# The Cost and Benefits of Government Regulation: An Environmental Dilemma


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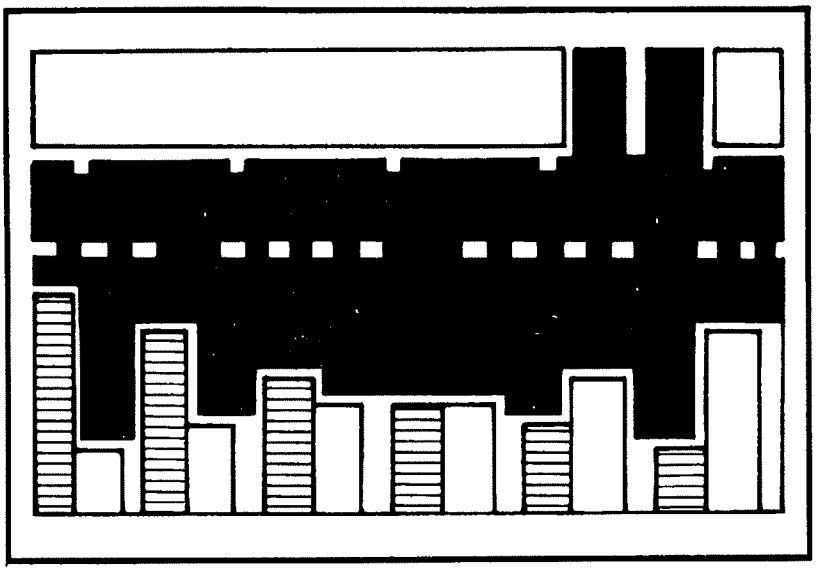

The cost of Government regulation has received considerable attention by the General Accounting Office. We have expressed some strong and sometimes controversial views on the subject, but we have come to our conclusions by painstakingly gathering the relevant evidence without any preconceived notion or biases. As an arm of the Congress, GAO is well insulated from the pressures of special interest groups. This insulation ensures GAO's ability to conduct independent reviews and report the results as we see them. For example, GAO was an early advocate of less regulation when it projected considerable savings if airline regulations were relaxed. However, we have also seen a need for tighter regulations to ensure the quality and safety of the food we eat.

Basically, there are three principal questions which need to be addressed in the broad spectrum of Government regulation:

- What is the nature of environmental regulation?
- What does it cost, and what are the benefits?
- How can environmental regulation be simplified and the cost reduced?

## Nature of Environmental Regulation

Environmental regulation—which places limits on the amount of pollution that can be tolerated without endangering the health and welfare of human beings and ecological systems—generally takes two forms: technology-based regulation and risk-assessment-based regulation. Both forms are often controversial and complex.

### Technology-Based Regulation

In technology-based regulation,

uniform standards are set, based on available control technology. This is a very rigid form of regulation; it allows little flexibility and does not require a cost/benefit test. Several GAO reports have addressed the inflexibility in existing environmental regulation, the need for a cost/benefit approach, and conflicting environmental regulations. For example:

- A minimum of secondary wastewater treatment is mandated by the Clean Water Act. The act does not consider the varying degrees of the assimilative capacity among different bodies of water. In a May 1978 report on secondary treatment of municipal wastewater in the St. Louis area, we estimated that about $160 million in Federal funds could be saved if the mandatory secondary treatment requirement were eliminated. Our work showed that secondary treatment in the St. Louis area would have minimal impact on the quality of the Mississippi River.[1]
- Similarly, in July 1980 we reported that about $10 billion would be needed through the year 2000 to construct advanced waste treatment facilities to prevent violations of water quality standards. However, the standard-setting process is imprecise, anticipated violations may be insignificant or uncertain, and advanced waste treatment may result in little improvement in water quality and the public health.[2]

Inflexibility is not only evident when levels of treatment and water quality standards are mandated. In a report released by GAO in December 1977, we noted that little attention had been directed to controlling "nonpoint" sources, although in some areas such sources comprised over 50 percent of the water pollution load.[3] At best, it was doubtful that the construction of additional point source control projects would improve water quality as much as implementing practices to control nonpoint pollution. Yet compared to the construction grants program under the Clean Water Act, very little funding is provided for nonpoint sources. To date, the primary program covering nonpoint pollution has received obligations of only $368 million while programs covering point sources have received $31 billion. Nonpoint pollution, therefore, is receiving only about one percent of the total pollution funding.

A particularly troublesome situation arises when individual environmental regulations, some technology-based, conflict or work against each other:

- To comply with environmental regulations for eliminating bacteria and other organisms, communities usually add chlorine to treated wastewater. But this same chlorine is often very toxic to fish, particularly trout, which other water quality regulations are designed to protect.
- Disposing of sludge from sewage treatment plants results in a "Catch 22"-type situation. Ocean disposal will be prohibited by the Marine Protection and Sanctuaries Act; sludge burning often requires expensive stack gas scrubbers to meet air pollution control regulations; and land disposal may not be practical or allowed if the sludge contains levels of toxics and metals because of the potential for ground and surface water contamination.

Obviously, the regulations generated by the Federal Government need to be synchronized, if only to preserve the mental stability of State and local governments and the private sector. But equally important is the need to maximize the use of limited governmental funds and private capital, by introducing sufficient flexibility into the regulatory process to achieve the greatest overall benefit.

### Risk-Assessment-Based Regulation

The second form of environmental regulation, risk-assessment-based regulation, attempts to reach judgments as to the relative risks associated with human and environmental exposure to potentially dangerous substances, versus the benefits in using such substances. Two examples of this type of regulation are the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). Although this form of environmental regulation may be more flexible than technology-based regulation, it is not without its problems.

Risk-based regulation requires judgments, which because of the difficulty in determining risks, costs, and benefits, are often controversial. Decisions cannot always be deferred until enough research has been done; therefore, the scientific bases for judgments are often very uncertain. The issue here is one of what scientific and technical information is available to EPA in its decisionmaking process and how the available data is used.

EPA must deal with many serious constraints in making decisions, such as scientific and technical issues at the frontiers of science. However, in a GAO report released in 1979, we concluded that independent assessment of scientific and technical information in the decisionmaking process, such as by EPA's Science Advisory Board, can be successful in improving the process and forestalling costly litigation.[4]

Unfortunately, the situation continues to exist where such independent assessments are not obtained. In congressional testimony in May 1980, we noted that EPA did not use its scientific advisory panel to provide scientific and technical advice for an emergency suspension of the pesticides 2,4,5-T and Silvex. As a result, serious questions have been raised about the evidence and the procedures used to support the suspension.

## Cost and Benefits of Environmental Regulation

Determining the cost and benefits of environmental regulation is both difficult and controversial. Questions constantly arise as to the appropriate methodology for measuring costs and benefits to be used, the base years to be used for comparison purposes, and how to value enhanced aesthetics, improvements in health, and the prolongation of life.

Nevertheless, environmental regulation cost and benefit estimates abound. Many do not use comparable bases and appropriate methodologies, and most estimates involve staggering sums. For example:

**Costs.** An EPA contractor study of the cost of complying with Federal pollution control requirements dur-

ing the mid-1970's found that in many cases both EPA and industry regularly exaggerated the likely capital costs. The study reported that, in the case of water effluent guidelines for petroleum refineries, both EPA and the industry estimated capital costs of $1.4 billion, 137 percent higher than the actual cost of $590 million. For iron and steel industry water pollution standards, EPA forecasted capital costs of $830 million, whereas the industry estimated $1.6 billion. Actual costs were $510 million. In contrast to overestimation, EPA estimated the capital cost of compliance with air pollution standards in the electric utility industry to be $71 a kilowatt. The industry suggested $87 a kilowatt, but the actual cost was $96 a kilowatt.

**Benefits.** What about attempts to measure benefits? A recent report prepared by an economist at Bowdoin College for the Council on Environmental Quality estimated significant benefits from environmental regulation. The report stated that in 1978, air pollution regulations were estimated to have saved 14,000 lives and produced about $21.4 billion in other benefits, such as improvements to human health and reduced damage to vegetation. Further, by 1985, water pollution controls should result in annual benefits of about $12.3 billion in terms of increased recreational and aesthetic values, higher fish yields, and reduction of certain waterborne diseases.

EPA claims that its programs are beneficial by creating new industries. For example, under the construction grants program, it expects that for each $1 billion in Federal expenditures, 14,000 construction jobs and another 18,000 jobs to support these construction jobs will materialize.

Although the efforts to compute costs and benefits may be entirely sincere, the figures are necessarily very "soft" and often not much more than "guesstimates." EPA says that overall, less than one-half of one percent of the yearly increase in the cost of living is attributable to environmental regulation. The effect of compliance with environmental laws on some segments of our society is much greater. In May 1980, GAO reported that the cost to some small communities—those under 10,000 population—exacts a much higher economic and social price because the costs must be shared by fewer taxpayers, sometimes placing severe burdens on low-income residents.[5] We identified actual cases where residents sold their homes, moved to low-income or public housing, or registered for welfare because they could not afford the high sewer rates assessed to support wastewater treatment projects. Other residents had not paid their sewer bill because they needed the money for food and living expenses, while others delayed recommended medical treatment so they could pay their sewer bill.

Environmental regulation has created new types of jobs and whole new industries, but economists differ as to whether the resulting expenditures are basically productive and whether they add much lasting value to society. Some argue that for every dollar industry spends on environmental regulation, one dollar is taken away from funds needed for a facility's capital improvements, modernization, and expansion, which also create jobs and provide more lasting benefits.

## Simplifying and Reducing the Cost of Environmental Regulation

We have already considered the need for greater flexibility in environmental regulation, the question of benefits versus cost, and the need to improve the scientific basis for environmental decisions. We must now examine two other areas which can lighten the burden of regulation—knowing the actual state of the environment before imposing regulatory measures, and developing innovative approaches.

### Actual State of the Environment

Before any decision on appropriate control strategies and employable activities can be made, accurate and reliable information on the true state of the environment is needed. Unfortunately, major decisions affecting health and the economy occasionally have been based on data obtained from inadequate environmental monitoring systems.

In a May 1979 report, GAO raised serious questions about the reliability and representativeness of air quality control data.[6] We reported that air quality monitoring networks were suspect because data were obtained from incorrectly sited monitors and uncertified equipment. Air quality data of this type, when used as a basis for policy decisions and regulatory actions, is highly questionable and can result in unnecessary, costly regulation. For example, businessmen in Butler County, Ohio, questioned the accuracy of EPA's monitoring network and awarded a contract to a research firm to develop a private air monitoring system because they believed that EPA would designate the area as not in compliance with ambient air quality standards. Although the area has not been so designated, the businessmen are continuing their private monitoring effort. Should the area be designated as nonattainment, then significant economic impacts, particularly restrictions on industrial expansion, could result. Also, State legislatures are being required to adopt expensive automobile emission control inspection and maintenance programs for areas not in compliance with ambient air standards, yet much of the data used in making nonattainment determinations is of unknown quality and may be unreliable.

Similarly, water quality data are often inadequate and unreliable. In 1978, in a GAO report on areawide, or "208" water quality management planning, we noted that water quality data were needed to support effective planning and to pursue the most cost-effective control programs.[7] Data were lacking which would describe how pollution occurs and to what degree water quality would be improved after one or more pollution causes were eliminated. A future GAO report will point out that existing fixed station water quality monitoring networks do not produce the accurate, reliable data needed to support costly pollution control decisions and to evaluate the effectiveness of such control strategies.[8]

## Innovative Approaches

Innovation and technological advancement have always been a hallmark of American industry. GAO's involvement in environmental protection activities, however, has shown only minimum application of this innovative capability. Two years ago we reported that a very old treatment technology—the septic system, when properly designed, installed, and maintained—is a viable alternative to costly central treatment processes.[9] However, Federal agencies do not encourage septic systems as a permanent way to solve wastewater treatment problems and do not provide financial incentives. States and communities have not developed more effective techniques to manage and control septic system activities.

GAO's work on combined sewer overflow problems has also demonstrated the need for innovation. To eliminate overflows and reduce flooding, the Chicago Metropolitan Sanitary District began construction of a two-phase, deep tunnel project, which probably would have cost more than $11 billion. Yet despite this massive expenditure, EPA and the State agreed that the project would not bring the area waterways to the 1983 fishable/swimmable goal. The use of innovative, best management practices, such as street and rooftop impoundments, porous pavement, check valves and standpipes, street sweeping, and in-line sewer storage, could contribute significantly to reducing overflow and flooding problems at a much lower cost.

Innovation in environmental regulation will become more and more important as demands for scarce resources multiply. The bubble concept, a recent innovation proposed by EPA, is not without drawbacks, but it may hold promise for significant savings. The banking and brokerage concepts, whereby companies reducing emissions below maximum requirements would be permitted to sell pollution rights to other firms, also holds promise for the future.

One area where innovation will truly be needed is the handling, treatment, storage, and disposal of hazardous wastes. We cannot afford examples like Love Canal, New York, and Hamilton, Ohio. Innovation through new and improved technologies for recycling and reuse, land disposal, underground deep well injection, and high temperature burning is a must if we are to have dealings with hazardous wastes.

## Conclusions

We should harbor no illusions that environmental regulation is going to disappear, despite the growing sentiment to sacrifice a cleaner environment in a period of inflation, energy problems, and recession. In various public opinion polls, the American people have expressed their desire for clean air, clean water, and unpolluted land, and their willingness to pay a reasonable price for such values. Everyone agrees that environmental regulation is needed.

The challenge, however, is to ensure that such regulation is not overly complex and burdensome, and that costs do not outweigh the benefits. We need flexibility; we need reliable, accurate data and scientific bases upon which to make decisions; we need innovation.

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[1] "Secondary Treatment of Municipal Wastewater in the St. Louis Area—Minimal Impact Expected" (CED-78-76, May 12, 1978).

[2] "Many Water Quality Standard Violations May Not Be Significant Enough To Justify Costly Preventive Actions" (CED-80-86, July 2, 1980).

[3] "National Water Quality Goals Could Not Be Attained Without More Attention to Pollution from Diffused or 'Nonpoint' Sources" (CED-78-6, Dec 20, 1977)

[4] "Improving the Scientific and Technical Information Available to the Environmental Protection Agency in Its Decisionmaking Process" (CED-79-115, Sept. 21, 1979)

[5] "EPA Should Help Small Communities Cope with Federal Pollution Control Requirements" (CED-80-92, May 30, 1980)

[6] "Air Quality Do We Really Know What It Is?" (CED-79-84, May 31, 1979)

[7] "Water Quality Management Planning Is Not Comprehensive and May Not Be Effective for Many Years" (CED-78-167, Dec 11, 1978).

[8] "Better Monitoring Techniques Are Needed for National Surface Water Quality Assessments" (CED report in progress, due for release in Dec 1980).

[9] "Reuse of Municipal Wastewater and Development of New Technology—Emphasis and Direction Needed" (CED-78-177, Nov. 13, 1978)