COMMENTS

DISCLOSING THE ENVIRONMENTAL IMPACT OF HUMAN ACTIVITIES: HOW A FEDERAL POLLUTION CONTROL PROGRAM BASED ON INDIVIDUAL DECISION MAKING AND CONSUMER DEMAND MIGHT ACCOMPLISH THE ENVIRONMENTAL GOALS OF THE 1970s IN THE 1990s

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INTRODUCTION

Tropical fish take on a precarious existence when forced endlessly to patrol small cubes and spheres of our living rooms, bedrooms, and waiting rooms. One wonders whether they ever realize the true state of their dependence. Their caretaker, a human, determines the conditions necessary for their very existence: food, heat, light, air, waste disposal, and physical protection.

The caretaker may feel in control of her own existence as well. But is she? An agency, sometimes too large to communicate, dealing with information often too complex to understand, buffeted by an ocean of political, financial, and technological pressures, makes daily decisions concerning her existence. The quality of the air, atmosphere, water, and land have been entrusted to this agency and a to system of regulations. The current state of our environment suggests that neither the agency (the Environmental Protection Agency (EPA)), nor the environmental regulatory system that it administers has been a good trustee of these essential conditions of life.[1]

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[1] The state of the environment as we end the twentieth century might be considered desperate. The air we breathe has become a sink containing more than 100 toxic compounds. *See* Easterbrook, *Cleaning Up*, NEWSWEEK, July 24, 1989, at 28 (stating that U.S. industry has confessed to pumping 2.7 billion pounds of toxic chemicals into the air each year); Karlen & Hager, *Pollution: Now the Bad News*, NEWSWEEK, Apr. 8, 1985, at 26 (discussing congressional survey indicating that air pollution from emission of toxic chemicals is worse than ever before); Mlot, *Multimedia Maneuvers: Shifting Tactics for Controlling Shifting Pollutants*, 127 SCI. NEWS

This Comment sets out to examine this inadequate institutional management of our environment. It also proposes a new approach. The argument derives from a recognition that our regulatory, envi-

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124, 124-25 (1985) ("Most air today holds a mix of about 100 organics and other toxic chemicals that may or may not be harmful at their parts-per-billion and parts-per-trillion levels."); *see also* Commoner, *The Environment,* THE NEW YORKER, June 15, 1987, at 46, 46-47 (1987) (compiling statistics gathered from Environmental Protection Agency Annual Reports for the years between 1975 and 1985 and comparing the small improvements in levels of air pollutants since the 1970s with the failure to reduce other pollutants); Mansnerus, *How the Lung Reacts to Ozone Pollution,* N.Y. Times, Aug. 21, 1988, at D7, col. 1 (describing one medical theory that high concentrations of ozone, increasing in urban air, can cause scar tissue to develop in human lungs, making breathing more difficult); Shaw, *Air Pollution by Particles,* 257 SCI. AM. 96, 96 (1987) (stating that acidic particles in the air damage man-made structures and plant and animal life).

Human activity has fouled the upper atmosphere as well. *See Nightline: The Greenhouse Effect* (ABC television broadcast, Sept. 7, 1988) (transcript on file at University of Pennsylvania Law Review) (discussing the effects of global warming due to the massive increase of carbon dioxide in the atmosphere resulting from the industrial revolution); *Greenhouse Effect,* INSIDE EPA'S ENVTL. POL'Y ALERT, Aug. 24, 1988, at 1 (predicting sea level rises of up to fifteen inches by 2025 and an eventual eighty percent loss of U.S. coastal wetlands as a result of the greenhouse effect); Commoner, *supra* at 53 (stating that if the ozone layer is sufficiently depleted, incidences of skin cancer will increase).

The water, too, seems to be ever more hazardous. *See* Levine, *Watergate: Earth,* OMNI, Feb. 1988, at 20 (suspended within the nation's groundwater lurk "[m]ore than 200 potential contaminates—from industrial solvents and pesticides to cleaning preparations and septic tank degreasers."); Sun, *Pesticides to be Judged on Leachability,* 239 SCIENCE 1086 (1988) (repeating recent EPA findings that "[a]bout 50 to 60 pesticides, many of them suspected carcinogens, have been detected in the ground water of 30 states"); *see also* Taylor, *Clean Water: Adding up the Balance Sheet,* U.S. NEWS & WORLD REP., Feb. 16, 1987, at 22, 22 (stating that after $40.5 billion of federal money and approximately $25 billion of state and local funds were spent to clean America's waterways, some 47,000 miles have markedly improved while 311,000 miles of water have worsened or remained unchanged).

The land itself suffers pollution comparable to that affecting our air, atmosphere, and water. *See* Marshall, *High Selenium Levels Confirmed in Six States,* 231 SCIENCE 10 (1988) (quoting a study performed by the Sacramento Bee which indicated that high selenium levels in 9 western states may be killing and deforming " 'birds, fish, and other wildlife in the San Joaquin Valley [and] . . . poisoning wildlife, livestock, and even some rural families over thousands of square miles.' "); Parkinson, *Responsible Waste Management in a Shrinking World,* ENV'T, Dec. 1983, at 61 (quoting statistics compiled in EPA, FIRST REPORT TO CONGRESS, RESOURCE RECOVERY AND SOURCE REDUCTION (1973) and TENTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY (1979) revealing that from the late 1940s through the early 1970s, the consumption of materials grew faster than the population, with an increasing percentage of materials consumed as throw-away goods); U.S. CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT, ARE WE CLEANING UP? 10 SUPERFUND CASE STUDIES—SPECIAL REPORT 7 (1988) [hereinafter OTA SPECIAL REPORT] (stating that a recent analysis of superfund toxic waste cleanup sites has revealed "some disturbing trends among the[ ] problems—trends that compromise the ultimate protection of human health and the environment. . . .").

ronmental caretaker has not accomplished what Congress asked it to do: to care for and improve the quality of our environment.[2] Nor is our caretaker, as it is presently conceived, capable ultimately of succeeding; although small battles have been and may yet be won along the way.[3]

This Comment argues that individuals, if provided with sufficient information concerning the impact of their activities on the environment and an incentive to use that information in an environmentally efficient manner, are better able to improve and control the quality of their environment than is a centralized caretaker. To that end, this Comment develops a structure of a federal pollution control program that would convert this theory into practical legislative and societal use.

The Comment proposes an "Environmental Impact Index" (EII), that would provide consumers with simple, concise, at-a-glance numerical information concerning the environmental impact of a product or package during its production, use, and disposal. With this information, consumers would better be able to make decisions based on environmental criteria as well as on price and quality. Linked to this Index, an Environmental Impact Tax (EIT) is suggested as a means by which society can create and control environmentally efficient behavior among consumers. Similar to a national sales tax, the EIT effectively would charge consumers, not producers, for the environmental costs of the goods they consume. Consumers would pay for environmental costs just as they now pay for the costs of production through basic product prices. The overall program would achieve environmental goals by reducing the demand for environmentally inefficient goods rather than by altering the supply, as is attempted by the current regulatory approach and by most environmental economic proposals.

Part I of this Comment begins with a brief exploration of the structure of and theories behind current United States environmental regulatory policy. The analysis then discusses why Congress chose a regulatory approach to pollution control. The strengths and weaknesses of the regulatory approach are also identified. Part II lays the groundwork for the proposed EII/EIT program by examining the production/pollution process. Through this investigation, a

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[2] The environmental goals identified by Congress as targets for the federal government were most sweepingly and elegantly set forth in the National Environmental Policy Act of 1969 (NEPA). *See infra* notes 6-8 and accompanying text.

[3] *See infra* notes 36-45 and accompanying text.

major weakness of the regulatory approach to pollution control is shown to be its failure to target that sector of the economy that ultimately controls producer behavior, and thus production pollution: the consumer sector. Part III develops the EII/EIT program by which environmental decision making can be returned to the individual consumers, who society will influence to make environmentally efficient choices. The objective of the program is to return control of the things of life to us all, for the benefit of us all.

I. THE CURRENT REGULATORY APPROACH TO ENVIRONMENTAL PROTECTION: ITS STRENGTHS AND WEAKNESSES

A. *Generally—The Theories, Policies, and Structure of U.S. Environmental Regulation*

"The essence of regulation is a conception that law is the means by which some notion of the public good is to take precedence over narrower economic interests."[4] Environmental regulation, unlike the regulation of specific industries such as the airlines or railroads, must balance the perceived public good against "the production and consumption decisions of every citizen and every business firm."[5] The synergistic relation among these actors, woven through the interlocked environmental media they all share (air, atmosphere, water, and land), presents environmental regulators with a labyrinthian agenda of decisions.

The public good toward which these decisions ultimately must work was eloquently set forth in the National Environmental Policy Act of 1969.[6]

> The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, . . . and recognizing further the critical importance of restoring and maintaining environmental quality, . . . declares that it is the continuing policy of the Federal Government . . . to use all practicable

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[4] K. HAWKINS, ENVIRONMENT AND ENFORCEMENT 17 (1984); *see also* T. MCCRAW, PROPHETS OF REGULATION 302 (1984) ("In regulation, . . . tradeoffs have appeared most clearly as ways of relieving the persistent tension between the forces seeking to implement economic efficiency for the broad benefit of American society, and those dedicated to guaranteeing the observance of legal due process for every . . . member of that society.").

[5] C. SCHULTZE, THE PUBLIC USE OF PRIVATE INTEREST 9 (1977); *see also* B. COOK, BUREAUCRATIC POLITICS AND REGULATORY REFORM 5 (1988) ("most kinds of social regulation encompass broad classes of industry and cut across economic sectors").

[6] Pub. L. No. 91-190, 83 Stat. 852 (codified as amended at 42 U.S.C. §§ 4321-4347 (1982 & Supp. 1987)).

> means and measures . . . to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.[7]

The legislature chose to achieve these lofty ends by means of "social regulation."[8]

In current form, environmental regulatory laws "set[ ] up a central agency [the EPA] to determine a detailed control strategy for every polluting source, balancing environmental gains against economic costs."[9] Congress anchored the EPA's broad regulatory and enforcement powers to a rather detailed bulwark of deadlines and procedures for developing environmental standards.[10] The standards form the actual control strategy to be asserted by the EPA and implemented by the states. These environmental standards may be viewed as falling into one of the following categories:[11]

1) *Performance standards* establish a particular degree of control without specifying the method to achieve this control. Examples of such standards can be found in the Federal Clean Water Act[12] and the Clean Air Act.[13]

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7 42 U.S.C. § 4331(a) (1982).

8 *See* B. COOK, *supra* note 5, at 4-5. (stating that social regulation is concerned with "the achievement of broad social goals with respect to safety, health, employment fairness, and related issues" while traditional economic regulation focuses on the control of prices and competition in specific industries).

9 C. SCHULTZE, *supra* note 5, at 53.

10 *See* R. MELNICK, REGULATION AND THE COURTS: THE CASE OF THE CLEAN AIR ACT 7 (1983).

11 The following two categories of regulatory standards were set forth in Anderson, *Human Welfare and the Administered Society: Federal Regulation in the 1970s to Protect Health, Safety, and the Environment,* in ENVIRONMENTAL AND OCCUPATIONAL MEDICINE 835, 846-48 (W. Rom ed. 1983).

12 33 U.S.C. §§ 1251-1376 (1982 & Supp. 1986). The Act authorizes the states or the EPA Administrator to establish the particular performance standards to be achieved and also sets forth a timetable for their achievement. *See* 33 U.S.C. §§ 1311(b), 1313 (1982). The standards developed must "reflect the greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available demonstrated control technology." 33 U.S.C. § 1316 (a)(1) (1982).

Effluent limitations are also set by the states and/or the Administrator on a particular timetable according to the "best available technology economically achievable." 33 U.S.C. § 1311 (b)(2)(A). The EPA is also required to maintain a list of toxic pollutants and develop limitations on their discharge according to "the best technology economically achievable." 33 U.S.C. § 1317 (a)(1), (2) (1982).

13 42 U.S.C. §§ 7401-7642 (1982 & Supp. 1987). The Act, like the Federal Clean Water Act, utilizes standards (national ambient air quality standards) and point source emissions limitations to achieve its goals. Under the Act the EPA Administrator is required to develop and maintain a list of air pollutants "which may

Performance standards, particularly effluent (water) and emission (air) standards, generally establish output limits for a *type* of source. Effluent and emission *discharge limitations*, on the other hand, place restrictions on the amount of a pollutant a *particular* source may discharge into the surrounding environment and will be coordinated among all discharges in order to achieve the overall performance standard.

2) *Ambient Standards* focus not on the source of the output but on the level of pollutants that the environment surrounding the source may contain.[14] Ambient standards exist for both air and water and typically identify the maximum concentration of a particular contaminant that may exist in a particular area: for example, "the mean annual total phosphate concentration in the Colorado River from the Utah border to Willow Beach must not exceed 0.04 milligrams of phosphate per liter."[15]

Virtually the entire U.S. pollution control effort rests on performance standards, discharge limitations, and ambient standards.[16]

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reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7408(a)(1)(A) (1982). Air quality criteria on each pollutant must then be established. *See* 42 U.S.C. § 7408(a)(2) (1982).

"The national ambient air quality standards [42 U.S.C. § 7409 (1982)] determine the concentrations of pollutants allowed in the surrounding air." S. WOLF, POLLUTION LAW HANDBOOK 51 (1988). Limitations placed on the sources of these pollutants are then used to achieve the relevant air quality standard. *See* 42 U.S.C. §§ 7411, 7412 (1982) (dealing with standards for new stationary sources and for hazardous air pollutants). The limitations must comport with those "achievable through the application of the best technological system of continuous emission reduction." 42 U.S.C. § 7411 (a)(1)(C).

States are required to enforce the standards through a state implementation plan to be approved by the Administrator. 42 U.S.C. §§ 7407(a), (c), 7410 (1982). The state implementation plans are used to achieve the ambient standards within air quality control regions which the Administrator and the states establish. 42 U.S.C. § 7407.

[14] *See* S. WOLF, *supra* note 13, at 53.

[15] *See* Anderson, *supra* note 11, at 847.

[16] The statutes responsible for the bulk of the effort toward pollution reduction and control are: the Clean Air Act, 42 U.S.C. §§ 7401-7642 (1982 & Supp. 1987); the Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1376 (1982 & Supp. 1986); the Toxic Substances Control Act, 15 U.S.C. §§ 2601-2629 (1982 & Supp. 1987); the Safe Drinking Water Act, 42 U.S.C. §§ 300f-300j-10 (1982 & Supp. 1987); and the Resource Conservation and Recovery Act of 1976, 42 U.S.C. §§ 6901-6987 (1982 & Supp. 1987). Each of these statutes requires that standards and limitations be established. For an overview and analysis of the standard-setting operation of each of the above statutes, see S. WOLF, *supra* note 13, at 1-2, 47-48, 104-06, 133-37, 183-84.

Design standards, behavioral standards, and informational standards are utilized to achieve certain environmental goals; however, they are not the primary means of implementing the environmental policy of the United States. *See, e.g.*, Anderson,

In addition to the goal of realizing a cleaner environment, these standards and regulations "were [specifically] adopted to force environmental values to be considered in all actions, . . . to force technology to meet [these] standards, and to increase the number and size of areas to be protected from improper use."[17]

To implement and enforce environmental standards, the EPA must monitor, either directly or indirectly, both producer discharges and the surrounding environment. The EPA must also take steps to achieve compliance with the standards once violations are discovered.[18] The legislature adopted this approach to accomplish the environmental protection and cleanup objectives strongly voiced in the late 1960s and early 1970s. The remainder of this Part discusses why the legislature chose such a regulatory system to accomplish our environmental goals and then points out the strengths and weaknesses of this approach.

B. *Why did the Legislature Choose a Regulatory Approach?*

> Environmental regulation is about risk. Public perception of risk relates closely to catastrophe and crisis, and . . . [the people's representatives in government] reflect[ ] that perception. So government is far more likely to act to prevent the repetition of an event which is unlikely to recur rather than one which certainly will. . . .
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> The Clean Air Act [in England] is . . . [an] example of how catastrophe can produce swift action. For years . . . there descended upon London in the winter from time to time an appalling sulphurous smog. . . . Every time this happened—and it was practically every winter— over 40,000 elderly people died.
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> And then in 1952, the great national cattle show was held in

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supra note 11, at 846-48 (stating that discontent with design standards and the sometimes unrealistic attempts at behavioral standards lead regulators to prefer non-"soft" solutions such as performance standards).

[17] Belsky, *Environmental Policy Law in the 1980's: Shifting Back the Burden of Proof*, 12 ECOLOGY L.Q. 1, 4 (1984).

[18] The EPA administers federal programs to control air, water, solid waste, pesticide, and noise pollution. It establishes and enforces emission, effluent, and disposal standards; assists state and local governments in their pollution control efforts; monitors and evaluates environmental quality; and conducts research and demonstrations related to improving or maintaining environmental quality. In addition, the Agency reviews and comments on the environmental impact of the actions of other federal agencies, regulates the dumping of materials into the oceans, and regulates the manufacture, distribution, use, and disposal of chemical substances that may be hazardous to the environment. *See* C. REESE, DEREGULATION AND ENVIRONMENTAL QUALITY 282 (1983).

> London. The prize cow of all England had been awarded her rosette, and the runner-up, and the third prize winner; and there was great rejoicing in the land. Then the smog came down, and in the morning they were all dead. It was under the pressure of that catastrophe, not the continuous experience of 40,000 human deaths year in, year out, which gave rise to the Clean Air Act of 1956 . . . .[19]

Although the United States cannot claim such an odd stimulus for its environmental legislation, we too experienced a torqued chain of events that towed the legislature into action under swelling public opinion.[20] As American society began to recognize the decay of the environment in the early 1970s, a new "environmental ethic" emerged based on the notion that "man must make peace with the environment, preserve and conserve it so that future generations will not suffer disastrous backlashes from current human excesses."[21] Society demanded governmental consideration of this ethic and a response to the environmental horrors that instigated it.

The government did react. Three interdependent factors led the government to choose a regulatory approach: history/tradition, timing, and assumptions concerning the nature of the ailments afflicting the environment.

1. History/Tradition

The legislative response to the problems industrialization brought in the nineteenth century foreshadowed the environmental

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19 Nathan, *The Role of Law and Lawyers in Environmental Regulation,* 8 ENVTL. L.Q. NEWSL., Summ. 1987, at 1, 1-2.

20 Rachel Carson's *Silent Spring* informed the public of the environmental costs of progress. *See* Russell, *Environmental Protection for the 1990s and Beyond,* ENV'T, Sept. 1987, at 12, 13. The Denora disaster of 1948 frightened urban America when 20 people were killed and nearly half a town became ill from air pollution. *See id.* Images of the Cuyahoga River, ablaze as it poured into nearly dead Lake Erie, signaled deep trouble in industry's relationship with the environment. *See id.* at 14. Ultimately, Earth Day in 1970 pushed the government to act. *See id.* "Congress Recognized that it is possible to pressure the environment so severely that it will backlash on man." Manley, *Federalism and Management of the Environment,* 19 URB. LAW. 661, 662 (1987).

The same process continues: "Traditionally ecological legislation passes in the wake of some mobilizing event: Superfund after Love Canal, the toxic-disclosure law after Bhopal." Easterbrook, *supra* note 1, at 32.

21 Manley, *supra* note 20, at 662; *see also* Novick, *The 20-Year Evolution of Pollution Law: A Look Back,* 4 ENVTL. FORUM, Jan. 1989, at 12, 14 (stating that a system of law and institutions has implemented a new environmental ethic). For a comprehensive discussion of this environmental ethic, see the various essays collected in ETHICS AND THE ENVIRONMENT (D. Scherer & T. Attig eds. 1983).

legislation of the 1970s. The virtually unlimited power over interstate transportation the railroads amassed in the late nineteenth century resulted in public demand for governmental control of rates and tariffs.[22] The legislature, balancing such control against the need for a healthy railroad industry, developed the Interstate Commerce Commission (ICC) "to direct and control [the railroads], and [this] governance as a practical matter implied not merely legislative power or simply executive power, but whatever power might be required to achieve the desired results."[23]

Congress created the ICC to achieve the public good of ensuring reasonable transportation costs.[24] Thus, the task of the ICC was simply economic. Congress subsequently used this regulatory technique of governance to compel disclosure and publicity of certain dealings (SEC), protect industries (ICC, FCC), and contain monopolies and oligarchies (FPC, FTC, Department of Justice Antitrust Division).[25] By the 1960s, the legislature had come to rely upon administrative regulatory governance whenever large, complex, politically volatile issues arose that called for "tradeoffs between the good of the whole society, on the one hand, and the rights of the individual, on the other."[26]

As the demand for safer products, better working conditions, and a cleaner environment began to build, the lawmakers adopted the same approach that successfully had controlled more industry-specific economic problems decades earlier. Lawmakers saw the public demand for environmental quality and workplace safety to be similar to its earlier demands for reasonable prices. A regulatory system to develop and enforce safety, performance, and effluent standards could, in effect, mirror the system already used to develop and enforce economic standards. The lawmakers felt that they needed only to adjust details of the system to correct faults critics had identified in earlier regulatory schemes. These critics had complained of "agency capture" by the industries being regulated, limited judicial review, and the absence of specific statutory standards and guidelines for administrators to follow.[27]

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22 *See* J. LANDIS, THE ADMINISTRATIVE PROCESS 9-10 (1938).

23 *Id.* at 10.

24 *See* P. AREEDA & L. KAPLOW, ANTITRUST ANALYSIS PROBLEMS, TEXT CASES 49-50 (1988).

25 *See* T. MCCRAW, *supra* note 4, at 301.

26 *Id.* at 302.

27 *See* R. MELNICK, *supra* note 10, at 7-9 & n.12.

2. Timing

While a historical reliance upon regulatory problem-solving contributed to Congress's choice of a regulatory approach to environmental problems, the timing of events also played a major role. As the social clamor for "somebody to do something about the environment" reached its peak on Earth Day in 1970, the pressure on political representatives to act swiftly became clear.[28] The environment became a hot political issue for politicians on all levels.[29] The pace of response quickened so much that only two months after Earth Day President Nixon proposed the establishment of the EPA.[30] The perceived need for swift action convinced politicians that regulatory approaches that had already succeeded in controlling business would provide the quickest, surest means to meet political demands regarding the environment.

3. Assumptions Concerning the Nature of Environmental Problems

The final factor favoring a regulatory solution to environmental problems was a set of assumptions surrounding the nature of the problem itself. First, many people believed that society, technicians, and legislators knew what the bad pollutants were and at what levels they became menacing or dangerous.[31] Second, they believed that they had the ability to measure the presence of these pollutants in the environment with reasonable efficiency.[32] Finally, they believed that they could reduce the presence of these pollutants to safe levels within a reasonably short time at reasonable costs[33] through "agency-forcing" and "technology-forcing" standards.[34]

These three assumptions resemble assumptions underlying economic regulations: that one may determine fair and more efficient prices or business structures; that one can measure prices and a busi-

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28 *See* Sagoff, *The Principles of Federal Pollution Control Law,* 71 MINN. L. REV. 19, 27 (1986).

29 *See* Russell, *supra* note 20, at 14; *see also* Ruckelshaus, *Environmental Risks and Liabilities—Identification, Assessment and Management,* 24 HOUS. L. REV. 11, 16 (1987).

30 *See* Russell, *supra* note 20, at 14.

31 *See* Ruckelshaus, *supra* note 29, at 17.

32 *See id.*

33 *See id.*

34 *See* Sagoff, *supra* note 28, at 19 & n.3, 20 & n.4. (noting that "agency-forcing" laws force the government to achieve a goal and that "technology-forcing" laws or regulations compel polluters to develop technology that will result in satisfaction of certain standards).

ness structure's impact on the economy; and that through price controls, licenses, and business constraints, government can achieve a more efficient and fair economy. These assumptions had served well when applied to individual industries. Congress thus thought that the only thing needed to achieve environmental goals across all industries was a strong federal enforcement program.[35]

All of these factors—history/tradition, timing, and certain assumptions—contributed to the ultimate decision to meet environmental goals with a regulatory approach. The next section examines the wisdom of that decision.

C. *Strengths and Weaknesses of the Environmental Regulatory Approach*

1. Strengths

Centralized regulations and standards, like those currently prescribed by the legislature, offer two significant categories of benefits in solving environmental problems.

a. *Control Over Specifically Identified Harmful Substances*

Environmental regulation's greatest achievements in pollution control have been reductions of specific toxins in the environment. For example, ambient lead concentrations have decreased 79 percent in ten years,[36] and toxic quantities of mercury, PCBs, and DDT have also been significantly reduced.[37] These achievements show that "[r]egulation succeeds most easily when its purposes are either plainly economic or plainly ethical."[38] Environmental regulations targeting specific toxins "stand squarely in the tradition of legislation that seeks to control and eliminate moral evils."[39]

The American Bar Association incorporated this lesson into its "rules of thumb" guide to regulatory efficiency: "Classical standard-setting is needed to protect the public by controlling dangerous conditions and substances, but where possible in dealing with problems . . . (such as environmental pollution . . .) less restrictive tools (such as taxes . . .) should be considered."[40]

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35 *See* Ruckelshaus, *supra* note 29, at 17.

36 *See* Russell, *supra* note 20, at 14.

37 *See* Commoner, *supra* note 1, at 57.

38 Sagoff, *supra* note 28, at 78.

39 *Id.* at 79 (footnote omitted). Similarly plainly ethical regulations are those banning child labor, discrimination, and the possession of automatic weapons. *See id.*

40 AMERICAN BAR ASSOCIATION COMMISSION ON LAW AND THE ECONOMY, FEDERAL REGULATION: ROADS TO REFORM 1 (1979).

"Evil-targeting" regulations succeed for the same reasons that most criminal laws result in effective control of unwanted behavior. Control of unwanted behavior is successful when enforcers have a clear objective, when enforcer-sanctioning of the activity is rarely permitted because of the clearly harmful consequences of the behavior, when there is a clear rule, when there is a lack of ambivalence by the controllers, and when the enforcers view the goal as attainable and possess the tools to achieve it.[41] Absolute bans on lead in gasoline or the use of DDT as a herbicide, anchored in public acceptance, are successful because they work within these prerequisites of regulatory efficiency.

b. *Benefits of Uniformity*

Another strength of centralized environmental regulation is that the uniformity it creates decreases the likelihood of "forum shopping" among geographical regions. Centralized regulation also allows polluters better to predict the consequences of their actions.[42] Emission and effluent limitations and standards based on the "best available technology" generally apply across an entire range of similar polluters, and are successfully imposed on these polluters.[43]

Continual judicial review, "notice and comment" rulemaking, and the processes of centralized agency decision making ensure consistency and predictability of results.[44] Some commentators have even argued that these benefits of uniformity not only increase predictability, but decrease pollution while augmenting producer wealth. They argue that polluters are forced to decrease production in order to meet pollution standards, resulting in a reduction of supply that drives up prices and profits.[45]

2. Weaknesses

The benefits of the current regulatory approach to pollution

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41 *See* K. HAWKINS, *supra* note 4, at 7-15, 32-35.

42 *See* Latin, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reforms*, 37 STAN. L. REV. 1267, 1271 (1985). *But see* Kolstad, *Uniformity Versus Differentiation in Regulating Externalities*, 14 J. ENVTL. ECON. & MGMT. 386, 398 (1987) ("Unquestionably, uniform regulation is less efficient than differentiated regulation . . . .").

43 *See* Ackerman & Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1336 (1985) (asserting that the best available technology controls have a disproportionate impact on new factories).

44 *See* Latin, *supra* note 42, at 1271.

45 *See* Maloney & McCormick, *A Positive Theory of Environmental Quality Regulation*, 25 J. L. & ECON. 99, 99-100 (1982).

control are almost entirely offset by three broad categories of problems.

a. *The Task of Environmental Cleanup and Protection is Too Complex for Centralized Regulation*

To administer its environmental regulations, Congress has "force[d] a central control agency [the EPA] to make thousands of decisions resting on detailed knowledge it cannot possibly have and, even less, keep up with over time."[46] This structural flaw is critical and accounts for much of the lack of progress toward a cleaner environment. For example, the EPA administers nine extremely detailed statutes that at times pit the quality of one environmental medium against that of another.[47]

While the regulatory system's greatest strength is in reducing specific substances in the environment,[48] most environmental regulations are not so narrowly targeted. The great majority of regulations are aimed at achieving standards of quality for hundreds of different geographic regions, determining and reaching optimum levels for hundreds of different pollutants, and monitoring and controlling thousands of different pollution point sources.[49] Effective environmental regulation is hampered further by disjointed goals, ambivalence, restrictions on enforcement, and the recognition that pollution is a "*necessary* evil that must be tolerated, at least to some extent" to allow society's continued growth.[50]

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46 C. SCHULTZE, *supra* note 5, at 53; *see also* Ackerman & Stewart, *supra* note 43, at 1336-37 (noting the massive burden placed on the EPA in order for it to make decisions on hundreds of thousands of pollution sources); Harnish, *The Self-Help Approach to Environmental Protection, or, Power to the People Revisited,* 86 DICK. L. REV. 647, 650 (1982) ("The sheer magnitude of the task makes it inconceivable to expect comprehensive monitoring of the actions of potential polluters.") (footnote omitted). When the EPA proposed one particular new rule, 192 commentators showed up at 29 public meetings, generating 300 pages of comment raising "400 discrete issues, *each* requiring an EPA response." The EPA's defense of the rule "comprised 300 pages of response, 800 pages of economic analysis performed at a cost of $600,000, and 500 pages of related analysis on regulatory impact." Costle, *Brave New Chemical: The Future Regulatory History of Phlogiston,* 33 ADMIN. L. REV. 195, 199 (1981).

47 *See* Morgenstern & Sessions, *Weighing Environmental Risks: EPA's Unfinished Business,* ENV'T, Jul.-Aug. 1988, at 15, 15 (describing the problem of conflicting environmental statutes).

48 *See supra* notes 36-41 and accompanying text.

49 *See* Ackerman & Stewart, *supra* note 43, at 1336-37 (describing the information gathering burden of formulating controls for hundreds of thousands of pollution sources); Morgenstern & Sessions, *supra* note 47, at 16 (describing problems with setting goals).

50 Sagoff, *supra* note 28, at 79.

Not only is the EPA responsible for decision making on remarkable complex problems, but the system Congress designed to implement EPA regulations places responsibility for prescribed actions in the hands of the private sector and state and local governments.[51] Thus, even if the EPA can assemble the information necessary to make a credible decision concerning a certain matter, implementation of that decision is uncertain because of the possibility of this "regulatory slippage."[52]

Just gathering enough information to implement the centralized regulatory system is difficult and costly. Physically gathering and analyzing scientific, engineering, biological, toxicological, medical, and economic information for all potential pollutants is one cost.[53] Another cost is the billions of dollars wasted annually because the EPA cannot identify and utilize variations among geography, industries, and factories to create the most economically efficient means of pollution control.[54] Finally, there is the cost of conflict resolution, which encompasses both trial and rulemaking expenses.[55] Under the direct regulatory system, "it is often more cost-effective for industry to 'invest' in such litigation rather than to comply."[56]

In addition to these costs, centralized environmental regulation is also hampered by political friction.[57] The EPA must respond to both legislative and executive demands. Often, this is simply impossible.[58] Congress's schizophrenic demands, alternately for more stringent enforcement and then for regulatory leniency, executive attempts to regulate regulators,[59] and pressures from both polluters and environmentalists all slow progress toward environmental

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51 *See* Morgenstern & Sessions, *supra* note 47, at 17.

52 *Id.* at 17.

53 *See* Ackerman & Stewart, *supra* note 43, at 1335-38 (reviewing the costs of regulations based on the best available technology).

54 *See id.* at 1335.

55 *See id.* at 1336-37.

56 *Id.*

57 *See* Manley, *supra* note 20, at 662-63; Morgenstern & Sessions, *supra* note 47, at 16.

58 *See* W. GELLHORN, C. BYSE, P. STRAUSS, T. RAKOFF & R. SCHOTLAND, ADMINISTRATIVE LAW: CASES AND COMMENTS 124-47 (8th ed. 1987) (exploring informal and formal political controls over administrative agencies).

59 *See* Smith, *Environmental Policy Making Under Reagan's Executive Order 12291: An Introduction,* in ENVIRONMENTAL POLICY UNDER REAGAN'S EXECUTIVE ORDER 3, 4 (V. Smith ed. 1984) (stating that Executive order 12291 is an "initiative[ ] from the executive branch of government to control the process of generating new federal regulations" by requiring that "all new major regulations be subjected to a benefit-cost analysis before" being acted upon).

goals.[60] Additionally, interstate competition for industry encourages states to lobby for more lenient standards within their boundaries in order to attract jobs, defeating the gains created by uniform regulation.[61]

Moreover, many of the assumptions implicit in Congress's regulatory choices[62] are incorrect. Although pollutants can be measured, not all pollutants or the levels at which they become dangerous have been identified.[63] Nor has the EPA been able to clean the environment quickly through regulations that "force" agencies and technologies to employ the best available pollution controls.[64]

All of these factors suggest that the task of environmental protection is simply too big for centralized management by a classical regulatory system. The complexity of the environment, the activities that influence it, and the many variables that must be considered are simply too complex for a small group of decisionmakers.

b. *Enforcement of the Standards Established by the Regulatory System has been Ineffective*

A 1979 study by the General Accounting Office revealed that twenty-two percent of 921 major air polluters who the EPA believed were complying with pollution standards were in fact not comply-

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60 *See, e.g.*, L. LAKE, ENVIRONMENTAL REGULATION: THE POLITICAL EFFECTS OF IMPLEMENTATION 1-4 (1982) ("[I]n the process of attempting to implement federal laws, political relations and institutions are changed in profound ways . . ." Federalism, the separation of powers, and citizen-government relations may be altered.).

61 *See* Manley, *supra* note 20, at 662-63 (asserting that states try to defeat environmental goals in the name of short term economic interests).

62 *See supra* notes 31-35 and accompanying text.

63 *See* Ruckelshaus, *supra* note 29, at 17. Of course, scientific knowledge tends to accumulate as society's particular need for it increases. *See, e.g.*, Carpenter, *Ecology in Court, and Other Disappointments of Environmental Science and Environmental Law*, 15 NAT. RESOURCES LAW. 573, 581 (1983) ("Environmental science has advanced in the ways it is applied and in the abilities of the scientists it attracts."). Current federal programs emphasize measuring the quantity of known pollutants discharged from particular sources or existing in specified geographical areas. *See supra* notes 13-18 and accompanying text; *see also infra* notes 73-78 and accompanying text (the environmental regulatory system has emphasized "end of the pipe" limits on present levels of wastes rather than waste reduction). Thus, our ability to measure even minute quantities of known pollutants has increased, while the identity of all pollutants and their impacts continues to elude us. In sum, the knowledge needed to implement various environmental approaches is attainable. The particular approach chosen ultimately controls the level of scientific knowledge attained within the limits of technology.

64 *See supra* note 34 and accompanying text (discussing "forcing" regulations); *supra* note 1 and accompanying text (arguing that the regulatory approach has failed).

ing.[65] In 1984, the EPA discovered that water pollution officials commonly ignored effluent discharges found to violate applicable standards.[66] These examples illustrate the impossibility of monitoring thousands of polluters to determine if they comply with EPA regulations.[67] Additionally, the recent political trend has been to emasculate whatever effectiveness the EPA has had in order to stimulate economic growth.[68] Thus even tough standards have had little impact.

The EPA's arsenal of civil penalties, fines, construction bans, and criminal sanctions seems unable to win the environmental war.[69] Polluter self-enforcement is one reason. Under the National Pollutant Discharge Elimination System (NPDES) and the New Source Performance Standards (NSPS), an industry must monitor and report its own performance over time, possibly subjecting itself to penalties and eliminating many of its own potential defenses.[70] This self-monitoring approach exacerbates the great gaps in agency enforcement efforts. One can hardly expect a "criminal" to turn herself in each time she discharges more pollution than her permit

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65 UNITED STATES GEN. ACCT. OFF., IMPROVEMENTS NEEDED IN CONTROLLING MAJOR AIR POLLUTION SOURCES 9 (1979) (Report CED-78-165).

66 *See Inspector General Finds Water Policy Officially Sanctions Noncompliance*, INSIDE EPA 3 (Mar. 16, 1984).

67 *See* Harnish, *supra* note 46, at 650; *see also* Ackerman & Stewart, *supra* note 43, at 1337 (noting that because agencies are faced with high administrative and compliance costs and a limited budget, strong incentives exist "to limit sharply the number of substances on the agenda for regulatory action").

68 *See* Commoner, *supra* note 1, at 54; *see also* Belsky, *supra* note 17, at 4-5 (noting that the Reagan Administration has changed the "burden of proof" from the government's obligation to "err on the side of caution" in protecting the environment, to forcing "those seeking to have controls adopted or enforced or seeking to restrict development" to "overcome the presumption against such controls or limitations").

69 *See* Harnish, *supra* note 46, at 650 (stating that the EPA has been criticized for ineffective enforcement, and that "the future of the federal environmental watchdogs is bleak."); Comment, *Prosecuting Corporate Polluters: The Sparing Use of Criminal Sanctions*, 62 U. DET. L. REV. 659, 675 (1985) (noting that civil penalties and modest fines have done little to stem the increase in pollution, and that criminal sanctions are rarely employed); *Court Holds Utility in Contempt for Burning Coal*, N.Y. Times, Sept. 9, 1987, at B3, col. 1 (reporting state official's assertion that a fine of $250, the maximum amount permitted by law, was too small to prevent future violations).

70 *See* Marks, *Citizen Enforcement of Environmental Laws*, ENV'T, June 1987, at 5, 5, 42. The NPDES, the "heart" of the Federal Water Pollution Control Act, 33 U.S.C. § 1342 (1986 & Supp. 1989), prohibits effluent discharges into navigable waters unless authorized by an NPDES permit. *See* S. WOLF, *supra* note 13, at 4; *see also* C. RUSSELL, W. HARRINGTON & W. VAUGHAN, ENFORCING POLLUTION CONTROL LAWS 36 (1986) [hereinafter ENFORCING POLLUTION CONTROL] ("Self-monitoring is by far the dominant choice [among the states] for dealing with what might be called primary surveillance, that is, the routine checking of compliance status.").

allows. Besides the obvious environmental losses, the enforcement gap leads to industry gains. Capital expenditures on pollution control, which averaged $4.8 billion a year between 1973 and 1980, declined to $3 billion in 1983 as a result of lax enforcement.[71]

To plug some of the holes, private citizens have tried enforcing environmental laws using private right of action provisions in environmental statutes. These efforts have redressed some of the failures in agency-enforcement activity, but they cannot make up for systemic problems within the regulatory approach itself.[72]

c. *The Environmental Regulatory System Concentrates on "End of the Pipe" Installation Technology Which Places Upper Limits on Pollution Rather Than Reducing Pollution in the Long Term*

The current regulatory approach has emphasized installing technology for the short term reduction to established discharge levels of pollution from particular point sources.[73] "[G]overnment has not required waste reduction[s]" that would reduce the total amount of wastes being discharged; instead, it has imposed regulations and enforcement strategies that control wastes at present levels.[74] If the established standards were environmentally ideal and perfectly enforceable, this approach would be effective. But this is not the case.[75] Thus, the current system ignores an entire spectrum of long-range pollution control problems. These problems are exacerbated by ineffective enforcement that eliminates any incentive for technological innovation toward the efficient reduction of pollution.[76]

The frequently applied "best available technology" standard creates a direct disincentive to the creation of new pollution reduction technology, because the availability of better technology would require new and more stringent regulations.[77] Furthermore,

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71 *See* Commoner, *supra* note 1, at 54.

72 *Cf.* Harnish, *supra* note 46, at 663 (stating that citizen enforcers are unlikely to be very effective due to various legal and practical barriers).

73 *See* ENFORCING POLLUTION CONTROL, *supra* note 70, at 2-3.

74 UNITED STATES CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT, FROM POLLUTION TO PREVENTION: A PROGRESS REPORT ON WASTE REDUCTION 1, 5 (1987).

75 *See supra* notes 65-72 and accompanying text (outlining failures of environmental regulation).

76 C. SCHULTZE, *supra* note 5, at 53.

77 *See id.; see also* R. POSNER, ECONOMIC ANALYSIS OF LAW 352 (3d ed. 1986) ("In the deliberations before the legislature or agency leading to the formulation of the standard, the affected industry has an incentive to propose the cheapest pollution control method, regardless of its efficacy, and to deny the existence of any more costly devices (even if they are more efficient because of the amount of pollution eliminated).").

because discharge permits are free and nontransferable, there is no incentive to reduce wastes below the prescribed level.[78] Thus, even if current standards were enforced perfectly, near current levels of pollution and technology would remain. Long term advances are discouraged.

Thus far, this Comment has explored the structure of the current legislative approach to the environmental crisis: why it was chosen, its strengths, and its weaknesses. This analysis shows that the environmental problems we face today will not disappear, nor will the environmental goals Congress identified in the 1970s be achieved if we maintain the current environmental regulatory system. The successes achieved by that system's strengths are finite and many already have been realized. The weaknesses of that system must be addressed in order to halt environmental degradation. The next two sections of this Comment will develop a proposal of a new and retooled national pollution-control system. This proposal would enable society to achieve the environmental goals of the 1970s in the 1990s.

II. SHIFTING THE AIM OF FEDERAL ENVIRONMENTAL POLICY: TARGETING THE DEMAND FOR ENVIRONMENTALLY INEFFICIENT GOODS RATHER THAN THE SUPPLY

The current environmental regulatory system has failed because it targets only a narrow sector of the economy. One must understand the entire environmental problem in order to develop effective solutions. The following diagram depicts, in rough form, the production/consumption/disposal cycle and the points at which pollutants and wastes are encountered.

As indicated in the diagram, pollutants are spun off during a product's life cycle at four different points: 1) when raw materials are gathered and industrial products are produced; 2) when the consumable product and the package that contains it are manufactured; 3) when the product is consumed; and 4) when the product and its package ultimately are discarded.

The United States' government has directed its entire pollution

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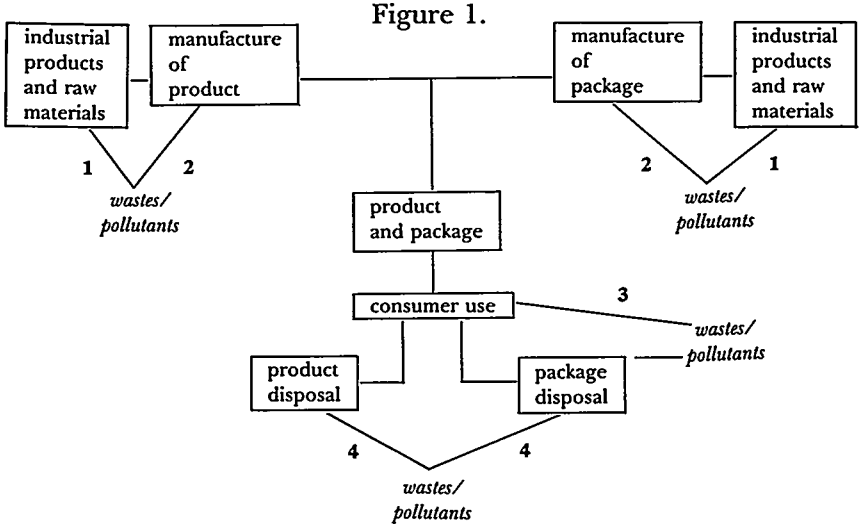
[78] *See* Ackerman & Stewart, *supra* note 43, at 1341. The plan introduced by President Bush to amend the Clean Air Act includes an "emissions trading" system which would place pollution permits on an open market allowing "engineers rather than regulators to judge which factories can meet standards most efficiently while adding a profit motive for inventing improved controls." *See* Easterbrook, *supra* note 1, at 33.

Figure 1.



control effort at businesses and producers[79] (stages 1 and 2 on the above diagram). Some of the reasons for this choice, and for the utilization of the regulatory approach in general, were explored earlier.[80] The system has failed[81] because it does not target the sector of the economy that controls the use and disposal of products and, ultimately, producer behavior—the consumer sector.

A. *The Economics of the Environment*

Basic to the American free market economy is the notion that the consumption decisions of the "household sector" (consumers) "represent the single most important component of [the] aggregate demand for goods and services. . . ."[82] In determining the amount and type of products or services to produce, given fixed output prices, business firms will consider two factors: the demand for the product or service at its prevailing price level and the cost to produce a particular volume of output.[83] At its simplest form, this principle can be reduced to: O = D / C, where O = the amount of output, D = demand for the output and C = the cost of producing

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79 *See supra* notes 9-18 and accompanying text.

80 *See supra* notes 19-35 and accompanying text.

81 *See supra* note 1.

82 R. LOMBRA, J. HERENDEEN & R. TORTO, MONEY AND THE FINANCIAL SYSTEM 60 (1980). The other factors in determining aggregate demand include the consumption decisions of the business, governmental, and foreign sectors. *See id.* at 262; R. DORNBUSCH & S. FISCHER, MACROECONOMICS 36 (1978).

83 *See* R. LOMBRA, J. HERENDEEN & R. TORTO, *supra* note 82 at 88-89; E. MANSFIELD, PRINCIPLES OF MICROECONOMICS 67-68, 155, 244-46 (1980).

the output. If demand increases, output increases. If costs increase so that the amount a firm receives is less than the cost of producing the product, output decreases. These adjustments, of course, assume that firms attempt to maximize profits. This analysis shows that consumers wield great influence over the production decisions made by business firms.

Determining consumer demand for a product, however, is a much more complex task than understanding producer supply decisions. A variety of factors including price,[84] income,[85] attitudes and needs,[86] habits and loyalties,[87] perceptions,[88] culture,[89] social class,[90] and reference groups[91] all contribute to establishing the demand for a product or service. Although these factors make determining demand difficult, influencing demand can be much easier.

The direct regulatory approach currently employed almost completely ignores the aforementioned market relationships.[92] In fact, many scholars argue that this approach causes a "market failure" that may be the cause of our environmental problems.[93] Environmental economists reach this conclusion by noting that a perfectly functioning market is one in which prices allocate all resources toward their most efficient uses.[94] Market failure occurs when there is a "divergence between the market prices of resources and those prices that would have to exist if an optimal state of affairs is to be secured."[95]

Many environmental resources, however, (such as public watercourses, the air, the atmosphere, landscape features, and even silence) are not priced because private ownership rights have not

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84 *See* H. ASSAEL, CONSUMER BEHAVIOR AND MARKETING ACTION 532-40 (191).

85 *See* E. MANSFIELD, *supra* note 83, at 134-35.

86 *See* H. ASSAEL, *supra* note 84, at 154-71.

87 *See id.* at 50-70.

88 *See id.* at 102-28.

89 *See id.* at 263-83.

90 *See id.* at 295-307.

91 *See id.* at 316-27.

92 *See* F. ANDERSON, A. KNEESE, P. REED, R. STEVENSON & S. TAYLOR, ENVIRONMENTAL IMPROVEMENT THROUGH ECONOMIC INCENTIVES 2 (1978) [hereinafter IMPROVEMENT THROUGH ECONOMIC INCENTIVES].

93 Practitioners of what is called "environmental economics" typically assert that direct regulatory systems cause failures of the market to allocate resources and use the environment in an optimal fashion. Such market failures allow environmental degradation to continue unchecked. *See* D. PEARCE, ENVIRONMENTAL ECONOMICS 1 (1976).

94 *See* D. PEARCE, *supra* note 93, at 2.

95 *Id.*

been assigned to them.[96] The result is that as these resources are used up through the emission of wastes and pollutants, the producer or user is not required to take their cost into consideration or pay for their depletion.[97] In terms of the output equation mentioned above, the producer effectively avoids a significant cost of production. Decision making and output levels become distorted, resulting in an over supply of the pollution-causing product and an under supply of environmental benefits.[98] Economists describe these situations, in which society in effect subsidizes activities due to market failure, as "externalities."[99]

To correct this market failure, environmental economists often suggest that legislatures force the internalization of these externalities by imposing a pricing system on environmental resources, charging producers an amount that would more accurately reflect the true costs of production, waste disposal, and pollution.[100] In effect, a tax would be levied on producers to approximate the social costs of pollution.[101] Arguments favoring this approach include: 1) charge systems are a more cost-effective means of achieving pollution control because private decision making on the basis of cost is employed, and operation of the system would require fewer resources;[102] and 2) enforcement would be easier and compliance higher because direct economic incentives to reduce costs would require reductions

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96 *See* IMPROVEMENT THROUGH ECONOMIC INCENTIVES, *supra* note 92, at 3-4.

97 *See id.* at 4.

98 *See* R. MUSGRAVE & P. MUSGRAVE, PUBLIC FINANCE IN THEORY AND PRACTICE 744-45 (4th ed. 1984).

99 *See* IMPROVEMENT THROUGH ECONOMIC INCENTIVES, *supra* note 92, at 4.

100 *See id.* at 5.

101 *See* P. BURROWS, THE ECONOMIC THEORY OF POLLUTION CONTROL 98-103 (1980); A. KNEESE & C. SCHULTZE, POLLUTION, PRICES AND PUBLIC POLICY 107-09 (1975) (proposing a positive program of pollution control incorporating an effluent or emission tax); R. POSNER, *supra* note 77, at 353; Baumol & Oates, *The Use of Standards and Prices for Protection of the Environment,* in THE ECONOMICS OF THE ENVIRONMENT: PAPERS FOR FOUR NATIONS 53, 53 (P. Bohm & A. Kneese eds. 1971). *But see* Endres, *Do Effluent Charges (Always) Reduce Environmental Damage?,* 35 OXFORD ECON. PAPERS 254, 260 (1983) (stating that firms "may react 'paradoxically' to an increase in effluent charge rates by increasing emissions"); McHugh, *The Potential for Cost-Increasing Technological Innovation Under a Tax-Based, Economic Incentive Pollution Control Policy,* 61 LAND ECON. 58, 64 (1985) (Stating that charge systems may "increase the total private cost to firms of meeting regional emission reduction goals. . . because the increase in transfer costs outweigh the decrease in true social resource costs.").

102 *See* IMPROVEMENT THROUGH ECONOMIC INCENTIVES, *supra* note 92, at 10.

in pollution.[103] More informed private decisions in all sectors of the economy would benefit society as a whole.

Until now, most proposed economic charge approaches have sought to achieve environmental quality by targeting only the business sector of the economy. Proponents of such charge approaches assume that most externalities occur during production. The charge approach alters the cost variable of the producer's output equation[104] in an effort to influence production decisions and create a more efficient market. The regulatory approach, while addressing economic factors, also targets only producers by implementing production constraints.[105]

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[103] *See id.* at 15-17 (arguing that direct regulation encourages decreasing costs by increasing pollution activities).

[104] *See supra* text following note 83.

[105] The desired effect of each of these approaches can be illustrated graphically:

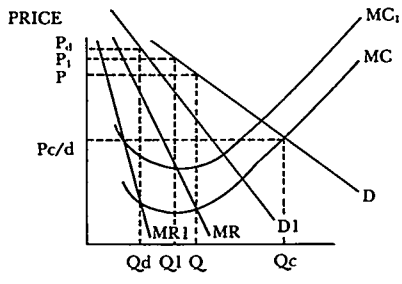

FIGURE 1 (monopoly)

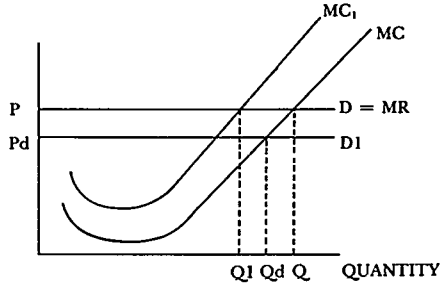

FIGURE 2 (perfect competition)

The above diagrams represent two firms, one in a monopoly situation and the other in perfect competition, subject to either the direct regulatory or the charge approach to pollution control. D represents the consumer demand for a particular product that, unknown to the consumer and unreflected in price, produces pollution externalities. MC represents the marginal cost to the firm of producing an additional unit of the product and does not include the social costs of pollution. MR represents the marginal revenue received by the sale of one additional unit. In order to maximize its profits the firm will produce where MR = MC.

In the monopoly situation, the firm will produce Q and charge P, allowing it to receive more profits than a competitive firm because it can reduce the quantity of the products it sells while increasing price over the price Pc/D and quantity Qc where the entire competitive industry for the same product would be required to produce to maximize its profits. *See* P. AREEDA & L. KAPLOW, *supra* note 24, at 16-17 n.33.

In the competitive situation, the firm will produce Q products and charge P. P is fixed for the individual firm if there is perfect competition. *Id.*

Assuming fixed demand, the charge approach would increase the marginal cost of producing the product by charging the producer for some of the social costs of pollution. Thus, the MC curve will shift higher to MC1 on each graph. For the monopoly, prices will increase to P1 as a result of this added cost and quantities will

Congress has not yet incorporated a charge approach into its environmental policy. This Comment will not discuss the reasons for this resistance. Rather, an entirely new approach will be proposed as an alternative to both the existing regulatory system and the system of charging producers.

B. *Adjusting the Demand Side of the Output Equation to Facilitate Pollution Control*

The consumer is an appropriate target of environmental enhancement legislation because consumer behavior greatly influences production decisions.[106] Additionally, consumers themselves cause pollution while consuming and disposing of products.

Reducing the demand for highly polluting products could produce a number of environmental benefits. First, it would decrease aggregate pollutant emissions as either inefficient production decreased[107] or more environmentally efficient methods of produc-

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decrease to Q1, reflecting more correctly the true cost of the product. For the perfect competitor, quantities of the pollution-causing product would be reduced, thereby reducing pollution, while society is compensated for the costs of pollution. The goal, of course, is to encourage producers to reduce pollution. The system would have to work in a way that producers could reduce the increase in marginal costs by reducing pollution. Based on present proposals, devising such a system would be quite difficult. *See* R. POSNER, *supra* note 77, at 354-55 (arguing that an approach charging producers for the costs of pollution is flawed). The EII/EIT program discussed *infra* notes 121-183 offers a different solution to this problem.

The current system of imposing regulatory standards affects producers in a way similar to the charge approach, but society is not financially compensated for pollution. The EPA requires that producers produce in such a way that pollutants are reduced. Such a requirement typically increases producer costs, increasing the firm's MC curve, thus reducing quantity and increasing price. But since reducing pollution merely means avoiding ineffective fines, there is little economic incentive for producers to reduce pollution. In fact, a producer can often keep its MC curve lower by increasing pollution.

A weakness in both these approaches is that they target producers exclusively, while consumer demand for environmentally inefficient products continues unchanged. This presses the producer into greater production and greater pollution.

106 *See supra* notes 82-83 and accompanying text.

107 Referring to the diagram *supra* note 105, a decrease in demand would shift the demand curve downward from D to D1, decreasing the quantity of environmentally inefficient products to Qd, assuming costs remain unchanged. The price at which the competitor would be able to sell its products would decrease to Pd.

The converse of these effects, of course, is that if one could increase the demand for environmentally efficient products, (moving from D1 to D), quantities of those products and their prices would increase as producers reacted. Both the direct and converse effects would improve the environment.

tion, use, and disposal were adopted.[108] The direct regulatory approach cannot achieve these results because it fails to address pollution occuring through the use and disposal of products and packages.[109] Additionally, targeting the demand component in producer decisions removes producers from the difficult position in which they are placed by both the regulatory and charge systems. Under those systems, producers face the same consumer demands, needs, and desires regardless of the additional costs of productions that are imposed. The result is that only one component of consumer demand—price—may be affected. The other factors of demand[110] are left weighing in favor of continued consumption of the same products, regardless of their environmental impact.

Second, making the demand for products sensitive to the pollution generated throughout the product's life cycle would provide an incentive to producers and disposal firms to satisfy that demand by developing products and disposal methods that meet consumers' overall desires.[111] Pollutants would be reduced because of the consumer demand for more environmentally efficient products and processes.

Third, a system operating within the free market by influencing consumer demand would be more efficient because a central planning agency would no longer be making pollution control decisions based on information that is nearly impossible to gather or assimilate.[112] Each producer and consumer would make her own decisions based on market information that would guide those decisions toward environmental goals.[113] Moreover, this approach recognizes that some pollution is an unavoidable by-product of economic and social progress; individual economic decision making will sometimes demand that certain products be produced regardless of their environmental impact. In those situations, however, costs could be imposed on the consumer to compensate society for the use and cleanup of the environment.

Finally, developing demand-driven economic incentives to encourage compliance with environmental goals greatly reduces the

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108 The exact amount of such reductions would depend, in part, upon the elasticity of demand for the product and the cross-elasticity of demand for substitutes of the product.

109 *See supra* notes 79-81 and accompanying text.

110 *See supra* text accompanying notes 84-91.

111 Producers will always try to market their products so as to meet the needs and desires of consumers. *See* H. ASSAEL, *supra* note 84, at 2-3, 142.

112 *See supra* notes 49-52 and accompanying text.

113 *See supra* notes 100-03 and accompanying text.

difficulties of attempting to force thousands of ambivalent producers to comply with regulatory standards.[114] If the market in which producers sell their goods and services demands that those items be pollution-lean, the need to monitor producers disappears; voluntary compliance would be more certain.

III. A Federal Pollution Control Program that Operates through Individual Decision Making and Consumer Demand: The Environmental Impact Index / Environmental Impact Tax System

This section will argue that using consumer demand to help fight pollution is a legitimate, workable, and necessary solution to environmental problems. It will begin by considering criticisms to such an approach.

Professor Latin, defending the current regulatory system, concluded that "decentralized decisionmaking by consumers will prove very inefficient in the context of environmental consumption."[115] He identified five potential obstacles to an exclusively free market approach to pollution control: 1) consumers are ignorant of the environmental consequences of their purchases,[116] and the complexity of environmental information prohibits them from obtaining adequate knowledge;[117] 2) producers cannot determine which attributes of a product (price, quality, environmental efficiency) were decisive in stimulating a purchase;[118] 3) a single price cannot adequately convey reliable environmental information because the potential environmental impacts along the production/use/disposal cycle of a product are too numerous, and therefore consumers cannot distinguish environmental efficiency from other factors controlling price;[119] 4) difficulties in identifying and valuing externalities prohibit their internalization by producers;[120] and 5) producers do not possess the environmental information necessary to inform the consumer; obtaining this information would be prohibitively expensive

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114 *See supra* notes 69-71 and accompanying text.

115 Latin, *Environmental Deregulation and Consumer Decisionmaking Under Uncertainty*, 6 Harv. Envtl. L. Rev. 187, 239 (1982).

116 *See id.* at 196-97, 200.

117 *See id.* at 189-90, 201-04.

118 *See id.* at 198-99.

119 *See id.* at 209-11.

120 *See id.* at 212.

for producers and, even if they had it, there is no incentive to publish it.[121]

These concerns are legitimate, but not insurmountable. Combining the free market principle of individual decision making with the strengths and efficiencies of governmental information-gathering would meet these concerns and provide further benefits by manipulating the demand side of the output equation.[122]

A. *The Environmental Impact Index*

Congress could combine private decision making with governmental information gathering by implementing a federal Environmental Impact Index (EII): a numerical distillation of a product's or package's impact on the environment as it is produced and discarded.[123] Motor oil and its plastic container can be used to illustrate this approach.[124]

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[121] *See id.* at 218-19. That "manufacturers and industrial users of commercial chemicals have little incentive to produce and distribute data about chemicals' adverse effects and, indeed, even the identity of the chemicals," has been recognized as an informational public health problem caused by market failure. Lyndon, *Information Economics and Chemical Toxicity: Designing Laws to Produce and Use Data,* 87 MICH. L. REV. 1795, 1795-99 (1989). Professor Lyndon proposes that this market failure can be corrected by linking public research costs to their private economic origins by instituting a "super-study" research program, based on the Superfund cleanup program, in which a national data system for toxicity information, funded by taxing industry, could be designed. *Id.* at 1835-41.

[122] *See supra* notes 107-13 and accompanying text.

[123] Designing a system to encourage ecologically efficient use of a product or package is a more difficult task and will not be attempted here. *See generally* Brooks, *Coercion to Environmental Virtue: Can and Should Law Mandate Environmentally Sensitive Life Styles?,* 31 AM. J. JURIS. 21, 30-35 (1986) (discussing the difficulties of defining an "ecologically sensitive lifestyle").

[124] Motor oil affects the environment at all four stages of the production/consumption/disposal cycle, *see* text accompanying note 79. The extraction process of the raw materials involves exploration, drilling, production, transportation, and storage. Environmental damage at this stage comes from chronic leaks and discharges as well as from major accidents like the Exxon Valdez oil tanker disaster. *See* Labaton, *Does an Assault on Nature Make Exxon a Criminal?,* N.Y. Times, Apr. 23, 1989, § 4, at 1, col. 4 (commenting on leak of 250,000 barrels of oil into Prince William Sound).

Wastes from the process of refining crude oil include air pollutants, in the form of carbon monoxides and dioxides from the heating of the oil; and hydrocarbon vapor loss, from pipe and tank leaks and process exhausts. Contamination may also come from dumping and accidental spills and leaks. M. CAMPBELL & W. GLENN, PROFIT FROM POLLUTION PREVENTION: A GUIDE TO INDUSTRIAL WASTE REDUCTION & RECYCLING 114 (1982). Plastic resins for the package are manufactured from petroleum in reactions that generate 265,000,000 metric tons of hazardous waste annually, with toxic chemicals comprising nearly one-tenth of that total. *See* Commoner, *supra* note 1, at 52. The transformation of the resins and other materials

The oil driller, oil refiner, plastic resin manufacturer, and plastic bottle manufacturer (assuming that all four are separate entities, and no vertical integration of the businesses has occurred) would come to an Environmental Protection Agency whose mission would not be to tell them the maximum allowable levels of pollutants they could discharge into the environment, but rather to determine the impact of their production processes on the environment. The EPA's new role would make it look more like the FDA (Food and Drug Administration) than the FBI, which it more resembles now.[125] The FDA determines the impact of certain substances and processes on the human body. Similarly, the EPA would determine the impact of certain substances and processes on the environment.

The administrative process, in fact, would parallel the FDA's procedures for approving new drugs.[126] The oil driller, oil refiner, resin manufacturer, and plastics producer would submit to the EPA

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into plastic forms for final use yields air pollution and solid wastes. *See* M. CAMPBELL & W. GLENN, *supra,* at 178-79.

The consumer fills her car's crankcase with oil and discards the container. Although the use of the motor oil, absent leaks and spills, is typically non-polluting, its disposal and the disposal of the plastic container create more environmental problems. Of 350,000,000 gallons of oil drained from cars annually, only 14% is recovered for reuse; the rest, laden with heavy metals and additives, flows into the environment. *See* Brinkman, *Used Oil: Resource or Pollutant,* TECH. REV. July 1985, at 46, 48. The plastic bottles usually end up in landfills.

[125] Of course the EPA, like the FDA or the FBI, would retain its role as a regulator and enforcer for extremely toxic pollutants such as lead, mercury and PCBs that are considered too dangerous to be allowed into the environment no matter what the market might dictate. *See supra* notes 36-41 and accompanying text; C. SCHULTZE, *supra* note 5, at 53-54; Merrill & Schewel, *FDA Regulation of Environmental Contaminants of Food,* 66 VA. L. REV. 1357, 1391-1423 (1980) (discussing FDA decisionmaking in the regulation of mercury, aflatoxin, PBBs, and PCBs).

[126] The FDA's approval process starts when a drug sponsor submits an Investigational New Drug Application (IND) before tests on humans can begin. *See* Farley, *How FDA Approves New Drugs,* FDA CONSUMER, Dec. 1987-Jan. 1988, at 7; Sands, *The FDA and New Product Development in the Pharmaceutical Industry,* 12 BAYLOR BUS. STUD. 7, 9 (1981). The FDA then reviews the application, which contains the sponsor's results of drug tests on animals, and, within 30 days, either approves or disapproves human testing. *See* Farley, *supra,* at 7; Sands, *supra,* at 9. After the tests on humans are concluded, the sponsor then submits a New Drug Application (NDA) containing all test results. *See* Farley, *supra,* at 7-9; Sands, *supra,* at 10. At this stage, the FDA begins its in-depth review: chemists examine how the drug is put together; pharmacologists evaluate its effects on animals; physicians review the clinical tests and identify therapeutic effects; statisticians evaluate the test procedures; and other scientists determine the drug's distribution, metabolization and elimination from the body. *See* Farley, *supra,* at 11. After approval, the FDA reviews the drug's labeling, promotion, and packaging, ensuring that statements of ingredients, structure, mechanisms of action, dosages, toxicity, side effects, and interactions appear on the new drug's labels, and that the packages themselves are non-toxic. *See* Sands, *supra,* at 11-13.

an environmental study or "environmental audit,"[127] conducted by either the firm's own experts or independent environmental impact auditors.[128] The study or audit would be a "mass balance" audit that

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[127] Environmental audits are not new to the business sector. In 1971, the Securities and Exchange Commission (SEC), in Securities Act Release No. 33-5170, 36 Fed. Reg. 13,989 (1971), informed registered businesses that certain environmental situations involving "significant capital outlays" potentially affecting earning power must be disclosed. Additionally, the strict liability implications of "Superfund" have caused a number of prudent businesses to seek environmental audits to "minimize their long-term exposure to liability." Myers & McCaffery, *The Goals and Techniques of Environmental Audits,* 30 PRAC. LAW. 41, 45 (1984) (suggesting criteria for choosing environmental auditors, defining the scope of the audit, and proposing a plan of study for an environmental audit that meets the SEC's disclosure requirements while aiding corporations in defending against future environmental liability claims).

"Superfund" is the common name for the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601-9657 (1982) (CERCLA).

> CERCLA gives the government the authority to determine what sites or situations constitute a danger to health and the environment. It then permits the government to adopt various responses to address the dangerous situation. One is the authority for the government to clean up a site at which hazardous substances are being released that endanger health or the environment, using Superfund to pay the costs. The government may seek reimbursement of its response costs from responsible parties under CERCLA. Lastly, the government may order responsible parties to undertake cleanup at their expense.

F. SKILLERN, ENVRIONMENTAL PROTECTION: THE LEGAL FRAMEWORK, § 5A.01 (Supp. 1988).

[128] *See* Meyers & McCaffery, *supra* note 127, at 46. Trade secrets, of course, would be purged from such audits or procedures would be adopted to maintain intra-agency confidentiality of sensitive material.

Disclosures of information contained in Environmental Impact Statements under the NEPA are subject to the Freedom of Information Act of 1967 (FOIA), codified as part of the Administrative Procedure Act, 5 U.S.C. § 552 (1982). But material in those statements classified as secret has been held exempt from disclosure under FOIA's "governmental secrets" provision. *See* Weinberger v. Catholic Action, 454 U.S. 139, 143-45 (1981); *see also* 5 U.S.C. § 552(b)(1). Presumably, then, information contained in the environmental audits proposed here similarly would be protected from public disclosure under FOIA's "trade secrets" exclusion. 5 U.S.C. § 552(b)(4).

Protection is also provided by the takings clause of the fifth amendment of the Constitution. In "[o]ne of the few documented releases of commercially valuable information," W. GELLHORN, C. BYSE, P. STRAUSS, T. RAKOFF & R. SCHOTLAND, *supra* note 58, at 770, unfortunately involving the EPA, the Supreme Court held that commercially valuable trade secrets might be considered "property" under some state law definitions, and their owners would receive "just compensation" if the trade secrets were disclosed or used by the government for the benefit of others. *See* Ruckelshaus v. Monsanto Co., 467 U.S. 986, 1000-04 (1984). "This conclusion would apply where the trade secrets were 'property' under state law and federal law created an expectation that submitted information would neither be disclosed nor used in assessing other applicants, submissions to the agency without appropriate

identifies and follows all materials used in production from the time they enter the plant through processing, storage, transportation, disposition, and disposal.[129] Additionally, waste streams throughout the process would be identified, as well as the characteristics of the local environmental media into which discharges flow. Methods of waste management would also be described. To ensure that the producer's application information was correct, the EPA could conduct periodic audits or require periodic audits by certified independent auditors, much as the SEC does for certain corporate financial statements.

The producer's environmental audit, like the test results submitted by a new drug sponsor to the FDA, would serve as an application to the EPA for "approval" to produce and market its product. This "approval," however, would typically be only the EPA's determination of the product's impact on the environment and the granting of an Environmental Impact Index (EII) number.[130] The EII number would come from the EPA's evaluation of the producer's application.

Government agencies have performed environmental impact assessments of present and proposed activities in at least 25 states and 16 other nations for nearly twenty years.[131] The EII system

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compensation." W. GELLHORN, C. BYSE, P. STRAUSS, T. RAKOFF & R. SCHOTLAND, *supra*note 58, at 770 (emphasis omitted).

129 The driller's environmental audit would be somewhat different: the environmental impact of reaching the drill site, sinking the well, extracting, transporting, storing and other residual damage following production completion would need to be identified.

130 This would be the case unless, of course, the producer's application revealed that especially dangerous toxic substances were involved. *See supra* note 125.

131 The National Environmental Policy Act of 1969, 42 U.S.C. § 4332 (1982) (NEPA) requires that: "(2) all agencies of the Federal Government shall . . . (C) include in every recommendation . . . and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—(i) the environmental impact of the proposed action."

Thus, since 1969, Congress has required that any

> agency proposing to undertake action that may affect the quality of the human environment . . . prepare a detailed [Environmental Impact] statement . . . that describes the area to be affected, the adverse environmental effects that can be avoided, reasonable alternatives and their harmful effects, and possible mitigation measures or methods of avoiding or minimizing harm.

F. SKILLERN, *supra* note 127, at § 2.04. Courts have interpreted this provision to require a full disclosure of the environmental effects of proposed projects. *See* Environmental Defense Fund, Inc. v. Corps of Eng'rs, 325 F. Supp. 728, 743-44 (E.D. Ark. 1971), *vacated on other grounds*, 342 F. Supp. 1211 (E.D. Ark.), *aff'd*, 470 F.2d 289 (8th Cir. 1972), *cert. denied*, 412 U.S. 931 (1974). Successful applications of environmental impact assessment processes include the use of impact statements to judge the effects of allowing supersonic aircraft to land at Kennedy and Dulles airports and

would establish similar assessments, but evaluating the private manufacture and disposal of products rather than public projects undertaken by government.

The case of motor oil refining, for example, would require an assessment of the environmental setting upon which the motor oil would have an impact, as well as production and disposal issues.[132] Variables to be considered might include: life-form populations living near the plant; habitats or land use of surrounding areas; land quality and soil erosion; critical ecosystem relationships; threatened or endangered species; water habitats; water quality and uses; water quantity; air quality; climatology; noise; aesthetics; and historical and archaeological considerations.[133]

After identifying the surrounding environmental variables, impact prediction and assessment would be done. The EPA would study how the activities, substances, and wastes identified in the oil refiner's application would affect the above environmental variables.[134] Assigning probabilities to alternative risk assessment scenarios can alleviate the uncertainty common to impact predictions in which relevant physical and economic variables are unknown.[135]

Measurements, based on tests or past experience, of both the identified environmental variables and the producer's pollution variables must be made.[136] These measurements may be based on tests, recorded experience, or both. Quantitative or qualitative measurements will be required depending upon the variable being assessed.[137] If the producer or product is new, predictions of potential impacts will be required. If the process being analyzed is established, direct measurements should be possible. Finally, secondary

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to determine the best route for the Trans-Alaska Pipeline for carrying natural gas. *See* Baldwin, *NEPA Symposium*, 15 NAT. RESOURCES LAW. 605, 606 (1983). Since 1969, at least 25 states and 16 other nations have adopted environmental impact review provisions for governmental entities. *See President's Address*, in ENVIRONMENTAL QUALITY: THE NINTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY, at iv. (1978).

132 *See* L. CANTER & L. HILL, HANDBOOK OF VARIABLES FOR ENVIRONMENTAL IMPACT ASSESSMENT 1 (1979).

133 *See id.* at 4-11; R. JAIN, L. URBAN & G. STACEY, ENVIRONMENTAL IMPACT ANALYSIS: A NEW DIMENSION IN DECISION MAKING 39 (1977) [hereinafter ENVIRONMENTAL IMPACT ANALYSIS].

134 *See* L. CANTER & L. HILL supra note 132, at 1.

135 *See* Freeman, *Risk Evaluation in Environmental Regulation*, in REFORM OF ENVIRONMENTAL REGULATION 47, 53-56 (W. Magat ed. 1982).

136 *See* ENVIRONMENTAL IMPACT ANALYSIS, *supra* note 133, at 61-70.

137 *See id.* at 64.

and cumulative impacts must be weighed and the entire group of measurements aggregated, summarized, and analyzed.[138]

The technology necessary to make these determinations and to manage the data is available now and constantly improves.[139] Thus,

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138 *See id.* at 22-33 (describing a step-by-step procedure for developing an environmental impact assessment); ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT 301-50 (C. Holling ed. 1978) (describing environmental impact assessment techniques). There are a number of ways in which the EPA could assess the environmental impact of particular activities. *See* Henshaw, *The Impact Judgment: A Technical Impasse?,* in IMPROVING IMPACT ASSESSMENT: INCREASING THE RELEVANCE AND UTILIZATION OF SCIENTIFIC AND TECHNICAL INFORMATION 313, 316-17 (S. Hart, G. Enk, & W. Hornick eds. 1984) (proposing a basic framework of seven "biosocial" criteria for assessing the impact of different activities on the biosphere: "1) Is the ecosystem unusual?; 2) How biological (sic) fit is the ecosystem?; 3) How productive is the ecosystem?; 4) How much biological persistence would the ecosystem have?; 5) How long would it take to replace the ecosystem if destroyed?; 6) Are there bioadministrative issues?; 7) Are there bioaesthetic issues?" Similar questions could be asked concerning various aspects of the environment in order to perform a complete impact assessment.).

139 *See generally* IMPROVING IMPACT ASSESSMENT: INCREASING THE RELEVANCE AND UTILIZATION OF SCIENTIFIC AND TECHNICAL INFORMATION (S. Hart, G. Enk & W. Hornick eds. 1984) (collection of essays based on a project initiated by the Research and Decision Center, reporting the results of a symposium on "Improving the Quality and Utility of Scientific and Technical Information in EIS's"); ENVIRONMENTAL RISK ASSESSMENT (A. Whyte & I. Burton eds. 1980) (report by the Scientific Committee on Problems of the Environment of the International Council of Scientific Unions with the support of the United Nations Environment Programme identifying and developing environmental risk assessment techniques); Carpenter, *supra* note 63, at 581 (stating that "environmental science has advanced in the ways it is applied and in the abilities of the scientists it attracts. Information about pollution control, hazardous wastes management, renewable resources use, human health effects, and other specific management areas now is satisfactory"). *See also supra* note 63 (discussing the tendency of science to create information and technology as society demands it, and concluding that the type of environmental program chosen will dictate the amount of scientific knowledge available); Lyndon, *supra* note 121, at 1798 ("Toxicology, computer science, and information management science . . . [allows us to] produce more information about toxicity and manage the data more effectively than we could in the early 1970s, when the environmental regulatory scheme was first established. New environmental technologies and service professions have evolved . . . .") (footnote omitted).

The existence of uncertainty continues to plague risk assessment. The public that faces the consequences of uncertain environmental decisions must adequately be informed so that "elite policymakers" will not make choices among competing goods. Hattis & Kennedy, *Assessing Risks from Health Hazards: An Imperfect Science,* 89 TECH. REV. 60, 71 (1986) (stating that an informed public will have to accept responsibility for choosing between competing goods and risks); *see also* Grad, *Risk Assessment and the Tyranny of Numbers: A Brief Comment,* 1 ENVTL. L. & LITIGATION 1, 10 (1986) ("Risk assessment is a tool to help us make difficult decisions [but] . . . it must be examined in each instance to determine the reliability of the underlying data and assumptions made . . .").

assessing the impact of a product on the environment is realistically achievable.[140]

It is imperative that environmental impacts not be evaluated in a vacuum.[141] Before the EPA determines the environmental impact of an activity,[142] basic policy choices must be made concerning: 1) the weight the information is to be given; 2) the method of identifying significant environmental effects; and 3) the adequacy of the necessary data.[143]

The determination of the relative weights to be given to identified impacts on the various environmental variables would require Congressional guidance. For example, "valuing" the reduction of plant life or the decrease in air quality near an oil refinery is necessarily a social policy, political decision.[144] Congress could devise a hierarchy of social values to place on elements of the environment, as a tool for the EPA's use in making evaluations.[145] Linked to this hierarchy, a "marginal impact scale" could be assigned to determine the weight to be given an observed or predicted impact.[146] Deci-

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[140] The same analysis used to determine a product's environmental impact during production would be used to assess the impact of its disposal. A similar audit would be required. The producer is best able to know or discover the decompositional characteristics and environmental impact of disposal of its products, and to design products and create methods of disposal that are environmentally sound. As indicated later, there will be a strong incentive to create such methods and products. *See infra* notes 171-81 and accompanying text.

[141] *See* R. MELNICK, *supra* note 10, at 6-9 (stating that "[i]t is relatively easy to delegate the task of achieving [fair and efficient pricing] to economists and other experts. But experts cannot so readily claim to know whether . . . the environment is sufficiently healthy, enjoyable, or even aesthetically pleasing").

[142] *See* ENVIRONMENTAL RISK ASSESSMENT, *supra* note 139, at xix (Defining an enviromental impact determination as "a search for a 'best route' between social benefit and environmental risk. It is a balancing or trading-off process in which various combinations of risks are compared and evaluated against particular social or economic gains.").

[143] *See id.* at 72 (stating that there is dispute about what is a valid, relevant, and acceptable basis for assessing risks based largely on differences as to what is a "significant" effect and what is a scientifically adequate amount of data).

[144] *See* Henshaw, *supra* note 138, at 313.

[145] This hierarchy might already be in place given that the current regulatory approach specifies ambient and performance standards that define the acceptable amount of particular pollutants, thus defining a socially acceptable amount of environmental degradation. Although often set by the EPA, such standards presumably are established by determining the amount of damage a particular pollutant causes, determining the level of environmental damage society accepts in that area, and then setting the standard within these limits. *See, e.g., supra* notes 9-17 and accompanying text. Therefore, current ambient standards could function as a guide to estimate society's valuing of a particular level of environmental degradation.

[146] For example, even if an activity is determined to have a small impact on a socially valuable environmental variable, Congress may nonetheless require the

sions concerning the method of identifying significant impacts and the amount of information required, however, would be made by the EPA. This governmental body has the technological expertise to evaluate options and adapt strategies to particular problems.[147]

The EPA's analysis of the environmental impact must then be transformed so that the average consumer will understand it. An Environmental Impact Index could be designed to convert the EPA's evaluations into a sliding numerical scale.[148] A scale of zero to fifty, for instance, could apply to manufacture and disposal, the two most environmentally threatening stages of the product and package life cycle. A score of zero would indicate little or no environmental impact with fifty indicating a highly adverse impact. The product label on a one quart container of oil, for example, might look like this:

Brand X Motor Oil		
Viscosity: 10-W-30	EII- Total	148
Price: $2.00	EII-Manu-prod	15
	EII-Manu-pack	39
	EII-Disp-prod	29
	EII-Disp-pack	35

(EII-Manu-prod = the environmental impact during the manufacture of the product; EII-Disp-prod = the environmental impact during disposal of the product;[149] pack = package; EII-Total = the

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evaluator to give that impact great weight because of the value of the variable to society.

147 *See supra* notes 125-38 and accompanying text for a discussion of the technical analysis that must be undertaken in order to assess environmental impacts.

148 The EPA and the states currently perform environmental indexing in certain situations. The EPA ranks some environmental risks using a verbal scale from "high" to "low." *See* Morgenstern & Sessions, *supra* note 47, at 17. Air quality is monitored and assessed by each state and reported to the general public each day by way of a numerical Uniform Air Quality Index, ranging from 0 to 300, which is converted into "descriptor words" for public dissemination: 0 to 50 = "good"; 51 to 100 = "moderate"; 101 to 199 = "unhealthful"; 200-299 = "very unhealthful"; 300 and above = "hazardous." 40 C.F.R Part 58, App. G, at 186 (1988).

Indexing is a useful means to communicate complex technical information to a public poorly versed in mathematics:

> If the price of dog food or cake mix can be rationalized, why can't some sort of rough "safety index" be devised which allows us to gauge how safe various activities, procedures, and illnesses are? What I'm suggesting is a kind of Richter scale which the media could use as a shorthand for indicating degrees of risk.

J. PAULOS, INNUMERACY: MATHEMATICAL ILLITERACY AND ITS CONSEQUENCES 94 (1988).

149 The EII disposal value would represent the most common disposal method available for the product. If more environmentally efficient methods were available

total environmental impact of both the manufacture and disposal of the product and package—the greatest impact value would equal 200.)[150]

These numbers would convey information to the consumer in familiar and recognizable ways, similar to information already required[151] or voluntarily provided by producers, such as: miles per gallon (MPG) on automobiles; British Thermal Units (BTUs) on air conditioners; ingredients and nutritional information on food products; dosage, ingredient, side effect, warning, and interaction information on drugs; active/inert ingredients, accident avoidance, and first aid information on dangerous cleansers and pesticides; content tags on upholstery and bedding; and warnings on machinery.

Providing this information would create many of the environmental benefits available through manipulation of the demand side of the output equation,[152] while avoiding the obstacles to consumer decision making identified by Professor Latin.[153] As mentioned previously, the demand for goods is affected by price, income, and by changes in consumers' attitudes, needs, and related psychological factors.[154] Providing consumers with easily understandable EII information would directly affect most of these decision making variables. Some producers are already utilizing environmental impact information to increase sales.[155] Because Americans overwhelm-

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the Environmental Impact Tax would provide incentives to use them. *See infra* notes 171-81 and accompanying text.

150 Raw material and industrial product EIIs would not be included in consumer labeling information. Instead, the EII for the various materials and industrial products that make up a product would be indicated on packaging.

151 Federal law currently requires that chemical toxicity information be disseminated. *See* Emergency Planning and Community Right to Know Act of 1986 (EPCRA), 42 U.S.C. § 11001 (Supp. V 1987); OSHA Hazard Communication Standard, 29 C.F.R. § 1910.1200 (1988). Many foods and drugs subject to FDA regulation must list their ingredients on labels. *See* Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 301 (1982). Pesticides must be labeled with their registration number and their active ingredients. *See* Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. § 136 (1982 & Supp. V 1987).

152 *See supra* notes 106-13 and accompanying text.

153 *See supra* notes 115-21 and accompanying text.

154 *See supra* notes 84-91 and accompanying text.

155 Atlantic Richfield recently announced that it will offer a "cleaner" gasoline called "EC-1" (Emission Control-1) that is designed to cut emissions of benzene, sulfur dioxide, and carbon monoxide. Zeidler, *Arco Rivals Spurred by "Clean" Gas,* Phila. Inquirer, Aug. 30, 1989, at D8, col. 1. Oil analysts describe ARCO's new product as "a marketing ploy that the others will have to follow." *Id.* (quoting George Gaspar, oil analyst with Robert W. Baird). "Melitta, the world's largest maker of coffee filters . . . [realizing] that the bleach used to make white paper for its filters posed potential environmental or health hazards . . . decided to introduce a

ingly support environmental protection, consumers are likely to adjust their purchases based on this information.[156]

Commentators and some governmental and regulatory officials are beginning to realize that further environmental improvements are contingent upon changing the behavior of businesses and individuals.[157] Providing the consumer with information about the consequences of her demand for and use of products is a large step

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line of brown, unbleached coffee filters" in the hope of increasing sales. Uhlman, *Cultivating the Consumer's Concern for Planet Earth,* Phila. Inquirer, Sept. 4, 1989, at D-1, col. 1. Manufacturers are also producing entire lines of green products: "biodegradable trash bags, cereal packaged in recycled paperboard, and cake mix with a reusable plastic baking dish. . . . Wal-Mart Stores, Inc. recently committed itself to identifying for its consumers products that are improved environmentally." *Id.* Boxes of AJAX laundry detergent now state: "The cleaning agents in AJAX are biodegradable. This means that these ingredients are broken down into simpler compounds by natural biological action. This capability helps to eliminate suds and foaming problems in our lakes and streams." AJAX Laundry Detergent, Colgate-Palmolive Co. The Kiplinger Washington editors have advised that companies are beginning to market the environmental characteristics of products and are finding that environmental consciousness sells. 66 KIPLINGER WASHINGTON LETTER, Oct. 13, 1989.

156 One marketing firm

> recently commissioned a national survey of 1000 adults that showed 89 percent were concerned about the environmental impact of the products they purchased. More than half said they had decided not to buy a product in the last year because of environmental concerns about it. And 8 out of 10 said they were willing to pay extra—ranging from 5 to 20 percent more—for a product packaged with recyclable or biodegradable materials.

Uhlman, *supra* note 155. *See also* Commentary, *Public Opinion on the Environment,* 29 ENV'T 2 (1987) (letter by Michael McCloskey, Chairman of the Sierra Club, describing recent public opinion polls and calling environmental concerns "second-order" issues in presidential campaigns); *"Public is Willing to Pay Price" for Pure Air and Water,* U.S. NEWS & WORLD REP., Jul. 8, 1985, at 41, 42 (statement by Lee Thomas, Administrator, EPA, that Americans are "willing to pay the price" for environmental protection). Evidence of the public's concern for the environment is also evident in the increasing number of citizen's suits seeking enforcement of environmental laws. *See supra* note 72 and accompanying text. *But see* Francis, *Attitudes Toward Industrial Pollution, Strategies for Protecting the Environment, and Environmental-Economic Trade-offs,* 13 J. OF APPLIED SOC. PSYCHOLOGY 310, 326 (1983) (stating that "[a]lthough environmental concern is considerable, perceived costs of pollution abatement activities appear to be impeding action," and job security is a primary concern).

157 *See* O'Riordan, *The Earth as Transformed by Human Action: An International Symposium,* ENV'T. Jan.-Feb. 1988, at 25, 27. (noting that the consumer and the "dispersed points of disposal from consumption" are not well-monitored); Russell, *supra* note 20, at 12 (" 'The environmental movement as a whole is increasingly coming to realize that we can no longer make major gains by forcing people to put widgets on smokestacks of plants.' "); Kolata, *How Much is Too Much to Pay to Meet Standards for Smog?,* N.Y. Times, Apr. 3, 1989, at A1, col. 1 (" 'To get significant reductions now means changing a number of behaviors' " because the easily

toward accomplishing this goal. Equipped with a standardized basis of comparison, many consumers would choose more environmentally efficient products. For example, motor oil packaged in a cardboard container might have a lower EII value than the same product packaged in plastic. Market stratification on the basis of environmental attributes, in addition to price and quality, would be encouraged as producers adjusted to meet the new direction of consumer demand.

This use of EIIs would induce producers to lower their EII numbers in order to make their products more marketable. Lower EIIs could be achieved by: 1) reducing the environmental impact of manufacturing a product;[158] 2) shifting to packaging manufactured with less environmental harm; 3) developing products and packages less harmful upon disposal; and 4) by developing more efficient disposal and recycling methods. Regulatory enforcement expense would decrease as producers began to gain economically from compliance.

A producer who developed new production processes to reduce harmful environmental impact could re-petition the EPA by submitting a new audit to modify its EII.[159] The re-evaluation process

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controllable sources already have controls. (quoting Alex Cristofaro, director of the atmospheric and economic analysis division of the EPA)).

"The air-pollution control plan adopted by government and regulatory officials [in Southern California] last month would force businesses to confront the environmental impact of their operations more directly than ever before." Stevenson, *Facing Up to a Clean-Air Plan: Southern California's Visionary Challenge,* N.Y. Times, Apr. 3, 1989, at D1, col. 3. That plan attempts to alter consumer as well as producer behavior: paints and coatings would have to be reformulated with consumers paying a surcharge for products not meeting the new standards, all aerosol sprays would be abolished, all charcoal broiling would be regulated, bias-ply tires would be banned, bakeries, dry cleaners, and breweries would be required to reduce emissions, and even gasoline engines on lawnmowers would be banned. *See id.*

158 Reducing the environmental impact of manufacturing is already possible and lucrative. *See* M. ROYSTON, POLLUTION PREVENTION PAYS 168 (1979) (pollution prevention is possible though a systems approach to technology, integrated production systems, recycling of wastes, and a merging of economics and technology incorporating consideration of the surrounding environment and community); MAKING POLLUTION PREVENTION PAY ix (D. Huisingh & V. Bailey eds. 1982) (reporting industry successes in pollution reduction through more efficient processes, better waste management and recycling, and stating that pollution is symptomatic of inefficient technologies that "waste resources, degrade the environment, and are unprofitable").

159 A current EPA program designed to decrease pollution by targeting consumer demand, and which employs a similar re-petitioning process, is the "gas guzzler" tax on certain cars. *See infra* notes 173-80 and accompanying text. Under that program, importers of automobiles that have not been given a fuel economy rating by the EPA may rebut the presumption of lowest fuel economy rating for

would be more easily traversed than the original analysis because baseline information on the producer and the environment would be available. Accumulating baseline information on environmental variables and relevant societal impacts would create economies of scale making new analyses more accurate and efficient while simultaneously increasing society's general understanding of the biosphere.[160]

Creating environmental sensitivity in consumer demand would foster individual decision making and control by allowing consumers to register preferences.[161] A consumer "vote" for an environmentally efficient product, however, would ultimately be driven by ideological and ethical considerations.[162] Not all consumers and producers would make environmentally motivated choices. Therefore, society must command more influence over these decisions in order to achieve its environmental goals. Society can gain this influence by altering prices to reflect environmental impact.

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purposes of the gas guzzler tax. This method is similar to the recommended reevaluation procedure or any challenge of an EII designation. Rev. Proc. 86-9, 1986-1 C.B. 530 provides that where an importer believes that the presumption of lowest fuel economy is inappropriate, it may, at its own expense, test that vehicle at an EPA-recognized laboratory. Rev. Proc. 87-10, 1987-1 C.B. 545 provides that an importer may also rebut the presumption by using the EPA-recognized fuel economy ratings from a different vehicle of the same year, make, model, and engine. Similarly, rebutting an EPA-designated EII might involve reauditing the production process at the producers' expense and might use already available relevant information.

160 Although "each environmental situation has some unique features . . . most ecological systems face a variety of natural disturbances and all organisms face some common problems." Thus, each new assessment is not totally unique; there are "relevant background principles, information . . .[and] comparable past cases." ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT *supra* note 138, at 3. As more activities are analyzed to determine their impacts and more measurements are made of relevant environmental variables, baselines of information will grow and the process will become more efficient. This accumulation of information might lead to a "national information data system" similar to that proposed by Professor Lyndon for chemical toxicity. *See* Lyndon, *supra* note 121, at 1825-35.

161 *See* Lyndon, *supra* note 121, at 1796 ("Toxicity information is necessary for intelligent private choices, as well as for the protection of public health.").

162 *See* Sagoff, *We Have Met the Enemy and He Is Us* or *Conflict and Contradiction in Environmental Law,* 12 ENVTL. L. 283, 286 (1982) (noting that one problem with economic techniques of cost-benefit analysis is that they may fail to allow consumers to register their ideological or ethical convictions).

The influence of environmental consciousness may be weakest in the context of industrial products. Producers are likely to choose among equally useful industrial products and raw materials on the basis of price alone. Therefore, the EII alone would not be effective for such products and materials, but would be extremely effective when combined with an Environmental Impact Tax.

B. *The Environmental Impact Tax*

The surest way for society to control the price of goods is with a sales tax. Under the proposed system, such a tax would be used to guide consumer demand toward environmentally efficient products and packages. Before this approach is developed, however, a brief word on what this type of tax would *not* be is in order.

Most proposals to use incentives to control pollution have called for one of the following approaches: an effluent charge system,[163] a marketable permit system,[164] a direct incentive producer subsidy system,[165] or an effluent tax system based on revenue needs.[166] The tax proposed here, however, does not share many similarities with these approaches. Instead, the Environmental Impact Tax (EIT) more closely resembles a "pure" pollution tax in that it would be based on the damage or social cost of pollution,[167] and would be targeted at consumers as well as producers; that is, all polluters. Although the EIT is neither a "value-added tax,"[168] a "user fee" tax,[169] nor a fed-

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163 *See supra* notes 100-03 and accompanying text. Although an effluent charge system may be based on the social costs of pollution, the difference between such a system and the EIT is that the EIT focuses on consumers as well as producers.

164 Under this approach, the government would issue a limited number of permits allowing the discharge of particular pollutants. The permits would be issued to the highest bidder and might be traded on a "permits market." *See* J. DIMENTO, ENVIRONMENTAL LAW AND AMERICAN BUSINESS 59 (1986).

165 This system would pay the polluter not to pollute through either direct grants or tax subsidies. *See* P. BURROWS, *supra* note 101, at 99; C. REESE, *supra* note 18, at 410-12.

166 Effluent taxes are similar to effluent charges in that they might be based on the quantity of effluent discharged. These tax systems, however, are often based on the revenue needs of the government imposing them. *See* C. REESE, *supra* note 18, at 412-15.

167 *See id.* at 412.

168 A value-added tax is a tax "imposed at successive stages of production and distribution on total consumer spending in the domestic economy. The characteristic feature of the tax on added value, which distinguishes it from a retail sales tax, is its imposition on all transactions at every stage of production and distribution in domestic commerce." Fuller, *The Proposed Value-Added Tax and the Question of Tax Reform,* 34 RUTGERS L. REV. 50, 51 (1981).

The EIT differs from this tax in that, although it would be imposed on industrial products and consumer goods, there would be no refund as the product passes down the distribution stream—each consumer of a product would pay for the environmental impact of her consumption. A finished product might thus be taxed at various stages so that the full cost of the environmental impact at each stage is recovered.

169 "User fees are prices a governmental agency charges for a service or product whose distribution it controls." Gillette & Hopkins, *Federal User Fees: A Legal and Economic Analysis,* 67 B.U.L. REV. 795, 796 (1987).

eral sales or consumption tax,[170] it does share some characteristics with each of these taxes.

The EIT would be tied directly to the "EII-Total" value which represents, as a unit, the product's and package's total environmental impact during manufacture and disposal. Like the EII, the EIT would be, in form, a progressive scale that increases as environmental impact increases. For example, the tax rate scale tied to the EII-Total value might look like this:

Products with an "EII-Total" value of:
0-50 = no EIT imposed
51-100 = EIT of 2% of purchase price
101-150 = EIT of 4% of purchase price
151-200 = EIT of 6% of purchase price

The motor oil mentioned above would thus have a 4% federal environmental tax imposed on its purchase price because its EII-Total value was 148.

An Environmental Impact Tax would ensure that the benefits of manipulating the demand side of the output equation[171] accrued to society. Because goods identified as less environmentally efficient would cost more, the quantity demanded of these products would decline while the demand for less costly substitute products would increase.[172]

Attempting to control producer behavior by increasing product prices through taxation is not untested. The Gas Guzzler Tax,[173] created by the Carter administration during the energy crisis of the 1970s, is a progressive tax similar to the EIT in that automobiles are taxed at a higher rate as fuel economy, determined by the EPA,[174] declines.[175] Similarity with the EIT does not end there; the National

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170 "Consumption taxes, of which the most familiar variety in the United States is the retail sales tax, are levies on individuals' consumption expenditures as opposed to their incomes." Schuyler, *Consumption Taxes: Promises & Problems,* 25 TAX NOTES 571, 571 (1984). *See also* Zodrow, *A Direct Consumption Tax as an 'Add-On' Tax,* 38 TAX NOTES 1389, 1391-95 (1988) (discussing the mechanics and merits of a consumption tax).

171 *See supra* notes 106-14 and accompanying text.

172 The size of such adjustments would depend, in part, upon the demand elasticities for each product and its available substitutes. Thus, control of producer behavior through manipulation of the demand curve would be inexact.

173 I.R.C. § 4064 (1982 & Supp. V 1987).

174 I.R.C. § 4064(c) (1982 & Supp. V 1987). There are special procedures for vehicles imported into the United States without a fuel economy rating assigned by the EPA. *See* Rev. Proc. 86-9, 1986-1 C.B. 530.

175 *See* Gensler, *Energy Tax Policy,* 5 NORTHROP U. L. J. AEROSPACE ENERGY & ENV'T 41, 48-49 (1984).

Energy Conservation Policy Act[176] requires that vehicles subject to the Gas Guzzler Tax must bear a statement of that tax on the vehicle's fuel economy label so that gas guzzlers can be identified.[177] The tax was proposed to spur automakers to comply with the fleet-wide fuel efficiency standards mandated by the Energy Policy and Conservation Act of 1975.[178]

As expected with taxes that increase product prices, wealthier individuals are better able to meet the added cost burden and can enjoy the product regardless of the tax. The typical consumer, however, and manufacturers catering to the typical consumer, must change their behavior. Today, the only cars consistently drawing the gas guzzler tax are a relatively small number of high-priced, high-powered imports.[179] Most carmakers, however, have increased their average fuel economy ratings.[180] The gas guzzler tax might be considered a truly progressive tax in that it taxes only the wealthy. The tax is successful because congressional fuel economy goals have been met for the vast majority of automobiles by using price incentives that influence producers and consumers to alter their behavior in a way beneficial to society.

The EIT would work in a similar manner for all products. The price added to environmentally inefficient goods would push both industrial and individual consumers to demand lower-cost, more environmentally efficient goods, thereby forcing producers to meet the demand. As with the gas guzzler tax approach, those goods which the government hopes to reduce or eliminate would still be available, but at increased cost—no regulatory ban would be

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176 15 U.S.C. § 2006 (1982).

177 *See* EPA Fuel Economy of Motor Vehicles, 40 C.F.R. § 600.306 (1989). Although the Gas Guzzler Tax is levied on the manufacturer and thus is not a sales tax, the car's label includes the EPA's fuel economy value for the car as well as the gas guzzler tax. The effect on the consumer is similar to the effect of a sales tax on fuel economy.

178 42 U.S.C. § 6201 (1982). *See also* Rankin, *Gas Guzzler Tax*, 35 CONG. Q. 2560 (1985) (relating the congressional estimate that by 1985, 175,000 barrels of oil per day would be saved by the tax and federal budget receipts would increase by $1 billion).

179 "The gas-guzzler tax and corporate average fuel economy (CAFE) tax may account for between $2,800 to $3,800 of the price difference between the gray market [imported automobiles not purchased in the U.S. from manufacturer-authorized dealers and thus not subject to the gas guzzler tax] and authorized sales of automobiles." Staaf, *The International Gray Market: The Nexus of Vertical Restraints, Price Discrimination and Foreign Law*, 19 U. MIAMI INT'L-AM. L. REV. 37, 92 (1987).

180 *See* Shabecoff, *Detroit Says Efficiency Has Gone Far Enough*, N.Y. Times, Mar. 12, 1989, § 4, at 6, col. 2 (stating that mileage per gallon of cars and light trucks nearly doubled between 1975 and 1985).

imposed.[181] Certain extremely dangerous pollutants and processes, however, would remain controlled or prohibited through direct regulation.[182]

Critics might argue that the EIT would allow the wealthy to pollute the environment while the poor carried the burden of conservation.[183] This argument fails to recognize, however, that the wealthy would pay for the damage their consumption inflicts upon society, just as they pay for the reduced gas mileage of their cars, the luxurious materials in their homes, and the fine tailoring of their clothes. A free market economy allows each to consume, according to her resources, in the way she desires.

Compared to the current regulatory approach, the EIT would offer a number of advantages. Both the EII and EIT would deliver producers from the difficult position in which they find themselves under the direct regulatory and charge approaches. Producers would no longer feel the "*Catch-22*" dilemma whereby complying with government limits or charges on emissions increases product costs, resulting in price increases that hurt sales. The EII-EIT system would force consumers to internalize the cost of environmental waste and would remove the economic incentives for producers to pollute.

As consumers refuse to purchase more expensive, environmentally inefficient products, producers will develop goods that will enjoy a lower tax rate. The methods of achieving a lower EIT would

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181 Before passage of the gas guzzler tax, a ban on the production of gas guzzling cars had been passed by the Senate—the tax replaced the ban. *See* Rankin, *supra* note 178.

182 *See supra* note 125.

183 The regressivity of the EIT as a sales tax might also be an issue. Many economists argue that sales and value-added taxes are regressive in that "in any particular year, low-income families will on average consume a higher fraction of their income than will high-income families." Thus a greater proportion of a low-income family's yearly income would be consumed by the tax than a family with greater income. R. MUSGRAVE & P. MUSGRAVE, *supra* note 98, at 446; *see also* Zodrow, *supra* note 170, at 1395. Notwithstanding this view, "[O]pinion polls show that the public now ranks them [sales taxes] as one of the fairest and least onerous taxes in this country." Schuyler, *supra* note 170, at 573. Professor Krauss has argued that consumption taxes are not regressive when viewed over an individual's lifetime, because life income will equal lifetime consumption for both the rich and poor. *See* Krauss, *A U.S. Sales Tax Would Be Preferable to a Value-Added Tax,* 10 TAX NOTES 131, 131-32 (1980).

Much of the potential regressivity of consumption taxes can be overcome in large part by exempting certain essential items from the tax (e.g. basic foods) or by permitting a tax-free amount of expenditure by allowing a credit against personal income tax.

be the same as achieving a lower EII. With the EIT, however, consumers, too, would feel a direct incentive to reduce the environmental impact of the goods that they purchase.

As mentioned earlier, the EII "disposal-product" and "disposal-package" values would roughly equal the environmental impact of the most commonly used disposal method for the particular product or package.[184] For example, if used motor oil typically was injected into the earth or washed down the drain, and used plastic bottles most often wound up in landfills, the EII would reflect these disposal methods. If, however, the consumer took her used oil and empty plastic bottle to an environmentally efficient disposal firm or recycler,[185] the EII and thus the EIT would be reduced.

To compensate the consumer for this behavior, a receipt could be given to the consumer which she could use to gain an "Environmental Disposal Tax Credit" on her federal income tax.[186] For consumers unable to use such an income tax credit (lower income individuals) the receipt could be used by filing a federal "Rebate for Environmentally Efficient Disposal" form at the end of the year. This would bring the consumer a rebate check. These credits and rebates would be the federal equivalent of the successful "bottle bills" or "deposit laws" implemented by various states.[187] The

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[184] *See supra* note 149.

[185] Approximately 14% of the one billion gallons of used lubricants generated each year are currently recycled, yet the technology exists to economically make all of these "wastes" as good as new. *See* Brinkman, *supra* note 124, at 47-49. The situation is worse for plastics; less than one percent of post-consumer plastic wastes are recovered annually. *See* Powell, *The Year in Review,* RESOURCE RECYCLING, Mar.-Apr. 1987, at 27. However, the technology is available to recycle most plastic wastes at both an energy and cost savings, *see* M. CAMPBELL & W. GLENN, PROFIT FROM POLLUTION PREVENTION: A GUIDE TO INDUSTRIAL WASTE REDUCTION AND RECYCLING 186-98 (1982); Stephens, *The Case For HDPE Recycling,* RESOURCE RECYCLING, Sep.-Oct. 1987, at 18, 48.

The recycling industry is presently capable of recycling a wide variety of resources: iron and steel, glass containers, textiles, tires, plastics, non-ferrous metals such as aluminum, copper, zinc, stainless steel, and waste paper. *See* Powell, *supra,* at 26-27, 46.

[186] Energy tax credits such as those in I.R.C. §§ 44C, 44D, 44E, and 46, which attempt to reduce the need for oil and increase the production of oil substitutes, seem to "cohesively and coherently further the national energy policy of conserving oil." Gensler, *supra* note 175, at 50. Although energy is not being targeted under this Environmental Disposal Tax Credit proposal, similar results might be achieved when applying it to encourage national efficiency in the disposal of products and packages.

[187] *See* Parkinson, *supra* note 1, at 65 (discussing the savings and environmental impact of container legislation); *see also* Kahle & Beatty, *Cognitive Consequences of Legislating Postpurchase Behavior: Growing Up with the Bottle Bill,* 17 J. APPLIED SOC. PSYCHOLOGY 828, 840 (1987) ("Legislation promoting the collective good, such as

"refunds on deposit" would be given only once a year and would come directly from the government rather than from each disposal firm. The amount of the credit or rebate could be based on the amount of the resource disposed in a more efficient manner, or on the value of the disposing or recycling firm's EII value subtracted from the "product-disposal" or "package-disposal" EII value of the item being discarded.

This federal EII-based disposal system would create an incentive for consumers to choose more efficient disposal methods for their discarded products and packages. Additionally, the manufacturing and recycling industries would have an incentive either to design products that can be disposed of with reduced environmental impact or to make recycling and disposal technology more efficient and more widely available.

The overall effect of the EIT, like the EII, would be to allow the consumer to make her own decisions on the basis of easily understandable information concerning the product's price, quality, and environmental impact. Admittedly, consumers will demand many products regardless of this information, but such decisions would be made individually. No government administrator would mandate a decision based on assumed collective preferences and on virtually unintelligible environmental, economic, and technical information. Given greater information concerning the basis for purchase decisions, producers would continually reduce their impact on the environment in order to meet the economic and ideological demands of consumers. Finally, the revenue raised from the EIT would fund the EII review process and the EIT Tax Credit for recycling, as well as other environmental projects including cleanup efforts and environmental research.

Implementing the EII-EIT system would, of course, take place over time; the current regulatory approach would remain until the system was fully operational. The direct regulation of toxic substances would always remain in place.

CONCLUSION

As knowledge of the environment continues to grow, we realize that many activities we once assumed to be harmless adversely affect the things that sustain life. What we do with this knowledge will

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bottle bill legislation, can be effectively implemented . . . by stressing . . . the receptivity of 'significant others' in the community to these laws.").

determine which, if any, environmental goals we achieve and, ultimately, will determine the quality of life.

Today, most of this knowledge is trapped in a centralized decision making agency which applies it through a system of direct regulations. A limited number of people deal with the knowledge, and a limited number of results are achieved. Like the fish mentioned at the beginning of this Comment, our existence is dangerously dependent. Our lives depend on the decisions made by this small group of people.

The Environmental Impact Index / Environmental Impact Tax system, however, would combine the knowledge possessed by this centralized agency with knowledge available in the private sector. Under the proposed system, this information would be disseminated among those decision makers most directly affected by its utilization or non-utilization: consumers. Society would use the Environmental Impact Tax to persuade these consumers to make environmentally sensitive decisions. In this way, consumers, producers, government, and society would all share common goals and objectives. Perhaps, using this system, control of the things of life can be returned to us all for the benefit of us all.