of business.

A second alternative for the polluter is that he can install pollution abatement equipment. This will happen when the costs of control amortized over their usual life are less than the tax the producer would have to pay if he continued to pollute at his present level.

Third, the polluter could pay the tax. He will do this only when the cost of abatement is greater than the cost of the tax. We can of course discourage this behavior simply by raising the tax. However, paying the tax option is most likely to be taken with firms that pollute the water. Sewage treatment plants are prohibitively expensive for an individual firm and there are great economies of scale in building large facilities. In this case the taxes that the government collects

should be used to build and/or improve present waste treatment plants so they could effectively treat the different pollutants.

Why haven't we already adopted this approach of taxing polluters if this is such a good way of controlling pollution? What are the objections?

Many people concerned about the environment have felt that taxing polluters is analogous to granting a license to pollute. It was argued that the big firms would have sufficient wealth to just keep polluting and pay the tax. But this objection is probably the result of a misunderstanding of government tax policies. There are two types of taxes: revenue taxes, like the income tax, designed to bring large sums of money into the government coffers and taxes such as tariffs which are designed to motivate people to act in certain ways. A pollution tax is of the second type since the government would hope to collect little or no revenue and can raise the tax to encourage producers to install abatement equipment instead.

Second, some people have charged that a pollution tax will raise the firms' costs and they will just pass these increased costs on to the consumer. I agree with them; that is the most equitable solution. As of now, people who live close to the polluter's firm are bearing part of the costs of his production. The consumers of his products are now paying artificially low price. The consumers of steel are paying less for steel because part of the costs of producing steel are being borne by the people who live close to the steel plant. Thus the consumers of steel are buying steel too cheaply as the present price does not reflect the true costs of production.

More importantly, people are now buying products which cause a lot of pollution precisely because the price does not reflect the total cost. Only when all articles for sale really reflect the total cost of producing those articles will we, as consumers, really make the intelligent choices as to what we buy. Under total cost pricing products which cause pollution will cost more and people will buy less of them which is what we want.

Manufacturers claim that with a pollution tax they will suffer because their costs will increase, while foreign firms being allowed to continue to produce will under-cut their prices. It is true that the cost to polluters will increase, either from paying the tax, or from installation of abatement equipment, but that does not reflect an increase in total costs to the society. The costs are just transferred to the people who are really imposing them upon others. If foreigners want to subsidize their industry by damaging their environment we should let them. We will produce (for domestic consumption and export) those products which cause less pollution and import high pollution products.

Because I believe in the use of economic incentive to reduce pollution and as an illustration of what might be done I have taken the initiative of introducing various bills incorporating the use of economic incentives. They do not only tax producers, pollution results from consumption also, thus consumers should be taxed if they use products that impose environmental costs on the rest of society. I will present a brief explanation of each.

My first bill would place a tax on non-returnable bottles and cans. Our roads and highways are littered with bottles and cans. All our states have anti-litter laws but they are not enforced. The pollution that results from the discarding of non-returnable bottles and cans cannot be blamed on producers of these items. They are only responding to the demand for these items by consumers as any rational businessman would do. A large majority of consumers have decided it is much less trouble to purchase non-returnable bottles and cans and discard them after use than it is to use returnable bottles and return them to the store. To correct this my bill would put a higher deposit on returnable bottles thus encouraging people to return them to the store and put a tax on non-returnable bottles and cans thereby discouraging people from buying them. It would, in short, establish the right kind of economic incentives.

My second bill would place a variable tax on detergents and other laundry cleaning agents. The bill provides for a one cent per pound tax for every percentage point of phosphate over five percent. A one pound box of detergent that has 45% phosphate would have a tax of 45¢ levied on it at the retail level. This bill would have two beneficial effects. First, it would reduce the consumption of high phosphate detergents by giving the consumer the incentive to buy low phosphate or no phosphate detergents because they cost less. Second, seeing the sales

of their high phosphate brands fall, the detergents industry will feel a real incentive to get the phosphates out and find suitable safe replacements.

My third bill, aimed at air pollution, would place a 5¢ per pound tax on sulfur oxides and particulate matter, two of the worst problems in air pollution. The EPA reports that in 1967, over 15,850,000 tons of particulates, and 23,825,000 tons of sulfur oxides were dumped into the atmosphere in the United States from stationary sources. This equals 160 pounds per person of particulates and 290 pounds per person of sulfur oxides every year. The passage of my bill would curb air pollution by reversing the entire incentive process that air polluters now face. Adoption of the bill would make it more profitable not to pollute, a polar opposite from the existing system. If the producer emits very little pollution he pays little or no tax, if he pollutes a lot, he pays a large tax. The bill also insures equity between present and potential new polluters—they are treated equally. Existing firms who have been given 4 or 5 years to reduce their emissions presently have a cost advantage over potential new firms who must install abatement equipment before commencing production. The adoption of the bill would put a halt to this discrepancy. Finally the bill would allow firms to locate their new plants where the resources, input prices, etc., are best suited for the most profitable operation, not to places where the air pollution laws are less stringent.

My fourth bill would place a \$50.00 deposit on all automobiles passing through the market place to insure they were properly scrapped at the end of their useful life. Now many cars are left to rust along our streets mainly because the cost of hauling the car away is as much as the owner gets when he turns it in for junk. Under my bill it would in all cases be more profitable to have the car hauled to the scrapyard to collect the deposit, than to abandon it and lose the deposit.

My fifth bill would allow cities to charge tolls on their freeways. Presently the cost of commuting is low—and we are providing no incentives for people to enter car pools. The average occupancy rate on the freeways in our cities is 1.5 people per car. If we could just double the occupancy rate we could completely eliminate over 25% of our air pollution in our cities as well as alleviate rush hour congestion. My bill would allow cities to charge tolls or user fees on the freeways within their boundaries, something they cannot presently do. By using peak-hour pricing cities could regulate peak-hour congestion by giving commuters the incentive to double up, thereby reducing air pollution, and reducing the need for building more ribbons of concrete.

I am presently working on a water pollution effluent charge. It will be introduced before the coming recess, and will place charges on pounds of BOD, acids, and suspended solids. The exact charges on each are still being worked out.

I believe that the use of economic incentives to combat pollution is the most effective method we can choose. The particular bills that I have introduced indicate how economic incentives could be established. But I am less concerned about the particulars of any bill than I am about the whole approach. The problems of pollution are so severe that we cannot afford to leave any possible solution untried. I urge that a very serious effort be made to use economics in the fight to save our environment.

Chairman PROXMIRE. Thank you very much, Congressman Aspin. I think you presented this in a very clear and convincing way. People think of economics as being extraordinarily complicated. Sometimes it is but I think your presentation this morning was most helpful.

In your statement, can pollution taxes work in the case of monopolistic or oligopolistic industry, for example, in those cases can't industry pass 100 percent of the tax on to the consumers and feel no pinch, therefore, no incentive to reduce their pollution?

Representative ASPIN. I think it depends. It depends in certain industries. I find it hard to imagine a case where an industry would be able to pass the total cost on to the consumer. It depends, of course, on what—

Chairman PROXMIRE. How about a regulated public utility where you want to do something about thermal pollution?

Representative ASPIN. I think they would, in fact, pass a great deal of it on to the consumer but I think that is not bad.

Chairman PROXMIRE. I agree with that. I agree it should be passed on. My question is, Would it provide an incentive to the particular industry to hold its costs down by using processes or equipment or some approach?

Representative ASPIN. Yes; I think it would. Of course it depends on the level of the tax and if people want to pay the tax rather than put in the pollution abatement equipment then the tax is too low. You can, of course, make it economically profitable to put in the pollution abatement equipment by simply raising the tax.

Chairman PROXMIRE. Now, the National Association of Manufacturers—incidentally, their spokesman is following you this morning—favor a system of tax credits and accelerated writeoffs instead of pollution taxes. Would you regard this as a viable alternative to a pollution tax?

Representative ASPIN. No; not as an alternative. I think there are several problems with that.

One, of course, is that as with so many of these things, we wouldn't know how much it was costing us. When you put in a tax writeoff, you lose control in precise terms of accounting as to what it is costing.

But, secondly, and more seriously, with a subsidy the people who are paying to clean up the environment are the wrong people.

The general taxpayer is paying instead of the polluter or the consumer of the goods that are producing the pollution.

I think the advantage of the tax is it puts the cost right where it should be; namely, on the person causing the pollution, whether he be the consumer buying the product or the industry producing the product. And that is where it should go, not to the general taxpayer who, God knows, pays enough as it is.

Chairman PROXMIRE. I think that is an excellent point.

Isn't it also true, however, that by providing for tax credits, that you might encourage a less efficient way of coping with pollution?

Representative ASPIN. Exactly.

Chairman PROXMIRE. In other words, instead of using a different fuel, different process, you buy the equipment because you get a writeoff.

Representative ASPIN. Exactly; anything like that assumes there is only one way to deal with the pollution problem. Technologies of dealing with pollution problems are advancing so quickly you don't want to say you have to put in this particular equipment. Maybe 5 years from now that is outdated, even by the time the law passes it may be outdated.

What you really want is to stop people from polluting. So we should put a tax on pollution and say it is up to you to decide the best way to stop the pollution, we will put the tax on as long as you are causing the pollution and take it off as soon as the pollution stops. Then we use the ingenuity and the research and development of these industries toward coming up with the best and cheapest way of dealing with the pollution problems. This is better than assuming, as a subsidy does, that there is only one way of doing it.

Chairman PROXMIRE. What about enforcement? You indicated in your statement that the regulatory approach involves very difficult enforcement problems.

Representative ASPIN. Yes, sir.

Chairman PROXMIRE. Wouldn't we have difficult enforcement problems with the pollution tax approach?

Representative ASPIN. Yes; the difference is the pollution tax is making money for the Government and they can spend that money on enforcement whereas the regulatory approach means that the money has to be funded from general revenues. There is an enforcement problem no matter what, but if you pass a law and then want to enforce that law, you have got to fund it. That means the taxpayers have got to pay to fund the inspectors, and what not. If you put on a pollution tax, true, that too has to be funded, but the tax there can be used to pay for the inspection to see that the law is being upheld.

Chairman PROXMIRE. Now, the main thrust of your presentation has been pollution taxes on industry. Is it possible or practical or necessary to impose a tax of this kind or some sort of similar incentive of this kind on Government bodies, municipalities, et cetera?

Representative ASPIN. Yes; we wondered about that. I am not sure about the constitutionality of it. We thought about that, too.

I believe there are problems about one government level taxing another government level. But in theory it is just an extension of what we are doing.

Chairman PROXMIRE. You suggest 5 cents a pound for a sulphur dioxide tax. Is this greater than what it would cost industry to abate sulphur dioxide pollution?

Representative ASPIN. Yes. According to our figures, that would offer an incentive to put in the equipment.

Chairman PROXMIRE. Because last week the experts we had before us suggested a 10- to 20-cents-a-pound tax.

Representative ASPIN. Yes, I don't want to argue the particulars of the thing but I think they were overstating the case. At least as far as we can determine, their figures really had a tax that was too high and the 5-cent tax would offer enough incentives.

Chairman PROXMIRE. At any rate, would you agree with the notion that this should not be a license to pollute?

Representative ASPIN. Absolutely.

Chairman PROXMIRE. In other words, the purpose of it should be to stop pollution?

Representative ASPIN. Sure.

Chairman PROXMIRE. Therefore you place the tax at a level which will accomplish that end?

Representative ASPIN. Exactly. If people say that the tax we have proposed is a license to pollute, my answer to that is the tax is too low.

Chairman PROXMIRE. Good. What do you do about the problem of uniformity of taxes? For example, isn't a pound of sulphur dioxide emitted into the smoggy air of Los Angeles much more harmful than a pound of sulphur dioxide elsewhere? Could localities supplement the Federal Government with an additional tax of their own?

Representative ASPIN. Yes; I think that might be a good point. There would have to be some way to mesh, if we are talking about air

pollution, a pollution tax in with the Clean Air Act and come up with some kind of a tax that would supplement what is in the direct regulation or law. But I think that there is room within the tax system to allow for that kind of flexibility.

Chairman PROXMIRE. Congressman Aspin, thank you very, very much for a most helpful and interesting presentation.

Representative ASPIN. Thank you.

Chairman PROXMIRE. We are indebted to you.

Representative ASPIN. Thank you.

Chairman PROXMIRE. Our next witness is Mr. H. C. Lumb. Mr. Lumb is appearing on behalf of the National Association of Manufacturers. He is vice president of Republic Steel.

Would you come forward, Mr. Lumb?

I was just introducing you, Mr. Lumb, as vice president of Republic Steel and director of the NAM. You are accompanied I understand, by Daniel W. Cannon, the NAM's director of environmental affairs, and John E. Kinney, sanitary engineering consultant.

Gentlemen, we are happy to have you here. As you know, your prepared statement will be printed in the record in its entirety. You may summarize it in any way you wish.

STATEMENT OF H. C. LUMB, VICE PRESIDENT, CORPORATE RELATIONS AND PUBLIC AFFAIRS, REPUBLIC STEEL CORP., ON BEHALF OF THE NATIONAL ASSOCIATION OF MANUFACTURERS, ACCOMPANIED BY DANIEL W. CANNON, DIRECTOR OF ENVIRONMENTAL AFFAIRS, NAM; AND JOHN E. KINNEY, SANITARY ENGINEERING CONSULTANT, ANN ARBOR, MICH.

Mr. LUMB. Senator, the NAM appreciates the opportunity to appear and present our views. Mr. Cannon is on my left, Mr. Kinney on my right.

I think you were right in assuming that perhaps there may be some difference of opinion from the views that have been already expressed. I propose to do as you suggested in your letter, summarize my prepared statement as briefly as possible and I would like to permit, with your permission, Mr. Kinney to make a few remarks on the testimony that was presented last Monday.

Chairman PROXMIRE. Very good, That would be fine. And as I said, the full prepared statement will be printed in the record without abbreviation but I would appreciate it if you could summarize it so that we can proceed to questions.

Mr. LUMB. Yes; first, let me make this point: American industry is not interested in a license to pollute. This year, U.S. industry is spending \$3.6 billion on new pollution control facilities in addition to hundreds of millions of dollars it will spend every year in the operation of billions of dollars worth of pollution control facilities already in place.

The principal obstacle to even greater pollution control expenditures by industry is the generation of enough cash to pay for these nonproductive facilities. Taking money away from industrial companies in the name of a tax on pollution would not help; in fact, it would harm the cause of pollution control.

Proponents of a pollution tax claim that it would provide an incentive for research and development in the pollution control field. Industry plans to spend more than \$900 million this year on pollution control research and development. It is impossible to understand how industry could spend even more if it had money siphoned away by an additional tax on its operations.

At this point, let me spend a moment on the history of the proposals for effluent charges, and I recognize the Senator as a proponent of the effluent tax and introduced a bill in the last session of Congress for that purpose.

You are familiar, I assume, with the Johnson Council of Economic Advisers in 1966. They set up a working committee to evaluate several proposals for creating economic incentives for industrial pollution abatement and the committee recommended the use of effluent fees for reasons which we consider fallacious.

For example, contrary to the assertion in the report, effluent fees are not in use anywhere to control pollution. Rather, the truth is that there is in wide practice user service charges whereby a waste discharger pays for having wastes treated.

The sewer service charge which a homeowner pays is an example. Another is the service charges paid by industries in the Ruhr Valley for treatment of waste waters. In the Ruhr, contrary to popular reporting, there is no penalty tax on effluents. There is a treatment service charge for waste waters unable to be returned to the Ruhr. Such waste waters are diverted to the Emscher River which is maintained as an open sewer for transmission to in-stream treatment facilities. The Emscher is lined with concrete and shrubbery conceals it from the eyes of the public.

Most American cities have the same fee services but no river basin in the United States has available a second river to use as an open sewer.

Again, the assertion that effluent fees can be quickly implemented is totally inaccurate even if there are some drastic assumptions such as that all industries utilize the same volume of air and water per unit of production, that all industries produce exactly the same weight of waste to air and water per unit of production, that the unit rate of tax would be equal for all discharges on the assumption that it would represent impact cost on the environment—because such implementation would demand that the existing tax collecting machinery absorb this additional burden without difficulty.

It has not been made clear as to whether a pollution tax would be administered by the Environmental Protection Agency as a pollution control measure or by the Internal Revenue Service as a revenue measure. In either event, the organizational and administrative problems would be of major proportions.

What I am saying, I guess, is that the NAM believes that taxes on effluents and emissions represent an unmanageable, uneconomical, and negative approach, and in principle would allow polluters to continue to adversely use our environment by the payment of a tax. On the other hand, a positive approach would involve establishment of a system of accelerated amortization and tax credits.

Now, the concept of special tax treatment of such costs has already been recognized twice by Congress. The first, as the Senator knows,

was during the suspension of the 7-percent investment credit. Pollution control equipment was exempted from this suspension. The second time was on the occasion of the repeal of the 7-percent investment credit by the Tax Reform Act of 1969.

This act included a provision for accelerated amortization of pollution control equipment. However, this provision contains so many restrictions that it is generally regarded as ineffective.

Many people in industry believe that this provision should be replaced by legislation such as is proposed in H.R. 3565, introduced on February 4, 1971, by Representative Charles S. Gubser, of California. This bill carries the title "Pollution Control Incentive Act of 1971" and would provide for a 20-percent tax credit and a 1- to 5-year amortization period of costs for air and water pollution control facilities.

One rationale for such legislation rests upon the widespread public benefit conferred by pollution control efforts and the generally non-productive character of pollution control facilities. Operation of these facilities usually does not yield a salable product to offset some of the capital and operating costs, let alone making any profit. In addition, these costs divert capital away from investments to productive facilities which could yield profits and provide jobs. It is on this basis that the official policy of the NAM calls for recognition of the public interest nature of these expenditures and their uneconomic aspects through accelerated amortization up to and including immediate writeoff at the option of the taxpayer and through tax credits to enterprises which expend private capital for such facilities.

In conclusion, I submit that the Joint Economic Committee should reject the concept of a pollution tax for the following reasons:

First, taking money away from industrial companies will not help the cause of pollution control and will not, in our judgment, facilitate the installation of pollution control facilities or the conduct of pollution control research and development.

Second, a pollution tax is inconsistent with the concept of government by sound and impartial regulation.

Third, a pollution tax would involve major administrative problems related to setting of the tax rates, monitoring of emissions and effluents, and enforcement.

Fourth, contrary to repeated assertions, there is no precedent for a pollution tax.

Fifth, a pollution tax could cause unfortunate and unforeseen economic dislocations, including driving some companies out of business.

Sixth, a pollution tax could be used to achieve Government control of industrial expansion, location, and operation.

We submit that a positive approach which would facilitate even greater expenditures for pollution control facilities and pollution control research and development should be based on the fact that there are broad social benefits which accrue to all the people of the Nation through environmental quality control efforts. Because of this and because in most instances money invested for abatement facilities does not bring an economic return, the association believes there should be some recognition of the cost of installing environmental quality con-

control facilities in relation to the general public interest and the uneconomic portion of the investment.

I appreciate this opportunity and if the Senator will permit, I would like for Mr. Kinney to make a few remarks.

Chairman PROXMIRE. All right, sir, if you could summarize quickly, we would appreciate it very much. I am delighted you have decided to do this because I think it is helpful to have rebuttal of the testimony that we had earlier. Go right ahead.

Mr. LUMB. Mr. Kinney is an independent consultant in Ann Arbor, Mich.

Chairman PROXMIRE. I understand.

Mr. KINNEY. Thank you, Mr. Chairman. As noted in my prepared statement, I am a privately employed consulting engineer in pollution control with formal education and 30 years of experience in the field. This experience has been with governmental agencies at State, local, county, and interstate agency level, and at the present time I am in an advisory capacity at Federal, State, and local level as well as to industry and civic groups.

My concern ties to the realities of pollution control. The gentleman that preceded us is talking the theoretical. The difference between reality and the theoretical has been the thing that has really been delaying our pollution abatement picture rather than the law per se or actually the agencies.

We have a great number of individuals who have no compunction whatsoever about proposing what they think should work and then when it doesn't, we are off on a different deal.

In reality our pollution control program has been pretty much of a merry-go-round and I can assure you that a pollution tax at this stage of the game would accelerate the merry-go-round rather than define the objective.

The House Public Works Committee oversight hearing during this past month did an excellent job of pointing up where the problems really are and for those who are truly interested, as I know you are, in trying to improve the environment, those hearings could offer some real good grasp as to what our difficulties are, where they are, and offer suggestions as to how the solutions might be developed.

What I would like to do is use as an illustration some of the proposals or some of the comments that were made by the individuals here a week ago supporting the proposal of effluent taxes. I do it for two purposes: One is to show that while they said in principle they were for it, in reality they really didn't understand what they were agreeing to nor did they agree among themselves, and I think these are the kinds of things that your hearings could well point up, so that if we are going to move into it, we are going to move into an area where we have a defined objective.

Let me offer as an illustration Mr. Kimball, executive director of the National Wildlife Federation, named the Ruhr, Springfield, Mo., and Otsego, Mich., as illustrative of his contention, "There is no doubt that a pollution tax is effective in reducing pollution."

Check into the facts on the three of them and first you find there are no pollution taxes in any one of the three places. The three named

areas do provide a waste treatment service for their industries and charge for that service when it is used, and they charge a cost adequate to treat the waste.

And the third is that they are doing it with two purposes in mind: It is cheaper to provide a uniform service or a central service at times for certain industrial wastes but there is a very real benefit in having the communities maintain the controls as a third-person control over the operation of those facilities.

Now, as Mr. Lumb pointed out, the Ruhr sells water to industries and to cities. It also builds, constructs, operates waste-treatment facilities and those people, cities and industries; that want to use it pay the fee for the use of it but unless they do use it, they pay no fee.

Mr. Kimball suggested that over there the result has been to reduce the use of water, drop the use of water to 500 gallons per ton as opposed to some 26,000 gallons that he is referring to in this country.

The truth is that the 500 gallons, and I kind of doubt that figure, is a total consumptive use. It is a total recycling operation and ends up an evaporative loss.

In this country we use it, treat it, and put it back for water available for other purposes. So, really, we are not comparing consumptive uses in both places.

Otsego, Mich., is another town he mentioned. This small town has two major industries, a milk-drying plant and a cottage-cheese plant.

When the city adopted a sewer ordinance and surcharge for stronger than normal sewage, the milk-drying plant instituted good house-keeping practices and reduced losses. The cottage-cheese plant reduced loss of whey to the sewer by hauling it out to the country for disposal.

Now, there is a question if you are going to take a look at the total environment as to whether or not this is an answer to an environmental quality control because putting this whey out in the land, unless it is plowed into the land, it develops one real stinking mess outside the town.

But the point is that the company didn't pay a tax. It avoided a service charge that it was paying to the city by taking certain things out. It did not change process. And it didn't change its operation.

And I have suggested in the prepared statement that perhaps you might want to check with the city manager, the city consultants and get the facts on it. If we are going to use Otsego as an illustration, in other words, I would suggest we know the full story on it.

Springfield, Mo., was the same kind of operation. Some 57 industries, and 22 of them have extra-strength waste and they provide for the treatment of the extra-strength waste but it is paid for. It is truly a service charge. Mr. Davis, who is more of an economist, in testifying in behalf of the National Audubon Society, on the other hand, admits that a tax would wipe out marginal industries but he apparently sees no importance in either the psychological or economic impact on the environment from such an operation. And really he doesn't understand or demonstrate, if you will, a knowledge of the variability of effluent quality for a given operation when he suggests

there would be no administrative burden on the Government in its application.

Seemingly, any tax collector could determine what the tax is and collect it. Yet only by reducing pollutants to some cookbook figure in terms of pounds-per-ton of product could a tax collector dodge the hurdles of a continuing monitoring complexity that is required under the present standards approach of enforcement, and incidentally, this is the pitfall into which the present administration is dropping. They are trying to reduce it to that form, pounds-per-ton. The only difficulty is that it doesn't operate continuously and over the course of a year, on the average it would be a given value for any one month but individual values could be very high and really result in a real pollution problem.

But Mr. Davis obviously isn't interested in uniformity, even though he has suggested this, and this is an inconsistency that bothers me because he does not endorse inefficient pollution controls or environmental controls. "It is not efficient," he said, "for a plant to be forced to clean up its emission by an amount which is greater than necessary to meet well-founded standards." And he further points out the inequities of uniform standards.

In this he differs when Mr. Alderson, Friends of the Earth, who wants a tax to exert a lever to eliminate all pollutants.

What I would suggest is that once the pollution taxes are instituted, the control is reduced simply to one of which alternative is cheaper, not which has the least adverse impact. The gentleman before us suggested a tax of a cent-a-pound on phosphates in detergents as a means of reducing pollution. He would provide a 45-cents-a-box tax to eliminate phosphate pollution but he would ignore the effect of the quick alternative of the substitutes that would be employed or the effect of that. Once the Government or the agency or the Congress would establish the tax on phosphates, does not then the Government assume the responsibility of saying that the alternative then really doesn't have a greater impact on the environment? And really these others do cause pollution. Do we stay with the pollution or do we stay with the idea of which tax is going to be the cheapest?

But, really, when the advocates for the tax agree that quality standards must yet remain they admit the built-in failure of the tax as an adequate control. The income from our liquor tax is the best assurance that the Volstead Act won't be repealed but the income from the liquor tax did not prevent alcoholics. The income from the pollution tax would fund programs which could not be self-sustaining, with the decreasing revenue the environmentalists envision. Mr. Train, when he pointed out the administration is after tax revenue, laid it on the line. A pollution tax once it becomes a revenue tax would really not be an effective means of controlling environmental quality.

Thank you.

(The prepared statements of Mr. Lumb and Mr. Kinney follow:)

PREPARED STATEMENT OF H. C. LUMB

OPENING REMARKS

Mr. Chairman, before presenting my prepared statement in which I detail at some length (a) what industry has done and is doing to improve the quality of

our environment and (b) the fallacies of an effluent tax, I would like to quote a few excerpts from outstanding scientists on the subject of ecology and our natural concern about our environment. First, Fred Smith, a consultant to President Nixon's Citizens' Advisory Committee on Environmental Quality in a recent paper entitled "America is a Growing Country" had this to say:

"Our system has let us down, we are hearing; industry is wrong-headed, worthless, and endlessly damaging to society; and we need to shift gears. Do away with growth, curb technology, they say, or our world will self-destruct in two generations. Obscure scientists bask in front-page publicity by describing disasters that might occur; politicians hail themselves as defenders of the environment against industrial polluters and crafty consumer exploiters, even while the government in their charge remains one of the most pervasive and most immovable polluters of all; and the consumer, as taxpayer, is horrendously exploited. Lawyers, acting in what they choose to call the public interest, indulge in a kind of publicity-rich legal guerilla warfare to put a stop to anything anybody doesn't like, anything that makes a profit and smells of progress. As a result, the confused public is once again ready to believe anything that sounds reasonably logical, especially if it also sounds frightening."

Next, Dr. Philip Handler, President, National Academy of Sciences, in his Schwab Memorial lecture at the Iron and Steel Institute annual meeting May 26th this year made these comments:

"The Environment"

"The fever pitch of national, indeed international, concern for the environment is a phenomenon which future historians must evaluate in the perspective of man's occupancy of our planet. The universal intensity of these feelings probably arises from the fact that, at some time, each of us feels threatened by environmental disaster or offended by unsightly cities or landscapes. And properly so. Yet, even now, man's effect on the general environment is trivial as compared to that of natural forces.

"Man and nature have ever been altering the total environment. Yet, even now, our tragically blighted cities are cleaner and healthier than were urban agglomerates anywhere in the world until the middle of the last century. We have not suddenly begun to alter the environment. Our entirely justifiable concern arises from the logarithmic concatenation of our ever-increasing numbers, our marvelously productive heavy industry and agriculture, and rapid growth of real per capita income, coupled with sensitive chemical analytical procedures which permit detection of contaminants in minute amounts, some of which—like the mercury in the swordfish—may well have been there all these years. The very affluence which generates environmental difficulty also permits us to direct our efforts toward its abatement, to consider reversing untoward processes which have been in train for many decades, only a few of which have yet attained genuinely crisis dimensions.

"The brute fact is that ecology is, as yet, a young, little developed science which requires much nourishment before it can adequately serve society. But ecology does insist on the complex inter-relatedness and stability of ecosystems. The lessons to those who would hurriedly attempt simplistic solutions to environmental problems is, as Landberg noted, 'Use well before shaking!'"

Finally, Dr. W. T. Pecora, Under Secretary of the Interior, and formerly head of the U.S. Geological Survey, made these observations in a commencement address last May at Texas Tech University:

"The intellectual superiority of *Homo sapiens* stands out clearly against the backdrop of geological history as reassurance to those who fear that modern man is charting a course to ecological disaster. He is not!

"There is real doubt in my mind that man could have survived as a member of the animal kingdom had he not been capable of harnessing energy. On the other hand, who can doubt that scientific and technological developments have brought with them longer life, better living, and more leisure time. The contribution of technology to quality of living is readily apparent if one compares life in the primitive bush with that in the United States. Which do you really prefer?"

"The same human qualities which made ancient man discontent with primitive existence causes modern man to be concerned with quality problems in his environment. This is a wholesome attitude if it acknowledges the fact that the influences of man are superimposed on natural quality patterns beyond our con-

trol. The Standard Research Institute reports that 65 percent of the 250 million tons of sulfur compounds and 99 percent each of the 6.5 billion tons of nitrogen compounds and 1.9 billion tons of hydrocarbons which enter the atmosphere each year are from natural sources. Qualities of surface waters in this country vary markedly from one region to the next because of natural influences and, despite induced pollution problems, the best quality of waters generally occur in the most populated areas. The entire country is underlain at shallow depth with water too salty to drink. With a little searching one can find waters unaffected by man which don't measure up to water quality standards—wells with high arsenic or fluorides, acid springs, and salty rivers like the Brazos. Surprising as it may seem, mercury has always been released by nature to our rivers.

"These factors do not mean that man's unique environment involves no new problems. Rather it emphasizes the need to sort out the new problems carefully, to concentrate effort on what can be controlled, to set our standards of quality realistically, and to adhere to them.

"The fossil fuels which power much of our industry have increased the carbon dioxide of the earth's atmosphere by about 6 percent, but this has provided the average citizen with 50 times the worldly goods of his frontier counterpart. Together, these allow an effluent society to take advantage of the scenic natural wonders that few of our forefathers could enjoy.

"We enter this decade torn between the desire to produce the *goods* needed for high quality of living and the desire to avoid the *bads* of environmental degradation. If true, ecological balance is not compatible with these objectives, how then can environmental harmony be achieved? Somewhere between the attitudes of unconcerned development and total preservation, there must be an acceptable point of balance—one where the ledger records the cost of environmental sacrifices, as well as operations costs—one which permits judicious alteration of the environment when there appears to be net gain. This point of balance cannot be set by legislation. It must be located and kept in focus by continuing dialogue between those concerned primarily with supplying material needs and those concerned with maintaining pleasant surroundings. All of us must encourage and participate in this dialogue if environmental harmony is to be achieved. Above all, we must think things through and not fall prey to slogans or headlines."

FORMAL PREPARED STATEMENT

My name is H. C. Lumb. I am Vice President, Corporate Relations and Public Affairs, Republic Steel Corporation, Cleveland, Ohio, and a member of the Board of Directors and Chairman of a Task Force of the Environmental Quality Committee of the National Association of Manufacturers:

My testimony is presented on behalf of the Association, which is a voluntary organization of business concerns large and small, located in every State, and vitally interested in sound pollution control measures.

I am accompanied by Daniel W. Cannon, Director of Environmental Affairs, National Association of Manufacturers, and John E. Kinney, Sanitary Engineering Consultant, Ann Arbor, Michigan.

The Association appreciates this opportunity to present its views to the Joint Economic Committee of Congress at these hearings called on the subject of "Economic Incentives for Pollution Control."

A pollution tax won't help control pollution.

American industry is not interested in a license to pollute. Let me make that absolutely clear. This year, United States industry is spending \$3.6 billion on new pollution control facilities in addition to hundreds of millions of dollars it will spend every year in operation of billions of dollars worth of pollution control facilities already in place.

The principal obstacle to even greater pollution control expenditures by industry is the generation of enough cash to pay for these non-productive facilities. Taking money away from industrial companies, in the name of a tax on pollution would not help—it would harm the cause of pollution control.

Proponents of a pollution tax claim that it would provide an incentive for research and development in the pollution control field. One witness at this hearing suggested that such a tax should be applied in circumstances where there is no current technology available to solve the particular problem. Industry plans to spend \$926 million this year on pollution control research and development. It

is impossible to understand how industry could spend even more if it had money siphoned away by an additional tax on its operations.

The proponents of a pollution tax appear to favor it on the basis of disappointment with the results of the regulatory approach. What they overlook is that pollution resulting from manufacturing operations is only one segment of the total pollution problem. Government figures indicate that manufacturing activities contribute less than 20 percent of total air pollution. Industrial water pollution is but one fraction of a total which includes pollution from municipal, recreational, agricultural and natural resources, with some of the biggest problems coming from drainage, erosion and siltation. A pollution tax would be even less effective in getting at these non-industrial sources than direct regulation.

We recognize statutory regulation of certain aspects of private enterprise as an essential function of the federal government, and as being in the public interest. Where such regulation is proper and advisable, it should be prescribed in advance by specific statutes, and should embody provisions which will, without overlapping or duplication, assure uniform application and interpretation, and deal impartially with all. The authority to issue rules should be limited strictly to those required for the purposes of administering the law within the limitations and standards fixed by the Congress. Administrative orders or decisions should be based upon the preponderance of the credible evidence produced in accordance with the rules of evidence applicable in courts, and should be subject to adequate judicial review of the law and the facts by the judicial branch of government.

We believe that the use of the tax system to achieve regulation by indirection is highly undesirable, and that the concept of a pollution tax is completely incompatible with the concept of impartial regulation.

One witness at these hearings said that such a tax would exert "a steady pressure to eliminate the last of the pollutant, instead of leaving the amounts permitted by clean-air standards to go untouched." We submit that it is unjust and inequitable to impose a so-called pollution tax on companies which are complying with standards established by government as being protective of the public health and welfare. The complete inconsistency of a pollution tax with government by impartial regulation is obvious.

One witness stated that the goal is to have no money coming into the Treasury. On the other hand, one wonders whether a pollution tax might not give the U.S. Treasury an entrenched interest in the continuation of pollution. The history of so-called "temporary" taxes in this country indicates that all taxes tend to become permanent revenue measures. The concept of a tax as a revenue-raising measure is contradictory to the objective of pollution control. The taxing power should be used primarily for fiscal purposes. The power granted to the Congress under the Constitution to raise revenues should be exercised in the light of that fundamental purpose.

History of effluent charge proposals

At this point, let us go back into some of the history of proposals for effluent charges. In 1966, the chairman of President Johnson's Council of Economic Advisers set up a working committee to evaluate several proposals for creating economic incentives for industrial pollution abatement. The committee was asked to rank each proposal on the basis of those incentives which it considered most efficient, effective and equitable.

The committee report, dated August 31, 1966, was later altered by a larger committee and captioned "Cost Sharing with Industry?" (November 20, 1967). This in turn was edited and later released as a report to Congress.

The proposal strongly favored by the committee and endorsed by the later reviewing group was one of effluent fees. These reasons were cited:

"Effluent fees encourage *the total least cost combination of methods* to reduce waste discharges within the plant;"

"Effluent fees encourage *least cost* methods to reduce pollution flows among a number of plants in a river basin;"

"Effluent fees can provide a source of revenue for water control purposes external to the plant and containing economics of large scale facilities;"

"Effluent fees can be implemented quickly;"

"Effluent fees are used to control waste treatment and finance water quality programs in many places throughout the world."

That the arguments are fallacious—either as direct misrepresentations or as limited presentations which distort a true appraisal—can be illustrated.

For example, contrary to the assertion in the report, effluent fees are not in use anywhere to control waste treatment. Rather, the truth is that there is in wide practice user-service charges whereby a waste discharger pays for having wastes treated. The sewer service charge which a homeowner pays is an example.

Another is the service charge paid by industries in the Ruhr Valley for treatment of waste waters. In the Ruhr, contrary to popular reporting, there is no penalty tax on effluents. There is a treatment service charge for waste waters unable to be returned to the Ruhr. Such waste waters are diverted to the Emscher River which is maintained as an open sewer for transmission to in-stream treatment facilities. The Emscher is lined with concrete and shrubbery conceals it from the eyes of the public. Most American cities have the same fee service but no river basin in the United States has available a second river for use as an open sewer.

Again, the assertion that effluent fees can be quickly implemented is totally inaccurate, even if there are some drastic assumptions, such as, that all industries utilize the same volume of air and water per unit of production, that all industries produce exactly the same weight of waste to air and water per unit of production, that the unit rate of tax would be equal for all discharges on the assumption that it would represent the impact cost on the environment—because such implementation would demand that the existing tax collecting machinery absorb this additional burden without difficulty. It has not been made clear as to whether a pollution tax would be administered by the Environmental Protection Agency as a pollution control measure or by the Internal Revenue Service as a revenue measure. In either event, the organizational and administrative problems would be of major proportions.

The argument that effluent fees encourage the "total least cost combinations of methods to reduce waste discharges within a plant" is not supported in the operating controls in industrial plants in the Ruhr basin, yet the Ruhr is erroneously reported as the leading example of control via effluent fees.

Ruhr plants vary widely in plant processes and equipment and differ little from comparable plants in the United States. Factors other than waste treatment costs control their in-plant changes just as they do here, and will continue to do so here unless the costs of an effluent tax are raised to such extremes as to force a cessation of discharge. It might be possible that a process modification might be available to meet the situation at some cost level, but the decision could just as easily be to cease operation. The committee report ignored this possibility and also ignored the possible consequences of such cessation of production on corporate and local area economics.

The same error lies in the assumption that effluent fees encourage least cost methods to reduce pollution flows from a number of plants in a river basin. The committee believed that since cost of reduction varies from plant to plant, an effluent fee would encourage a greater than average reduction in those which could do so at least cost and, thus, they felt this would reduce the net total cost to all plants from what it would be if all plants had to provide the same degree of reduction. Unmentioned in the report is the residual penalty to be sustained by the company which had to continue the higher effluent tax because it couldn't easily reduce the load. Also unmentioned was the point that such plants are usually the older ones and more likely the marginal plants which would then face one more hurdle for survival. Nor does the report discuss the economic impact on an area when such plants are closed. Thus the underlying fallacies are the assumptions that the environmental concern is limited to one of reduction of waste loads and that any program directed towards waste reduction will have no possible adverse consequent effect. Obviously, this is not the case.

The committee's fifth point is possibly true. The effluent tax could be a source of revenue for controls outside a plant, such as in-stream treatment of flow augmentation as suggested in the report, but this is true only if the effluent fee is a direct charge for services rendered, such as where in-stream treatment is actually provided as is the case in the Ruhr. But when an effluent tax is collected at the federal level, the argument is fallacious.

In brief, the fallacies in the proposal to tax effluents are these:

"There is no guarantee the tax will accelerate industrial cleanup and it will definitely not cure municipal agricultural or recreational sources of pollution.

There are many unknowns in implementing such a proposal and it is not in

practice anywhere at the present time. The Ruhr program is comparable to that of such cities as Philadelphia which charge for services rendered in the treatment of industrial wastes, but no American river basin has a situation comparable to the Ruhr.

The tax requires an administrator with such broad discretionary authority that he can control industrial expansion and operation.

The tax will definitely have an adverse impact on marginal industries and thus on the economy of areas which can be of much more significance than the present pollution. In effect, it will transform physical environment blights to social, cultural and economic environment blights.

The tax disrupts the present ongoing pollution abatement program and institutes a hiatus while new ground rules are developed.

To be self-sustaining, the rate tax must be increased as the pollution decreases so there is no real incentive to clean up.

Minimizing or avoiding a tax on discharges to water, for example, will promote discharges to air or land. The cost of the tax, not the effect on the environment, will control."

There are three areas of interest in the pollution tax proposal which merit attention:

The *first* is that the idea has been advocated for a number of years by Allen Kneese of Resources for the Future. His publications on the subject are numerous and highly theoretical, but simplified to two quality parameters, BOD and chlorides. Of fundamental importance is the fact that in his proposal, all water users, not just industry, should pay for use of the water, and that discharge of a waste should be permitted (even encouraged) if the cost of treatment to the discharger exceed the cost to handle the polluted waste water downstream. Moreover, Mr. Kneese uses as his illustration the Ruhr, Germany, river authority but fails to accurately report on what is being done there. There is no tax on pollution discharges to the Ruhr. If the company exceeds defined limits, the company can treat the water or it can discharge it to a parallel river system which acts as an open sewer to convey the wastes to point of treatment. The cost of this treatment is assessed to the sources.

The *second* point meriting attention is that the researching and drafting of the bill introduced by Chairman Proxmire in the last session, S. 3181, obviously relied heavily on Mr. Kneese's theory. The bill added a provision for using the funds to finance municipal construction and policing. The proposal for taxing effluents developed in the Johnson Administration was based on the concept that a properly scheduled tax would force marginal and obsolete production facilities out of action and thus encourage higher efficiency and lower cost production without polluting effects. The Nixon Administration has been somewhat divided and was more against taxing discharges until the deficit in the budget suggested additional revenue. But what has not been worked up in detail are the mechanics of collection, how much will be collected, the impact on the marginal plants, the impact of closing marginal plants on local economics, the net effect on the federal tax structure by payments which will be operating costs and, therefore, deductible, but assigned to specific federal accounts and, therefore, truly reducing the net general federal income. Nor have there been any estimates of the costs of collection, the means of monitoring or the records involved.

The *third* area of concern relates to where this is leading. Suppose for a moment the taxing proposal is adopted. In many instances a quarter of a cent per pound can make or break a market potential. Costs are measured to tenths of a cent and the process was installed with such margins anticipated. The additional costs of pollution control facilities—and the operating costs are often more circumscribed than the capital costs—are for many industries something that was not anticipated. In addition, other unanticipated costs of doing business have been added but most of these are uniformly applied.

But with the uncertainties in measuring discharges there is a fertile field for negotiation and compromise. Also, with the conversion to an effluent tax the stream and air standards will no longer be controlling. The issue resolves itself to one of a negotiated agreement with the taxing authority.

The potential for making higher assessments on one stream than another provides opportunity to define areas of economic development. The potential to measure discharges differently provides opportunity to curtail production.

But this taxing potential can also set the rates so that a company is forced to convert from coal to gas or to low sulfur oil. What this will do to these energy

industries is obvious. The relative availability of fuels in various regions can have a tremendous impact on economic development. Some aspects of this are now within the authority of the Federal Power Commission.

There is also the effect on the tax structure, which at present is under terrific strain. With a population which has changed from primarily one of manufacturing to one of services and government and with a continually increasing demand for higher cost services, the objective has become one of a new tax base which would not fall on the majority—the services-oriented and government personnel. Agriculture has little promise, so industry is the best bet.

Nor is the concept of pollution taxes limited in application to those industries not connected to municipal treatment plants. The Administration is presently considering the policy of excluding from eligibility for federal grants that portion of the capacity of a municipal treatment plant used or expected to be used by industry. Part of the reasoning is to require separate monitoring of industrial discharges so the pollution tax could be applied to all industry. Otherwise, there would be a claim of discriminatory taxation. But again, the objective is revenue, not effective pollution control, for there are major environmental protection benefits from joint treatment with third person control.

Other programs are underway in the United States which will provide prerequisites to a pollution tax. A number of government agencies are insisting effluent standards must be adopted as essential to federal enforcement but, in reality, enforcement could proceed now if there is violation of quality standards. The objective is one of attaining effluent standards, essential for a taxing program.

Another essential is public reporting of waste load discharges in pounds-per-day and this is being promoted via applications for Corps of Engineers permits on discharges, by recommendations of the General Accounting Office, by legislation pending before the Senate Public Works Committee, and by reports and hearings of the House Government Operations Subcommittee.

Still another essential is the authority of the federal government to have right of entry and subpoena records of finances and operation. This, too, is in proposed legislation and so is the authority to actually define the kind of controls to be installed, as well as the control over the actual site location of sources of discharges, so there can be a definition or calculation of possible adverse impact which will influence the charges.

Lastly, there must be punitive controls to enforce compliance and these are manifested in criminal and civil penalties of large magnitude in all recently proposed legislation.

To sum up, the National Association of Manufacturers believes that taxes on effluents and emissions represent an unmanageable, uneconomic and negative approach and in principle would allow polluters to continue to adversely use our environment by payment of a tax.

The tax credit approach

On the other hand, a positive approach would involve establishment of a system of accelerated amortization and tax credits.

But, first, let us examine the dimensions of American industry's pollution control efforts. The \$3.6 billion figure previously referred to for capital expenditures for industrial air and water pollution control facilities during 1971 was established by a survey conducted by McGraw-Hill Publications Company and released on May 14. This survey showed that industry plans to spend nearly \$2.1 billion on new air pollution control facilities and about \$1.6 billion on new water pollution control facilities. In manufacturing, 7.6% of total capital expenditures will be allocated to control of air and water pollution. Spending on research and development devoted to solving pollution control problems is expected to total \$926 million, some of which will be federally financed. Where technologically and economically feasible solutions are not yet available, the survey report stated that some companies said they were now closing down many of their polluting facilities rather than attempting to upgrade them.

No very good figure is available as to American industry's total capital expenditures for pollution control over the past decade. The only good benchmark we have is a survey by the National Association of Manufacturers, in cooperation with other industrial organizations, which showed that, at the beginning of the past decade, the replacement value of water pollution control facilities being operated was over \$1 billion. Annual additions to this benchmark figure have undoubtedly trended upward at an increasingly accelerated pace. It could

be concluded that the present replacement value of air and water pollution control facilities now operating is in the neighborhood of \$10 billion.

It should be carefully noted that the figures referred to are all capital expenditures, and do not include annual operating and maintenance expenses involved in connection with pollution control facilities. These additional expenses amount to hundreds of millions of dollars annually. A very rough rule of thumb is that such additional annual expenses approximate 10% of the total capital expenditures.

As standards become more stringent, it may be that industry will be called upon to spend much more per year for new pollution control facilities than the \$3.6 billion it will spend this year.

This raises some fundamental questions as to how big a financial load we should place upon our economic system in this regard and how this load should be distributed. The cost of controlling pollution enters into our national accounts, affects our competitive position in world trade, and consequently affects our balance of payments. A delegation from the National Association of Manufacturers met in Brussels early this year with delegations from the manufacturers associations of the six Common Market countries. These associations are banded together in an organization known as U.N.I.C.E. A major subject of the conference was pollution control. The impression gained by the NAM delegation was that these countries were at least 5 to 7 years behind the United States in terms of pollution control.

This is why it has been urged that, at least for the period that American industry is going through what appears to be a "pollution control crunch," and until other countries catch up to the United States in this regard, industry should be granted a tax credit for some portion of the cost of new pollution control facilities. The concept of special tax treatment of such costs has already been recognized twice by the Congress. The first time was during the suspension of the 7% investment credit. Pollution control equipment was exempted from the suspension. The second time was on the occasion of the repeal of the 7% investment tax credit by the Tax Reform Act of 1969. This Act included a provision for accelerated amortization of pollution control equipment. However, this provision contains so many restrictions that it is generally regarded as meaningless and ineffective. Many people in industry believe that this provision should be replaced by legislation such as is proposed by H.R. 3565, introduced on February 4, 1971 by Representative Charles S. Gubser of California. This bill carries the title of "Pollution Control Incentive Act of 1971," and would provide for a 20 percent tax credit and a 1 to 5 year amortization period of costs for air and water pollution control facilities. These are defined to include the cost of land, buildings, improvements, machinery, and equipment used to control pollution, whereas present law is limited to equipment and buildings used exclusively to house such equipment.

H.R. 3565 calls for certification of the facility by the appropriate State agency, whereas present law requires dual certification by both the State agency and the Federal government. A 3-year carryback and 5-year carryover of unused credits would be provided.

One rationale for such legislation rests upon the widespread public benefit conferred by pollution control efforts and the generally non-productive and uneconomic character of pollution control facilities. Operation of these facilities usually does not yield a salable product to offset some of the capital and operating costs, let alone make any profit. In addition, these costs divert capital away from investments in productive facilities which could yield profits. It is on this basis that the official policy of the National Association of Manufacturers calls for recognition of the public interest nature of these expenditures, and their uneconomic aspects, through accelerated amortization up to and including immediate write-off at the option of the taxpayer and through tax credits to enterprises which expend private capital for such facilities.

It is sometimes said that the cost of controlling pollution should be considered as an ordinary cost of doing business and should be included in the price of the product. I suggest that controlling pollution is in the process of becoming an *extraordinary* cost of doing business, and I question whether it is wise, in light of foreign competition, the drain on our gold, our balance of payments problem, and the recent battering of the American dollar in foreign money markets, to build all of this extraordinary cost into our price structure.

It might also be noted that raising the prices of products to cover increased costs is all right if the government will not raise objections to your price increases and if customers will not turn to your domestic and foreign competitors. If the public insists on an ultra-high quality physical environment in highly industrialized areas, and insists upon achieving this type of environment within an extremely tight time schedule, a tax credit not only seems equitable, it seems to be the only available economic avenue to diffuse this cost increment among the entire public which benefits.

Having considered some of the reasoning supporting a tax credit for pollution control let us turn to the question, What is the prevailing climate of opinion toward such a proposal? A July 1970 report by Opinion Research Corporation of Princeton, New Jersey gives the results of a survey of the latest public attitudes toward air and water pollution. The results in the report were based upon a nationwide survey of the United States public 18 years of age and older. Personal interviews were conducted with 2,168 respondents in their homes from May 18 to June 18, 1970. One of the questions asked was "Would you be for or against companies being given a tax reductions to help them cover the cost of installing pollution control equipment?" Of the total public, 58 percent were for, and 34 percent were against. The survey report commented as follows: "The public continues to be willing to support tax credits to help companies cover the cost of installing pollution control equipment."

This solid majority support for pollution control tax credits among the general public reflects the same viewpoint prevailing among top-level industrial executives. As reported in the February 1970 issue of *Fortune*, some 270 chief executives of companies listed in *Fortune's* annual 500 Directory were personally interviewed at length to ascertain their opinion about various aspects of the environment problem, as it affects them both as citizens and as leaders of business. In response to the question "What do you think would be the single most effective—least effective—incentives to business to do something more about pollution?", 59 percent considered tax credits for pollution control costs as most effective while 2 percent considered tax credits least effective. "Passing on costs to consumers" was considered most effective by 4 percent and least effective by 47 percent.

Perhaps the best way to conclude a discussion of a tax credit proposal is to quote the President of the United States. The following statement is made on page 133 of the publication, "Nixon on the Issues":

"Tax incentives are a different *kind* of Federal investment from direct expenditures. Both affect the federal funds available for other purposes; but they are set very different in their effect. I think my audience understands why I favor incentives. They use and strengthen private institutions, rather than replacing them with public bureaucracies. They disperse administrative responsibilities to lower and more local levels rather than overcentralizing them. They allow for some more variety, flexibility and experimentation rather than perpetuating over-rigid federal directives. They bring out private investment funds to help get the job done. I like the mix of incentives and direct expenditures, but the balance must be corrected in favor of more incentives."

Conclusion

In conclusion, we submit that the Joint Economic Committee should reject the concept of a pollution tax for the following reasons:

1. Taking money away from industrial companies will not help the cause of pollution control and will not facilitate the installation of pollution control facilities or the conduct of pollution control research and development.
2. A pollution tax is inconsistent with the concept of government by sound and impartial regulation.
3. A pollution tax would involve major administrative problems related to setting of the tax rates, monitoring of emissions and effluents, and enforcement.
4. Contrary to repeated assertions, there is no precedent for a pollution tax.
5. A pollution tax could cause unfortunate and unforeseen economic dislocations.
6. A pollution tax could be used to achieve governmental control of industrial expansion and operation.

We further submit that a positive approach which would facilitate even greater expenditures for pollution control facilities and pollution control research and

development should be based on the fact that there are broad social benefits which accrue to all the people of the nation through environmental quality control efforts. Because of this and because in most instances money invested for abatement facilities does not bring an economic return, the Association believes there should be some recognition of the cost of installing environmental quality control facilities in relation to the general public interest and the uneconomic portion of the investment. This recognition should take the form of accelerated amortization up to and including the immediate write-off of the facility at the option of the taxpayer, and tax credits to enterprises which expend private capital for such facilities.

We greatly appreciate this opportunity to present our views.

PREPARED STATEMENT OF JOHN E. KINNEY

My name is John E. Kinney. I am a privately employed sanitary engineering consultant with formal education and 30 years experience in pollution control. This experience includes county, state and interstate regulatory agencies. At present I am advisor to industries, civic groups, and government at federal, state and local levels.

This experience dates back to the time when pollution was a dirty word, before it became a cause. I have attempted to share that experience with Congressional and state legislative committees in their efforts to develop laws to promote pollution abatement and control.

Frankly, I have been frustrated a number of times by an inability to convey the realities of pollution control to individuals and at times congressional committees. The well-intentioned concerned citizen can demand action and get it. Unfortunately he can do it with no penalty to himself if his proposal is wrong, or if his proposal adversely affects others. Even worse, he can rationalize reasons for the lack of success in attaining the desired end and, again lacking knowledge for an adequate diagnosis, promote another equally unattainable approach.

The result has been a merry-go-round of agencies, policies, and premises which have been quite effective in delaying pollution abatement. That there has been progress in spite of this is a tribute to the people who have been damned by environmentalists over the past two decades.

The story was quite graphically told during the recent oversight hearings by the House Public Works Committee.

The House Public Works Committee hearings have permitted an insight into the true reasons for our failures in abating pollution—and all of them do not lie in the law. The hearing record can assist in correction of the problem.

But I can assure you that the pollution tax is not a remedy; and I would use some illustrations from the testimony of the environmentalists who appeared before your Committee to make my point.

For example, Mr. Kimball, Executive Director, National Wildlife Federation, on pages 4 and 5 names the Ruhr, Springfield, Missouri, and Otsego, Michigan as illustrative of his contention "there is no doubt that a pollution tax is effective in reducing pollution." The facts on each show (1) there is no pollution tax imposed in any of the three places; (2) the three named areas provide a waste treatment service for their industries and charge for the service what it actually costs to treat the waste; (3) it is often cheaper for the governmental agency to treat the waste than for the industry to do so and the agency prefers to have a control over the industrial waste treatment.

The Ruhr authority sells water to industry and cities. It also constructs and operates waste treatment facilities for those who want to use them. If there is not use there is no fee paid. To reduce volumes of water discharged to the treatment plant, the companies can recycle water. But the more they recycle, the greater the evaporative loss. This water is thus truly consumed and not available for use by others. Comparing 500 gallons a ton (a questionable figure) in the Ruhr with 26,000 gallons in the United States is fatuous. If all American steel plants were to totally recycle their huge volumes of water, the evaporative losses would drop stream flows quite significantly in some areas.

The same principle applies to Otsego, Michigan. This small town has two industries which were important contributors to the sewage treatment plant. When the city adopted a sewer ordinance and a surcharge for stronger than

normal sewage the milk drying plant instituted good housekeeping practices and reduced losses; the cottage cheese plant reduced loss of whey to the sewer by hauling it out to the country for disposal. There is question as to whether this practice is an improvement in so far as the environment is concerned but the point is that the company did not pay a tax, it paid a service charge for treatment of wastes and merely diverted the whey to reduce payment to the city. No changes were reported in processing.

For reference this Committee could contact Wes Clark, the city manager, Dean Smalla, the plant operator or Ted Williams, the engineering consultant. Incidentally, the ordinance was adopted 15 years ago.

Springfield, Missouri, differs only in size. The principles are the same. Paul Hickman, the superintendent, can detail the progress but the city does not levy a pollution tax. It provides a service for its 50 some industries and takes the extra strength waste from 22 of these companies at a surcharge rate commensurate with the cost of treatment.

The meat packing plant referred to by Mr. Kimball was owned by the Missouri Farmers Association. When the ordinance was adopted in 1962 the company, having to pay on a basis of volume as well as strength, reduced the volume of water it pumped from its own well and installed screens to catch the heavy solids. There was no process change or pretreatment—only what has become normally accepted good housekeeping.

There is no experience anywhere to my knowledge on the practical application of a pollution tax. The backing for the proposal is all theoretical.

Mr. Kimball referred to empirical studies in Kansas. Perhaps he should have said theoretical. But he pointed out that the tentative conclusion of taxation being cheaper than regulation was based on permitting variable reductions. If it is cheaper for one company to reduce than another, the reduction would be the responsibility of the first. Yet, he follows that with the idea the effluent tax would be applied to all and at different rates according to the type of waste—not the effect of the particular discharge. What he proposes in effect is to give some arbitrary and discretionary authority to decide not only the rate but to whom it would be applied. This definitely conflicts with his stated thesis that the market place will remove the inefficient producer.

Mr. Davis, testifying on behalf of the National Audubon Society, on the other hand, admits such a tax would wipe out marginal industries. He apparently sees no importance in the psychological or economic impact of such action on environmental quality. Nor does he demonstrate knowledge of the variability of effluent quality from a given operation when he suggests there would be no administrative burden on the government in its application. Any tax collector seemingly could determine what the tax is and collect it. Such naivete! Only by reducing pollutants to some cook book figure in terms of pounds per ton of product could the tax collector dodge the hurdles of a complex continuing monitoring. This, incidentally, is the trap into which the present Administration is falling.

But Mr. Davis obviously isn't interested in such uniformity for he does not endorse "inefficient environmental controls." "It is not efficient," he said, "for a plant to be forced to clean up its emission by an amount which is greater than necessary to meet well founded standards." And he further points out the inequities of uniform standards.

And in this he differs drastically from Mr. Alderson, appearing for Friends of the Earth, who wants a high tax to "exert a steady pressure to eliminate the last of the pollutants instead of leaving the amounts permitted by standards."

That there is irritation about pollution is obvious but irritation is no guarantee of perspicacity. What is needed desperately is a defined goal. The House Public Works Committee report #2021 in 1966 provided the only definition in our legislative history. Attention to that definition would have discouraged the attitude expressed by some that we must eliminate all waste discharges. It is impossible.

The warning of Philip Handler, President of the National Academy of Science, is apropos:

"We have not yet established the social mechanisms whereby to bear the costs or agreed on how to determine what we shall forego so as to do so. Meanwhile, my special plea is that we do not, out of a combination of emotional zeal and ecological ignorance, hastily substitute environmental tragedy for existing environmental deterioration."

What must be recognized is that once pollution taxes are instituted the control is reduced simply to one of which alternative is cheaper—not which has the least adverse environmental impact.

And when the advocates for the tax agree that quality standards must yet remain, they admit the built-in failure of the tax as an adequate control. The income from our liquor tax is the best assurance the Volstead Act will never be repeated. The income from the pollution tax would fund programs which could not be self-sustaining with the decreasing revenue the environmentalist envisions. Russell E. Train, Chairman of the Council on Environmental Quality, placed the issue on the table when he said the Administration is after tax revenue. And this probability cannot be ignored by the environmentalists who now endorse the idea. At some point in time the proponents of ineffective legislation must accept responsibility.

Chairman PROXMIRE. Thank you very much for vigorously and clearly expressing your viewpoint on this. Frankly, I don't think you get the message as far as we are concerned. You and I do disagree on whether or not we ought to have an antipollution tax or a charge on waste treatment services, et cetera, whatever you want to call it.

At any rate, the fact is that we are not stopping pollution now. It is getting worse, worse in 1969 than in 1968, worse in 1970 than in 1969, worse in 1971 than in 1970, in spite of all of the speeches, the legislation, in spite of the very large amount of money which you point out industry is now paying to secure antipollution equipment. It just isn't doing the job.

We need a new strategy, new technique, and we also need a sense of urgency, it seems to me.

I think we have to act on this.

Now, let me point out, Mr. Lumb, in your statement you seemed to imply that it is unfair to industry to expect industry to invest even more in combatting pollution when they are investing as much as they are in view of the fact that what they are investing in is not productive; that is, it doesn't bring an economic return. They don't get any more from it.

This is precisely and exactly why we want this kind of a charge put on, whether you call it an effluent charge for treatment or call it a tax. Once it is made clear that this water that they are using to carry off their waste is not a free goods, is an economic goods and they have to pay for it, then they will find when they invest in these facilities that they are productive because then it holds down their costs. It is going to give them better profits, going to be a clear incentive they can understand.

This is what we are arguing for and this is why it seems to me it is very likely to work as I think it has worked. I don't care whether you call it a waste treatment service or effluent tax; it is the same thing in my view.

Mr. LUMB. It is not the same thing. A user charge is——

Chairman PROXMIRE. Well, I am happy to modify my bill and call it a waste-treatment service charge.

Mr. LUMB. May I respond to your——

Chairman PROXMIRE. All right. Go ahead.

Mr. LUMB. It seems to me that the effluent tax presupposes that industry is not doing its job.

Chairman PROXMIRE. There is no question about that.

Mr. LUMB. I submit to you that if there is one segment in this economy that is trying to put its money where its mouth is, it is American business and industry in this total environment field. I don't

know of a single major corporation, and I know a lot of them, that hasn't built into any capital improvement that it has on the drawing board or has had for the last 5 years or projected for the future, that doesn't include the most modern treatment facilities that existing technology will provide.

Chairman PROXMIRE. All right, now, Mr. Lumb, let's take an example. Take the great steel industry located around the bottom of Lake Michigan, that pollutes Lake Michigan. They have spent a lot of money, I know they have, and I know these are good people, good men, as you are. They don't want pollution. They don't like it. They want to stop it. But the fact is they operate an enormous business which involves enormous investment, great employment. They have a responsibility. And their responsibility is they have to make a profit or they go out of business.

One of the ways they find it is necessary and desirable to operate is to use the water of Lake Michigan to carry off their wastes and it is killing that lake. It is destroying that lake. What we are saying is we think with a tax that will make it more productive for them to put more research, more effort, more energy into reducing pollution, they are far more likely to do it.

You know that back in 1910 legislation was passed prohibiting any kind of pollution being put into Lake Michigan from Lake County, Ind., or Cook County, Ill., and yet it has continued now for 60 years and it is worse this year as I say than last year and worse last year than the year before. It is just progressing and getting so bad they are going to kill that lake, as I say.

This is an immensely valuable asset to America as well as to that area and I think we just have to think seriously about it.

Another thing that really concerns me about the attitude of the National Association of Manufacturers on this is that I disagree wholeheartedly with your contention that if we adopt this kind of an approach, it is going to be greater interference with business. I think it is just the opposite. What this does is say here is the tax. You fellows handle it any way you want. We don't say you have to stop pollution tomorrow. We say it will be in your economic interest to cut it down sharply. You can adopt any process you wish. Buy more equipment, use different fuel, use an entirely different kind of approach but it simply gives you an economic incentive and says take it from here. It is up to American industry with all your ingenuity to use whatever means you want to stop—

Mr. LUMB. Do you want to comment on Lake Michigan?

Mr. KINNEY. Yes; I am not unacquainted with Lake Michigan. In fact, I know it quite well and I have spent a good many days in sampling, analysis, and what have you, on it and I differ with you totally in terms of your information that Lake Michigan is getting worse from day to day. I do know the improvements and I know of changes that have occurred and I know the residual problems that are out there and I can assure you, Senator, that the problems on Lake Michigan are shore-related problems, that you could shutoff the industries around there and still have your problems.

Now, do we anticipate at this stage that we are going to shutoff all the industrial discharges, promote the recycling, if you will, all as a

total closed system? You will have a residual air pollution; you will change your fuel energy spectrum across the country by coming in for low sulfur fuels; you are going to reduce all your marginal operations, and then at that stage of the game when we still have the problem of Lake Michigan, then whom do we turn to? Up the Roaring Fork in Aspen, Colo., at 10,000 feet, they have the same types of algae problems, same depth, clean water at the far end. There is no industry. There is no agriculture. There is no mining. There is no phosphate and detergents. There is still the problem.

The point is, it is the manner in which we are using the land up there for recreation and the guidelines established by the Congress as to how that should be used up there, and until we take a look at the full picture we are going to go from one problem to another.

You say under present laws things are getting worse. I can assure you the problems across the country are not getting worse. They are getting better. We are knowing more things than in the past.

Chairman PROXMIRE. The witnesses that we had last week gave us an objective measure of pollution. They called it an environmental pollution quotient, environmental quality index. I am sure it can be challenged, et cetera, but at least it is an attempt to measure objectively, arithmetically as much as possible what is happening to the environment and by their measures it is getting worse from year to year.

Mr. KINNEY. That measure goes back 2 years, not 30 years.

Chairman PROXMIRE. You don't question it is worse now than it was 30 years ago, do you, in pollution, both air and water?

Mr. KINNEY. Definitely not.

Chairman PROXMIRE. When you say definitely not you mean that water pollution isn't worse now than it was?

Mr. KINNEY. It definitely isn't.

Chairman PROXMIRE. Isn't worse?

Mr. KINNEY. We have got problems now down to specific points. I would give my eyeteeth to spend a week in the field with you to show you the differences between that and what you are reading in the paper.

Chairman PROXMIRE. I can remember 30 years ago you could swim in the Great Lakes, in most of the rivers, drink the water. Now you go downtown and inhale and you can tell it is worse. You can almost walk on some of these lakes.

Mr. KINNEY. 30 years ago it was impossible to swim in the Ohio River, It was bubbling from corruption from all of the sewer outfall. Thirty years ago you had one series of worms in the Ohio Basin.

Chairman PROXMIRE. The incidence of emphysema is caused by a number of things but one of the principal causes is air pollution and that has increased some tenfold in the last 20 years.

Mr. KINNEY. It depends upon which parameter you are using. Thirty years ago you couldn't see across town in Detroit because of the smoke. Now we can pick out the stacks that are still left. All our northern cities 30 years ago were a total mess. We now have different levels and what we are looking at now—actually we don't remember how bad things really were. If you weren't in this thing 30 years ago you didn't know what to look for.

Chairman PROXMIRE. Let me get back and see if I can develop—
Mr. KINNEY. What I am suggesting is my concern that once you jump to this kind of a change with a suggestion that industry can then decide whether it wants to pay the tax or not, we are going to have certain ones that are going to continue to pay it. Then what do we do?

Chairman PROXMIRE. You are not suggesting that Lake Erie is better now than it was 30 years ago? You are not suggesting the Mississippi is better, the air you breathe in Los Angeles or Chicago or New York is better, are you, really?

Mr. KINNEY. Los Angeles is the one that is worse but Los Angeles is—

Chairman PROXMIRE. Only one.

Mr. LUMB. Only one.

Mr. KINNEY. Not because of industrial pollution. Industrial pollution is not the problem in Los Angeles. It is essentially a smog problem.

Chairman PROXMIRE. I have got great admiration and I mean it, for the NAM. You have a fine economist who has come in and testified before this committee—very able, very fair. I disagree with him sometimes on his policies but I think he has demonstrated considerable foresight and ability but I cannot understand you gentlemen taking the position that our environment is not polluted more not than it was 20 or 30 years ago. If that is true, we would like to have the facts and figures.

Mr. LUMB. I suggest if you really want the facts and figures that we start listening to people like Mr. Philip Handler, the president of the National Academy of Sciences, or Mr. W. T. Pecora, whom I mention in my opening remarks to my prepared statement. They are real scientists who know the facts.

Chairman PROXMIRE. You say U.S. industry is spending \$3.5 billion for new control facilities for pollution. Can you break this down for us? Over what period? Is this per year or over a period of longer than a year?

Mr. LUMB. This is a result of a survey made by McGraw-Hill and we will be glad to submit their survey for the record.

Chairman PROXMIRE. Fine. We would like to know over what period, whether it is 1 year, 5 years, or 10 years.

Mr. LUMB. This year.

Chairman PROXMIRE. All right. We would like to have that for the record.

(The following information was subsequently supplied for the record:)

POLLUTION CONTROL EXPENDITURES

(Survey by the Economics Department, McGraw-Hill Publications Co.,
May 14, 1971)

HIGHLIGHTS

1. \$18.2 billion is the total cost of bringing all of American business' existing facilities up to present pollution control standards.
2. American business plans to spend \$3.64 billion for air and water pollution controls in 1971, a huge 46% increase above 1970.
3. Industry plans to devote nearly \$2.1 billion of its pollution control investment to air pollution control this year, a solid 53% rise above 1970. About \$1.6 billion is expected to be allotted to water pollution control, a 37% jump from last year's level.

4. Total pollution control spending will account for 4.4% of planned 1971 capital investment compared with 3.1% a year ago.

5. R. & D. spending devoted to industry's pollution problems is expected to total \$926 million in 1971, a 25% increase above 1970.

American business needs to spend a total of \$18.2 billion to bring all of its existing facilities up to present pollution control standards. Before McGraw-Hill made this survey, this cost was one of the great unknowns facing our society. The key result of this survey means that it will cost 5 times the \$3.64 billion business is currently planning to invest in air and water pollution control this year. Thus, if business were to maintain its present spending rate, it would nearly satisfy current anti-pollution legislation by the end of 1975. But standards are likely to become more stringent with the passage of time, so the total cost could run well above \$18.2 billion. However, it is expected that many firms will find it necessary to shut down polluting facilities which will not meet stricter controls on an economic basis.

The industry which will make the biggest investment in pollution control to bring its facilities up to current standards is electric utilities. It will have to invest \$3.24 billion, nearly 4.8 times its planned 1971 air and water pollution control expenditures. Second is the iron and steel industry, which would achieve its \$2.64 billion investment in pollution control in 12.5 years if the 1971 anti-pollution spending pace were maintained. The petroleum industry ranks third in pollution control costs, at \$2.12 billion; and it would complete its anti-pollution program in just over 4 years based on its current spending rate. The paper industry comes next with a total pollution control cost of \$1.89 billion. Closing out the top 5 is chemicals with an anti-pollution bill of \$1 billion.

AIR AND WATER POLLUTION CONTROL EXPENDITURES

American business is making a strong effort to eliminate industrial pollution. This is the fourth consecutive year of increased investment by business to meet the challenge of cleaning up America's air and water. It plans to spend \$3.64 billion for air and water pollution control in 1971. This is a very substantial gain of 46% above actual investment in 1970, and is more than 11 times the expected percent increase in total capital investment this year. Manufacturing industries currently plan to spend \$2.46 billion in 1971, a significant 43% increase over last year. The biggest growth in air and water pollution control investment in 1971 is in nonmanufacturing with an increase of 51% to nearly \$1.2 billion. This year's plans would probably have been larger, but companies reporting to us pointed out that they are now closing down many of their polluting facilities rather than attempt to upgrade them.

21 out of 26 major industry groups plan a rise in pollution control investment for this year. Two industries, railroads and communications, indicate no change in plans. The expected percentage increases in air and water pollution control expenditures this year range from a low of 3% in iron and steel to a high of 150% in transportation, other than railroads and airlines. The paper industry expects to raise its expenditures to curb air and water pollution in 110% in 1971. Next in line is food and beverages with a planned increase of 80% above 1970 which will bring its total to \$151 million. The automobile industry plans a 76% hike, to \$118 million, while the electric utilities industry anticipates a 68% gain for an increase of \$274 million over last year.

Three major industries plan declines in investment in air and water pollution control this year. The largest drop (60%) is planned by the "other" transportation equipment industry. Plans of the "other" nondurables group are down 38% from 1970, while pollution control spending of the rubber industry is expected to slip 16% between 1970 and 1971.

The electric utilities plan the largest spending on air and water pollution controls in 1971—\$679 million, up from \$405 million last year. Second is petroleum with plans for \$507 million, 50% above 1970's \$337 million level. Paper follows in third place with \$321 million, up \$168 million from a year earlier. It is followed by chemicals, \$263 million, an increase of 56%, and iron and steel at \$212 million.

AIR VERSUS WATER

Business plans to invest \$2.06 billion in air pollution control and \$1.58 billion in water pollution control this year. Spending for control of air pollution is ex-

pected to be up 53%, for water pollution control 37%. Thus, spending on air pollution control is expected to account for 57% of the pollution control pie covered in this survey, with water pollution control accounting for the remaining 43%.

19 of 26 major industries plan to raise their spending for air pollution control this year. The 1971 increases run the gamut from 11% in the aerospace industry to 167% in transportation, other than railroads and airlines. Paper is second highest with a 131% gain, followed by the "other" durables group (86%), petroleum (84%), and commercial business (76%). Food and beverages and electric utilities complete the top seven anti-pollution industries, in percent terms, with increases of 68% and 67% respectively.

Four industries plan to cut investment in air pollution control this year. The "other" transportation equipment industry plans to chop spending for air pollution control by 83%, rubber expects a 34% decline, airlines a 6% drop and railroads a 5% dip.

Water pollution control investment plans of 23 of 26 major industries are higher this year than last. Increases in this category range from 7% for the electrical machinery industry to 233% for the airlines. The textile industry is second in line with 133%, followed by automobiles (109%), "other" transportation (100%), paper (97%), food and beverages (89%) and electric utilities (69%).

Only three industries plan declines in water pollution control spending. They are "other" nondurables (43%), iron and steel (15%) and "other" durables (13%).

POLLUTION CONTROL: A RISING SHARE OF BUSINESS CAPITAL SPENDING

In 1971, business will devote a rising share of its total capital spending to combat pollution in America. Planned pollution control expenditures will account for 4.4% of capital investment in 1971 compared with 3.1% in 1970.

In manufacturing, 7.6% of capital expenditures is presently allocated to control of air and water pollution, up from 5.4% last year.

22 of 26 major industry groups indicated rising proportions of their capital spending will be devoted to the fight against pollution this year. The outstanding increase in proportions is planned by the paper industry,—20.3%, up from 9.3% in 1970. The second largest gain in shares is expected by the nonferrous metals industry, from 8.1% in 1970 to 13.2% this year. The automobile industry also plans a significant increase in its share of investment going for pollution control, from 4.2% in 1970 to 8% in 1971.

The paper industry (20.3%), nonferrous metals (13.2%), "other" durables (12.4%), steel (12.3%), and stone, clay and glass (9.5%), are the five industries planning to devote the greatest share of their capital expenditures dollar for anti-pollution purposes in 1971.

Only three industries will cut their share of investment going for pollution control. "Other" transportation equipment will taper its share to 2.2% of its capital investment, down from 5% a year ago. The "other" nondurable group's investment will fall to 2.8% from 5.5%, while the instruments industry slices its ratio of pollution control spending to total capital investment by .1 point. Only the communications industry plans no change for 1971.

R & D EXPENDITURES FOR POLLUTION CONTROL

American industry plans to spend \$925.8 million on research and development dealing with pollution problems this year, 25% more than last year. Some of these programs will be federally financed. Anti-pollution R & D expenditures are expected to rise this year at a rate four times as fast as total R & D.

Manufacturers expect to devote \$743.2 million of their R & D expenditures to pollution control this year, this is a 12% hike over 1970 and approximately 2½ times the expected increase in manufacturers' total R & D expenditures this year.

The two largest performers of anti-pollution R & D in 1971 will be the industry leaders of a year ago. Aerospace remains the largest single performer, spending \$222 million, a 22% increase above last year. Nonelectrical machinery ranking second, will account for \$186.5 of R & D pollution control expenditures this year. Together, these two industries account for almost half of industry's total R & D environmental control expenditures in 1971. Next in line is the automotive

industry, with an R & D anti-pollution effort costing \$74.6 million, 24% above a year ago.

The strongest year-to-year growth is planned by lumber (200%), furniture (175%) and electric utilities (173%).

Nonmanufacturing industries, responding to the urgent need for new and improved pollution controls have rapidly accelerated the pace of their R & D spending for this cause. Together, the utilities, the railroads and the mining industries will spend \$182.6 million in 1971, a 127% increase above 1970.

Only six industries plan to cut R & D spending for anti-pollution purposes. Steel and chemicals report the two largest downturns, 53% and 32%, respectively, followed by "other" manufacturing industries (21%), textiles (14%) "other" transportation equipment (5%) and rubber (3%).

The survey results indicate that American business is demonstrating its determination to fight pollution. It will spend large sums on pollution controls and also close down a large number of polluting facilities. Business will have to spend \$18.2 billion to meet current pollution control standards. At the present spending rate, it would complete most of its pollution control program by the end of 1975.

TABLE I.—How much industry must spend for pollution control¹

Industry :	[In billions of dollars]	Amount
Iron and steel.....		2.64
Nonferrous metals.....		1.62
Electrical machinery.....		.21
Machinery.....		.69
Autos, trucks, and parts.....		.17
Aerospace.....		.06
Other transportation equipment.....		.21
Fabricated metals.....		.19
Instruments.....		.10
Stone, clay, and glass.....		.16
Other durables.....		.46
Total durables.....		6.51
Chemicals.....		1.00
Paper.....		1.84
Rubber.....		.30
Petroleum.....		2.12
Food and beverages.....		.40
Textiles.....		.11
Other nondurables.....		.08
Total nondurables.....		5.85
All manufacturing.....		12.36
Mining.....		.74
Railroads.....		.32
Airlines.....		.08
Other transportation.....		.06
Communications.....		(2)
Electric utilities.....		3.24
Gas utilities.....		1.04
Commercial ³32
All business.....		18.16

¹ The total cost of bringing industries existing facilities up to present pollution control standards as of Jan. 1, 1971.

² Less than \$500,000.

³ Figures based on large chain, mail order and department stores, insurance companies, banks, and other commercial businesses.

TABLE II.—HOW MUCH INVESTMENT GOES FOR AIR AND WATER POLLUTION CONTROLS

[Dollar amounts in millions]

Industry	Actual				Planned 1971	Percent change 1970-71
	1967	1968	1969	1970		
Iron and steel.....	\$130	\$119	\$179	\$206	\$212	3
Nonferrous metals.....	43	15	41	100	152	52
Electrical machinery.....	17	53	32	52	58	12
Machinery.....	29	60	51	121	169	40
Autos, trucks, and parts.....	62	27	55	67	118	76
Aerospace.....	9	16	22	15	18	20
Other transportation equipment.....	5	11	15	15	6	-60
Fabricated metals.....	22	41	44	53	70	32
Instruments.....	5	6	25	25	28	12
Stone, clay, and glass.....	48	40	63	64	104	62
Other durables.....	18	21	103	135	175	30
Total durables.....	388	409	630	853	1,110	30
Chemicals.....	92	109	140	169	253	56
Paper.....	94	82	143	153	321	110
Rubber.....	7	10	9	50	42	-16
Petroleum.....	102	170	260	337	507	50
Food and beverages.....	42	23	58	84	151	80
Textiles.....	7	9	10	13	25	92
Other nondurables.....	53	20	31	60	37	-38
Total nondurables.....	397	423	651	866	1,346	55
All manufacturing.....	785	832	1,281	1,719	2,456	43
Mining.....	66	56	105	115	135	17
Railroads.....	(1)	(1)	(1)	28	28	0
Airlines.....	(1)	(1)	(1)	21	27	29
Other transportation.....	0	0	0	4	10	150
Communications.....	0	0	0	(1)	(1)	(1)
Electric utilities.....	135	219	155	405	679	68
Gas utilities.....	80	25	130	110	148	35
Commercial ²	0	0	0	100	158	58
All business.....	1,066	1,132	1,671	2,502	3,641	46

¹ Not available.² Less than \$500,000.³ Figures based on large chain, mail order, and department stores, insurance companies, banks, and other commercial businesses.

TABLE III.—TOTAL EXPENDITURES FOR AIR AND WATER POLLUTION CONTROL, 1970, 1971

[Millions of dollars]

Industry	Actual 1970		Planned 1971		Percent change 1970-71	
	Air	Water	Air	Water	Air	Water
Iron and steel.....	\$86	\$120	\$110	\$102	28	-15
Nonferrous metals.....	20	20	119	33	49	65
Electrical machinery.....	25	27	29	29	16	7
Machinery.....	82	39	116	53	41	36
Autos, trucks, and parts.....	45	22	72	46	60	109
Aerospace.....	9	3	10	8	11	33
Other transportation equipment.....	12	7	2	4	-83	33
Fabricated metals.....	25	28	37	33	48	18
Instruments.....	18	7	18	10	0	43
Stone, clay and glass.....	39	25	62	42	59	68
Other durables.....	58	77	108	67	86	-13
Total durables.....	479	374	683	427	43	14
Chemicals.....	79	90	130	133	65	48
Paper.....	59	994	136	185	131	97
Rubber.....	32	18	21	21	-34	17
Petroleum.....	152	185	280	227	84	23
Food and beverages.....	38	46	64	87	68	89
Textiles.....	4	9	4	21	0	133
Other nondurables.....	4	56	5	32	25	-43
Total nondurables.....	368	498	640	705	74	42

See footnotes at end of table.

TABLE III.—TOTAL EXPENDITURES FOR AIR AND WATER POLLUTION CONTROL, 1970, 1971—Continued

[Millions of dollars]

Industry	Actual 1970		Planned 1971		Percent change 1970-71	
	Air	Water	Air	Water	Air	Water
All manufacturing.....	847	872	1,323	1,133	56	30
Mining.....	73	42	87	48	19	14
Railroads.....	21	7	20	8	-5	14
Airlines.....	18	3	17	10	-6	233
Other transportation.....	3	1	8	2	167	100
Communications.....	(1)	(1)	(1)	(1)	(2)	(2)
Electric utilities.....	256	149	427	252	67	69
Gas utilities.....	75	35	88	60	17	71
Commercial ³	50	50	88	70	76	40
All business.....	1,343	1,159	2,058	1,583	53	37

¹ Less than \$500,000.² Not available.³ Figures based on large chain, mail order and department stores, insurance companies, banks and other commercial businesses.

TABLE IV.—TOTAL POLLUTION CONTROL EXPENDITURES AS PERCENT OF CAPITAL SPENDING

[In percent]

Industry	Actual 1970	Planned 1971	Industry	Actual 1970	Planned 1971
Iron and steel.....	10.3	12.3	Food and beverages.....	3.0	4.9
Nonferrous metals.....	8.1	13.2	Textiles.....	2.3	4.1
Electrical machinery.....	2.3	2.4	Other nondurables.....	5.5	2.8
Machinery.....	3.5	4.8	Total, nondurables.....	5.4	8.1
Autos, trucks, and parts.....	4.2	8.0	All manufacturing.....	5.4	7.6
Aerospace.....	2.8	3.6	Mining.....	6.1	6.7
Other transportation equipment.....	5.0	2.2	Railroads.....	1.6	1.8
Fabricated metals.....	4.3	6.0	Airlines.....	.7	1.3
Instruments.....	3.6	3.5	Other transportation.....	.3	.8
Stone, clay, and glass.....	6.4	9.5	Communications.....	0	0
Other durables.....	9.2	12.4	Electric utilities.....	3.8	5.4
Total, durables.....	5.4	7.2	Gas utilities.....	4.4	5.4
Chemicals.....	4.9	7.7	Commercial ¹6	.9
Paper.....	9.3	20.3	All business.....	3.1	4.4
Rubber.....	5.3	5.7			
Petroleum.....	6.0	8.5			

¹ Figures based on large chain, mail order and department stores, insurance companies, banks, and other commercial businesses.

TABLE V.—TOTAL R. & D. POLLUTION CONTROL EXPENDITURES

Dollars in millions]

Industry	Actual 1970	Planned 1971	Percent change 1970-71
Iron and steel.....	\$1.7	\$0.8	-53
Nonferrous metals.....	10.1	13.5	34
Machinery.....	177.6	186.5	5
Electrical machinery and communications.....	48.1	63.7	32
Aerospace.....	181.3	222.0	22
Autos, trucks, and parts.....	60.1	74.6	24
Other transportation equipment.....	2.2	2.1	-5
Fabricated metals and ordnance.....	7.0	11.0	57
Professional and scientific instruments.....	31.6	32.9	4
Lumber.....	.4	1.2	200
Furniture.....	.4	1.1	175
Chemicals.....	53.1	36.1	-32
Paper.....	8.2	8.3	1
Rubber.....	3.2	3.1	-3
Stone, clay, and glass.....	15.4	19.1	24
Petroleum products.....	34.4	43.2	26
Food and beverages.....	5.6	7.3	30
Textile mill products.....	5.0	4.3	-14
Apparel.....	(¹)	(¹)	(²)
Other manufacturing.....	15.7	12.4	-21
All manufacturing.....	661.1	743.2	12
Nonmanufacturing.....	80.4	182.6	127
All industry.....	741.5	925.8	25

¹ Less than \$50,000.² Not available.

Chairman PROXMIRE. How much for air, how much for water, how much to abate solid waste pollution and how much for research? Do you have those figures?

Mr. CANNON. The survey states that industry plans to devote nearly \$2.1 billion of its pollution control investment to air pollution control this year and about \$1.6 billion is expected to be allotted to water pollution control, and R. & D. spending devoted to industry's pollution problems is expected to total \$926 million in 1971.

Chairman PROXMIRE. Well, that is very helpful. I appreciate that. The reason I make the point is that the tax foundation estimates that cleanup costs for air and water pollution for the next 5 years will run \$25 to \$30 billion and this doesn't include sewer overflow collections and the large amount you are referring to, and it is a large amount of money, falls far short.

In your statement you say industrial pollution is but one fraction of the total pollution problem. Considering just water pollution, what fraction would industry be responsible for? —

Mr. LUMB. It depends on where you are—

Chairman PROXMIRE. Can you make a national estimate?

Mr. LUMB. I don't think you can. I think you can say this without any fear of contradiction, that the biggest polluter of all is nature, by far.

Chairman PROXMIRE. Well, of course, there are balances in nature. There are certainly polluting elements in nature; no question about it.

Mr. LUMB. Let me give you a figure.

Chairman PROXMIRE. I am talking about the pollution caused by nonnatural forces.

Mr. LUMB. It would be a very small percentage of it caused by industry. As a matter of fact, you hear a lot about the Cuyahoga River—

Chairman PROXMIRE. The GAO, in which we have placed great reliance—maybe they are wrong on this—their report from 2 years ago says it is industrial sources of pollution that account for the major untreated wastes.

Mr. KINNEY. I think they would have some difficulty supporting that. I know the report you are referring to.

Senator, if these committee hearings could bring up one point and one point only; that is, how do we define the goal of what we are looking for? We have no definition in our Federal law for pollution. We are shooting for a nebulous goal. The only definition for pollution is in the House Public Works Committee report in 1966 but we have forgotten that goal and if your committee can determine what we are trying to find—that is the reason you cannot get a figure. It depends upon which agency comes up with what they determine the thing should be and then they set a figure on it. Somebody else has a different goal; they set a different figure. Trying to reconcile those figures is trying to reconcile our health problem across the Nation.

Chairman PROXMIRE. It is very difficult in some areas, less difficult in others. BOD can be a reasonable measure to some extent in some. With respect to air there are certain measures that are helpful. Sometimes, as you say, it is a little complicated. By and large this has been put into effect. You gave the examples of Otsego and Springfield.

Mr. KINNEY. But that isn't a definition of pollution. In other words, the pollution tax in Mr. Kimball's words—

Chairman PROXMIRE. It was tried there and worked. Call it a service charge, whatever it was. You may say when you pay a tax on your gasoline that this isn't really a tax because it is used to build highways, a service charge for using the highways. I suppose maybe that is true. In other words, whatever you want to call it, it was a charge imposed on the industrialists and they reduced their pollution very sharply, 60 percent in the Otsego area in 4 months.

Mr. KINNEY. Would you be willing to suggest what you were calling a tax, anybody who pays a tax on a waste charge, then the governmental agency accept the treatment for all those wastes—

Chairman PROXMIRE. The administrative part is something we can work out in terms of efficiency.

Mr. LUMB. We don't know any exclusively industrial waste treatment facilities that are directly operated by municipalities or cities—

Mr. KINNEY. When you were talking about regional treatment plants and the bill that you proposed, that kind of a thing makes a lot of sense but it means somebody accepting and treating rather than putting a tax on it because you are now discharging. Now, if that kind of a thing is—this again is part of this lack of communication.

Chairman PROXMIRE. We want to do just that. You say it makes a lot of sense. That is what we want to do, set up that with the revenue that comes in. That is part of the bill we have introduced.

Mr. KINNEY. But to do what, though?

Chairman PROXMIRE. Set up regional associations that treat the water which has been polluted by the industry and we would fund those associations with the revenues that we get from the effluent charge.

Mr. KINNEY. The biggest problem that you are going to have is the Federal administration which will—an agency which won't do it. The Mahoning River, Youngstown—there was a proposal for a regional operation to be constructed by the State that would be paid for under just what you are calling for. In other words, it would be paid for by those that would use it, the same as the Ruhr, treat the whole river basin.

Chairman PROXMIRE. In our judgment it has to be uniform. You cannot expect one city to clean up its entire river when they are on a waterway where many cities contribute. Like Lake Michigan, many cities involved. One could do a superb job in Wisconsin and it wouldn't affect Lake Michigan very greatly at all.

You have to have a comprehensive kind of a program and only the Federal Government is in a position to provide it.

Mr. KINNEY. Well, I sincerely hope if the National Government gets into it that their effectiveness is better than it has been in the pollution control program so far. It is going to be screwed up more than it has been.

Most cities have pollution control ordinances. Most cities have programs set up to be able to tie into those treatment plants either directly or haul into it and be able to pay for that extra treatment. This is not anything new within the cities. But that is as Mr. Lumb has mentioned only a service for which you are getting a benefit. It is an entirely different deal than just a tax on which you hope so nebulously—

Mr. LUMB. I wanted the record to be abundantly clear that we are not opposing service charges for services rendered in waste treatment. As a matter of fact, we have to clean up the water in the Cuyahoga before we can use it for cooling purposes and we put it back in a hell of a lot cleaner condition than we take it out.

Chairman PROXMIRE. Well, I appreciate that and I think that is very helpful. I think if we can work together on that kind of thing maybe—

Mr. LUMB. We certainly can.

Chairman PROXMIRE (continuing). It would be most helpful because I would agree it should be related to the treatment of the water and what has happened to it.

One final question, gentlemen.

In your prepared statement, Mr. Lumb, you suggested the cost of collection, monitoring and recordkeeping would make pollution taxes

unworkable. Last month Prof. Robert Haveman, who used to be a staff member of this committee, testified before the committee. He estimated that the Nixon administration's proposal would cost \$12 billion over the next 5 years. The Muskie proposal would cost \$14 billion, and the effluent charge proposal would cost the budget \$4.3 billion, with a grant program just as large.

Would you comment on those estimates? Have you had an opportunity to consider them, whether those estimates are realistic or accurate or not?

Mr. LUMB. I couldn't, maybe Mr. Kinney can. I know this: We have estimated that to monitor the outfalls in the steel industry, I am talking about the sewer outfalls, to put the monitoring (sampling and analysis) equipment on, we had a bid from the Calgon Corp. in Pittsburgh. Just the cost of the equipment for each outfall would be \$50,000. Assuming there are 1,500 in the steel industry, that is \$75 million just to install the monitoring equipment.

Then you have got operating costs and then you have got the problem of how often you are going to monitor. Here we are talking about water.

Now, when you get into putting monitoring equipment on a stack and measuring the gases that come out, you have to separate—at the moment you are talking about sulfur dioxide, 65 percent of which, of course, you know comes from nature. I quote you the Stanford Research Institute on that.

So I don't know. These are all guess estimates. Maybe Mr. Kinney has an answer.

Chairman PROXMIRE. Well, let me just ask you gentlemen if you could—and you say there are no estimates on the cost of collection, monitoring, recordkeeping—provide us with estimates for the overall costs, making any assumptions that you wish; the assumption, of course, should be that you try to minimize the cost as much as possible. You try to do it on a spot basis. You don't do it, of course, where you don't absolutely have to do it, but make what estimates you can.

Mr. LUMB. You don't pay taxes on a spot basis, Senator.

Chairman PROXMIRE. Fine.

Mr. LUMB. It is unconstitutional in the United States.

Chairman PROXMIRE. I understand that, but you, as I say, try to make it as minimal as possible but as realistic as you can.

Mr. KINNEY. Filling out these forms for the Corps of Engineers on effluent discharges, one company with which I am knowledgeable, it has cost them over \$600,000 to prepare the information, the data, needed for those forms. A large company with a number of small plants, and the collection of this kind of information in order to get it the way the Government wants it, they put to an outside contractor to develop the report.

The data collected are useless. The forms provided on this thing permit you to make no appraisal whatsoever of the effects of those waste discharges on the river. They are good for policing, citizens' action; but in terms of water quality appraisal, that money is wasted.

That \$600,000 would have been a lot better spent going into waste treatment facilities in the first place, and this is one of the illustrations I suggest that when we jump up to some of these things, they sound

good at the moment, but when they are not tried out on a field basis first, some of the results aren't exactly what are anticipated.

Chairman PROXMIER. Thank you very much, Mr. Kinney, Mr. Cannon, and Mr. Lumb, for a most vigorous and effective presentation.

Our next witness is Mr. David Zwick, editor, Nader task force report on water pollution entitled "Water Wasteland."

Mr. Zwick, I understand you are going to summarize for us the views and conclusions contained in the "Water Wasteland" study, and that you also represent this morning the viewpoint of Environmental Action. We very much appreciate your willingness to testify. So go right ahead.

STATEMENT OF DAVID R. ZWICK, EDITOR, NADER TASK FORCE REPORT ON WATER POLLUTION ENTITLED "WATER WASTELAND"

Mr. ZWICK. Thank you, Senator.

I would like to give the subcommittee my views on effluent charge schemes, and economic incentive plans for water pollution abatement in general, based on our study. Although I am not otherwise connected with Environmental Action, that organization endorses my views on this subject.

It is patently apparent that our national water pollution control effort has failed to do the job in water pollution abatement. At least, I believe Mr. Lumb's and Mr. Kinney's comments which we just heard, that pollution has been getting better, are, in view of the evidence available, just plain nonsense.

If you compare industrial wastes to municipal wastes, for instance; if you compare industrial wastes to domestic sewage, industrial wastes surpass domestic sewage wasteloads. They were somewhat equal between 1900 and 1920, Public Health Service data shows. By 1960, they were more than twice domestic sewage wasteloads; and, of course, as industrial wasteload increases, per capita consumption increases. By 1968, the EPA figures show the organic wasteload pollution in the rivers from industry is somewhere between four to five times as great as domestic sewage; and, of course, to say that industrial wastes are only four to five times as bad as domestic sewage, understates the case because you cannot compare something like cadmium—5 pounds of cadmium—to 500 pounds of inert solid matter.

The Federal officials concerned with the problem are in fact hard pressed to name a single major body of water where Federal abatement action has improved the condition of the water, so that it is once again suitable for human use, as drinking water supply, fish habitats, and recreation spot.

Now, some economists have interpreted this failure to produce cleanup as the signal that we should abandon the regulatory approach to pollution abatement, setting standards and enforcing them, in favor of an economic incentive scheme, an alternative scheme, such as a national tax on effluents keyed to the amount and strength of discharge. The regulatory approach, this argument goes, has been tried and it has failed.

I would disagree. The regulatory approach has never really been tried. With the exception of the recently "rediscovered" Refuse Act of 1899, which went almost completely unenforced up until its 70th birthday, the Federal laws on water pollution barely deserve to be called a regulatory scheme at all. The Federal Water Pollution Control Act contains no penalties, it imposes crippling jurisdictional restrictions on the Administrator of EPA, and it frustrates the abatement process with time-consuming mandatory delays. Some Federal officials have estimated it takes somewhere around 58 months to get an injunction under the Federal Water Pollution Control Act.

The Refuse Act at least has fines for polluting, but they are too small—a maximum of \$2,500—to deter a large company's violation. And because citizens apparently have no way under the law to compel the Attorney General to use and enforce the Refuse Act, if he chooses not to do it, polluters have been spared even that small inconvenience in the vast majority of cases. I would for those reasons consider the development of a strong workable Federal enforcement scheme of paramount importance in restoring our waters.

A national effluent tax scheme could not and should not take the place of Federal standard setting and enforcement, for several reasons. In the first place, none of the administrative problems of the regulatory approach can be avoided by imposing an effluent charge. The Government would still have to monitor polluters' discharges, to make sure they weren't cheating on their "tax returns." And when Federal effluent tax inspectors discovered a "false" return, a penalty should obviously be imposed, just as it should be under any pollution enforcement scheme when a violation is discovered.

More important, however, a flat national effluent tax would, in all probability, simply not work to do what it would ostensibly be intended to do. It would not restore our waters to usable quality. That is because each place along each body of water has its own unique characteristic—its own unique size and current. A level of taxation which would work to eliminate pollution in one place—the Mississippi River, for example—would leave another place, say the Brandywine Creek, inundated with effluent.

The Federal Government could not conceivably begin to attempt to compute the different tax rates that would be necessary to protect the water along every bend in every river and stream, considering the different industries involved. Were local agencies to be given the option of adding to the flat national tax for a given pollutant, there is no guarantee that they would do it at all, or do it well.

The cost of making a mistake in computing the proper level, based on complex and inaccurate data, might be the loss of a species of aquatic life, or a serious health hazard in a swimming area. To even begin attempting to insure that the water quality in each spot was the water quality desired, the level of taxation would not only have to be changed by some public agency each time a trial revealed an error, but, in addition, each time a new industry, or a different industry, came to the area, creating new opportunities for error in economic predictions and calculations.

Such a system would serve only to create thousands of new jobs for economists, without solving the water pollution problem.

An unfortunate side effect would be that industrial planning and spending would be disrupted with each administrative change in the tax rate. One way to avoid all these problems, of course, would be to set a flat national tax so high that for every industry, in even the smallest creeks, for many years to come, the condition of the water would fulfill our most optimistic expectations. Following this tack, however, would eliminate what is touted as the principal advantage of the effluent tax—economic efficiency.

In summary, I believe that an effluent tax is not, by itself, a workable strategy for eliminating water pollution. We simply cannot afford to do away with the concept—heretofore unrealized, of course—of setting limits on the amount of gunk that can be dropped into a given stream by a given polluter and enforcing those limits by imposing severe penalties for infractions.

I would like to emphasize that having said that an effluent tax is not an acceptable alternative to a regulatory scheme is not to say that it would not be a valuable addition. It would be. It would make the job of allocating waste burdens easier on local public agencies, because each polluter would be asking to be permitted to discharge less in the first place than he otherwise would. Because the marginal cost of increased waste control for many, if not all, polluters will be equal to the effluent tax, the end result would be a more efficient distribution of cleanup costs than would result without an effluent tax scheme. Pollution control would, in other words, be cheaper than it otherwise would be.

It would also happen faster. Under the typical regulatory plan, polluters are given compliance deadlines several years ahead to construct the necessary control equipment and cut down on their wastes. They have every incentive to pressure the authorities to extend the deadlines ad infinitum, because time is money. The longer they can put off pollution control expenditures, the better it is from their standpoint.

Because an effluent tax would make it more expensive to pollute than not to pollute, it would eliminate most of that incentive industries now have to delay putting in control equipment and meeting the standards. In summary, an effluent tax is not, standing alone, a device for protecting water quality in particular places. It is, rather, a blunt tool to get companies heading generally in the right direction, in the direction of pollution abatement.

While this would be no mean accomplishment in itself, there are other economic incentive schemes available, I believe, which hold promise of doing more.

One such scheme was first suggested by economist J. H. Dales in his "Pollution, Property and Prices." A public agency would set a maximum load limit, no matter how tiny, of pollutant matter which could be dropped into a given body of water at a given point and still maintain high water quality and all water uses. Up to this point the process is the same as that which would have to be followed in any workable regulatory plan. The difference comes in the manner of allocating that tiny load among the various competing potential dischargers along the stream. A typical approach, up to now, exemplified by the Delaware River abatement plan, has been to require each dis-

charger—or each discharger within a specified zone along the river—to cut back on his current discharge by an equal amount. Say, every polluter would have to go to 90 percent treatment would be the typical type of requirement.

Dales suggested instead that the public agency auction off the available total discharge amount to the highest bidder, thereby creating a natural functioning market in discharge “rights.” The idea has been carried further by Harvard economists Henry Jacoby and Grant Schaumburg, in work that is presently in the draft stage.

Jacoby and Schaumburg propose the establishment of a system of fixed-term discharge permits as a basic strategy for allocating pollution control burdens. Such a system might work as follows: Pollution dischargers are sold permits specifying the amount and location of discharges permissible under local water quality conditions. The amount of those permits would be consistent with existing water quality standards. Each permit would be for a specified short, fixed term, as under the Refuse Act permit program now planned. Dischargers would then be allowed to buy, sell, lease, or rent permits from other polluters in the river basin market area.

The resulting market would maintain water quality standards and, at the same time, provide for smooth adjustment of discharge privileges. The Government could, if it wished, make continual improvements in water quality by “retiring” permits when their terms expired rather than issuing them out again. Because the total “supply” of permits would remain fixed—or shrink—while the number of potential dischargers would be increasing, all polluters would have a continuing incentive to find cheaper and better ways to limit their wastes.

It would, therefore, stimulate research.

Those polluters who are able to treat their wastes more cheaply will be willing to sell or “sublet” some of their permits to polluters who are expanding or entering. Since the marginal cost of meeting the water quality standards will be the same for each polluter under such a system, the total cost is minimized, just as it would be under an effluent tax scheme. The difference between this scheme and an effluent tax scheme, however, is that here it is guaranteed that the water quality standards will be met. And because no complex computations and continual adjustments are involved, as they would be under an effluent tax scheme, the fixed term discharge permit market scheme would avoid the tremendous administrative burden that would accompany an effluent tax. In short, such a plan as economists Jacoby and Schaumburg suggest would appear to have most, if not all, of the advantages of an effluent tax scheme and none of the serious drawbacks.

There are a number of practical details that need to be worked out. How, for example, would municipalities be handled? Questions like this arise under an effluent tax scheme, too, however, and none of them look insurmountable.

In closing, I would reiterate the primary importance of developing a strong and effective enforcement system in water pollution abatement. As I have indicated, I do not believe we can control water pollution without a workable standards scheme.

The first step we need to take is deciding, for each stretch of each body of water, “this far and no farther.” We need to set a maximum

limit, for all time, on the waste that will be dumped into the stream and then reduce that limit. The growth of industry in a given area will then have to accommodate to the needs of the ecosystem and not vice versa. That step having been taken, industry will find it in its own advantage to discover the most cost-efficient ways of meeting the environmental goals. It is not beyond possibility that the polluters themselves would be the ones pushing hardest for an efficient allocation scheme, such as the one I described. While it is essential that we find the cheapest ways to meet our environmental goals as soon as possible, the important first step, I believe, is setting those goals and serving notice to all that we intend to meet them, one way or another.

I thank the subcommittee for the opportunity to testify and would be happy to answer any questions.

Chairman PROXMIRE. Thank you very, very much, Mr. Zwick. I think that we fundamentally agree. I don't think we proposed at any time that the so-called effluent tax or charge or whatever you want to call it should be the only thing. It certainly wouldn't work in my view satisfactorily as the only strategy.

What I have tried to argue is that the present strategy is not working. The strategy that you suggest, Jacoby and Schaumburg, is fascinating but I think that while it may have its great appeal it would also perhaps be the kind of approach that might also be subject to delay and court test and that sort of thing.

What I like about the effluent tax is that you can put it in uniformly all over. As you say, it discourages pollution. It is not by itself enough. It has to be supplemented in all kinds of ways but I think you and I would agree on the basis of your testimony that you wouldn't dismiss the effluent tax approach. You state it is not enough; we need more. Is that right?

Mr. ZWICK. That is right. In fact, I think it would be an excellent idea to put in an effluent tax right away for the reasons you state, but I would at the same time provide that the locations which had a sophisticated enough system to go to another type scheme such as the one I suggested, be allowed to do it. I would go further, I think, and require that places shift over to a scheme more like the one I suggested later on, but as you indicated, the advantage of an effluent tax scheme is that it could be put into effect right away with no problem and would immediately start cutting down the waste level.

Chairman PROXMIRE. In the beginning of your remarks you said something in rebuttal to previous witnesses about the industry representing four to five times as much—

Mr. ZWICK. Oxygen demanding waste.

Chairman PROXMIRE (continuing). BOD waste as domestic.

Mr. ZWICK. That is right.

Chairman PROXMIRE. Can you supply for the record the authority for that, the basis for that estimate?

Mr. ZWICK. Yes, sir; I will.

Chairman PROXMIRE. Be as specific as you can, where it would apply and limitations on it, et cetera.

Mr. ZWICK. Yes, I will.

(The following information was subsequently supplied for the record:)

The figures in the chart below were provided by the Environmental Protection Agency and appeared in the EPA report, *Cost Effectiveness and Clean Water*, March 1971, Table 5, p. 12.

B.O.D. PRODUCTION AND DISCHARGE, 1968 MUNICIPAL AND INDUSTRIAL SOURCES

	B.O.D. produced		B.O.D. discharged to waterways	
	In million pounds per day	As percent of industrial-municipal total	In million pounds per day	As percent of municipal-industrial total
By human population (municipal).....	23.2	19.	8.2	17.6
By industry (total).....	98.9	81	38.3	82.4
Discharged through municipal treatment plants.....	18.9		7.6	
Treated by industry or discharged without treatment.....	80.0		30.7	

* B.O.D. (Biochemical Oxygen Demand) is the standard measure of organic waste.

Precise data on industrial wastes are not presently available. The figures presented above are not exact, but are approximations which EPA developed by extrapolating from information which is available to it. In pp. 25-28 of *Cost Effectiveness and Clean Water* (Vol. II), the EPA explains how it derived the figures above and lists its reservations about them.

The Federal Water Pollution Control Administration (now the Water Quality Office of EPA) developed industrial waste production statistics initially in preparation of the 1968 report entitled *Cost of Clean Water* (the original predecessor of *Cost Effectiveness and Clean Water*). The FWPCA states that it derived its original waste production figures by correlating available information on standard manufacturing processes and wastes in various industries with statistics on total production and water use by these industries—as reported in the 1963 *Census of Manufacturers*—thus arriving at a means for calculating waste production from figures for industry output and water use. The resulting statistics—the figures presented were for 1964—showed industry BOD production outweighing domestic production by about 3:1. (See *Cost of Clean Water*, Vol. II, pp. 59-64 for chart and explanation of method.)

In preparing *Cost Effectiveness and Clean Water*, EPA used statistics for production for each industry to calculate waste production in 1968. "The principle problem with the method—given the validity of the industrial production indices [supplied by the Federal Reserve Board] and the calculated base year [1964] wasteloads—is the assumption of constant waste to output ratio. The assumption is crude, but the fact is that there is not sufficient information to allow modification," the report notes on p. 26.

To calculate BOD waste removal achieved by treatment—and hence, remaining BOD discharge—EPA had to calculate gross effectiveness of existing industrial waste treatment facilities. This also involved a great deal of extrapolation. EPA explains on p. 27 of the report, that it made this calculation by comparing total facilities in place with total facilities required, estimated according to an already-derived ratio between total production and total capital needs for waste treatment facilities.

The EPA notes that determining total discharges from public treatment facilities "involves much less uncertainty than do attempts to estimate the same values for industry." However, a major problem in this area is calculating the public and private shares of BOD discharged through public treatment facilities. EPA notes that it may have underestimated industry's share by using a rule of thumb to calculate "domestic" BOD which—while widely accepted—probably "overstates the normal domestic loading."

EPA's conclusion, however, is that the estimates are basically sound. "While the details and the precision of the listed values may be subject to considerable suspicion, there is little reason to doubt the general validity of the relationships or the order of magnitude of the values," it notes.

Chairman PROXMIRE. As you know, and as I asked the previous witnesses, Professor Haveman testified that the total cost of the Nixon

administration bill over a total of 5 years would cost \$12 billion, the Muskie bill \$14 billion, effluent charges \$4.3 billion. Would you agree with those estimates?

Mr. ZWICK. From what I have seen, Senator—I haven't done my own study on this, of course—but they do suggest to me that they are in the same areas as the kind of estimates that have been made in other studies.

For example, on the Delaware River I believe it was estimated that costs of abating pollution by—if an effluent tax scheme was used, were somewhat less than a half of the cost if the uniform reduction method was used which was the method eventually selected.

Chairman PROXMIER. If we set up a system of effluent charges, should Congress legislate the exact fees to be charged or should that be left to the executive branch?

Mr. ZWICK. At the present time I would suggest, I think, that the level be left to the executive branch. There may, however, be an argument for Congress setting the level in that. As I see the effluent tax scheme, it is a simple thing to get people heading in the right direction and, of course, that being the case, there is no reason to change it around from year to year because hopefully we will get to something better soon in any event, and Congress setting a good firm level that would work generally across the country would probably work relatively well.

Chairman PROXMIER. Environmentalist proposed what we had in mind, about 10 cents a pound for BOD. Does that seem like a logical rate?

Mr. ZWICK. It seems logical. I haven't done the work, frankly, to be able to determine what the level should be.

Chairman PROXMIER. Do you have any opinion what the charges should be for sulphur dioxide? Congressman Aspin testified earlier that it should be around 5 cents a pound.

Environmentalists who testified earlier said 10 to 20 cents.

Mr. ZWICK. I don't have any estimates on that, Senator.

Chairman PROXMIER. Mr. Zwick, thank you very, very much for most helpful testimony. We deeply appreciate your coming and I think you have made a fine addition to the record.

Thank you very much.

Our final witness this morning is Mr. Hendrik S. Houthakker, professor of economics, Harvard University, and until just a few days ago a very distinguished member of the Council of Economic Advisers. Mr. Houthakker, we are happy to have you. I admire your interest in this subject even though you and I have disagreed on many occasions.

Mr. Houthakker has appeared before the committee a number of times as a member of the Council of Economic Advisers. It is fine to have you here.

I understand you have interrupted your vacation in Vermont to make this appearance. We are grateful to you for that.

You have, I understand, no prepared statement, so why don't you proceed with any comments you want to make and then we will turn to the questions.

STATEMENT OF HENDRIK S. HOUTHAKKER, PROFESSOR OF ECONOMICS, HARVARD UNIVERSITY

Mr. HOUTHAKKER. Thank you, Mr. Chairman. I appreciate your kind words and I always consider it a privilege to appear before the Joint Economic Committee, whether in an official or a private capacity.

The hearings you are conducting at the moment are most timely, since we seem to be approaching a period where people who are concerned about pollution have come to realize that regulation by setting standards is not necessarily the most efficient answer in all circumstances.

The Council of Economic Advisers and the Joint Economic Committee have long been concerned with alternative ways of controlling pollution, by levying charges or by selling permits.

I believe that such methods are in principle superior, although I recognize they cannot be used in all circumstances and cannot take the place of minimum standards.

What the Council of Economic Advisers has recommended in its annual reports is primarily a system of charges which supplement the standards set under existing legislation. I believe that there is a general desire to have minimal standards of pollution control but in addition there is a desire to have such control as can be justified in light of the additional costs incurred.

We face a situation which, of course, is very common in economic policy, that one goal is desired but can only be achieved at the expense of other goals. We have the classic problem of reconciling different goals and this is, of course, what the price mechanism is set up to do.

This is why there is interest among economists and others in using the price mechanism. I am very glad to see that some of the environmentalist organizations have also become more favorable to this approach because they realize that the standards approach, which is the one prevalent at the moment, is open to a certain amount of abuse primarily by inadequate enforcement.

The typical situation which we have now, and I could cite many examples but I am sure they are familiar to you, is that a local pollution control authority set standards for a particular polluter. The polluter claims that these standards cannot be met. The result then is a lengthy battle before various administrative bodies and ultimately before the courts, in the course of which nothing much is done about the pollution in question.

Finally, and I think very few of these cases have actually come to a final disposition, it is likely that the polluter will find ways of meeting the standards but only at such a large cost that the operation in question will in many cases become unprofitable and will have to be abandoned or moved elsewhere.

This, I think, is an unfortunate course of events because the regulatory approach does lead to litigation in many cases. The results expected from legislation are thus very long delayed.

Moreover, there is no guarantee that the optimal amount of pollution control is actually achieved.

This is why effluent charges of one kind or another, or permits that are sold, are in general a more efficient approach, although, again, I emphasize they cannot be used in all circumstances.

I believe that is all I have to say by way of introduction. I will, of course, be very happy to answer questions.

Chairman PROXMIRE. Thank you very much.

Incidentally, have you had an opportunity to study or to discuss in Vermont the approach which I understand they are taking? I understand that they are the first State, I believe, that is trying some sort of effluent charge or effluent tax. I know you are up there for vacation. Maybe you have not had a chance to consider that. If you have, I would be interested in your views.

Mr. HOUTHAKKER. I am sorry to say that I have spent so little time in Vermont during the last 2½ years that I am a little out of touch with what is happening there. But I am catching up quickly. I cannot comment at the moment on what the State of Vermont is trying to do.

Chairman PROXMIRE. What has happened to the administration's proposed tax on sulfur dioxides?

Mr. HOUTHAKKER. I believe this tax is still under discussion, but I don't think that any statement can be made at the moment as to when and if such a tax will be proposed.

Chairman PROXMIRE. Is there some conflict between the Council on Environmental Quality and the Treasury?

Mr. HOUTHAKKER. I am afraid I cannot comment on conflicts that may or may not exist within the executive branch. All I can say is that discussions are proceeding.

Chairman PROXMIRE. To what extent, Mr. Houthakker, would you favor the use of economic incentives in addition to the sulphur dioxide tax?

Mr. HOUTHAKKER. The administration also proposed a tax on lead in gasoline which went in the same direction. This tax did not make it last year but there is a possibility it may be introduced again, although this is also not finally decided as I understand it.

In our annual report we also came out for the sale of dumping permits.

Chairman PROXMIRE. Would you favor effluent charges or do you have any comment on S. 3181 which is the bill I introduced to provide for a system of effluent charges?

Mr. HOUTHAKKER. The idea of effluent charges is one with which, in principle, I am most sympathetic. I am afraid the bill itself only reached me this morning, so I was unable to study it in any detail.

Chairman PROXMIRE. How about solid waste disposal? Do you see any plan for economic incentives there? There has been one proposal in the Senate that I know of. I am sure there have been many others but one I am particularly aware of, that provides for a tax on containers that are not disposable. There is another that I am very interested in that provides for a tax of a cent a pound on all products that are not consumable and that would last less than 10 years.

Mr. HOUTHAKKER. I think there is a great deal of merit in these ideas. Nonreturnable containers have become a major problem and I certainly hope that better ways of controlling them can be found. There is, of course, as in all charges of this kind, a difficulty in finding an appropriate level of tax. We do not necessarily want to exclude all non-returnable containers. This would be a very great step backward and might inconvenience consumers more than the pollution does right

now. But as a principle, it certainly is a sound one and I hope some way will be found to implement it.

I might add that in addition to containers, there are many other kinds of waste problems; One is automobiles.

Chairman PROXMIRE. Yes. Now, the proposal I had would be imposed on everything that you can't actually consume that would last less than 10 years, such as automobiles, newspapers. The New York Times on Sunday probably would have a tax of 5 cents because it weighs so much.

Mr. HOUTHAKKER. I think these are ideas that certainly merit consideration. There are, of course, different ways of doing this. There is an industry that collects old newspapers, though not comprehensively. It probably isn't worthwhile picking up most of the newspapers that are sold. But there is a waste paper industry which does some of this. And it would be good to rely on the industry's help to make the best use of waste materials, including paper and other materials.

Chairman PROXMIRE. I am very interested to know how you would deal with the tax credit approach that the National Association of Manufacturers suggested to us this morning. Do you believe this to be a viable alternative to effluent or emission taxes?

Mr. HOUTHAKKER. The case for a tax credit approach, I think, is not very strong. There is a great danger that the tax credit will not be used for the right purposes. In general, sound policy requires that the cost of pollution control is incorporated in the products. If people want the product despite the higher cost of pollution control, then the consumer should pay for it, but there is no reason why this burden should be shifted on to the taxpayer.

We can get a reasonable allocation of resources only if we link the pollution control to the products that cause the pollution, and I believe that a tax credit would lead to a considerable distortion and to a very wasteful use of pollution control equipment.

Chairman PROXMIRE. Do you see any philosophical problems in using the taxing power, not the credit but the taxing power, to create incentives? Are there any examples of this in our current tax laws that you can think of offhand?

Mr. HOUTHAKKER. Yes; there are many examples of the taxing power being used for other than revenue purposes, which is what I would take it you have in mind.

Chairman PROXMIRE. Right.

Mr. HOUTHAKKER. There are large numbers of tax credits and deductions and other forms of special treatment that are allowed by tax laws in the interest of stimulating some purpose that Congress—

Chairman PROXMIRE. I wasn't thinking so much of the tax credit approach again. I was thinking of the tax, imposing a tax to achieve something.

I don't know if you were here earlier but the first witness, Congressman Aspin, suggested a tariff as an example, that this wasn't really for revenue in his view. It was very largely to discourage imports that compete with our own domestic products.

Mr. HOUTHAKKER. I think a tariff is a good example. There are many other examples. There is certainly an element of discouragement of consumption in the excise taxes on alcohol and tobacco. I think this

is a principle that can be found in other taxes, too, but I would go farther than that. It is almost impossible to find any tax which is truly neutral in its effect on the allocation of resources.

The income tax does in principle subsidize leisure at the expense of work. Now, I don't think that is a very strong effect but it is there nevertheless.

The only tax which does not, in theory anyway, influence the use of a Nation's resources is the poll tax and, of course, we all know poll taxes have other undesirable features. So that in general we cannot say that taxes are there for the purpose of raising revenue and should not be used for anything else.

Practically every tax has secondary effects. In some cases the secondary effects may actually become more important than the revenue effects but in principle every tax should be regarded as partly a device for raising revenue and partly a device for influencing the use of resources. So, from this point of view, I have no philosophical difficulty at all with the use of taxes to discourage pollution.

Chairman PROXMIRE. In your judgment, Mr. Houthakker, does the administration regard the sulphur dioxide tax as a revenue proposal or as an incentive generating approach?

Mr. HOUTHAKKER. Well, Senator, you realize I cannot speak for the administration anymore.

Chairman PROXMIRE. I understand. Your knowledge as a former member of the Council of Economic Advisers?

Mr. HOUTHAKKER. I would say the administration has considered the sulphur dioxide tax primarily as a pollution control device and that the revenue aspects are quite secondary.

I believe the same is true of the tax on lead in gasoline.

Chairman PROXMIRE. One other question, and if you don't want to answer this question I will understand because you were invited to discuss the economic approaches to pollution control.

Because of your recent services on the Council of Economic Advisers, I cannot resist the temptation to get your views on the general economic outlook. I was very disappointed by the recent administration decision to adopt no further stimulative policies and I am completely puzzled by their continued rejection of a more comprehensive income policy.

Could we get your comments on the price and wage situation and what kind of anti-inflationary policies you think are called for now that you are free and emancipated and you can speak as a Harvard professor and not as a member of the team?

Mr. HOUTHAKKER. Senator, I am in a somewhat embarrassing position answering these questions, which I will, nevertheless, try to the best of my ability. You must understand that until last Friday I was a member of the administration and that the transition from a public official to a private professor does take some time. I am inevitably aware of certain positions which I myself may have supported as being right on balance, even though as an economist I can see difficulties with them. Let me nevertheless try and say what I can on these two points.

In the first place, concerning the state of the economy in general, we are evidently in an upturn. We are recovering from the lows reached in 1970 and this upturn promises to continue at something like the present rate.

Now, the question which I am sure concerns you and concerns many other people is whether the present upturn is strong enough. Now, of course, we all know that a rise in real GNP at the rate of 3.6 percent per year, as we had in the second quarter, is not enough to make a dent in unemployment. It is not enough because output per man-hour is rising at a fairly fast rate at the moment and because the labor force is growing. So that we need a real growth rate of more than 3.6 percent if we are to achieve the stated goal of getting unemployment to a more acceptable level in 1972.

This does not mean that additional stimulative measures are necessary at the present time. The main question which clouds the situation somewhat is monetary policy. We have had a very rapid expansion of the money supply during the first half of 1971, at a rate much larger than what was intended, I believe, by the Federal Reserve or anticipated by the Council of Economic Advisers—or anybody else.

There is some question in my mind whether this rate of growth in money supply is really there. I think that the unusual international monetary events of the last few months may have distorted the figures to some extent. I personally would not be surprised if after all the revisions are made the money supply turns out to have risen at a less rapid rate than we are finding in the statistics at the moment. But these revisions have not yet been made and we cannot go by hunches.

The fact is at the moment we are faced with statistics showing a very rapid increase in money supply which for all we know will in due course have an effect.

I myself have long had the view, which I believe is shared by many economists but not by all, that the effect of money supply on GNP is subject to a considerable time lag. Therefore, the increase in money supply which we see at the moment is not yet making its full impact felt. This will not come until later.

Therefore, it can be argued with considerable plausibility that we are at the moment already seeing the stimulus that needs to be applied from the monetary point of view and that putting more stimulus on top of this would get us back into the same kind of overreaction that we have seen too many times during the last several years.

Chairman PROXMIRE. Now, the trouble with that position, Mr. Houthakker, as you, I am sure, fully understand, is that we have the stimulus in the money supply, growth in the money supply, for the last 6 months at the rate of about 10 percent.

The Chairman of the Federal Reserve Board who has more to say about the money supply than anybody else I suppose has come before this committee and indicated that he thought an annual rate of growth of about 6 percent was about right.

Now, if he is going to balance it in calendar 1971, so that he has about a 6-percent growth, that means that the money supply is going to slow down rather dramatically in the next 6 months. So that it would seem to me that whereas there is a lag, no question about that, and there may be some stimulus still remaining in this big growth in the first 6 months of the year, the slowdown in the remainder of this year is likely to have the effect of sharply increasing interest rates and have a direct effect and have an adverse effect on housing and economic activity generally.

Now, that may not come for a little while but it is likely to come and we also see interest rates beginning to rise and, after all, as far as most of us are concerned, regardless of theories about money supply and interest, it is increases in interest rates that is the real cutting edge. It is the interest rates we see and as I say, they are increasing.

Let me finish by saying if this is true, as you say, the 3.6 percent real growth is not enough to diminish unemployment; if this is true, it would suggest that unemployment is going to remain high, around the 6 percent level, for the rest of this year and into next year.

Mr. HOUGHAKKER. Senator, I would like to make a number of comments on this.

In the first place, I was suggesting that we have not yet had the full impact of the monetary stimulus. This may still take some time before it comes.

One indication of this is the high savings rate. The high savings rate may indicate that consumers feel that liquidity is insufficient and they are still building up their monetary assets before spending their income. That is one point I would like to make. The real growth rate may well increase as a result of the monetary growth we have experienced in the first half of 1971, and if the real growth increases, it will at some point eat into unemployment.

The second point I would like to make is that I don't share your view that it is interest rates that really matter. I think the money supply does have an impact of its own quite apart from the effect on interest rates.

Having said this, I should add that the behavior of interest rates in the first half of this year, especially in the last few months, has been somewhat puzzling. It is somewhat hard to say why short term interest rates should have gone up as much as they did in the face of a rather unusually rapid increase in the money supply.

I believe the basic reason for this is that earlier in the year, when we had a very sharp decline in short term interest rates, the short term and the long term interest rates got out of line with each other. The long term interest rates did not fall very much. The shorter interest rates fell very sharply.

This divergence between the two sets of interest rates could not persist for very long, and what we have seen, therefore, is a correction in the pattern of yield which took the form mostly of the short term rates going up rather than the long term rates going down. The long term rates did not go down because they are determined very strongly by expectations concerning future inflation.

We have seen some slowdown in inflationary price increases but it has been limited. The long term interest rates are still basically what one would expect them to be, equal to the real rate of interest, which at the moment is somewhere around 3 or 3.5 percent, plus the present rate of price increase, which is around 4 percent. This gives you long term interest rates of 7 or 8 percent.

So until we have a reduced expectation of future inflation, interest rates cannot come down very much.

Chairman PROXMIRE. That brings us to the second part of my question. How about the inflation situation? Why not an income policy of some kind? Mr. Burns has argued for it; independent economists have

pleaded for it, and the administration seems to have walked away from it flatly. That is, either wage-price guidelines, wage-price guideposts, wage-price boards, wage-price controls, something so that we can have some assurance that inflation is getting under control.

Mr. HOUTHAKKER. I cannot share your faith that the establishment of any kind of board would have a major impact on prices and wages. In fact, it may actually have an adverse effect.

Chairman PROXMIRE. Well, it has worked to some extent in the construction industry, the only industry in which the administration tried it. The President has tentatively put his toes in the water in respect to steel.

Mr. HOUTHAKKER. In the case of construction I would say it is much too early to say whether this approach has had any effect at all. It is true that some of the very largest settlements have been rejected and as a result have been cut down. As far as I am aware, this applies to only very few of them.

On the other hand, there may well be a tendency to work to what seems to be a norm of about 12 percent per year, which is still very large considering the unemployment situation in the construction industry.

I believe that we would have made a great deal more progress in the area of construction if the Davis-Bacon Act had remained suspended. This, in fact, is the only direction in which I believe progress is to be expected; namely, by relying more on the competitive market mechanism.

We have in our economy a great many obstacles to competition of which Davis-Bacon is just one example. The suspension of Davis-Bacon did threaten the wage structure in the construction industry and this is one of the reasons why the unions were most anxious to get Davis-Bacon reinstated and came to the Government with the request to set up this board, which previously they had turned down.

The union contractors were of the same opinion. They felt themselves threatened by nonunion contractors. As a result, the suspension of Davis-Bacon was revoked.

As I say, I think it is too early to say whether the present arrangement will lead to a reduction in construction settlements. But I remain to be convinced that the approach taken in the construction industry is one that will lead to similar results elsewhere.

As regards steel, the President, having made known his concern for this area, has not said exactly what he would like to see as a constructive settlement. There, again, I think we have to wait and see whether there is going to be any visible result.

My personal opinion, and here now I speak as an ex-Government official, is if we want to see inflation slow down we should be prepared to affect prices even where it hurts, and one such case is steel.

Chairman PROXMIRE. How about being a little more specific about that? How about the oil import program, limitation on oil production because of the pro rata limitations domestically, the effects of import controls on steel prices and automobile prices? Aren't all of these factors that are responsible in part for our inflationary problem?

Mr. HOUTHAKKER. Yes; Mr. Chairman, they are very much responsible for it. The fact is that in many cases where our anti-inflationary

policy has had an effect on prices, the affected parties have come to the Government with requests for protection of one kind or another and as a result, we have not had the effect on prices which we might have expected. Maybe we should have realized that the oil industry would take this action, or the steel industry, but the fact is the kind of anti-inflationary policy which we have been pursuing the last 2½ years requires a willingness to expose people to a certain amount of temporary danger, and this willingness has not always been present.

Chairman PROXMIRE. With respect to the oil import problem, the administration hasn't been very willing to expose the oil industry to the force of international competition. They haven't to the best of my knowledge even permitted Canadian oil to come in, although there is no question on the national security ground there. We have limitation on importation of Venezuelan oil, although that is really safe in view of the power of our Navy in this hemisphere.

Mr. HOUTHAKKER. Mr. Chairman, I can say that I was an observer on the Oil Import Task Force and as such it can be seen from the report that I concurred in the recommendation of the majority, to put on a tariff. However, I would say this: If the tariff had been adopted at the time we had recommended it, the price of crude in this country would have increased, so that does not really present a clear-cut case.

I would say that the Government may have been somewhat lax in not taking necessary action in other areas where prices increased as a result of Government omission or commission.

Chairman PROXMIRE. Well, Mr. Houthakker, I want to thank you very, very much. I hope you can now go back and resume your vacation in pollution-free Vermont where they are making such a noble effort to try to prevent pollution from destroying the environment of that lovely State.

Thank you very much for a fine job, most helpful statement, and response.

The subcommittee will stand in recess.

The full committee will meet tomorrow in room S-407 in the Capitol and will have Prof. John Kenneth Galbraith, Homer Jones, former vice president of the Federal Reserve Bank, St. Louis, and Prof. Franco Modigliani testifying for our midyear review of the economy at 10 o'clock tomorrow morning.

(Whereupon, at 11:40 a.m., the subcommittee was adjourned, to reconvene subject to the call of the Chair.)

APPENDIX

STATEMENT ON EFFLUENT TAX FOR WATER POLLUTION CONTROL

(By Wesley E. Gilbertson, Deputy Secretary for Environmental Protection and Regulation, Pennsylvania Department of Environmental Resources)

On behalf of Pennsylvania's pollution control program, and as Chairman of the Conference of State Sanitary Engineers, I am pleased to submit this statement to the Joint Economic Committee in connection with its review of economic incentives for pollution control. It is our understanding that special consideration is being devoted to the effluent tax, among other economic incentive measures which may be used in the abatement of water pollution.

For many years Federal and State legislative policies have directed the use of regulatory measures as the principal approach to water pollution control. Although much remains to be done, significant progress has been achieved (which has been recorded elsewhere) and it is clear that substantial momentum has now been built up which will produce increased rates of accomplishment in the immediate future. Continued action is assured due to a broad base of support by the public and elected officials. Thus, any decision to shift policies and strategies for pollution abatement must be preceded by the most careful assessment of potential adverse effects upon a sophisticated and pervasive interlocking system of Federal-State regulatory measures.

The use of effluent taxes as the regulatory mechanism for water pollution control would be extremely difficult to administer. It would require even more sophisticated and complex monitoring arrangements than now exist and would necessitate an enormous bookkeeping system.

According to program officials in Eastern European countries which are trying the effluent tax concept, its principal value is production of *revenue*. Moreover, it does not effectively control pollution. They find it necessary to accompany the effluent tax with the usual regulatory approaches.

In a large and growing number of areas in the United States, industries are now paying service charges to sewer authorities and other public agencies, based on the volume and strength of their wastes, which are in turn based upon the cost of water pollution control. These charges and regulatory actions have resulted in in-plant process changes to reduce the volume and strength of industrially discharged wastes. This demonstrates that current regulatory and financing methods are effective in forcing industry to incorporate process changes which are beneficial for pollution abatement purposes.

One of the most serious questions about the effluent tax is: how will it affect management decisions with regard to the basic alternatives—(1) abate pollution, or (2) pay the tax? This issue is particularly critical in connection with short-run industrial situations—of which there are an increasing number. For example, when industrial management is faced with a decision on whether to abate pollution in connection with production which will terminate in, say, three to four years, the decision will undoubtedly be to pay the tax, even if quite high. The aggregate effect of multiple decisions of this type would result in a deterioration rather than an improvement in water quality.

Fundamentally, abatement of water pollution represents a type of "tax" on any industrial operation. It is widely recognized as a "cost of doing business" like real estate taxes, etc. The direct application of regulatory standards, then, imposes a financial requirement on each discharger which is based on the quality standards of the receiving stream. Under this rationale it is dubious that a circuitous financing-regulatory arrangement—via the effluent tax—would accelerate water pollution control.

Recognizing that financing costs of waste treatment construction and operation are significant, some individuals and groups not directly involved in water pollution control operations have advocated the effluent tax as a means of raising the required funds. The foregoing discussion has dealt primarily with industrial pollution abatement. An equally important objective is the construction and operation of municipal and regional waste treatment systems, which include both sewage and industrial wastes. Because of legal limitations on general obligation bonding, many areas of the country have moved to revenue bonding and the use of special authorities and districts. These special purpose agencies do not have legislative authorization to derive revenue from any source other than that specified in their charters (viz sewer charges, water charges, etc.). The collection of effluent taxes from such a public agency, or even from a municipality, would appear to be virtually impossible. Yet this comprises a substantial portion of the total volume of waste discharged.

The important matter of Federal-State relationships in water pollution control and financing is also of real significance. Over a number of years States have enacted bonding programs and other financing arrangements as part of the Federal-State matching grants system. New legislation in this field is being enacted through public support—which is essential in any massive program of this type. It would seriously retard water pollution control progress if such financing arrangements were to be slowed down or dropped.

In summary, the concept of the effluent tax, while superficially attractive, *must be considered primarily as a revenue-raising device rather than a water pollution control regulatory measure.* Changes in Federal policy with regard to water pollution control strategy already threaten to slow down the progress which is being generated under existing programs. Economic incentives other than effluent taxes are currently being applied effectively. The effluent tax is not to be considered an effective replacement strategy for regulation of water pollution.

CHAMBER OF COMMERCE OF THE UNITED STATES,
Washington, D.C., July 26, 1971.

HON. WILLIAM PROXMIRE,
Chairman, Joint Economic Committee,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: The purpose of this letter is to transmit to your Committee the views of the National Chamber on so-called pollution taxes, a subject of recent Committee hearings.

The National Chamber federation—on behalf of its over 3,800 chamber of commerce and trade and professional association members, and over 39,000 business members—opposes the entire concept of punitive taxation to “improve” the environment. We believe the regulatory approach, through the establishment and enforcement of environmental quality standards, is the most effective and most economically sound method for achieving our environmental goals.

A major problem with the concept of effluent taxes (or fees) is that there is neither a guarantee that such taxes will alleviate environmental pollution nor an administrative system which could effectively implement such taxation.

Apparently, many fail to understand these drawbacks—perhaps because there seems to be some tendency to think of effluent taxes and user charges as the same thing. The error of this is revealed in the attachment, which distinguishes between the two concepts. The attachment shows, by comparison, a user charge system could assure pollution prevention, but a pollution tax system would not accomplish this goal and, in fact, would create other problems in the ill-fated attempt.

Three major examples which have been used before your Committee as illustrative of pollution taxes actually provide excellent examples of user charges. The supplemental statements filed by John E. Kinney in his appearance before your Committee on July 19 discussed these three examples, specifically: the Ruhr Valley; Springfield, Mo.; and Otsego, Mich.

Another problem with pollution taxes is that they could become licenses to pollute—a situation which would permit substantial environmental degradation at a price. Taxes, pollution taxes included, tend to become self-sustaining. As such, there will be a built-in pressure to increase the tax rate as pollution decreases, thus providing no real “incentive” to reduce waste discharges.

A third problem concerns the ability of corporations to finance their own needed waste treatment facilities. Pollution taxes will drain capital from those facilities most in need of such funds to finance pollution control programs. In effect, those companies most in need of environmental controls will be the ones most damaged under a taxation system—and the environment will suffer as a consequence.

We will appreciate your consideration of these views and we request that this letter, with its attachment, be made a part of your Committee's hearing record.
Cordially,

HILTON DAVIS,
General Manager, Legislative Action.

Attachment.

EFFLUENT TAX SYSTEM PROPOSAL

In essence, the Proxmire bill, S. 3181, would establish a nationwide effluent tax system, setting a charge to be levied on all industrial waste discharges. The resultant tax revenue would be used to finance municipal waste treatment facilities. Not only would this system employ highly inequitable methods (by taxing only industrial waste discharges, by ignoring agricultural wastes, and by using the tax to subsidize the treatment of municipal waste), but the proposal would not achieve its desired goal—prevention of water pollution. An effluent tax system will not prevent water pollution, and may, in fact, result in further environmental deterioration.

The major misunderstanding which exists concerning an *effluent tax system* is its confusion with an *effluent charge system*. A workable effluent charge system, while requiring substantially improved administrative institutions for the water basins, has several major distinctions from an effluent tax system:

1. All waste sources are included—this is a necessary step to adequately manage the water quality of any basin;

2. Each waste source would be given an alternative: treating its own waste, or paying a charge to someone else for this service. Either way, there is assurance that the waste would be treated and, therefore, that pollution would be prevented.

Under an effluent charge system, for those sources either unable or unwilling to undertake the capital expenditures necessary to construct individual treatment facilities required to meet water quality standards, the river basin authority might construct regional treatment facilities (financed through bonds issued by the authority). This regional plant would accept and treat wastes from these sources, charging each source an equitable fee to cover the cost of waste treatment, including retirement of the authority's bonds. Because the costs of individual treatment facilities and the effluent charge reflect the quantity and strength of each waste, there is substantial incentive to those sources capable of waste reduction prior to treatment. The major point that must be re-emphasized in comparing an effluent *tax* system to an effluent *charge* system is that under the latter, pollution prevention is assured.

While both types of proposal may provide administratively unworkable, the imposition of a *national* tax on effluents based upon their quantity and quality is a most staggering undertaking considering the varied characteristics of wastes—BOD, suspended solids, pH, alkalinity, odor, color, foam, nutrients, etc.

To illustrate that an effluent tax system will not prevent water pollution or significantly reduce the volume and/or strength of waste discharges, let us assume a conceptual river basin with a limited number of point discharges (industries and municipalities) which has managed to develop a suitable method of taxing effluents. Having adopted the principles of S. 3181, the river basin authority establishes an effluent tax system in order to prevent pollution. One or more of several alternatives could occur, depending upon the nature and composition of the basin's water pollution problems.

1. If the major water pollution problems in the basin are agriculture-oriented, pollution will continue because this source has been ignored.

2. If the basin's major pollution problems are municipality-oriented, the industrial base in the basin will not be able, under any system or level of taxes, to finance treatment facilities for these municipalities. Without sufficient effluent tax revenue, and because no tax penalties are applied to municipal discharges, no significant improvement in municipal waste treatment can be expected; Hence, the basin's pollution problems will persist.

3. If the basin's major pollution problems are industry-oriented, the effects of an effluent tax are most revealing. (Since municipalities constitute a small portion of the problem, only a small amount of revenue needs to be generated to subsidize construction of municipal facilities. Therefore, the tax will first be set at a low level. While this will probably provide sufficient revenue to construct the necessary municipal facilities, the low level of tax will be a relatively cheap "license to pollute" for the industries. In a very real sense, imposition of the tax will be an incentive to continue waste discharges. Some industries might feel that paying the tax constitutes the extent of their corporate responsibility in the fight against pollution, since their alternative course of action is the reduction of their waste discharges. Rather than incur the substantial capital expenses necessary to construct industrial waste treatment facilities, industrial plants will pay the low tax and discharge untreated waste. Therefore, little improvement in the water quality of the basin can be expected.

To "solve" this problem, the effluent tax will be raised. The least profitable plants (due to economies of scale, probably the smallest plants) will be the first to feel the effects of the higher taxes. Unfortunately, due to their low profitability, these plants will be the least able to take the expensive remedial action necessary to reduce their waste discharges. Most of these smaller plants, unable to either pay the effluent tax or finance construction of waste treatment facilities, will shut down. Medium and large scale plants with correspondingly higher profitability will now be in a stronger financial position since their smaller competitors have been forced out of business. These firms may decide to pay the effluent tax and continue to discharge untreated wastes, or to construct treatment facilities. Since debt financing of treatment facilities constitutes capital investment in non-revenue producing equipment, and since operating costs (taxes) can be passed on more easily due to the lesser competition, most firms will probably pay the tax and the pollution problems of the basin will continue.

Once again the tax rate will be raised to "encourage" treatment of wastes. As the effluent tax rate climbs, more and more firms (the medium-sized ones at this point) will find it increasingly difficult to pay the tax. Some firms will explore process changes—but these are normally very expensive for an existing plant. Some other firms will attempt to construct treatment facilities. But the continuing drain on the financial resources of these companies (caused by the effluent tax) will make it difficult to finance the needed construction, especially considering the time lag involved between the decision to construct the treatment facilities and the actual coming-on-line of these facilities. Assuming some plants can secure financing, even once these facilities are in operation, there will be some discharge of waste (100% treatment is not presently within our technology). This continuing discharge will be taxed, again adding to the drain on financial resources. Eventually, a high tax rate will force these plants out of operation. The large plants—the most profitable plants—will be able to pay the increasing tax. As more and more of the medium-size competitors are eliminated by the tax burden, these firms will find it substantially easier to adjust prices to cover the effluent tax rises. And, as before, discharge of untreated waste will continue.

The chief results of an effluent tax system on these three basin types provide an insight into what can be expected if a national effluent tax system is adopted. On a national basis, waste sources are approximately equally divided among municipalities, industries, and agricultural practices. An effluent tax system will probably lead to an improvement in municipal waste treatment, no change in agricultural waste treatment, and a lessening of industrial waste treatment. This latter effect would result from the concentration of industry into several large-scale plants (rather than a mix of large, medium, and small), with the tax providing a very real disincentive to these plants to construct facilities. It will become a true "license to pollute." Instead of having some water basins with water quality problems, the national water system will degenerate into all basins having water quality problems. The large sums of money which these basins will be collecting to allow pollution will be small consolation for the existence of that pollution.

This discussion of both an effluent tax system and an effluent charge system has proceeded on a *purely theoretical basis*. The National Chamber is not advocating the establishment of an effluent charge system for each water basin in the country. Strong water basin authorities should be developed, and should adopt the most appropriate measures necessary to meet the water quality standards for that basin. An effluent charge system is only one of the many alternatives for action which strong basin authorities might consider.

STATEMENT OF EDISON ELECTRIC INSTITUTE ON ECONOMIC INCENTIVES TO CONTROL POLLUTION

The Edison Electric Institute, national trade association of investor-owned electric light and power companies, includes in its membership companies which serve more than three-fourths of the electricity customers of the nation. The Institute shares in the nation's concern about the effects of pollution on our environment. The electric utility industry has worked hard and is continuing to work vigorously to reduce emissions and concentrations from its plants.

Current discussions of economic incentives to control pollution which are of particular concern to electric companies center around the so-called sulfur emissions charge or tax. The Institute opposes penalties on the use of sulfur bearing fuels, which have been suggested as a means for reducing sulfur oxide emissions and, correspondingly, ground level urban concentration levels. While it may sometimes be desirable to establish economic disincentives as a technique for achieving socially desirable ends, a pollution tax would have a number of serious shortcomings.

A sulfur tax, for example, of the type recently proposed by Representative Aspin¹ would present many electric power companies, already hard pressed to meet both expanding capacity demands and environmental needs, with the dilemma of not having enough suitable fuel to meet their customers' requirements or having to pay so much sulfur tax as to impair their credit to the point where they could not proceed with work on behalf of clean air and water already undertaken. Moreover, such a tax would not effectively help reduce urban sulfur oxide concentrations.

The electric utility industry is spending considerable amounts on numerous sulfur removal research activities. Today over sixty processes for desulfurization of fuel or of fuel combustion products are in various stages of development with over sixty companies and institutions plus the federal government engaged in research. A number of processes are now moving into full-scale tests. For example, one major electric power company will spend about \$12 million in 1971-72 to install experimental desulfurization facilities at two of its generating stations. Obviously, reliable application of sulfur removal processes cannot be attempted before sufficient experimental experience has been obtained, and even then such facilities cannot be installed immediately in any one system or in all systems.

Furthermore, a sulfur tax which would be immediately effective would be particularly burdensome for the electric power industry since its duty to meet constant energy demands prevents it from shutting down at one time all, or a major portion, of its equipment to install a sulfur removal system. In fact, installation could be made only during normal shutdown periods over a number of years. For example, it would take over ten years to install sulfur removal devices on all the generating units of a major electric power company. This factor combined with the unavailability in the foreseeable future of effective sulfur removal systems would make it impossible for the industry to eliminate its sulfur oxide emissions and avoid sulfur tax for something approaching 15 years even with the industry working at peak effort to eliminate its pollution.

Efforts to reduce sulfur oxide emissions are being conducted with diligence as a brief review of recent environmental programs indicates. In 1968, the industry made capital expenditures of more than \$200 million on air quality control, and the level of expenditures is increasing rapidly.² The Department of Health, Education and Welfare projects expenditures for sulfur oxide emission control on steam electric power plants of up to \$630 million annually by 1975, exclusive of new investments and nuclear power costs.³

Presently, one of the best available long-range solutions to the sulfur emission problem appears to be nuclear power generation. To date, about \$1 billion has been spent by the industry on nuclear generating stations in operation now and from \$5 to \$10 billion for stations still under construction. The continuation of the industry's nuclear plant construction program will result in its having expended at least \$20 billion more by 1975.

¹ Representative Aspin suggested taxing all sulfur oxide emissions in excess of 100 pounds from stationary sources at the rate of 5 cents per pound per year.

² This is in addition to the much larger annual fuel costs associated with low sulfur fuels, partially accounted for by the need to open new coal mines, extend rail hauls and to purchase equipment.

³ Secretary of Health, Education, and Welfare, *Cost of Clean Air*, 1970, Report to Congress, 8 (S. Doc. 91-65, 1970).

It is not clear where else the industry's resources could be applied. Present efforts encompass nearly every aspect of the sulfur oxide problem—from research of ways to desulfurize fuels and combustion products, to conversion of existing facilities to burn low or non-sulfur bearing fuels, and to increased reliance on nuclear power for future fuel needs. In any case, the desirability—from the overall point of view of pollution abatement—of imposing a major new cost on the electric utility industry is highly questionable.

During the past ten years numerous factors have combined to weaken the industry financially, in particular some of the big-city companies which have been affected the most by environmental concerns. Construction cost inflation greater than has been seen in generations plus all-time high money costs have made it difficult for electric power companies to raise the billions of dollars needed to finance needed expansion and at the same time take the environmental steps which the public demands.

One consequence of new money borrowings is the deterioration of interest coverages for the industry's securities. After-tax interest coverages on the senior debt offerings of a number of industry members have recently deteriorated sharply. A representative group of electric and combination utilities which in 1965 recorded average after-tax interest coverage of 3.59, in 1970 recorded coverages of only 2.21. On a before-tax basis, indications are that earnings available for fixed charges were sufficient to cover interest charges five to six times in 1965; today, this coverage has declined to about three times interest requirements, with many electric utilities close to two times coverage. It is apparent, therefore, that the total financial resources available for environmental improvement are not unlimited. Further tax inroads on such resources could well impede the total effort to clean up the air and water by making impossible the already difficult job of raising money to fund projects.

We would also call the attention of the Committee to the inflationary character of a pollution tax. Such a tax would add a very substantial cost, unrelated to new pollution abatement facilities or added efficiency, to those already heavy costs being experienced for environmental cleanup to meet local and state regulations.

The problems of designing a pollution tax which would be nondiscriminatory and, at the same time, capable of administration appear to be very difficult to surmount. For example, a flat rate sulfur tax would treat all sulfur oxide emissions as having an equal impact on the environment but, in fact, urban concentrations of sulfur oxide result largely from emissions by numerous small combustion units, and emissions from industrial, utility or other users in rural areas are unlikely to produce high concentrations of sulfur oxide in the atmosphere. Furthermore, a uniform nationwide sulfur tax would ignore the substantial effect of variations in climate, topography and meteorology on sulfur oxides and other pollutants. The Clean Air Act of 1967 expressly mentions that these three factors are to be considered in establishing air quality control regions.

Emissions discharged at low altitudes and at a low velocity and temperature have a tendency to remain in the immediate area and account for the bulk of urban sulfur oxide concentrations at ground level. Most small users' furnaces and emission facilities have these characteristics. On the other hand, electric utilities and some other industrial users release their emissions from tall stacks at a high temperature and velocity, which minimizes harmful concentrations. This has been clearly established.

For example, Argonne National Laboratory prepared a mathematical model to aid prediction of pollutant concentrations in the Chicago area. The model pointed to the low temperature-altitude-velocity emissions as the primary source of sulfur oxide concentrations at ground level. Actual field measurements validated conclusions drawn from the model. The Mitre Corporation, on commission of the Federal Environmental Protection Agency, also modeled sulfur oxide concentrations in the Chicago metropolitan area. The study showed that complete elimination of sulfur oxide emissions from electric power plants would reduce ground level concentrations by about 11% in the most polluted area of Chicago even though the plants account for two-thirds of sulfur oxide emissions in the metropolitan area. At the outset of their report accompanying the study, the writers stated:

Sulfur dioxide is one of the major air pollutants in industrial cities in the eastern United States. Since 30% to 80% of the sulfur dioxide emissions in these cities may come from electric power plants that burn fossil fuels, it has

been said the curbing emissions from power plants would considerably alleviate the sulfur dioxide pollution problem. We report a modeling study of atmospheric diffusion which indicates that emissions from power plants contributed only a modest percentage of the yearly average concentrations of sulfur dioxide at ground level in the most polluted areas of Cook County, Illinois, during 1968.

As a second example, the dramatic improvement in recent years in the air quality in England is well-known. This success resulted primarily from eliminating use of high sulfur fuels by home and other small users and encouraging high velocity-altitude discharges by large industrial users. Mr. F. F. Ross of the British Central Electricity Generating Board recently noted that annual emissions within fifty to sixty miles of Buxton in the English Midlands are significantly greater than those reported for comparable areas around Chicago and New York. On the other hand, the levels of sulfur oxide in the ground-level atmosphere at Buxton averaged around .03 parts per million with a high of .12 parts per million, reached only on one day, while the same or higher levels obtained in Chicago and New York were 1970 ground-level ambient air levels averaged .03 and .08 parts per million, respectively.

It is clear that in order to reduce the sulfur oxide concentrations in city air, special emphasis must be directed to the small combustion furnaces that emit at low altitude, low temperature and low velocity. Thus, it would be discriminatory to tax all sulfur emissions as though they were identical. The anomalous consequence of such discrimination would be that the small users, which have the most serious effect on the urban environment, would have relatively little incentive to clean up and no incentive at all to handle their emissions in ways which minimize their harm. For the small user, even a 10¢ per pound sulfur tax would only amount to a few dollars a year. For the electric power industry, even after complete conversion to 1% sulfur fuels, the proposed tax would still amount to an estimated 1% to 2% of electric revenues, in addition to the cost of conversion to the low sulfur fuels themselves. Paradoxically, the tax would also represent a disincentive to utilities to spend many millions on high stacks which have proved to be the most effective means of reducing ground level concentrations.

A sulfur tax would treat emissions in sparsely populated regions as having the same environmental impact as urban emissions. However, the latter clearly contribute the great bulk of sulfur oxides which result in unwanted ground level urban concentrations. It would be unfair to fuel users in the non-concentrated parts of the nation to pay at the same rate for their emissions as do their urban counterparts. Moreover, it would appear to be a mistake to establish a sulfur tax which would give no incentive at all to move coal-burning plants out of urban areas. Perhaps most important for society is the fact that the flat rate would put urban and rural fuel users in competition for the limited low sulfur fuel supplies which should be directed to the urban fuel user.

Supplies of low-sulfur fuels are not available on an equal basis throughout the nation, thus causing any flat rate sulfur tax to be a more severe imposition in one locale than in another for reasons totally unrelated to efforts at pollution abatement. Specifically, natural gas which emits no sulfur oxides is available in large quantities only in the south and southwest. Low-sulfur residual fuel oil supplies, domestic and imported, cannot meet present fuel needs. Low-sulfur coal produces greater sulfur oxide emissions than either natural gas or residual fuel oil, but electric power companies in the north central portion of the country have found that only low sulfur coal from newly-discovered mines in the far west is available to them. Thus, a sulfur tax would unfairly impose a stiffer burden on companies forced to burn low-sulfur coal, which must be transported at a high cost over 1000 miles from the western mines, than on companies located in regions having available supplies of natural gas and residual fuel oil. Ironically, the companies now directing the most time, money and effort to pollution abatement would be the most heavily taxed under a flat rate sulfur tax. Any pollution tax should avoid this kind of inequity.

In 1967, recognizing the incontrovertible fact that local air quality is affected by prevailing topographical, climatological and meteorological conditions, Congress by the Clean Air Act provided for the establishment of air quality control regions. Today there are over 100 such regions. The Federal Environmental Protection Agency has promulgated minimum air quality standards and local agencies are expected to establish plans to meet them. Local programs for pollution

control designed to meet local needs are to be preferred, and states and municipalities all over the country are promulgating and enforcing regulations. Measurements in major urban areas indicate that in recent years sulfur oxide levels have been decreasing. This is surely the result of regulation. If the government felt, however, that local authorities would grant undue variances from standards, it could with considerably less economic dislocation than would result from a pollution tax, provide for tightening up the various procedures, or even provide that the price of a variance would be the payment of a penalty tax of some kind.

In summary, any pollution tax must take into account the differing impact of emissions in rural versus urban areas, the effect of dispersal techniques proven effective in reducing ground level pollution levels, and the effect of varying climatic, topographical, and meteorological conditions on pollution levels. Particularly important, the time schedule for imposition of any pollution tax must recognize that the obligation of the electric power industry to provide a constant supply of energy prevents it from installing major pollution abatement devices requiring plant shut-downs except on a gradual basis.

The Institute opposes a pollution tax as unnecessary, an undue burden upon consumers who eventually must pay such a tax, an ineffective approach to the problem, and a contravention of the purposes for which such a tax would be imposed. Raising the price of electricity through such artificial means as a sulfur tax would mean possibly prohibitive costs in applying many processes needed to assure the nation the best possible environment. We believe that sound regulations, vigorously enforced, are the best means for government to ensure continued improvement in air quality.

INSTITUTE OF PUBLIC ADMINISTRATION,
Washington, D.C., August 2, 1971.

HON. WILLIAM PROXMIRE,
Chairman, Joint Economic Committee,
U.S. Capitol, Washington, D.C.

DEAR SENATOR PROXMIRE: It was with great interest that I noted that the Joint Economic Committee recently held hearings on effluent and emission charges. We have just completed an evaluation for the Environmental Protection Agency of the different approaches towards controlling stationary source air pollution. While we have some reservations, which I will discuss shortly, our conclusion was that emission charges (i.e., a pollution tax) are the most efficient and logical means of controlling air pollution.

While it is obviously not possible to discuss all of our conclusions here, I would like to outline briefly for you the reasons that we concluded that a pollution tax can most effectively control environmental degradation. Incidentally, I would be more than happy to send you a copy of our report, *Governmental Approaches to Air Pollution Control*, which includes an analysis of the 1970 hearings held on your effluent charge bill. As a complement to that report, we completed a study on *Governmental Approaches to Automobile Air Pollution*, also sponsored by the Environmental Protection Agency.

Our study looked at the basic approaches to pollution control which are:

1. Voluntary control,
2. Emission or effluent standards,
3. Land use controls,
4. Private legal action,
5. Cost sharing,¹
6. Economic incentives,² and
7. Emission or effluent charges.

Of these approaches, only two—pollution standards and charges—can effectively induce pollution abatement.

We reached this conclusion by applying a set of criteria to each approach, emphasizing two major criteria—efficiency and economy. To be acceptable, an approach had to induce polluters to stop pollution and encourage polluters to control pollution at the least cost to society.

¹ For example, accelerated depreciation, tax credits or exemptions, loans, or grants through which the Government pays part of the cost of control.

² For example, subsidies or grants large enough to pay all costs of control which induce a polluter to cease polluting.

Most proposed pollution control approaches do not induce the polluter to stop pollution. Voluntary control by the polluter has never worked anywhere in the world and land use controls merely place pollution in another location rather than eliminating it. While private legal action can effectively supplement other approaches, it cannot by itself induce significant pollution abatement. Cost-sharing proposals pay only part of the costs of abatement and there is no reason for industry to voluntarily pay the remaining costs since the investment is non-productive. Our study concluded that none of these approaches could induce pollution abatement.

The remaining three approaches—economic incentives, pollution standards, and pollution charges—were evaluated as to their economic efficiency. An approach was not considered to be economically efficient if it had a :

1. Bias toward certain control techniques and technologies, which are not necessarily the most effective ;
2. Requirement for an across-the-board (uniform) reduction in emissions, which costs more than approaches requiring selective abatement to meet the same control objective ;
3. Lack of continuing inducement to reduce emissions below a given level (as requirements approach a 100-percent reduction, of course, this consideration diminishes in importance) ; and
4. Requirement for the immediate application of control techniques and technology which are not available, leaving polluters only the alternative of shutting down.

Economic incentives are not economically efficient. They are usually biased towards capital intensive methods since they subsidize capital costs, but not operating, maintenance, or overhead costs. Capital costs probably account for less than a third of total air pollution abatement costs for most firms. This approach tends to discourage the least-cost solutions by promoting construction of capital intensive treatment facilities where process changes, recovery of by-products, or changes in raw materials might achieve the same result at lower cost. Furthermore, recipients of economic incentives tend to be unconcerned with obtaining the least-cost system of control since the government pays for it rather than the polluter. For these reasons, we concluded that economic incentives was not an appropriate approach for the government to rely upon for pollution abatement.

The remainder of this letter will discuss pollution standards and charges, the only effective methods of pollution abatement. It should be emphasized that neither the standards approach nor the charges approach precludes the use of other approaches discussed in this report—land use controls, private legal action, the use of cost sharing, and economic incentives. All these measures may play useful supplementary roles, though they cannot by themselves, either separately or all together, be relied on to control pollution.

Pollution standards are emerging as the dominant approach to pollution control in this country. Pollution charges are scarcely being considered in most quarters, although the research for our report suggests that standards may be less effective, less economical, and less flexible to changing air pollution control conditions than charges.

Standards and charges are generally comparable in their ability to reduce pollution to the level at which standards are set, although standards enforcement does rely on a great deal of voluntary compliance. However, the major difference between standards and charges is in their costs. The standards approach is unnecessarily costly because it disregards the different costs, to different firms and industries, of meeting a uniform standard. Available studies conclude that the uniform standards approach might well cost from two to seven times as much as an approach such as charges, which allows variations in emission reductions while reducing the overall level of pollution by the same amount.

Another drawback of standards—from the standpoint of encouraging the least cost form of control for any area—is that polluters have no inducement to reduce pollution below the standard. In contrast, a charge, since it is continually costing the polluter money, will offer a continuing incentive to him to reduce his pollution to the point where the incremental cost of control at the source equals the charge. Of course, as standards approximate a 100-percent reduction requirement, the need for a continuing incentive is negligible.

Emission charges encourage the most economical method of pollution reduction for four major reasons. First, charges are neutral toward all methods of

pollution prevention, abatement, and control. Faced with a charge, a polluter can: (1) close down, (2) relocate his facility, (3) alter his product, (4) change his raw materials, (5) change his processing technology, (6) recycle his wastes, (7) reclaim his wastes, (8) treat his wastes, (9) dispose of his wastes elsewhere, (10) pay someone else to treat his wastes, or (11) pay the charge. Assuming firms are profit-maximizing (or more correctly cost-minimizing), the polluter will choose the response which is least costly. Charges, since they are neutral with respect to the response to be taken, offer the distinct advantage of allowing polluters the entire range of possible responses, thereby enabling selection of the least-cost solution.

Second, charges enable a given pollution reduction target to be reached less expensively than across-the-board standards. By tacitly taking into account differences in the marginal costs of pollution control among various sources, charges would encourage those polluters with low abatement costs to abate both earlier and in larger amounts than those with high costs.

Third, charges encourage continued efforts to reduce pollution up to the point where it vanishes. Most approaches offer no such continuing incentive.

Fourth, and of great importance over the long run, charges induce polluters to devise new methods of abatement. This is very important since a system of charges would be the only approach whose immediate application would encourage pollution control even in the absence of commercially-proven techniques and technologies.

Perhaps, the biggest obstacle to implementation of charges seems to be the belief in many quarters that charges constitute a "license to pollute." However, it seems to us that this is an emotive phrase designed to obscure the real issues in pollution control. Every approach to pollution control permits some pollution. For example, under a standards approach, the polluter is allowed to pollute up to the level of the standard, thereby giving him a "license to pollute." The real issue, therefore, is not whether pollution is permitted but *how much* pollution will be permitted.

In addition to the primary criteria of economy and efficiency, we briefly evaluated standards and charges against the criteria of administrative feasibility, flexibility, political acceptability, equity, information requirements, communicability, and its administrative costs. In general, charges are just as functionally sound in these areas, if not more so, as standards.

The real question, however, is not which approach appears best in theory, but which can actually achieve effective and economic pollution control. The major problem with the charges approach is that it remains an untested idea. The charges experience with water is very limited and to the best of our knowledge, no country has implemented or even carefully studied an emission-charge approach to air pollution control. This suggests a strategy which seeks to obtain additional knowledge about charges through research and demonstration projects.

Research is particularly needed on the administrative feasibility of charges. The theory behind charges has been well discussed, but little has been done to determine what functional problems a charges system might face.

In terms of demonstrating charges, it is obvious that few areas of the country would be interested in being a demonstration area since its industries would be adversely affected. However, a charge might easily be placed upon a particular air or water pollutant on a national scale. This would effectively demonstrate the capabilities of a charge system.

In conclusion, it is our feeling that the charges approach, while untried, is the best system for controlling pollution. All levels of government should begin to consider implementation of the charges approach. Your hearings in 1970 and those which you recently held are an extremely important beginning. It is now imperative that other areas of government and private citizens begin to understand the charges approach. Only then will we see implementation of the charges approach.

If you have any questions, feel free to contact me.

Sincerely yours,

TERRY A. TRUMBULL.