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ENVIRONMENTAL POLICIES AS A CONGRESSIONAL REQUIREMENT FOR SOCIAL EFFICACY

By Richard D. Grundy*

INTRODUCTION

The issues inherent in the regulation of scientific and industrial activities are characteristic of much broader societal concerns. They exemplify the historical contradiction, and conflict, between man's natural desire and quest to improve his material standard of living, through an ever increasing consumption of natural resources, and man's concurrent desire to conserve these same resources and the environment for future generations. For Western man, these diametrically opposed social values, and their associated goals represent an unprecedented challenge.

Out of this inherent conflict there has emerged a social movement which seeks to augment the rights and powers of the consumer in relation to the sellers. The objective is to incorporate intellectually refined concepts of the common good into today's corporate practices. The overriding ethic is social efficacy as a condition of human use. The challenge is to foresee and take the necessary steps to forestall the adverse effects and risks of actions by government, business, and society alike.

Achievement of this objective will require a new concept of professionalism, a concern not only for the immediate benefits of our labors but also a concern for the ultimate consequences of man's actions for the consumer, the environment, and society at large. In other words, recent environmental problems require a shift from the traditional limited perspectives of serving consumer desires efficiently over the short-term to the broader objective of serving their long-term interests. The essential ingredient is a national perspective in which, quite properly, technology as well as our social insti-
tutions are the servants, not masters, of mankind. Technology inherently has no ideology, no morality, and no sense of social purpose or the "common good." We as citizens must ultimately provide technology with a sense of moral direction and human purpose.

THE PROLOGUE

Americans are accustomed to an abundance of material goods and energy. The price for this is the highest per capita consumption of resources of any country in the world. To no small extent, our style and standard of living is made possible by an abundance of low-cost energy.

Historically, as a nation, we have paid scant attention to the conservation of natural resources or to the preservation or enhancement of environmental quality. Our extraction and use of these resources has often been wasteful. Simply stated, because resources were available they were consumed without questioning the legitimacy of their demand or the efficiency of their utilization.

The prologue, the society of Western man, is aptly characterized as a culture primed by population growth and driven by technology to create problems of environmental degradation that impact directly on all senses. The legacy of this life-style is a crescendo of human concern for technology's adverse consumer, environmental, and public health effects that have become almost synonymous, in the public's eye, with new technological developments. In short, human qualities often have been endangered by the pursuit of economic growth as an end, rather than as a means to achieve broader societal goals.

All this must change. Declining reserves of resources, accelerating demands, environmental concerns, and national security all serve as restraints on our continuing ability, as a society, to provide abundant supplies of natural resources. For example, as a nation we have come to expect, as a matter of course, abundant low-cost energy supplies. However, faced with short-falls in energy supplies, our country is being called upon to institute energy conservation practices on a national basis, not for environmental reasons, but because energy supplies cannot keep up with ever-increasing demands.

The combined influence of recent energy, environmental, and consumer policies will dramatically affect our nation's future social and economic institutions. The first signs of change are reflected
in Congressional actions during the last four years regarding environmental quality management, air and water pollution control, and technology assessment.

AIR POLLUTION CONTROL

Air pollution control is portrayed, in the press, as a recent political issue; in reality, however, Congressional interest dates to legislation in 1955, followed by initial Federal enforcement authority over interstate air pollution in 1963, and the Air Quality Act of 1967. The most significant legislation to date, the Clean Air Amendments of 1970, could be portrayed as perhaps the most significant economic, as distinguished from environmental, legislation enacted in the history of the United States. Without question the 1970 amendments represent a significant land use planning measure.

In 1970, the Congress mandated achievement, by 1975, of primary air quality standards designed to protect public health. Provision also was made for achievement of secondary standards intended to protect the public welfare at a reasonable time thereafter. Several states, however, have accelerated this time schedule in their plans of implementation. Exercising authority provided in the 1970 Amendments, in many instances, state implementation plans call for achievement of the national secondary (welfare) standards by 1975.

Despite uncertainty over the availability of "clean" fuels to meet the national primary (health) air quality standards for sulfur oxides, many states exercised their authority to establish stricter standards than the Federal standards for 1975 on the basis of air quality enhancement. The sulfur oxide control standards adopted for heavily polluted regions, such as New York City, also are being required for other air quality control regions in response to citizen pressures and encouragement by the Environmental Protection Agency. The emphasis of the control strategies being adopted for electric utilities is the use of low sulfur fuels, principally imported oil.

However, nationally the available supplies of low-sulfur fuel and sulfur oxide control equipment cannot meet aggregate demands within the time schedules called for by the states. Commenting on this on May 31, 1972, the Environmental Protection Agency stated:

In most States emission regulations were made to apply statewide, without regard to the differing air quality in regions within the State.
It is clear that achieving these rigorous State standards in the time prescribed would significantly enhance air quality in many areas of the Nation, as contemplated by the Clean Air Act. However, in addition to reviewing the effectiveness of each State implementation plan, this Agency and the Federal Government have an obligation to assess the impact of the various plans in the aggregate. From this standpoint, there is strong evidence that the complete implementation of the plans as submitted may not be attainable in the time prescribed.

There are alternative strategies which should permit achievement of the goals of the Clean Air Act within the legislative deadlines, but the approach must be twofold. First, implementation of the standards must take into account the limits on total availability of clean fuels. Second, government must also address the problem of creating economic and other incentives which ensure that natural or desulfurized clean fuels go to users in areas of greatest environmental need.

The Pure Air Act of 1972 (the sulfur emission tax), which is currently before Congress, is important to both aspects of this approach. The tax would permit clean fuels to reach users in areas of environmental need by providing a strong economic incentive for those users to bid for the clean fuels. The tax would also increase the availability of clean fuels by providing an economic stimulus both to develop new clean fuel resources, and to perfect technology for cleaning fuels before combustion, and for purifying exhaust gases.

Preliminary analysis by EPA indicates the real possibility that, under current conditions in the domestic and world fuel markets including the absence of the sulfur tax, all aspects of the State Plans in the aggregate cannot be achieved by 1975 despite the best efforts of both government and the private sector (Emphasis added). Pending further study, EPA is approving or promulgating regulations for meeting both the primary and secondary SO\textsubscript{x} standards. The States should proceed to develop compliance schedules on the assumption that both standards can be met. . . . Highest priority must be given to achieving the primary standards (health related) by the statutory deadline.

In summary, despite the uncertainty regarding available supplies of “clean” fuels, the Environmental Protection Agency is holding to the 1975 primary air quality standard for sulfur oxides mandated by Congress.\textsuperscript{7} This will require expenditures of about $12 billion over the next 5 years on the control of air pollution emissions from both mobile and stationary sources to avoid an estimated $14 billion in air pollution effects.
Implicit in this situation is the potential for Federal intervention in the establishment of end use policies, although statutory authority is not available for this purpose. Under such controls available low-sulfur fuels would be allocated to those critical regions where their use is necessary for compliance, by 1975, with the national primary (health) air quality standard for sulfur oxides. The EPA's guidelines for development of state implementation plans suggest that air quality control regions be divided into three categories, as follows:

Priority I—The national primary (health) air quality standard is in violation;  
Priority II—The existing ambient air quality is somewhere between the primary (health) and secondary (welfare) air quality control standard; and  
Priority III—The existing ambient air quality is higher than the national secondary (welfare) air quality standard.

These priorities, however, were not reflected in the State Implementation Plans.

The Congress and the Environmental Protection Agency are now faced with the policy decision of whether to allow the marketplace to determine who receives the low sulfur fuels or, alternatively, whether Federal intervention is justified to insure preferential treatment for those air quality control regions where the national primary air quality standard is currently violated.

**WATER POLLUTION CONTROL**

On October 18, 1972, the Congress overrode the President's veto, which had been justified on fiscal grounds, of the Federal Water Pollution Control Act Amendments of 1972. Without question, this legislation is the most significant Federal water quality legislation since the Water Pollution Control Act Amendments of 1956 and the Water Quality Act of 1965. This measure represents a redirection of Federal policy as well as a commentary on the adequacy of our total national—governmental, industry, and social—response to water pollution control to date. In summary, the 1972 Amendments provide that—

—by mid-1977, all municipal wastewaters must be provided the equivalent of secondary treatment.  
—by mid-1983, all municipal wastewaters must be processed by advanced disposal methods, including land disposal.
—by July 1, 1977, all industrial sources must apply the best practicable control technology, taking into account the total impact of the action on plants within a given category (e.g., steel, chemical, paper), considering overall financial ability to comply and the national impact of compliance on communities and workers.

—by July 1, 1983, industrial sources must adopt the best available technology, taking into account whether such application is economically achievable by the category or class of industries affected, and, at the same time, whether compliance will result in reasonable progress toward the national goal of eliminating all water pollution.

—the EPA Administrator shall establish guidelines for the State’s operation of permit programs; however, the permits already issued under the 1899 Refuse Act are to be considered valid under the new legislation; this will lead to a phasing out of the 1899 Refuse Act permit program.

—a separate permit program will be created covering the disposal of dredged or fill material in the Nation’s waters, to be administered by the Corps of Engineers in compliance with guidelines developed by EPA in conjunction with the Corps of Engineers.

—citizen suits may be undertaken against the government, or a private interest, for violation or failure to carry out mandatory provisions of the law; however, such suits are restricted to those citizens, or citizen groups, having an interest in the matter in litigation, in accordance with Sierra Club v. Morton.

—with the exception of construction of publicly-owned waste treatment plants and permits granted for the discharge of pollutants by new sources, actions taken by the Environmental Protection Agency are exempted from the National Environmental Protection Act’s requirement for environmental impact statements.

—the EPA Administrator may allow thermal discharges higher than those required under Sections 301 and 306, where the owner or operator can assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made.

Perpetuating several features of the 1970 Clean Air Amendments,11 the 1972 water pollution control amendments also provide for the establishment of new source performance standards for at least 28 industries. The standards are to reflect the "greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no dis-
charge of pollutants.” The ultimate objective is elimination of waste-water discharges through closed-cycle industrial processes.

For potentially toxic pollutants, provision is made for the establishment of effluent limitations, including a prohibition. Concern is for those pollutants which available information suggests could either directly, or as a result of bio-magnification through food-chains, cause death, disease, behavioral abnormalities, genetic mutations, birth defects, and physical deformations.

A significant change in public policy is the emphasis placed on effluent standards, rather than river basin planning. The Water Quality Act of 1965 provided for comprehensive river basin planning and effluent standards reflecting receiving water standards. This change in Federal policy reflects the present inability to relate effluent standards to receiving water quality in a manner which facilitates comprehensive river basin planning.

This difficulty led to the creation in 1971, prior to the 1972 amendments, of the 1899 Refuse Act permit program, which existed independent from the Federal-state water quality standard program set up by the 1965 Act. The 1972 Amendments, however, attempt to restore the lead role to the states by providing for state establishment of permit programs.

Let us examine the widely published 1985 goal of “zero” discharge. The reaction to this goal by industry has been to refer to it as the “1491 Standard” or “pre-Columbian Standard.” A careful reading of the statute, however, reveals several “real world” criteria:

The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that consistent with the provisions of this Act—(1) it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985; . . .

To assess the implications of this goal, provision is made for a 15-member Commission to undertake a study into the environmental, technological, economic, and social effects that would result from enforcing the 1983 “best available” regulation on industry and attaining the 1985 goal of pollution-free water. Inherent in this evaluation is the concept of technology assessment or the balancing of social benefits and costs against economic benefits and costs. The instructions in the Senate debate on S. 2770 were to—
require the application of the best practicable control technology currently available . . ." and if "... compliance is not attainable at a reasonable cost, in which event there shall be applied an effluent limitation based on that degree of effluent control achievable through the application of the best available technology, taking into account the cost of such controls . . .

The advocated rule of reason was that, "reasonable cost is the basic test, under the pending bill, for eliminating discharges." This philosophy was intended to mean that as controls increased, "the next standard would not be implemented if the social and economic costs clearly outweighed the social and economic benefits." This language contains the necessary flexibility to reflect the public's willingness to pay for, and their dedication to, environmental quality. Adjudication also is provided, but only after extensive hearings and investigations designed to deal with the recalcitrant elements of the business community. The final outcome will depend upon courts' interpretations of "enhancement," "practical," "best available," and "equity."

TECHNOLOGY ASSESSMENT

Perhaps our greatest challenge as a Nation is the emerging requirement for preassessment of the social and environmental implications of man's activities. This undertaking requires the scientific application of the art of prophesy—previously a gift of actual, or would be, religious leaders.

Practically speaking, we as a society are no longer allowed the luxury of assuming that technological innovation is inherently beneficial. To the contrary, what has emerged is a cultural force which insists on social efficacy—the incorporation of people and their human needs into decisions, as a condition of human use.

Recent Congressional expressions of concern are manifested in the National Environmental Policy Act (NEPA) and the creation of the Office of Technology Assessment. The Office of Technology Assessment represents an expression of Congressional disaffection with the posture of the scientific, engineering, and technological communities generally. NEPA, in turn, has developed a substantial body of case law that adds a considerable gloss to the statutory language—expanding NEPA's scope, thrust, and significance.

The most notable, although not necessarily the most significant,
applications of NEPA are seen at the energy-environmental interface in the Federal licensing of nuclear power plants, the Federal leasing of resource development rights on the outer continental shelf, and the construction of a trans-Alaska pipeline. Equally significant, however, was the July, 1972 publication by the Food and Drug Administration of proposed procedures for the preparation of environmental impact statements. Final regulations have not been promulgated; however, the proposed regulations would extend the requirement for an environmental impact statement to the following thirteen FDA actions:

(1) Recommendations or reports made to Congress on proposals for legislation in instances where the agency has primary responsibility for the subject matter involved;
(2) Destruction of articles condemned after seizure or enjoined;
(3) Destruction of articles following detention or recall at agency request;
(4) Destruction of articles banned by regulation;
(5) Disposition of Food and Drug Administration laboratory waste materials;
(6) Establishment by regulation of labeling or other requirements for marketing articles;
(7) Establishment by regulation of standards for articles (except food standards);
(8) Approval of new drug and abbreviated new drug applications and old drug monographs;
(9) Approval of new animal drug and abbreviated new animal drug applications and old animal drug monographs;
(10) Approval of antibiotic drug monographs;
(11) Approval of food additive petitions;
(12) Approval of color additive petitions; and
(13) Policy, regulations, and procedure-making which significantly affect the quality of the human environment.

In addition, a person, requesting any of these Federal actions, will be required to include with their application or petition an environmental impact analysis of the requested action on the quality of the human environment. Rightly, an environmental impact analysis report also is required whenever a manufacturer, distributor, or dealer proposes to destroy materials (food, drug, cosmetic, medical device, electronic product, or hazardous substance) which have been condemned, enjoined, detained or banned by regulation. The proposed procedures thus require a rigorous assessment of
alternative actions sufficient to avoid premature economic commitments which might have greater environmental effects than existing or other new options.

The philosophy of NEPA also is being reflected in state and local actions. For example, the 1970 California Environmental Quality Act requires an environmental impact report to the local planning agency on any public works project that may significantly affect the environment. The California Supreme Court has held that the law also applies to private construction for which a development permit of any kind must be obtained if the project's effect on the environment would be "significant." Perhaps the most significantly affected are the land-speculators, the housing and construction industries, and the associated savings and loan industries, who are involved in private land-use decisions, which have traditionally been geared for maximum short-term financial return.

The lesson is that traditional corporate policies and management decisions inadequately reflect today's overall economic priorities, which now extend to the adverse public health, environmental, and consumer product side-effects of corporate and government decisions. In part this change stems from a failure of our business and industrial institutions to provide governmental bodies with sufficient valid information—which is a requisite for the establishment of our society's overall economic priorities by the appropriate governmental bodies.

What is important are the apparently ever-increasing social costs of corporate decisions. The Congress and state legislatures can define by statute general constraints on corporate behavior. For example, criteria may be legislated for use in effectuating pollution control standards and economic incentives; however, there still remain the administrative and corporate decisions necessary to reflect social and environmental costs explicitly in management decisions and accounting systems.

Among the various terms employed are "social auditing," "environmental accounting," "social-economic accounting," and "social accounting," to name a few. Whatever the term employed, social accounting concepts must ultimately reflect—

(1) extended and revised definitions of economic or business costs and benefits which include direct social costs and benefits as well as second and higher (or lower) order consequences of business activities;

(2) new concepts and techniques for quantifying these costs and benefits which traditionally have not been reflected in corporate accounting systems but rather have been considered externalities;
(3) new approaches to governmental and/or corporate institutions capable of balancing divergent perceptions of social costs and benefits in a manner that can be reflected in corporate accounts; and
(4) techniques for monitoring the evolution of our understanding of the social costs and benefits of man’s activities and expanded concepts of social and environmental accounting.

In effect, the challenge for business is to develop products and marketing practices that combine short- and long-term consumer values.

In the future, technology and economic growth cannot be expected to receive the unquestioning popular support and acclaim they have received in the past. In other words, corporate and government actions must be related to today’s social priorities, human needs, and aspirations which reflect expanded concepts of the public good.

THE EPILOGUE

An insight into anticipated corporate reform is provided in the public’s recent disaffection with technology. The former president of Stanford, Kenneth Pitzer and others have suggested that scientists and engineers need to review their relationships with society. Most in need of review are relationships with the Congress, which are almost non-existent.

The scientific community’s characteristic posture is one of preoccupation with the pursuit of individual scientific excellence (analogous to the next quarterly statement). Ambition too frequently is viewed by others as a preoccupation with providing information acceptable to one’s professional peers (or stockholders) —not society (the consumer)—thereby securing their (the stockholders’ or peer group’s) respect and attention—not society’s. All too often, only what has value in the intellectual marketplace (or the quarterly statement) survives.

Consequently, within the technical community elite “peer groups” have emerged that exclude not only the layman but other scientific and engineering disciplines from both their intellectual and social company. The extreme is exemplified by the scientist who considers his research worthy of preferential Federal support by virtue of his membership in the “peer group.” There is no concomitant recognition of social accountability in the public affairs sense of the phrase.

Yet, the criterion for the new professionalism is social efficacy,
including a concern for the side-effects of our scientific and engineering labors at technology's interface with the public, the environment, and the social priorities of our times.

Application of this concept will require a far greater flow of information across the interface between the scientific, engineering, and business communities and our public institutions than has occurred in the past. At least three changes can reasonably be expected: a breakdown in the traditional isolationism which is characteristic of these communities; a movement of corporate and technical concerns closer to society's total problems; and the development of technical centers of unimpeachable quality to which all can turn for reliable appraisals, with identified biases, of alternative technical and corporate decisions.

Historically, however, scientists and engineers have shown an ambivalence toward participation in the public domain—on occasion even pronouncing politics as corrupting. When participating in public affairs (e.g., the legislative process), their performance judged in political terms is usually ineffective, leaving much to be desired. Their usual approach, as experts, is to depend on the powers of persuasion, rather than logic. In truth, they do not fully understand the meaning of public accountability and are unwilling to accept the risks inherent in expressing opinions on where matters of science end and where the "trans-scientific" decisions involved in politics begin. Yet, we live in an age of "participatory democracy," where the public demands accountability from all segments of society—scientists, engineers, and corporate interests are not exempt.

Under our Federal form of government, matters of national policy are the responsibility of the Congress and, indirectly, of state legislatures. These bodies and their associated legislative and investigatory committees are uniquely constituted for the formulation of social policies and priorities—serving as a forum for the presentation and resolution of divergent and often controversial viewpoints. The function of legislative committees is to appraise alternatives and formulate criteria for judging administrative decisions made by executive agencies.

The principal objective of participants in this forum should be to provide assistance in the form of information which defines alternatives and assesses their merits, a service for which the scientist and engineer are uniquely qualified. A scientist or engineer should further concern himself with expressing opinions on the specific
language of legislation. This is the reverse of current attitudes and practices, which verge on the mere touting of pet ideas and projects.

The role of the technologist as the assessor of options may seem limited, if not demeaning; however, this is a significant service, not routinely being provided to Congress and state legislatures on matters of technology. The absence of this service led to the recent creation of an Office of Technology Assessment to aid Congress. The resolution of social policies in such areas as public health, the environment, land use, transportation, housing, and energy policy represent unprecedented challenges for Congress, for scientists and engineers, and, indeed, for the world. Resolution of these policy issues will require crossing the "trans-scientific" interface where matters of science end and political decisions involving social priorities begin.

Controversy will be an essential ingredient for ventilation of these issues and optimization of the necessary decisions. All too frequently, however, there is a tendency to forget that differences of opinion and perception are often based upon incomplete information.

To be beneficial in the formulation of social priorities, controversy should never require a battle to the death. For crisis, like beauty, is largely in the eyes of the beholder. For the mayor of Calcutta, where a million people sleep every night on the street, drink water from the gutters, and find their food in garbage pails, the "environmental crisis" means something quite different than it does for the mayor of New York, who can afford to concern himself with the control of sulfur oxides. As stated by Arnold Toynbee: 23

"Our greatest challenge today is the morality gap between our cumulative accelerating advance in science and technology and our appalling failure in our relations with each other."

Footnotes

* B.S., M.P.H.; Professional Staff, Senate Committee on Public Works; currently on assignment as Executive Secretary, National Fuels and Energy Policy Study (S. Res. 45), Senate Committee on Interior and Insular Affairs. This article is adapted from a paper presented at the Fifth Industrial Affiliates Symposium on the Effects of Regulatory Agencies on Scientific and Industrial Productivity, under the sponsorship of the Industrial Affiliates Program of the Departments of Chem-
istry and Chemical Engineering, Stanford University, November 13–14, 1972.


7 J. A. Noone, Doubts about clean fuels fail to deter EPA, states on air pollution battle plans, National Journal, 1050–59 (June 24, 1972).


13 Buckley, J., op. cit., S. 17,416.


16 Friends of Mammoth v. Board of Supervisors of Mono County, 8 Cal. 3d 1,500 P.2d 1360, 104 Cal. Rptr. 16 (1972), modified, 8 Cal. 3d 247, 502 P.2d 1049, 104 Cal. Rptr. 761 (1972).


