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Stuart L. Deutsch

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SETTING PRIORITIES: PRINCIPLES TO IMPROVE ENVIRONMENTAL POLICY

STUART L. DEUTSCH*

I. INTRODUCTION

Imagine a utopian world. There is a truly effective, wise, and fair environmental policy for the United States. The result of the policy is the elimination of all pollution which causes any human health effect or any effect upon ecosystems or any aspect of the environment. The policy is accomplished at a cost that is affordable by society as a whole and by those entities or subparts of society that are expected to bear a share of the cost.

There are several elements to this utopian environmental policy. To the maximum extent possible, pollution is prevented before it is generated, since both the direct cost of elimination and the total costs to society virtually always are lowest when a pollutant is never generated. If generated, the pollutant is being contained within the manufacturing process or site. Indeed, it is turned into a usable product or returned to the production process in which it is generated. Reinjecting material into the manufacturing process or making it into some usable product is cheaper in most cases because the treatment or emission of pollutants into the environment is the most injurious and costly outcome. If the material cannot be used in the production process or made into a final product, it is being recycled in some other way, perhaps by being made available to others to use before it reaches the environment. The products created for industry or consumers are usable without causing pollution, and then are recycled at the end of their maximized useful life. When recycled or used as material for further production, such use is in a clean and controlled process. If, by necessity, accident, or miscalculation, pollutants must be delivered to the end of the pipe and actually reach the environment, there is an effective process to control and detoxify the pollutant, minimize its environmental effect, and place it in a secure disposal facility from which it will not escape to contaminate the environment, or cause health or welfare effects. The pollution control or

* Professor of Law and Co-Director, Program in Environmental and Energy Law, Chicago-Kent College of Law, Illinois Institute of Technology; B.A. 1966, University of Michigan; J.D. 1969, Yale University; LL.M. 1974, Harvard University.

clean-up activity will not merely shift the pollutant from one medium (air, water or land) to another without consideration of the effects of the pollutant on each medium.

Recognized as central to this utopian environmental policy is the goal of absolutely minimizing the generation of pollutants which could have world-wide or regional effects, such as changing the climate of the Earth, weakening the ozone layer of the atmosphere or destroying species. Also central is a recognition of our obligation to future generations to pass on to them a world in which there are still special places and natural resources that provide a quality of life equal to or better than our own. Within our own generation, we are careful to be sure that minorities, poor people, workers, or other definable groups do not bear the burden of the environmental pollution to benefit other parts of society. Of course, we are careful not to shift environmental burdens to third world countries. Finally, we fairly allocate the costs and burdens of our environmental policy among those who create the products, those who consume the products, and others who live within a society made prosperous by the overall wealth and production levels of the country.

While I have been accused of being an idealist, I usually do not operate in quite this impossible a fantasy world, and don't tell fairy tales that are quite this far-fetched. However, the story of the utopian environmental policy is useful, because it shows aspects of environmental policy which should be incorporated into the real-world environmental policies of the United States. We continue to be by far the largest national economy, the largest user of energy and resources, and the largest polluter in the world. It is essential that at least some additional aspects of the fairy tale policy be incorporated into present-day environmental policy. Surprisingly, several key parts are not seriously even under consideration.

What I will do in this Essay is comment upon the limitations in the model which has guided the environmental policy of the last twenty years and discuss the changes in the theory of environmental policy and decision-making that are beginning to be implemented by Congress and United States Environmental Protection Agency. The major concepts of the "new" theory are part of my fairy tale. They also have been part of the debate about environmental regulation since the earliest days of the debate that led to the creation of our present complicated set of environmental statutes and programs. The "new" ideas slowly are moving from being tangential themes to being part of the central philosophical justifications for the next round of environmental programs and regulations.

As you can probably tell from my utopian fairy tale, I support the incorporation of the ideas into new programs. If properly done, the new programs should improve both the fairness and the effectiveness of environmental policy. However, some care needs to be taken in articulating the ideas and translating them into programs, or else the actual programs may fail to improve the effectiveness, fairness or rationality of environmental programs and decision-making. Instead, they may simply make more complex an already too complex system.¹

II. THE DOMINANT MODEL OF ENVIRONMENTAL POLICY SINCE 1970

While it is an overstatement to say there has been a single, coherent theory guiding environmental policy, the dominant model has been that environmental protection must make up for market failure and should be based upon what is often termed a "command-and-control" structure. Under the command-and-control model, which is exemplified by statutes such as the Clean Air Act² and the Clean Water Act,³ a single medium is protected from pollution *after the pollution is generated* by a series of programs established through a complex top-down regulatory scheme. Congress, with increasingly complicated and specific statutes, establishes the parameters of the program, and the United States Environmental Protection Agency [EPA], usually taking several years to do so, drafts detailed regulations to create the programs. The regulations typically govern specific pollutants in a specific medium, and often even particular industries. The regulatory programs are quite detailed, telling the regulated entity exactly what kind of pollution control device to use and specifying the production materials and processes allowed to be used by the regulated entity.

To complicate the picture even further, there is a federalism feature: often the programs are administered by state agencies rather than the EPA. For the state to take over, however, the state program must meet

1. Some of my colleagues have written articles reviewing the past and have advocated changes for the future. See William L. Andreen, *The Evolving Law of Environmental Protection in the United States: 1970-1991*, 9 ENVTL. & PLAN. L.J. 96 (1992); Michael C. Blumm, *A Primer on Environmental Law and Some Directions for the Future*, 11 VA. ENVTL. L. J. 381 (1992); Richard O. Brooks, *A New Agenda for Modern Environmental Law*, 6 J. ENVTL. L. & LITIG. 1 (1991); Marcia R. Gelpe, *Organizing Themes of Environmental Law*, 16 WM. MITCHELL L. REV. 897 (1990); Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L. J. 1.

2. 42 U.S.C. §§ 7401-7647q (1988 & Supp. II 1990). Even the 1990 amendments to the Act reflect the older philosophical basis described in this section of the Essay, although the first fruits of the newer ideas can be seen in the amendments as well.

3. 33 U.S.C. §§ 1251-1387 (1988).

standards defined by the EPA for administration and enforcement. In some cases, the programs and interactions are so complex, the EPA has lost effective control over state agency activities.

The programs emphasize the use of technology at the end of the pipe to control the pollution which is generated by industrial processes, motor vehicles, and other sources. However, remarkably little effort has been expended to prevent the generation of pollution. Further, despite the existence of the Superfund program, few resources are available to clean up the environment or remediate the effects of the pollutants.

If the command-and-control approach has had a major theoretical rival during the last two decades, it has been economic theory arguing that market failure is less significant than claimed by the command-and-control model, and that an optimal level of regulation should be determined through the market. Where there is market failure, cost-benefit analyses of the expenses and benefits of pollution controls should determine the appropriate stringency of governmental regulation. Economic theory argues that the goal is to create the most efficient regulatory scheme, which can determine appropriate performance standards and the optimal level of pollution control. The regulated source should select the actual pollution control techniques or technology to be used and the pollution levels that would be reached.⁴

We have achieved substantial environment benefits from the command-and-control system, including in many cases reducing pollution output and levels dramatically.⁵ Certainly, we have avoided the remarkable and depressing levels of destructive contamination reached in the industrial areas of Eastern Europe. We do not have nearly the level of environmental injury or contamination that would have resulted without a significant environmental protection program.

I will not deny that the command-and-control approach, as tempered by the arguments of the economic model, has protected human health and the environment reasonably effectively in many ways. However, it also is clear that we are causing significant world-wide impacts

4. For a debate among supporters and detractors of versions of these theories, see Michael C. Blumm, *The Fallacies of Free Market Environmentalism*, 15 HARV. J.L. & PUB. POL'Y 371 (1992); James L. Huffman, *Protecting the Environment from Orthodox Environmentalism*, 15 HARV. J.L. & PUB. POL'Y 349 (1992); James E. Krier, *The Tragedy of the Commons, Part Two*, 15 HARV. J.L. & PUB. POL'Y 325 (1992); see also the other articles in *Symposium—Free Market Environmentalism*, 15 HARV. J.L. & PUB. POL'Y 297-620 (1992).

5. See, for example, the special *20th Annual Report* of the Council on Environmental Quality, which reviews the accomplishments of the two "environmental decades" between 1970 and 1990; see also COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY: 21ST ANNUAL REPORT (1991).

with pollutants we generate, that we are the cause of continued species extinctions, and that we suffer from continued high levels of health and ecosystem effects. After twenty years of regulation there are still 100 non-attainment areas for ozone levels under the Clean Air Act and major waterways are still heavily polluted. Our society continues to generate and improperly dispose of enormous and dangerous quantities of pollutants. Many people, especially minorities in urban and rural areas, continue to be exposed to dangerously high levels of hazardous materials.

I would argue that the present environmental protection scheme has reached the limits of its effectiveness. Important equity issues remain unsolved. Critically important issues, which have only been minor themes during much of the environmental debate since the early 1970's, now must emerge as the central ideas to guide the modification of environmental policy and decision-making. The next sections of the Essay will discuss those ideas, both the ones which are being incorporated and those which remain outside current proposals to expand the environmental protection model.

III. THREE BASIC CONCEPTS OF THE NEW DIRECTION IN ENVIRONMENTAL POLICY

We can identify several key ideas that are included in our fairy tale about environmental policy. They are:

1. **Pollution prevention:** Policies should reduce the generation of pollution. Pollution which is not generated does not affect people or the environment and does not have to be controlled or cleaned up.

2. **Reuse and reintroduction of raw and intermediate materials:** Materials used in the manufacturing process should not be allowed to become wastes whenever it is possible to utilize them as inputs in the process.

3. **Recycling:** Any material or final product should be used as a raw material for another product if it is possible to do so. This reduces the quantity of new resources which must be obtained and reduces the quantity of waste which must be managed.

4. **Life cycle planning:** Products and processes should be designed and used to minimize the total pollution load created by the process or product over its full life.

5. **Integrated pollution control:** The regulation of pollution should be understood as a cross-media problem, in which the effects in all media are recognized and minimized.

6. **Risk assessment:** The most serious and damaging environmen-

tal problems caused by our society and the products we create should be identified and the risk factors should be used as an important input for environmental policy.

7. Inter-generational equity: Our obligation should be recognized to leave a world for future generations in which high levels of economic prosperity and quality of life are possible. This perspective should also be a critically important aspect of environmental policy-making.

8. Environmental equity: Our obligation today includes a fair distribution of environmental risks and costs that cannot be avoided so that the costs and injuries are not unfairly borne by workers, poor people, minorities, or third world countries.

Three of these principles have begun to be recognized in recent years as important concepts to modify the command-and-control paradigm by reorienting the focus and direction of environmental policy: pollution prevention, integrated pollution control, and environmental risk assessment. Versions of all three concepts are under active exploration by Congress and the EPA, and all three have been incorporated into some aspects of environmental decision-making.

A. *Pollution prevention*⁶

It seems obvious and almost simplistic to assert that the most effective way to protect the environment and human health from pollution is to prevent the generation of pollutants which might injure the environment or people. However, a simple idea often requires a long period of gestation, especially when the environmental regulatory scheme began as a response to pollution in the environment. The process of developing an environmental regulatory scheme was focussed on the pollutants already in the environment and the obvious pollutants which were spewing out of the ends of literally thousands of pipes. The command-and-control statutes emphasized the physical reality Congress and the public experienced: reduce pollution emissions through end-of-the pipe hardware such as scrubbers and catalytic converters and manage the "disposal" of pollutants after generation. Little attention was paid to the question of

6. The idea of pollution prevention is discussed in Frances H. Irwin, *An Integrated Framework for Preventing Pollution and Protecting the Environment*, 22 ENVTL. L. 1 (1992); Manik Roy, *Pollution Prevention, Organizational Culture, and Social Learning*, 22 ENVTL. L. 189 (1992); James M. Strock et al., *Integrated Pollution Prevention: Cal-EPA's Perspective*, 22 ENVTL. L. 311 (1992). All these articles are from a Symposium on Integrated Pollution Control, see *infra* note 10. See also Stephen M. Johnson, *From Reaction to Proaction: The 1990 Pollution Prevention Act*, 17 COL. J. ENVTL. L. 153 (1992).

the need to generate the pollutants or to the changes in raw materials and production which could sharply reduce the pollutants.

The command-and-control approach did lead to the reduction of generation of some pollutants, since process changes, materials substitutions, and fuel modifications often were the cheapest ways to help meet command-and-control goals. However, pollution prevention effects were secondary and almost accidental to the regulatory process. In addition, shifts to satisfy command-and-control requirements often resulted in the generation of pollutants affecting a different medium (air to water, water to land) rather than a real reduction in the level of pollutants generated.

In contrast, pollution prevention seeks to eliminate products which themselves are pollutants for any medium, or which generate or utilize pollutants in their manufacture. One goal, at a minimum, is to change raw materials and energy components of the product, or the type of manufacturing process, to reduce the pollution generated. An additional goal is to re-examine decisions whether to manufacture a particular product at all, or to use particular raw materials or energy sources, again to reduce the amount and type of pollutants which are generated. Perhaps product substitutions or even the elimination of the product is appropriate to reduce the pollution load.

While pollution prevention concepts have been discussed and advocated for decades, the first federal statute establishing pollution prevention as an explicit policy was passed by Congress in 1990.⁷ The preamble states:

(2) There are significant opportunities for industry to reduce or prevent pollution at the source through cost-effective changes in production, operation, and raw materials use

(3) The opportunities for source reduction are often not realized because existing regulations, and the industrial resources they require for compliance, focus upon treatment and disposal, rather than source reduction; . . .

(4) Source reduction is fundamentally different and more desirable than waste management and pollution control. The Environmental Protection Agency needs to address the historical lack of attention to source reduction.⁸

7. The Pollution Prevention Act of 1990. P.L. 101-508, Title VI [Subtitle G], (codified at 42 U.S.C. §§ 13101-13109). The Act was passed on November 5, 1990. REDUCING RISK: SETTING PRIORITIES AND STRATEGIES FOR ENVIRONMENTAL PROTECTION (1990) [hereinafter REDUCING RISK], the report of the Science Advisory Board of the EPA, calls for an emphasis on pollution prevention as well. The report calls pollution prevention "the preferred option for reducing risk," *id.* at 6; see also The Memorandum from Henry Habicht II, Deputy Administrator of the EPA to All Agency Personnel, entitled *EPA Definition of 'Pollution Prevention'*, reprinted in 23 Env't Rep. (BNA) 749 (July 3, 1992).

8. 42 U.S.C. § 13101 (Supp. II 1990).

Thus, Congress for the first time is proposing to adopt a shift of philosophy to a pollution prevention model. The goal is to reorient the focus of decision-makers both in regulated industries and at the EPA.

In the Act, Congress offers a workable definition of pollution prevention, which Congress terms *source reduction*:

any practice which—

- (i) reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment . . . prior to recycling, treatment, or disposal; and
- (ii) reduces the hazard to public health and the environment associated with the release of such substances, pollutants or contaminants.⁹

While the statute represents a desirable change in philosophy, the actual programs created are neither radical nor particularly imaginative. The statute merely establishes an office within EPA to coordinate pollution prevention programs, develop standard measurements of reductions, review agency policies which might affect pollution prevention, and become a clearinghouse for information. It establishes an advisory panel, training programs, and public and private reporting programs. The statute also creates a small grant program to help establish state technical assistance programs.

While a quite timid first step, the Act opens the theoretical door for the establishment of more extensive programs to prevent pollution, including regulations mandating life-cycle analyses of products, limits on the use of the most dangerous materials or most polluting processes, requirements that products easily be dismantled and recycled, and other more imaginative programs.

Several benefits can be accomplished by such pollution prevention measures. First, by placing the spotlight on the question of the legitimacy of the use of polluting materials and processes, pollution prevention strategies will reduce the total pollution load created by society. Second, such programs could forbid the use of certain materials or processes that cause the most pollution, or establish differential taxes or fees for the use of those materials. Third, recycling and reuse of materials are in most cases less polluting than using new materials and will be emphasized under pollution prevention schemes.

However, while extensive pollution prevention programs will reduce the pollution load and environmental degradation dramatically, they will not eliminate the generation of substantial amounts of pollutants. Other programs are needed to deal with the continued pollution problems.

9. 42 U.S.C. § 13102 (Supp. II 1990). Pollution prevention is called "source reduction" in the statute. See Johnson, *supra* note 6, at 170-74.

B. *Integrated pollution control*¹⁰

The major regulatory statutes are structured to control pollution either on a medium by medium basis: air, water, land; or on a particular problem basis: active hazardous waste sites, abandoned hazardous waste sites, air pollution sources. Only the National Environmental Policy Act,¹¹ which requires environmental impact statements that are supposed to explore all environmental problems generated by a major federal project which might have a significant effect on the human environment, and the Toxic Substances Control Act,¹² which regulates the manufacture of chemicals, attempt to cross the medium and program boundaries in a significant way.¹³

The EPA is organized as a series of medium-related programs as well, both at the national headquarters and the regional offices, because of the historical fact that EPA was formed from media-specific units in several cabinet departments,¹⁴ and because the organization has been guided by congressional passage of media-related statutes.

The result has been more than twenty years in which regulatory programs have been created and carried out as if only one medium at a time is polluted and as if pollutants never cross medium boundaries. Pollution problems have often been "solved" through regulations that merely transform the pollutant from, for example, an air pollutant into a water or land pollutant. The pollutant has been managed by moving it from office to office within EPA in a paperwork parade, but the environment and human health have not been protected effectively.

During the last few years, integrated pollution control proposals have been developed arguing for a major change in the single medium focus of environmental regulation.¹⁵ Under an integrated pollution con-

10. An excellent symposium on integrated pollution control has been published in 22 ENVTL L. 1-348 (1992). See the articles and the works cited therein for an extensive discussion of integrated pollution control.

11. 42 U.S.C. §§ 4331-4370 (1988).

12. 15 U.S.C. §§ 2601-2629 (1988).

13. While the hazardous waste regulatory statutes require multi-media cleanups of hazardous waste sites, they have emphasized the risks to groundwater and have not acted as multi-media regulatory statutes.

14. Especially from the Departments of Agriculture, Interior and the then-Health, Education and Welfare. See generally, MARC K. LANDY ET AL., *THE ENVIRONMENTAL PROTECTION AGENCY: ASKING THE WRONG QUESTIONS*, (1990); *Symposium: Assessing the Environmental Protection Agency After Twenty Years: Law, Politics, and Economics*, 54 LAW & CONTEMP. PROBS., Autumn 1991. However, a new experiment has begun to develop multi-media programs at the EPA. For example, the Chicago Regional Office, Region V, has a new Multi-media branch, exploring the best ways of regulating and enforcing the hazardous waste programs.

15. The leading authority has been Professor Lakshman Guruswamy of the University of Arizona Law School. The following articles are representative of works of Professor Guruswamy's: *Integrating Thoughtways: Re-Opening of the Environmental Mind?*, 1989 WIS. L. REV. 463; *Inte-*

trol program, the regulatory structure will be modified so that the EPA no longer is organized exclusively in medium-related offices. The regulatory programs will recognize the mix of pollutants that are generated by a source and the ways in which those pollutants may travel across media boundaries to pollute. The regulatory scheme will be focussed on establishing the proper mixture of pollution controls that will minimize the total effect of all pollutants generated by a source on all media in the environment and on human health. It will recognize the movement of pollutants across media and will take that movement into account in the regulatory scheme.

Within the last year, a second level of integrated pollution control has been added to the debate. While the earlier proposals looked for more efficient and effective end-of-the-pipe pollutant control through integration, newer proposals have begun to recognize that an integrated pollution control system must expand beyond the pollution-control jurisdiction of the EPA to create an integrated decision-making process by all government agencies, even those not ordinarily seen as having an environmental mission. All agencies would recognize that decisions concerning trade, agricultural policy, and even corporate governance may have significant environmental effects. Further, true integrated pollution control must include a major element of pollution reduction, and must ask whether the mix of policies and products, private as well as public, create an appropriate level of environmental protection. A true integrated pollution control scheme will explore what is produced, in energy as well as physical product, what is used as raw and intermediate materials, and the incentives that exist to switch to less polluting materials, products, and methods. It will lead to the adoption of regulatory programs that minimize pollutants from all segments of production and activity as well as across all media.¹⁶

C. *Environmental risk assessment*¹⁷

The environmental regulatory system should strive to achieve the

grated Pollution Control: The Way Forward, 7 ARIZ. J. INT'L & COMP. L. 173 (1990); *The Case for Integrated Pollution Control*, 54 LAW & CONTEMP. PROBS., 41 Autumn 1991; *Integrated Environmental Control: The Expanding Matrix*, 22 ENVTL. L. 77 (1992). In addition, a Conservation Foundation Task Force began working on integrated pollution control in the mid-1980s. The group proposed a statute and published several reports. For a list of the reports, see Irwin, *supra* note 6, at 5 n.10.

16. See Irwin, *supra* note 6.

17. Here, too, *Environmental Law* has recently published an excellent symposium. See *Symposium, Risk Analysis and the U.S. Environmental Protection Agency*, 21 ENVTL. L. 1321-1508 (1991). The U.S. EPA has produced the seminal works in this field with UNFINISHED BUSINESS: A

maximum reduction of pollution possible, technically and economically, to protect human health and the ecosystem. The regulatory and research programs should emphasize that which is most destructive and injurious. Surprisingly, this simple idea has only been partially incorporated into the environmental structures developed since 1970. Because environmental statutes have often been reactive, responding to public perceptions of environmental crises or problems, the statutes themselves do not necessarily face the most serious problems. In addition, even within the statutes that do confront important environmental issues, the political process and economic considerations often have shifted the programs away from maximum protection and effectiveness. Further, even today there is a remarkably high level of scientific ignorance concerning what is happening in the environment, what is a pollutant, what the effects are of pollutants, and what are effective methods to prevent, control, and clean up pollutants. Many programs were created and large amounts of resources expended trying to regulate less important environmental problems or creating ineffective control programs.

During 1986 and 1987, the U.S. EPA asked a committee of senior staff members to look at the relative risks posed by thirty-one environmental problems subject to EPA jurisdiction. The group looked at four kinds of risks: cancer, other human health risks, ecological risks, and welfare risks.¹⁸ While the results have been criticized and were improved upon by later studies, the report marks the beginning of a serious attempt by the EPA to incorporate environmental risk concepts into decision-making.

The idea of including risk assessments in decision-making is a good one. We should know what aspects of our production of goods and our pollution loads are most dangerous and how they are most dangerous. We should focus our regulatory programs to solve those problems, while recognizing all problems which are dangerous to people and the environment.

Through the more recent study performed by the EPA's Science Advisory Board, which did not limit its scope to the EPA's jurisdiction, we now have a good starting point for a national debate on environmental risks. The Advisory Board report emphasized the importance of protecting natural ecosystems and the necessity of protecting habitats, species and biological diversity, preventing stratospheric ozone depletion,

COMPARATIVE ASSESSMENT OF ENVIRONMENTAL PROBLEMS (1987) [hereinafter UNFINISHED BUSINESS] and REDUCING RISK, *supra* note 7.

18. See UNFINISHED BUSINESS, *supra* note 17; see also REDUCING RISK, *supra* note 7, and three accompanying appendices (which included the reports of each of the three subcommittees).

and combatting global climate change.¹⁹ These issues were identified as the highest risk problems because their effects will be felt over a broad geographic area, the problems will require a long time and enormous resources to mitigate, and some effects of the problems are irreversible. Some of the environmental situations considered most important by the average citizen, including hazardous waste sites, oil spills, and groundwater pollution, were downgraded to the category of relatively low-risk problems by the study.

While environmental risk assessment is an important additional element for decision-making, caution needs to be the watchword in using the results of such risk analyses for policy decisions.²⁰ The environmental movement has gained widespread support in the U.S. and world-wide because it has been sensitive to the risks perceived by ordinary people in their lives. While the most important risks, even if not appreciated by the public, should become the focus of major new programs, the many environmental degradations felt by individuals in their lives cannot be ignored. To the extent that particular situations are seen as acute problems or even crises by citizens, residents of an area, and workers, environmental policy should continue to carry out programs to control those risks.

In addition, it must be emphasized that there is no environmental risk analysis system possible today that has a thorough scientific basis. *Reducing Risk* emphasizes the gaps in knowledge that constantly hampered the efforts of the study group, and calls for an extensive program of research to fill in the gaps. Even where there is a base of knowledge, the process of risk assessment includes important elements of non-scientific judgment. While technical and scientific expertise should provide input into the ultimate decisions, a technocracy does not guarantee wisdom or sound judgment to determine the most serious risks or the most effective or fairest policies. Environmental policy should not be made in ignorance or by ignoring scientific and technical fact, but neither should it be made exclusively based upon supposedly established scientific facts or judgments. The environment, and health and ecological effects, are much too complex to be fully understood by even the most detailed scientific knowledge system. The collective wisdom of laypeople, citizen activists, and the regulated community is needed to establish a legitimate and effective environmental regulatory system.

19. See *REDUCING RISK*, *supra* note 7.

20. For persuasive critiques, see James E. Krier & Mark Brownstein, *On Integrated Pollution Control*, 22 *ENVTL. L.* 119 (1992); Donald T. Hornstein, *Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis*, 92 *COLUM. L. REV.* 562 (1992).

IV. OTHER PRINCIPLES WHICH SHOULD BE INCORPORATED INTO ENVIRONMENTAL POLICY AND DECISION-MAKING

Even while applauding the incorporation into environmental policy of the three principles discussed above, we should remember that our fairy tale identified several other important principles which should be incorporated to achieve the decision-making process and policies which will most effectively protect us from the products of our own activities.

A. Incorporate a civil rights element into environmental decision-making and policies: special programs for urban areas and for disadvantaged and minority peoples often more exposed to pollutants than the general public

Many of the most polluted areas of the country, and many active hazardous waste disposal facilities, are located where there are concentrations of minority and poor people.²¹ Many of the workers who are most at risk from toxic and hazardous conditions in the work place are low income and minority workers.

There are several reasons for this situation. Developed land is least expensive where poor people and minorities live, and so hazardous waste facilities have tended to locate in those areas given their need to be near the facilities they service. Lands adjacent to heavy industrial areas and already polluted areas cost less to purchase or rent, and so poor people and minorities are often concentrated there. Minority workers tend to have the lowest paying and most dangerous jobs in manufacturing. Children who live in poor areas and have parents working in dangerous jobs are exposed to high levels of pollutants at a time when they are most at

21. Two seminal works are U.S. GENERAL ACCOUNTING OFFICE, SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES (1983), and UNITED CHURCH OF CHRIST COMMISSION FOR RACIAL JUSTICE, TOXIC WASTES AND RACE: A NATIONAL REPORT ON THE RACIAL AND SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES, 1987; see also Regina Austin & Michael Schill, *Black, Brown, Poor & Poisoned: Minority Grassroots Environmentalism and the Quest for Eco-Justice*, 1 KAN. J. L. & PUB. POL'Y 69 (1991); Rachel D. Godsil, Note, *Remedying Environmental Racism*, 90 MICH. L. REV. 394 (1991); *Unequal Protection: The Racial Divide in Environmental Law*, NAT'L L.J., Sept. 21, 1992 (Special Section), at S1-S12. While the majority of poor people are non-minority in the U.S., a higher proportion of minority people are poor. Thus, a higher proportion of minority people are included in the classification of poor people. In addition, even non-poor minority people, especially blacks, have been forced to live in areas that are less desirable and more polluted than are lived in by whites of similar income levels. Further, the residents of traditional central cities, especially in the East and Midwest, include a large number of both poor and minority people who are heavily exposed to pollutants. Finally, in rural areas, the minority poor tend to live closer to abandoned and active hazardous waste facilities and lands tainted by pesticides and other agricultural chemicals.

risk from exposure. Finally, racism and discrimination has pushed its victims into the most dangerous places to live.

Regardless of the reason for the situation, equity and fairness argue that the poorest and most disadvantaged should not bear the heaviest burden of pollution. To change the situation, we need to develop new programs that will clean up contaminated environments, change the criteria for location of solid and hazardous waste facilities, and modify land use patterns to separate poor and minority communities from pollution.

B. Modify generational expectations and recognize claims of future generations

Today, we discount the value of resources and the environment to future generations and rarely ask whether we are unfairly consuming resources or polluting the environment in ways which will significantly damage the quality of life of future generations. While we have created national parks and maintain some programs for historic and resource preservation, we are willing potentially to change the climate of the earth, cause thousands of species to become extinct, generate pollutants which will have to be contained and managed for thousands of years, and make virtually irreversible decisions to destroy and pave soils, cut down forests, and disrupt ecosystems.

A modified theory of environmental policy would incorporate a recognition of the need to protect and preserve for our descendants and successors. We must stop discounting the value of resources for future generations and should recognize as a fundamental principle that we should leave the earth at least as clean, natural, and resource-rich as the present generation is able to enjoy. We need to determine the very special world-level and national places and ecosystems that must be preserved and we must identify renewable resources to utilize instead of non-renewable ones. We must adopt policies to identify and prevent irreversible uses and commitments of resources.²²

C. Recycling as a fundamental policy

While the Resource Conservation and Recovery Act²³ even includes the idea of recycling in its name and statement of purpose, we actually do little to encourage or support recycling. A true recycling statute should

22. A superb analysis of these issues can be found in EDITH BROWN WEISS, *IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY* (1989).

23. 42 U.S.C. §§ 6901-6992k (1988).

be passed which mandates recycling of all products and materials that can be recycled. A fee system should be imposed which would raise the cost of raw materials to recognize their pollution effects and thus change the economics of the decision to recycle or use new material for products. Many other policies and charges could be established which recognize the benefits of a maximum recycling program.

D. Establish life cycle planning as a principle of environmental regulation

Related, but not identical to, recycling is the concept of life cycle planning. The environmental regulatory scheme should require that products be evaluated for their pollution potential in all parts of their generation, use, recycling, or disposal. Some materials and products, especially when energy needs are included, may be substantially cleaner than others overall, although they may generate more pollution at an earlier stage in their cycle. Our policies should encourage the use of those products. Many products needlessly pollute when discarded, because no thought is given to the end of their cycle. For example, cars and other durable consumer goods could be designed so that they are constructed mainly of recyclable materials and can be easily demolished and reused after their lifetime as a consumer product has ended.²⁴ Nuclear power plants were not required during initial licensing to consider the cost and difficulty of dismantling or of storing the highly radioactive materials that make up the core of the reactor. We now are discovering that the cost of dismantling is close to the cost of construction, and we have not yet established a safe place to store the high level nuclear wastes for the thousands of years in which the material must be kept separate from the environment.²⁵

E. Remove our blinders: recognize many more substances as pollutants

Not mentioned in our fairy tale is an important concept that needs to be included in environmental policy. Under the basic regulatory statutes, a comparatively small number of pollutants are regulated. For example, under the Clean Air Act, only six conventional pollutants are the centerpieces of the regulatory process. For many years, the EPA resisted

24. See *Manufacturers Urged to Make Environmentalism a Goal*, N.Y. TIMES, Sept. 29, 1992, at B7.

25. See *Nuclear Waste Disposal: A Symposium*, 53 TENN. L. REV. 475-648 (1986); see especially James H. Davenport, *The Law of High-Level Nuclear Waste*, 53 TENN. L. REV. 481 (1986); see also Caryn Beck-Dudley & J. Robert Malko, *Decommissioning Nuclear Power Plants: A Survey of State Public Service Commissions*, 10 J. ENERGY L. & POL'Y 141 (1990).

regulating hazardous air pollutants beyond the six, with the EPA managing to identify only eight hazardous air pollutants during twenty years. In the 1990 Clean Air Act Amendments, Congress required that the EPA begin a process of regulating 189 hazardous air pollutants identified as such by states and in other federal programs.²⁶ However, some states have identified at least 500 substances that ought to be regulated and some scientists argue that the number is even much higher than that.²⁷ Similar claims can be made for the substances regulated under the Clean Water Act, the hazardous waste statutes, and other programs.

Certainly, a fundamental principle should be that we will recognize as pollutants and regulate effectively all substances which are dangers to people and the ecosystem.

F. Vastly greater information is needed about the generation, persistence, health and welfare effects, and clean-ups of pollutants

Also not included in our fairy tale, but directly related to the point made above, is our appalling lack of knowledge about virtually every aspect of major pollutants and the environment. Especially in a recession and with the huge federal deficit, it is hard to get Congress to agree to spend large amounts of money on basic environmental research. However, any effective environmental regulatory system must identify what should be regulated, how to reduce and control the substances, and how to clean them up. We do not know to what extent we are changing the climate of the earth, exactly how we are weakening the ozone layer, how lead and other toxic pollutants affect the bodies of adults and children, what substances are carcinogens, and what may cause birth defects or genetic changes. We do not know the most effective ways to control pollution generation or to clean up pollutants which are emitted or spilled. Only years of support for basic and applied research will overcome this problem and provide the knowledge necessary to make the best decisions.

IV. CONCLUSION

This Essay has explored aspects of a complete environmental policy for the United States. The policy would incorporate many elements which unfortunately are not included in the present policy. While the

26. Clean Air Act section 112(b)(1), 42 U.S.C. § 7412(b)(1), as amended in Title III, Clean Air Act Amendments of 1990, Pub. L. 101-549, 104 Stat. 2399 (West Supp. 1991). See Theodore L. Garrett & Sonya D. Winner, *A Clean Air Act Primer: Part II*, 22 *Envtl. L. Rep. (Envtl. L. Inst.)* 10235, 10245 (1992).

27. See *THE CLEAN AIR ACT AMENDMENTS: BNA'S COMPREHENSIVE ANALYSIS OF THE NEW LAW* 93, 97, 109-110 (1991).

present policy has achieved a decent level of protection for the environment, it should be modified to incorporate the additional elements discussed in this Essay if we are to have an effective, fair, and efficient policy that protects both this generation and future generations, the many species with which we share the earth, and the special places and ecosystems which need protection. We do not know enough, we do not act wisely enough, and we do not act effectively enough today. We, the earth, and the future are losers because of the limits of our present policies and our failure to incorporate the additional elements discussed in this Essay.

