

Environmental Policy—It Is Time for a New Beginning

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I. INTRODUCTION

Almost twenty years have passed since President Nixon signed the National Environmental Policy Act that began the “decade of the environment.”¹ The Environmental Protection Agency (EPA) was also created in 1970 to centralize federal efforts to improve our environment.² Myriad environmental statutes and implementing regulations followed.³ Today EPA employs over four-

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1. Pub. L. No. 91-190, 83 Stat. 852 (1970) (codified as amended at 42 U.S.C. §§ 4321-4370a (1982 & Supp. IV 1986)).

2. EPA was established December 2, 1970 by Reorganization No. 3. Pub. L. No. 91-90, 83 Stat. 852 (1970) (codified at 42 U.S.C. § 4321 (1982)).

3. The major environmental statutes and the dates of their major amendments are:

a. Clean Air Act, Pub. L. No. 84-159, 69 Stat. 322 (1955); Clean Air Act Amendments of 1966, Pub. L. No. 89-675, 80 Stat. 954 (1966); Clean Air Amendments of 1970, Pub. L. No. 89-604, 84 Stat. 1976, (1970); Clean Air Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 685 (1977) (codified at 42 U.S.C. §§ 7401-7642 (1982)).

b. Federal Water Pollution Control Act, 66 Stat. 755 (1952); Federal Water Pollution Control Act Amendments of 1961, Pub. L. No. 87-88, 75 Stat. 204 (1961); Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816 (1972); as last amended by Pub. L. No. 100-4, 101 Stat. 60 (1987) (codified at 33 U.S.C.A. §§ 1251-1387 (West 1986 & 1987 Supp.)).

c. Toxic Substances Control Act, Pub. L. No. 94-469, 90 Stat. 2003 (1976); as last amended by Pub. L. No. 99-519, 100 Stat. 2989 (1986) (codified at 15 U.S.C. §§ 2601-2629 (1982 & Supp. IV 1986)).

d. Federal Insecticide, Fungicide and Rodenticide Act, c. 125 §§ 2-13, 61 Stat. 163 (1947); Pub. L. No. 92-516, 86 Stat. 975 (1972) as last amended by Pub. L. No. 98-620, 98 Stat. 3357 (1984) (codified at 7 U.S.C. §§ 136-136y (1982 & Supp IV 1986)).

e. Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795 (1976), as last amended by Pub. L. No. 99-499, 100 Stat. 1613 (1986) (codified at 42 U.S.C. §§ 6901-6991i (1982 & Supp. IV 1986)).

f. Marine Protection, Research and Sanctuaries Act of 1972, Pub. L. No. 92-532, 86 Stat. 1052 (1972); as last amended by Pub. L. No. 99-499, 100 Stat. 1613 (1986) (codified at 33 U.S.C. §§ 1401-1445 (1982 & Supp. IV. 1986)).

teen thousand people.⁴ Its major environmental statutes fill a 654 page book and the regulations encompass eleven volumes and 8608 pages of the Code of Federal Regulations. EPA's operating programs require about \$2.7 billion and the Superfund and Leaking Underground Storage Tank (LUST) programs require an additional \$1.6 billion.⁵

EPA's work and billions of dollars spent by the public and private sectors have given us cleaner air and water, but the approaches used for the past twenty years are about to run out of steam. New programs are becoming more expensive, more complex, and often provide only marginal benefits. The reason is not difficult to visualize. When a pioneer wanted to dispose of solid waste, it was thrown in the back yard. Small cities had to establish a municipal dump. Large cities today must ship wastes long distances, the wastes are much greater on a per capita basis (because of the increased use of packaging materials) and they must be disposed of in a manner that protects the public from nuisance, odor, and ground water contamination. The price per ton for proper disposal escalates. Similar patterns occur concerning discharges into the air and water.⁶ Furthermore, when environmental problems receive governmental attention, not surprisingly, the inexpensive, quick payoff responses come first. For example, automobile air pollution control costs in 1981 dollars were \$50 per vehicle for the 1970-1971 model year (MY), \$370 for the 1972 MY, \$700 for the 1977-1979 MY and \$1400 for the 1981 MY. The 1979 to 1981 MY cars incurred marginal costs for pollution

g. Safe Drinking Water Act, Pub. L. No. 93-523, 88 Stat. 1660 (1974); as last amended by the Safe Drinking Water Amendments of 1986, Pub. L. No. 99-399, 100 Stat. 642 (1986) (codified at 42 U.S.C. §§ 300f-300j-11 (1982 & Supp. IV 1986)).

h. Comprehensive Environmental Response, Compensation and Liability Act of 1980, Pub. L. No. 96-510, 94 Stat. 2767 (1980), as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, 100 Stat. 1613 (1986) (codified at 42 U.S.C. §§ 9601-9657 (1982 & Supp. IV 1986)).

i. Uranium Mill Tailings Radiation Control Act of 1978, Pub. L. No. 95-604, 92 Stat. 3021 (1978) (codified at 42 U.S.C. §§ 7901-7942 (1982)).

j. The National Environmental Policy Act, Pub. L. No. 91-190, 83 Stat. 852 (1970), as last amended by Pub. L. No. 94-83, 87 Stat. 424 (1975) (codified at 42 U.S.C. §§ 4321-4370a (1982)).

4. 14,323 work years are requested for fiscal year 1988, EPA 1988 Budget in Brief 3 (1987).

5. *Id.*

6. Steinhart, *Down In The Dumps*, AUDUBON, May 1986 at 102.

control of \$700 (1981 dollars), yet, had only very modest marginal reduction in emissions.⁷

Since the mid 1960's the United States has seen a tremendous legal effort to deal with pollution. Our nation spent nearly \$500 billion from 1972-1983 on pollution abatement—over \$2000 for every person living in the United States.⁸ The great output of laws and input of money have brought large programs and some measurable improvement in our environment. But the easy improvements have now been made and many of our programs are bogged down. In the past ten years there have been reductions in the levels of all six of the air pollutants for which health-based national ambient air quality standards have been established. However, three of the six showed no change between 1985 and 1986, while sulfur dioxide and ozone decreased only three and two percent respectively.⁹ Increasingly, it is questionable whether the programs are worth their cost and hassle. Yet massive and more stringent programs are being developed that are aimed at truly marginal problems while serious issues are not addressed. This view is shared by EPA experts who believe that criteria air pollution including acid precipitation, stratospheric ozone depletion, and pesticide contamination are high priority subjects for control.¹⁰ Yet all receive from modest to little attention. However, hazardous waste sites which are considered by EPA experts to be of medium/low risk, have the largest program budget in EPA devoted to their cleanups.¹¹ Environmental law programs ought to protect public health and/or the well being of ecosystems. Today they often seem to primarily produce billable hours for environmental consultants and lawyers.

7. L. WHITE, *THE REGULATION OF AIR POLLUTANT EMISSIONS FROM MOTOR VEHICLES* 85 (1982).

8. National expenditures are added from Table A-19, *COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY, 15TH ANNUAL REPORT* 614 (1984) [hereinafter *CEQ, ANNUAL REPORT*]. They are \$499.371 billion in dollars of the year of expenditure (not adjusted for inflation). Population of the U.S. was 242.4 million in 1987.

9. EPA, *NATIONAL AIR QUALITY AND EMISSION TRENDS REPORT, 1986* (1988).

10. Pesticide problems are generally unappreciated by a largely urban America. However, an estimated 300,000 farm workers suffer pesticide-related illnesses annually. This helps create a death rate in agriculture that in 1985 was 49 workers in 100,000 as compared with 11 in 100,000 for six other major occupational groupings. McCarthy, *Mysterious Maladies of Farm Workers*, Wash. Post, June 13, 1988 at A11, col. 4. These statistics, however, are challenged by the president of the American Farm Bureau Federation as being too high. Wash. Post, July 4, 1988 at A20, col. 3.

11. Allen, *The Situation: What The Public Believes; How The Experts See It*, 13 *EPA J.* November, 1987 at 9.

The following are some examples of the lack of focus in the system. In 1986, Congress enacted Title III of the Superfund Amendments and Reauthorization Act (SARA), known as the Emergency Planning And Community Right-To-Know Act of 1986.¹² This statute appears to require what EPA for years has had the authority to do under the Toxic Substance Control Act (TSCA).¹³ Since EPA was unwilling to exercise its authority, Congress passed this legislation to mandate information gathering and direct the states to create another planning entity.¹⁴ The private sector will incur substantial expense in generating the required data. Will the law prevent another accident such as the one in Bhopal, India?¹⁵ It probably will not, if the recent chemical warehouse fire in Seabrook, New Hampshire is indicative.¹⁶ Will the public benefit? Yes. But how much is it worth? Do states really have the resources to carry out effective planning? Could locally generated revenues be better spent housing the homeless, mentally ill, or dealing with some other locally pressing concern?

At the state level, examples of expensive marginally useful programs also exist. The most newsworthy is California's Proposition 65.¹⁷ Beginning February 1988, this law bans the discharge of certain chemicals, designated by the state, into drinking water sources. It also requires companies using any substances on the list to post work place safety warnings and requires that warning labels be affixed to those consumer products containing such substances. Consumer warning requirements take effect one year af-

12. The Superfund Amendments And Reauthorization Act of 1986, Pub. L. No. 99-499, 100 Stat. 1613 (1986).

13. EPA's former director of the Office of Toxic Substances supports the concept of a broad TSCA authority to gather information. See *Issues in Toxic Control: An Interview With Don R. Clay*, EPA J. June, 1985 at 3.

14. EPA, TITLE III FACT SHEET, EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW (1987); Elkins & Makris, *Emergency Planning and Community Right-to-Know*, 38 J. AIR POLLUTION CONTROL ASSOC. 243 (1988).

15. Galanter, *When Worlds Collide: Reflections on Bhopal, The Good Lawyer, and the American Law School*, 36 J. LEGAL ED. 292 (1986); D. KURZMAN, *A KILLING WIND* (1987).

16. On March 12, 1988 a fire at the Johnson Matthey chemical warehouse consumed 3000 or more chemicals and attracted national attention. The company was in full compliance with Title III of SARA, but problems existed in emergency response at the local, state and federal levels. See Burtis, *Title III Compliance May Not Be Enough: Lessons Learned from a Chemical Fire in Seabrook, NH*, ENVTL. MANAGER'S COMPLIANCE ADVISOR 11 (1988).

17. Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986. This law was passed as a water initiative and is codified at Cal. Health and Safety Code §§ 25249.5 - 25249.13 (West Supp. 1987).

ter they are added to the Governor's list.¹⁸ Governor George Deukmejian submitted a list of only twenty-nine substances. This created an immediate outcry¹⁹ which was followed by a law suit that resulted in 201 substances being added to the list.²⁰ Once a toxic substance is listed, "clear and reasonable" warnings must be provided. The burden of proving compliance is on the producer or seller, though, and there can be substantial uncertainty as to when there are "no significant risks" that would obviate the need for a warning.²¹ As this law begins to be implemented, will notification of hazardous substances in consumer products provide benefits commensurate with the cost? Do we gain public health benefits from these required warnings that justify the costs—social and economic?

The nation is fixated on the dangers from hazardous substances. There is no question that they are undesirable. The right-to-know law and California's Proposition 65 each address a problem and will probably have some benefit.²² But efforts aimed at control of hazardous substances seem imbalanced in a nation that casually accepts an estimated 314,000 deaths per year from cigarette smoking.²³ Our toxic cleanup program is giving increased attention to the protection of our underground water supply. EPA's operating plan for fiscal years 1986 and 1987 put the development of new standards in the drinking water program "among the highest priorities for the Agency."²⁴ Underground water protection programs have also expanded for waste management facilities under the Resource Conservation and Recovery

18. [Current Developments] Env't. Rep. (BNA) No. 2245 (Oct. 17, 1986).

19. Mathews, *Deukmejian Using Short List of Toxics*, Wash. Post, March 28, 1987, at A8, col. 1.

20. *AFL-CIO v. Deukmejian*, slip op. 348195 (Cal. Super. Ct. 1987).

21. Environmentalists would argue that the uncertainty over the "no significant risk" level gives industry a strong interest in having risk levels clearly established. California has set more numerical limits under this Act in one year than EPA has addressed under TSCA in 12 years. Roe, *Market Incentives for Toxic Chemical Protection*, 19 EDF LETTER 3:4 (1988).

22. Both of these statutory examples have strong proponents that see substantial public benefits from these laws. See Waisanen, *Management Systems Being Developed By OSHA And EPA*, [Current Developments] Env't Rep. (BNA) No. 231 (June 17, 1988) (emergency planning and community right to know); *Environmentalists and Industry Square Off Over California Toxics Law*, *The Fight For Prop 65*, 6 NRDC NEWSLINE 2:2, May/June 1988.

23. OFFICE OF TECHNOLOGICAL ASSESSMENT, U.S. CONGRESS, *SMOKING-RELATED DEATHS AND FINANCIAL COSTS* (Sept., 1985).

24. GENERAL ACCOUNTING OFFICE, *GROUNDWATER STANDARDS STATES NEED MORE INFORMATION FROM EPA* 5 (March, 1988).

Act (RCRA)²⁵ and remedial actions under "Superfund" which must attain the underground water Maximum Containment Level Goals established under the Safe Drinking Water Act.²⁶ Underground water protection is important, as it provides the water supply for half of our population.²⁷ But our efforts to protect this resource are offset by other governmental policies concerning underground water. We use seventy percent of this water for irrigation²⁸ that is often provided at government expense and is then used to produce low value crops such as hay.²⁹ We subsidize irrigation but use more than one third of the water from Western federal irrigation projects to grow crops that are eligible for federal subsidies because they are in oversupply.³⁰ We tolerate rapid exhaustion (mining)³¹ of entire aquifers and the imminent regional economic collapse which will follow when the supply of underground water is gone or is effectively out of reach because of excessively high pumping costs.³²

The most serious consequence of our lack of focus or perspective is the complete failure of our nation to grapple with the fact that environmental law brings arithmetic improvement to an exponentially worsening world pollution problem. Or, put another way, our population and consumption increases wipe out the benefits of environmental controls. This is the famous Malthusian theory now verifiable by real world data. But, we find our response is further limited by the law of diminishing returns. Pollution control programs usually bring further improvement at very high marginal cost, with continued environmental destruction oc-

25. WAGNER, *THE COMPLETE HANDBOOK OF HAZARDOUS WASTE REGULATION* 82 (1988).

26. ERT, INC. & SIDLEY AND AUSTIN LAW OFFICES, *SUPERFUND HANDBOOK* 73 (2d ed. 1987).

27. C. MEYERS, A. TARLOCK, J. CORBRIDGE & D. GETCHES, *WATER RESOURCES MANAGEMENT* 630 (3d ed. 1988).

28. *Id.* at 582.

29. Irrigation has been defined as: "The construction of vast works (dams, tunnels, canals, and so on) at public expense in order to produce surplus agricultural commodities, which are then purchased and stored at public expense. *Western Water Made Simple*, HIGH COUNTRY NEWS 192 (1987).

30. *First Waves in New Water Wars*, U.S. NEWS & WORLD REPORT, May 30, 1988 at 21.

31. Mining occurs when water withdrawal occurs faster than the aquifer can be renewed by rainfall percolating through the soil. The nation uses approximately 21 billion gallons per day of groundwater in excess of local recharge rates. See NATIONAL WATER COMMISSION, *THE NATION'S WATER RESOURCES, 1975-2000*, vol. 1 at 8 (1978).

32. Groundwater overdraft is more than 12,500 million gallons per day in the Texas-Oklahoma High Plains area, an amount about equal to the natural flow of the Colorado River. *Id.* at 18.

curing despite extraordinary efforts at control. No matter how stringent environmental controls become, the increase in population and consumption nullifies the effort, and the law of diminishing returns limits the effectiveness of new responses.

An example of this principle at work in water pollution is a large modern sewage treatment plant such as the Blue Plains Plant in Washington, D.C. After meeting EPA's effluent standards, such a facility can legally release the equivalent of forty-five million gallons of untreated sewage a day.³³ Our very expensive sewage treatment construction program reduces, but does not eliminate, adverse environmental impact. As more people enter the area and water consumption increase, benefits are further reduced. In the ten years prior to 1984, EPA reported that the population served by municipal treatment plants increased by eighteen million people but the total amount of pollutants entering the nation's rivers from these plants stayed constant. Water pollution did not worsen because the federal government spent \$40 million, and state and local governments spent nearly as much, to build sewage treatment plants over a fifteen year period. The water pollution problems that did not receive substantial funding, such as non-point source discharge, worsened.³⁴ An example of this principle at work in air pollution would be a 1,000 Megawatt coal burning electric power plant which is subject to New Source Performance Standards (NSPS) under the Clean Air Act. If the plant utilizes particulate removal equipment with 99.4% efficiency, it will still release over 1200 tons per year of particulate pollution, *i.e.*, the equivalent of a major stationary source (as defined by the CAA) nearly ten times over.³⁵

33. This is based on meeting 85% removal through "secondary treatment." EPA's effluent limitations for secondary treatment are found at 40 C.F.R. section 133.102. The 30-day removal shall not be less than 85% for BODs and suspended solids. More stringent requirements can be applied to meet stream quality standards, which is the situation with Blue Plains. See *Montgomery Environmental Coalition, Inc. v. EPA*, 19 ERC 1169, 1170 n.2 (D.C. Cir. 1983).

34. Houck, *Ending The War: A Strategy To Save America's Coastal Zone*, 47 Md. L. Rev. 358, 379 (1988).

35. A major stationary source is defined in § 302(j) of the Clean Air Act (42 U.S.C. § 7602 (1982)) as a facility that has the potential to emit one hundred tons per year or more of any air pollutant. It is assumed here that a 1000 megawatt plant will burn 10,000 tons of bituminous coal per day. The coal produces 24×10 BTU/ton and is 8% ash. Thus 800 tons per day of ash is produced but since 70% is fly ash (30% is bottom ash) only 560 tons/day is released to the air. This is 3.36 tons/day after control or 1226.4 tons/year after controls.

We are exhausting our capacity to absorb high cost and marginally effective programs. At the present time, for example, Clean Air Amendments are pending in Congress. Our legislators are arguing over how stringent to make State Implementation Plans (SIPs) in order to reach ozone standards,³⁶ that are of modest importance to public health when compared, for example, to the problems posed by Acquired Immune Deficiency Syndrome (AIDS).³⁷ An Office of Technology Assessment study indicates that it would cost from \$6 billion to \$7 billion annually for ozone control to be implemented in cities that, under existing law, need further controls.³⁸ One aspect of this control program will be tighter standards on automobiles. Yet, it is not the tailpipe, but the front of vehicles that kills nearly 50,000 Americans per year.³⁹ Current regulatory efforts downplay airbags and other safety devices.⁴⁰ The chemical most in need of control, to protect public health from automobiles, is alcohol.⁴¹ Instead, we press for costly programs to control marginal problems of air pollution.⁴² The serious air pollution issues, such as acid rain⁴³ and carbon dioxide

36. Ozone standards of 0.12 parts per million, measured as a one-hour average, were to be achieved by the end of 1987. EPA states that 68 cities failed to meet the standard. On May 26, 1988, EPA expanded its definition of areas that violate ozone standards to include 345 counties or cities. [Current Developments] *Env't Rep.* (BNA) No. 171 (June 3, 1988).

37. Ozone in the lower atmosphere is a threat to health and is regulated under a complex federal/state program. Sixty-eight cities are ozone violators. Congress extended the December 31, 1987 attainment date to August 1988, and EPA has been developing a "Post-87 Ozone Attainment Policy." *AIR POLLUTION CONTROL NEWS*, March-April, 1988 at 2. Ozone in the stratosphere forms a band about six miles thick that protects humans from harmful ultraviolet solar radiation. This has received considerable attention, particularly concerning the "ozone hole" over Antarctica. This has led to laws and an international treaty (The Montreal Protocol, signed by President Reagan, April 5, 1988) restricting chlorofluorocarbons (CFC's) that destroy stratospheric ozone. U.S. DEP'T OF STATE, *THE OZONE TREATY: A TRIUMPH FOR ALL, UPDATE FROM STATE 3* (May-June 1988).

38. [Current Developments] *Env't Rep.* (BNA) No. 68 (May 20, 1988).

39. There were 47,900 deaths from motor vehicles in 1986. *THE WORLD ALMANAC AND BOOK OF FACTS* 810 (1988).

40. The Insurance Institute for Highway Safety estimates there would be 7,750 fewer deaths in 1990 if all cars were equipped with airbags. If airbags had been required since 1969, estimated lives saved could have exceeded 100,000. McCarthy, *Iacocca's Conversion*, *Wash. Post*, July 2, 1988 at A23, col. 3.

41. According to the U.S. National Highway Traffic Safety Administration, approximately 33% of fatal motor vehicle accidents in 1985 were alcohol-related. *STATISTICAL ABSTRACT OF THE UNITED STATES* 1987, 590. In 1986, approximately 34% of these fatalities were alcohol-related. *STATISTICAL ABSTRACT OF THE UNITED STATES*, 1988, 581.

42. LAVE & SESKIN, *AIR POLLUTION AND HUMAN HEALTH* 231, 245 (1977).

43. See, e.g. R. MELLO, *LAST STAND OF THE RED SPRUCE* (1987).

(CO₂) buildup (the greenhouse effect), receive little effective control efforts.⁴⁴

In the 1960's, there was little federal environmental law.⁴⁵ Indeed there was little action by the legal profession. Much of the literature concerning the environment was being written by scientists acting as political activists. The consensus among these writers was that environmental degradation had reached crisis proportions, and that it was caused by the multiple effects of population, consumption, and social policies that allowed or even encouraged conduct that harmed ecosystems.⁴⁶ While some of the most outspoken of these environmental "gurus" differed as to whether population or consumption was the primary factor, they all agreed that these were the major factors.⁴⁷

As the environmental programs began to evolve in the 1960's, the federal government took the dominant role. There was (and still is) no overall environmental program or goal. Each discreet problem competes for the attention of Congress and the Administration. Environmental protection measures compete for funds with other environmental programs and must also compete with all the other claimants seeking federal funds for their programs. The programs that survive and prosper are those that obtain the most political support and encounter the least effective opposition. In the environmental field this has meant that, from the beginning, the impacts of population and consumption have been ignored. These two problems lack well-organized constituencies and there is no consensus that they are problems, let alone problems in need of solution. So Congress focused on the obvious—the anti-environmental social conduct (pollution), which is

44. The first five months of 1988 were substantially warmer than any previous period in the past 100 years. The four warmest years in the last century have been in the 1980's. A NASA expert has testified before Congress that the agency has "99% confidence" that current temperatures represent a "real warming trend" rather than a chance fluctuation. Weisskopf, *Scientist Says Greenhouse Effect Is Setting In*, Wash. Post, June 24, 1988 at A4, col. 1.

45. Modern environmental law may have begun with the Federal Water Pollution Control Act of 1948 but the first federal laws with some enforcement powers were the Federal Water Pollution Control Act amendments of 1965 and the Clean Air Act of 1963.

46. Ehrlich & Holdren, *The People Problem*, THE SATURDAY REVIEW, July 4, 1970, at 2. Commoner, *The Causes of Pollution*, 13 ENVIRONMENT 2 (1971).

47. Dr. Paul Ehrlich was the leading proponent of population control as the most important measure of environmental control. Dr. Barry Commoner considered technology to be the major problem in the United States. A. REITZE, ENVIRONMENTAL LAW 23 (2d ed. 1972).

the least important of the three causes of ecosystem degradation. As the environmental law program developed, the sewage treatment construction program dominated the funding process.⁴⁸ Given the way the law evolves this was understandable, even if it was an irrational way to formulate environmental policy. Sewage treatment grants provided federal money to every congressional district; moreover, because the construction of sewage treatment plants is not a regulatory program, the program was not opposed by potential regulatees. Industry benefitted because waste producers were able to avoid capital costs associated with waste treatment by hooking into municipal treatment facilities.

As the nation congratulated itself on its environmental efforts, some professionals warned that these approaches would not work. But the nation was not listening. The environmental approaches that were adopted had developed a large constituency of beneficiaries that wanted to maintain the status quo. By the mid-1970's, the environmental program was largely in place. New laws were described as "mid-course corrections" or "fine tuning." When 1981 brought to power an administration that was committed to anti-environmental policies, the people interested in environmental protection fought to keep what they already had. Expansion of the field moved primarily in the direction of hazardous and toxic substance control. This subject had some support of the Reagan Administration, a national consensus that the problem needed attention, and a Congress that was very supportive. So like water seeking the easiest path, environmental law moved in the direction of least resistance.

The environmental field lacks any overall plan or direction. We can not continue indefinitely to create expensive programs. We can not continue to solely address the problem of environmental degradation through regulations to clean up the environment in which the twin problems of population and consumption are ignored. This nation needs a comprehensive environmental policy and that policy must be broad enough to include a population, material conservation, and energy policy. Included in this environmental policy should be a long range view of environmental

48. Between 1972 and 1984 federal, state, and local governments invested \$56 billion in construction of municipal sewage treatment facilities. BNA U.S. ENVIRONMENTAL LAWS 475 (1986). In fiscal year 1987, a substantially reduced federal sewage treatment plant construction grants program was budgeted at \$2.361 billion. OMB, BUDGET OF THE UNITED STATES GOVERNMENT, FY 1989, 5-47 (1988).

priorities and some consideration of costs and benefits. The focus of this article is the impact of population, material conservation and energy policies on environmental law, with recommendations concerning the integration of these subjects into environmental policy.

A broad view of the environment was taken by the 1972 Club of Rome study. It claimed that growth on this planet is ultimately limited by five basic factors—population, agricultural production, natural resources, industrial production, and pollution. The group's belief was that the problems facing mankind are of such complexity and are so interrelated that traditional institutions and policies are unable to cope with them.⁴⁹ Unfortunately, their pessimistic view of political institutions seems to be accurate, for despite the great publicity given to the study, little change has occurred.

II. TOWARD A COMPREHENSIVE ENVIRONMENTAL POLICY

A. *Population*

In 1977, President Carter instructed his Council on Environmental Quality (CEQ) and the Department of State to study the "probable changes in the world's population, resources and environment through the end of the century." The study would serve as the "foundation for our longer-term planning."⁵⁰ In 1980 the study, the Global 2000 Report, was released. It constituted the first attempt by the United States government to project long-term trends in population, resources and the environment.⁵¹ The study predicted continued rapid growth in the world's population with the most growth in the poor, less-developed, nations. The projections were pessimistic, with per capita food supply declining in poor countries, especially in sub-Saharan Africa. The report predicted that oil prices would rise, which has not yet materialized, but the report accurately predicted a bleak outlook for lesser developed countries in terms of meeting their energy needs.

49. D.H. MEADOWS, D.L. MEADOWS, J. RANDERS & W. BEHRENS, *THE LIMITS TO GROWTH* (1972).

50. President's Message to Congress on the Environment, 13 WEEKLY COMP. PRES. DOC. 782 (May 23, 1977).

51. COUNCIL ON ENVIRONMENTAL QUALITY AND U.S. DEP'T. OF STATE, *THE GLOBAL 2000 REPORT TO THE PRESIDENT: ENTERING THE TWENTY-FIRST CENTURY* (1980).

While the picture painted by the report is depressing, overall it has not been inaccurate.⁵²

When President Carter received the report, he established a Presidential Task Force on Global Resources and Environment to be headed by the Chairman of the CEQ. It was to include the Secretary of State, the Assistant to the President for Domestic Affairs and Policy, the Director of the Office of Science and Technology Policy, and the Director of the Office of Management and Budget. President Carter also directed the State Department to raise the issues identified in the Global 2000 Report in all appropriate international meetings.⁵³

At approximately the same time as the Global 2000 Report was released, a study called the World Conservation Strategy was released by the United Nations Environment Programme (UNEP).⁵⁴ The UNEP report called attention to the 500 million people in developing countries that were malnourished and 800 million that were destitute. These people, in their struggle to subsist, were destroying the very resources that would be necessary to free them from poverty and starvation.⁵⁵ In the United States, the Presidential Commission on World Hunger stated that chronic undernutrition is a major world problem; some 800 million people outside the Communist countries exist in a state of chronic undernutrition.⁵⁶

In 1969, President Nixon called for the creation of a commission on population growth.⁵⁷ Congress responded with legislation "to establish a Commission on Population Growth and the American Future."⁵⁸ This commission was to study population problems. Its report, *Population and the American Future*, was submitted on March 27, 1972.⁵⁹

The major recommendations of the Commission were:

52. Brown & Flavin, *The Earth's Vital Signs*, STATE OF THE WORLD I (1988); Postel & Heise, *Reforesting the Earth*, STATE OF THE WORLD 83 (1988).

53. CEQ, 11TH ANNUAL REPORT 5 (1980).

54. International Union for the Conservation of Nature and Natural Resources (Morges, Switzerland), *World Conservation Strategy: Living Resource Conservation for Sustainable Development*, (1980).

55. CEQ, 11TH ANNUAL REPORT 5 (1980).

56. PRESIDENTIAL COMM'N ON WORLD HUNGER, *OVERCOMING WORLD HUNGER: THE CHALLENGE AHEAD* (1980).

57. H. R. Doc. No. 139, 91st Cong., 1st Sess. (1969).

58. Pub. L. No. 91-213, 84 Stat. 67-69 (1970).

59. COMMISSION ON POPULATION GROWTH AND THE AMERICAN FUTURE, *POPULATION AND THE AMERICAN FUTURE* (1972).

- 1) Schools should receive aid for population and sex education programs and such information should also be provided through the media and responsible community organizations. Information dissemination should strive to improve the quality of education for parenthood.
- 2) Discrimination based on sex should be fought through passage of the proposed Equal Rights (for men and women) Amendment to the Constitution. In addition, adequate child-care arrangements should be provided for parents who wish to use them.
- 3) Discrimination against children born out of wedlock should be eliminated and adoption laws reformed.
- 4) Investment should be increased in birth control research.
- 5) Access to abortion services should be liberalized, with the admonition that abortion not be considered a primary means of birth control.
- 6) Health services related to fertility, including prenatal and pediatric care, contraceptive services, voluntary sterilization, abortion, and the treatment of infertility, should be extended and improved through public and private financing mechanisms.
- 7) No increase in present levels of legal immigration should be permitted, and illegal immigration should be stopped.
- 8) To ease problems created by poor population distribution, programs for human resource development should be developed and assistance provided in relocating.
- 9) Comprehensive planning should be done on a metropolitan and regional scale, with greater public control over land use.
- 10) Genuine freedom of choice of housing within metropolitan areas should be promoted for minorities.
- 11) A National Institute of Population Sciences should be created within the National Institutes of Health, and an Office of Population Growth and Distribution should be created within the Executive Branch.

Although he stated, "I do not plan to comment extensively on the contents and recommendations"⁶⁰ of the Commission's report, President Nixon immediately rejected the main recommendations, and he did nothing to support any of the recommendations. President Nixon said that liberalizing abortion laws "would demean human life," and that he wished "to make it clear that I do not support the unrestricted distribution of family planning services and devices to minors. Such measures would do nothing to preserve and strengthen close family rela-

60. Rosenthal, *Nixon Rejects Population Panel Advice*, Wash. Post, May 6, 1972 at A1, col. 4.

tionships.”⁶¹ A mere glance at these recommendations demonstrates how little has been accomplished in achieving them. The major reason is that the development of a population policy has been engulfed by the concern over family planning, and the concern over family planning is dominated by the politics of abortion.⁶²

In 1967, the Foreign Assistance Act was amended to require that a portion of United States foreign aid be spent for population planning.⁶³ Section 104(a)⁶⁴ of that Act states that “the Congress recognizes that poor health conditions and uncontrolled population growth can vitiate otherwise successful development efforts. . . .” However, Section 104 prohibits the use of United States population assistance funds to pay for research on abortion methods. It prohibits use of these funds to lobby for abortion. The Agency for International Development (AID) went further and prohibited use of AID funds for any abortion-related activities. According to AID, no funds were used for such activities.⁶⁵

This law was further restricted by the Reagan Administration. The Administration policy is that no United States financial aid for population planning is to be given to any organization which provides information or services related to abortion, even if it does so in foreign nations with funds from other sources.⁶⁶ The irony is that this policy was announced in 1984 at the International Conference on Population sponsored by the United Nations in Mexico City, Mexico. Mexico has a very high birth rate and its impact on the nation’s economy generates a constant flow of illegal immigrants to the United States. The Reagan policy led to the withdrawal in 1985 of United States funds for the International Planned Parenthood Federation (IPPF) and for the United Nations Fund for Population Activities (UNFPA). The UNFPA lost its funding because of presumed “indirect” support for “coercive” abortion in China, though, the charge concerning UNFPA appears to be untrue.⁶⁷ The policy of the Reagan Administration is that abortion is not an acceptable element of family planning

61. *Id.*

62. Reidinger, *Will Roe v. Wade Be Overruled?* 74 A.B.A.J. 66 (1988).

63. GUTTMACHER INSTITUTE, ISSUES IN BRIEF (Sept., 1987).

64. Pub. L. No. 95-424, 92 Stat. 945, (codified at 22 U.S.C. § 2151(a) (1982)).

65. PLANNED PARENTHOOD FEDERATION OF AMERICA, INC., FACT SHEET 2 (1988).

66. *Id.* at 2.

67. *Id.* at 3.

programs. The Agency for International Development (AID) rules that implemented this policy were challenged by a family planning organization in a federal court. In July 1988, the Federal District Court of the District of Columbia held that the AID rules violate First Amendment rights to free speech and association of the United States family planning groups. Spokesmen for the Justice Department and AID said the decision will be appealed.⁶⁸

Domestic population policy is more ephemeral, but the most tangible expression is Title X of the Public Health Service Act.⁶⁹ This legislation was enacted in 1970 to make contraceptive services available to all.⁷⁰ This statute has remained controversial, for the Reagan Administration has attempted to promulgate regulations that would implement the agenda of anti-abortion groups. Under this law, the use of federal funds to perform abortions is forbidden. But anti-abortion groups do not want the subject mentioned. Under 1988 regulations,⁷¹ family planning can not include any abortion-related information or abortion referral. A pregnant client must be referred for prenatal care services and must be provided with prenatal care information. These regulations have been challenged in three lawsuits.⁷² In federal district courts in Massachusetts and Colorado, injunctions were issued against the anti-abortion regulations. In June 1988, a federal judge in New York upheld the Reagan Administration's prohibition on federally funded family planning clinics informing women that abortion is an option for handling an unintended pregnancy.⁷³ Within this arena is a sideshow of litigation concerning the Adolescent Family Life Act.⁷⁴ This law, enacted in 1981, is dubbed the "Chastity Act." It is aimed at dealing with the problem of teenage pregnancy, without the use of birth control or abortion. It seeks to educate adolescents to abstain from sex through counseling, frequently with the active and federally

68. Hockstader, *Funds Ban Rejected for Groups Performing Abortions Abroad*, Wash. Post, July 6, 1988 at A17, col. 4.

69. Pub. L. No. 97-35, (Title IX, § 3931(a)(1)), 95 Stat. 570, (codified at 42 U.S.C. § 300 (1982)).

70. GUTTMACHER INSTITUTE, *supra* note 63.

71. 53 Fed. Reg. 2,922 (1988) (to be codified at 42 C.F.R. Pt. 59) (proposed Feb. 2, 1988).

72. GUTTMACHER INSTITUTE, WASH. MEMO., (Feb. 8, 1988 and March 29, 1988).

73. Rich, *Judge Backs Ban on Abortion Advice*, Wash. Post July 2, 1988 at A5, col. 1.

74. Pub. L. No. 97-35, 95 Stat. 580 (codified at 42 U.S.C. § 300(z) (1982)).

funded involvement of religious groups. Part of this act was declared unconstitutional by the Federal District Court of the District of Columbia and was directly appealed to the United States Supreme Court.⁷⁵ The Supreme Court declined to strike down the law in a 5 to 4 decision written by Chief Justice William H. Rehnquist.⁷⁶ The Court suggested that the proper remedy was to withdraw funds from those grantees that were acting improperly.⁷⁷

An important part of a population policy concerns the role that immigration should play in the increase in the size of the United States population. We must consider what measures to take to control legal and illegal immigration. The Immigration Reform and Control Act of 1986 is just beginning to be implemented.⁷⁸ More than 2.1 million illegal immigrants have filed for amnesty.⁷⁹ We do not yet know the environmental effects of this legislation.⁸⁰

As the political and economic conditions in the Third World—particularly in Central and South America—continue to deteriorate, desperate individuals will try to immigrate to the United States. As immigrants become United States citizens and get involved in the political process, we can expect continued pressure to legalize larger immigration quotas. We can also expect illegal immigration to continue to increase because nothing is acting to diminish the desperate conditions which motivate migration. For much of the world, war, runaway inflation, and declining food supplies create intolerable conditions that cause people to illegally immigrate. The United States does not have a viable plan for dealing with an army of invaders from the south. This will be an unarmed army, composed largely of children who are merely seeking the American dream. Whether they are welcomed or rejected, the large numbers of immigrants pose a major policy

75. Reske, *The Abortion Counseling Case*, 74 A.B.A.J. 76 (1988).

76. Bowen v. Kendrick, 108 S.Ct. 2562 (1988).

77. Marcus, *Funding for Religious Groups To Promote Chastity Upheld*, Wash. Post, June 30, 1988 at A22, col. 5.

78. Hoffman, *The Immigration Reform and Control Act of 1986: What Does American Business Do Now?*, VIRGINIA BAR NEWS, April, 1988 at 17.

79. Barker, *2.1 Million Immigrants Beat Amnesty Deadline*, Wash. Post, May 6, 1988 at A9, col. 1.

80. One study, funded by the Ford Foundation, is to evaluate the Immigration Reform Act and its impact on American society and that of other countries. It is being done by the Urban Institute in Washington, D.C., See Rich, *Think Tank Survives Lean Times*, Wash. Post, May 16, 1988 at A13, col. 3.

problem for this nation. The most humane policies are those that deal with the underlying causes—energy prices, diminished natural resources, lowered agricultural production, and high birth rates.

The United States today is one of the fastest-growing industrialized nations.⁸¹ The number of women of child-bearing age is at an all-time high. Immigration, legal and illegal, is a major contributor to our population growth. It is, therefore, imperative that citizenry in general, and not just the opponents of population planning, take an interest in the population growth impacts on our environment. The time has come to ask the question: What is the desirable size for the United States population (and for the world population)? The time has come to determine what steps might be taken to effectuate a population goal. Since about one-quarter of all births are unplanned or unwanted, the reduction in government support for family planning could result in population growth that few people desire.

The United States does not have an articulated population policy, but it does have a pro-natality tilt. The decision as to whether or not to have children is protected by the right to privacy, which is protected under the Constitution of the United States.⁸² After that decision is made, however, the public pays to provide infrastructure for the child: government supplies education, health care, recreational facilities, and much more, to raise a newborn infant into an economically productive adult. This makes the public treasury an important subsidizer of the individual's private decision to have a child. The recent political proposals to provide subsidized child care for working parents is a further example of this shift in the costs from the parents to the public. Many of the public expenditures that benefit families are justified, but their indirect contribution to population growth remains unexamined. Private decisions, or careless indifference, concerning natality have a large societal impact. For every 100 children born today in the United States, thirteen will be born to teenage mothers, fif-

81. U.S. growth rate of .9% is low by developing world standards (3% for Sub-Saharan Africa) but it is nearly double the rate for Europe and the Soviet Union (.5%). Our growth rate, if continued, will result in the nation's population doubling during a human's lifetime and potentially occurring more rapidly with increased immigration. CEQ, 16TH ANNUAL REPORT 408 (1985).

82. See, e.g., *Griswold v. Conn.*, 381 U.S. 479 (1965); *Eisenstadt v. Baird*, 405 U.S. 438 (1971); *Roe v. Wade*, 410 U.S. 113 (1973).

teen will be born into households where no parent is employed, fifteen will be born into households with a working parent earning a below-poverty wage, and twenty-five children will be receiving welfare assistance at some time prior to their adulthood.⁸³

Since 1960, the population of the United States has increased by about 60 million people⁸⁴ and the world population has increased by 2 billion.⁸⁵ Total energy consumption by the United States has increased sixty-nine percent and our population has increased by one-third.⁸⁶ These increases have nullified most of our efforts at pollution control. As a nation, it is time to recognize that the more rapidly we stabilize our population, the higher our per capita income will be. Conversely, the more our population grows, the poorer we will become and the greater the stress will be on our ecosystem and on our national security.⁸⁷ Merely feeding our expanding population will require large inputs of fertilizers, insecticides and agricultural machinery. All of the above are highly energy intensive inputs, but without such inputs, American agriculture is no more productive than the Third World agriculture and perhaps less. As energy costs rise, so will agricultural production costs, and production can be expected to decline, for purchasers will not be able to afford their present diet. Petroleum, as it becomes scarce and more costly, can only be used in agriculture by reducing consumption in other sectors of the economy. To maintain our standard of living over the next several decades will be difficult, if not impossible.

B. *Material Conservation*

In order to effectively deal with our environmental problems, we must develop a material conservation policy that can be implemented in conjunction with pollution controls. The material con-

83. Squires, *We Don't See Any National Agenda for Children*, WASH. POST HEALTH, May 24, 1988 at 9, col. 4.

84. THE WORLD ALMANAC AND BOOK OF FACTS 532, 535 (1988).

85. PLANNED PARENTHOOD FEDERATION OF AMERICA, INC., *supra* note 65.

86. THE WORLD ALMANAC AND BOOK OF FACTS 125 (1988).

87. Population increases also bring increases in domestic animal populations. World sheep and goat populations increased by about 250 million animals between 1955 and 1976. Grazing lands are under pressure from those seeking farm land and, thus, these lands are farmed and not allowed sufficient fallow time for soils to recover. Marginal lands are grazed and as the vegetative cover disappears so, too, does the soil to the effects of wind and rain. Desertification follows and has been especially serious in the arid areas south of the Sahara Desert. CEQ, 16TH ANNUAL REPORT 282-284 (1985).

servation policy must harmonize with the energy policy and, to the extent possible, with economic and environmental goals. However, it will be difficult to develop such a policy. Consumption is part of the American Dream. Each generation has expected to live better, *i.e.*, consume more, than their parents. If national consumption decreases, our natural environment might improve, but the economic and political implications would be profound. Consumption policy, therefore, must focus on certain aspects of consumption to be politically acceptable. This would include situations where recycling could be accomplished without objectionable adverse effects, the use and disposal of hazardous material, and the use and disposal of materials of strategic importance. Energy policy is the most important aspect of consumption, however, because energy use is so closely related to our major environmental problems, such as the large scale biosphere impacts of increased carbon dioxide,⁸⁸ acid rain⁸⁹ and pollution of the oceans.⁹⁰ In the longer term, conservation of material, *i.e.*, doing more with less, is the key to the United States staying wealthy. In the past, the resources of the world were easily available and inexpensive. Today, world population pressure, the increased consumption of other developed nations, and the diminishing resource base makes conservation imperative. We need to develop a sustainable economy within the carrying capacity of our resources. This is not only a economic and environmental necessity; it is also important in avoiding armed conflict as the world battles over who will get the last barrel of oil or the last ton of a rare mineral.

There have, in the recent past, been some limited efforts to develop a national materials policy. When the National Environmental Policy Act (NEPA) became law in 1970, it required the federal government to use all practicable means to "enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."⁹¹ In the fall of 1970, Congress established a National Commission on Materials Pol-

88. See generally Rotty & Reister, *Use of Energy Scenarios in Addressing the CO2 Question*, 36 J. AIR POLLUTION CONTROL ASSOC. 1111 (1986).

89. See generally NATIONAL RESEARCH COUNCIL, *ACID DEPOSITION, LONG TERM TRENDS* (1986).

90. See generally NATIONAL ADVISORY COMMITTEE ON OCEANS AND ATMOSPHERE, *THE ROLE OF THE OCEAN IN A WASTE MANAGEMENT STRATEGY* (Jan., 1981).

91. 42 U.S.C. § 4331(b)(6) (1982).

icy⁹² under Title II of the Resource Recovery Act.⁹³ In 1973, the Commission produced a final report that called for a national materials policy to protect the environment and to conserve resources.⁹⁴ Needless to say, the report was ignored. In 1973, the National Academy of Sciences and the National Academy of Engineering held a symposium on materials policy. This meeting coincided with the renewal of the Arab-Israeli conflict and with a five month oil embargo against the United States.⁹⁵ Again nothing of substance developed from the report, despite the impact of oil cutoffs.

During the period from 1970 to 1975, state governments and Congress focused on a minor aspect of materials policy, the so called "bottle bills" aimed at reusing beverage containers.⁹⁶ A comprehensive solid waste statute was not enacted until 1976 when Congress passed RCRA.⁹⁷ RCRA has been amended several times since its enactment with the most important changes being the Hazardous and Solid Waste Amendments of 1984.⁹⁸

RCRA as amended includes in Section 6901(c):

(c) Materials

The Congress finds with respect to materials, that—

- (1) millions of tons of recoverable material which could be used are needlessly buried each year;
- (2) methods are available to separate usable materials from solid waste; and
- (3) the recovery and conservation of such materials can reduce the dependence of the United States on foreign resources and reduce the deficit in its balance of payments.⁹⁹

This finding has never resulted in serious efforts at implementation.

92. The subject had been studied earlier. In the 1950's President Truman, concerned about resource shortages experienced during and after World War II and the Korean War, established the Paley Commission to study the subject. U.S. PRESIDENTS MATERIALS POLICY COMM'N, RESOURCES FOR FREEDOM: A REPORT TO THE PRESIDENT (1952).

93. Pub. L. No. 91-512, 84 Stat. 1227 (1970).

94. FINAL REPORT OF THE NATIONAL COMM'N. ON MATERIALS POLICY, MATERIAL NEEDS AND THE ENVIRONMENT TODAY AND TOMORROW, (June, 1973).

95. NATIONAL ACADEMY OF SCIENCES, NATIONAL MATERIALS POLICY (1975); NATIONAL ACADEMY OF SCIENCES, MINERAL RESOURCES AND THE ENVIRONMENT (1975).

96. A. REITZE, ENVIRONMENTAL LAW 55 (1972); Note, *The Oregon Bottle Bill*, 54 OREGON L. REV. 175 (1975).

97. 42 U.S.C. §§ 6901 - 6991(i) (1982 & Supp. IV 1986).

98. Pub. L. No. 98-616, 98 Stat. 3221 (1984).

99. 42 U.S.C. § 6901(c) (1982).

RCRA as amended has developed into one of the major programs implemented by EPA. The statute is divided into nine subchapters or subtitles. The most significant is the subchapter III (or C) program dealing with hazardous waste management. The program for resource conservation and recovery has not gotten much past the use of the words in the Act's title. In the United States, we recycle only about ten percent of our waste; paper, glass and a few metals are the subject of most of the effort.¹⁰⁰ RCRA has had little effect on these dismal statistics. One small, tangible example of the federal program is the regulatory guidelines for federal procurement of recycled goods.¹⁰¹ In addition EPA could use Section 6 of the Toxic Substances Control Act (TSCA)¹⁰² to control the generation of wastes in specific industries, but it has not chosen to do so.

The RCRA subtitle C program encourages source reduction, recycling and waste minimization,¹⁰³ at least in regard to hazard-

100. Steinhart, *supra* note 6, at 102.

101. RCRA states that if a federal, state, or local procuring agency uses appropriated Federal funds to procure certain designated items, such items must be composed of the highest percentage of recovered materials practicable. EPA is required to designate these items and to prepare guidelines to assist procuring agencies in complying with these requirements. 42 U.S.C. § 6962 (1982 & Supp. IV 1986).

EPA issued the first of these guidelines for cement and concrete containing fly ash, on January 28, 1983, 40 C.F.R. §§ 249.01-249.33 (1987). EPA issued a second guideline for paper and paper products containing recovered materials, on October 6, 1987, 40 C.F.R. § 250.10 (1988).

A third guideline, for asphalt materials containing ground tire rubber, was proposed on February 20, 1986 (51 Fed. Reg. 6,202 (1986)). A fourth guideline, for engine lubricating oils, hydraulic fluids, and gear oils containing re-refined oils, was proposed on October 19, 1987 (52 Fed. Reg. 38,838 (1987)); this guideline is being finalized.

The most recent EPA effort is the EPA Proposed Guideline for Federal Procurement of Retread Tires under the Resource Conservation and Recovery Act (53 Fed. Reg. 15,624 (1988)). Other guidelines are to be issued pursuant to an agreement made in *EDF v. EPA*, DC, No. 87-CV-3212-SS, April 8, 1988. [Current Developments] *Env't Rep.* (BNA) No. 2451 (April 15, 1988).

102. 15 U.S.C. § 2605 (1982).

103. Source reduction reduces the amount of waste that exits from the process by changes in technology, process, plant operations and procedures and raw materials before the waste is generated. Recycling implies use, reuse or reclamation of the waste. If recycled on site the waste may be excluded from the reach of RCRA. *American Mining Congress v. EPA*, 824 F.2d 1177 (D.C. Cir. 1987). Waste minimization is defined at 42 U.S.C. § 6922(b) as the reduction in volume and toxicity of waste that has been generated. There is some inconsistency between EPA definitions and those used in pending legislation and others in the field. Note that waste minimization can be considered treatment that is subject to RCRA permitting requirements.

ous material.¹⁰⁴ There are three waste reduction provisions under RCRA: (1) section 3002(a)(6),¹⁰⁵ which requires generators to report efforts made to reduce the volume and toxicity of waste; (2) section 3002(b),¹⁰⁶ which requires that generators certify in their section 3002(a) manifests that they have a program to reduce the amount or toxicity of the wastes generated to the degree determined by the generator to be economically practicable; and (3) section 3005(h),¹⁰⁷ which requires the same certification for new permits issued for the treatment, storage, or disposal of hazardous waste.

These statutory provisions are more hortatory than regulatory. It is not surprising that a report by Congress' Office of Technology Assessment concluded that waste reduction efforts in industry have been minimal.¹⁰⁸ Current waste reduction is motivated by the increasing cost of land disposal. The high cost of land disposal prompts industry to reduce the creation of hazardous material and/or recycle the wastes¹⁰⁹ or burn them, sometimes in processes that utilize their energy.¹¹⁰ A more important industry motivator is the "Superfund" legislation,¹¹¹ which makes generators liable for what they send to land disposal sites. Since this liability is joint and several and can extend far into the future, even a small amount of waste sent to a disposal site can expose the generator to substantial claims.¹¹²

EPA has taken the position that treatment and recovery should be the preferred methods for managing hazardous waste¹¹³ and has formally adopted this policy.¹¹⁴ Under RCRA, most untreated hazardous wastes will be banned from land disposal by

104. For an overview see Noll, Haas, Patterson, *Recovery, Recycle and Reuse of Hazardous Waste*, 36 J. AIR POLLUTION CONTROL ASSOC. 1163 (1986); EPA, *THE NEW RCRA—A FACT BOOK 1* (Oct., 1985).

105. 42 U.S.C. § 6922(a)(6)(C) (1982 & Supp. IV 1986).

106. *Id.* at § 6922(b)(1).

107. *Id.* at § 6925(h).

108. OFFICE OF TECHNOLOGY ASSESSMENT, *FROM POLLUTION TO PREVENTION* (June, 1987).

109. Lehman, *Can Pollution Be Destroyed?* 12 EPA J. 10 (1986).

110. Skinner, *Research to Break the Land Disposal Habit*, 12 EPA J. 12 (1986).

111. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601-9657 (1982 & Supp. IV 1986).

112. ERT, INC. & SIDLEY & AUSTIN LAW OFFICES, *SUPERFUND HANDBOOK* (2d ed. 1987).

113. White, *EPA Program for Treatment Alternatives for Hazardous Waste*, 35 J. AIR POLLUTION CONTROL ASSOC. 369 (1985).

114. 41 C.F.R. § 35050, (1976). EPA created a waste minimization staff within the Office of Solid Waste to aid in efforts to encourage waste reduction and to release grant

1990. The major impetus for hazardous waste reduction is just beginning to be felt as EPA regulates to limit the land disposal of these hazardous substances. These regulations are causing disposal prices to rise sharply. In addition, facilities for disposal may not exist at any price due to public opposition to the presence of landfills,¹¹⁵ as well as the waste industry's problems in dealing with uncertainty regarding regulatory requirements and the difficulties of obtaining affordable insurance.¹¹⁶

In the 1984 RCRA amendments,¹¹⁷ Congress created a phased program for EPA to implement that would reduce the use of land disposal for hazardous waste. The Amendments state that "reliance on land disposal should be minimized or eliminated, and land disposal, particularly landfills and surface impoundments, should be the least favored method for managing hazardous wastes."¹¹⁸ Under RCRA, EPA is required to set pretreatment requirements that reduce the toxicity of wastes.¹¹⁹ The statute also prohibits storage of waste in excess of time and quantity limits.¹²⁰ The placement of hazardous wastes in salt formations or in caves is restricted and subject to permit requirements.¹²¹ Bulk or non-containerized liquid wastes were prohibited from landfill disposal in May, 1985 and the rules were further strengthened in November, 1985.¹²²

The first phase of the land disposal ban began November 7, 1986 when EPA set out the regulatory program for land disposal prohibitions and treatment standards for specified solvent and dioxin wastes.¹²³ The second phase is the ban on the "California list". These wastes were first banned by California and its pro-

monies that were approved by Congress. [Current Developments] Env't Rep. (BNA) No. 37 (May 13, 1988).

115. Tarlock, *Anywhere But Here: An Introduction to State Control of Hazardous Waste Facility Location*, 2 J. ENV. L. 1 (1981); Tarlock, *Siting New or Expanded Treatment, Storage, or Disposal Facilities: The Pigs in the Parlors of the 1980s*, 17 NAT. RES. L. 429 (1984).

116. COOKE, *LAW OF HAZARDOUS WASTE: MANAGEMENT, CLEANUP, LIABILITY* 189-190 (1988); see generally Abraham, *The Insurance Implications of Administrative Compensation Systems*, 25 HOUS. L. REV. 817 (1988).

117. Pub. L. No. 98-616, 98 Stat. 3221 (1984).

118. RCRA, § 1002(b)(7), 42 U.S.C. § 6901(b)(7). (1982 & Supp. IV 1986).

119. *Id.* at § 3004(m), 42 U.S.C. § 6924(m).

120. *Id.* at § 3004(j), 42 U.S.C. § 6924(j).

121. *Id.* at § 3004(b), 42 U.S.C. § 6924(b).

122. *Id.* at § 3004(c), 42 U.S.C. § 6924(c).

123. *Id.* at § 3004(e), 42 U.S.C. § 6924(e). Regulations are at 51 Fed. Reg. 40,572 (1986). See also 40 C.F.R. 261.31.

gram has been incorporated into RCRA.¹²⁴ These wastes include free liquids associated with sludge, heavy metals, acids with pH below two, polychlorinated biphenyls (PCB's), and halogenated organic compounds. A California waste, except halogenated organic waste, can be rendered into a solid and disposed of in a landfill.¹²⁵ The third phase is a schedule of disposal restrictions for wastes not dealt with in either phase one or phase two. The schedule is to be based on a ranking of the hazardous waste, with high volume, high toxicity wastes to be regulated first. EPA promulgated a schedule in 1986 that would regulate one-third of the ranked and listed hazardous waste by August 8, 1988, two-thirds by June 8, 1989, and the remaining waste by May 8, 1990.¹²⁶ In May, 1988, proposed regulations for restrictions on the first one-third of the list were promulgated.¹²⁷

At the same time that restrictions on waste disposal have become more stringent, EPA has promulgated more restrictive technical and permitting standards for landfills and other disposal units. The basic regulations were issued in 1982.¹²⁸ In 1985, the rules were amended to reflect the statutory changes made in 1984.¹²⁹ These rules set standards for the required double liners and leachate collection systems.¹³⁰ In 1986, the rules were tightened again to further control and detect leachate.¹³¹ The effect of these rules is to discourage land disposal of waste.

The impact of RCRA and CERCLA on hazardous waste disposal has resulted in a de facto policy that, however limited, is as close as we have come to a national material policy. A general consensus has developed that a hierarchy of waste management practices exist according to the ability to protect the environment. They are:¹³²

- Waste reduction to produce fewer harmful residuals, including process changes and raw material substitutions.

124. RCRA, § 3004(d), 42 U.S.C. § 6924(d).

125. 51 Fed. Reg. 19,300 (1986).

126. RCRA, § 3004(g)(4), 42 U.S.C. § 6974(g)(4) (1982); *see also* 51 Fed. Reg. 44,713, 44,740 (1986).

127. 53 Fed. Reg. 17,578 (1988), [Current Developments] *Env't Rep.* (BNA) No. 106 (May 27, 1988).

128. 40 C.F.R. §§ 264.1-264.351 (1987).

129. 50 Fed. Reg. 28,702 (1985).

130. RCRA, § 3004(o), 42 U.S.C. § 6924(o) (1982 & Supp. IV 1986).

131. 52 Fed. Reg. 20,218 (1986).

132. Wolf, *Source Reduction and the Waste Management Hierarchy*, 38 J. AIR POLLUTION CONTROL ASSOC. 681 (1988).

- Waste recycling including resource recovery.
- Physical, chemical, and biological treatment that results in reduced volume and/or less toxicity.
- Incineration at high temperature.
- Solidification and/or stabilization before land disposal.

The disputes concerning this hierarchy usually involve the issue of when an option is no longer viable, so that a generator can move down the hierarchy to select another option. The extreme environmental position would demand source reduction in all, or nearly all, situations. The extreme industry position is to favor land disposal unless an alternative presently exists that would be cost effective in the short run, usually three years or less. Most people would occupy the middle ground, but areas of disagreement are many. Should requirements be eased for small quantity generators? How do you force decision makers to consider all disposal costs when many costs are masked by insurance or workmen's compensation, or can occur in the future on someone else's watch. Decision makers are often rewarded for being short-sighted.¹³³ This, however, is a problem that is pervasive in the environmental law field. The hazardous waste reduction program, with all its limitations and unresolved issues is, nevertheless, the best model of what will be involved in a materials policy and the problems that will arise in policy implementation.

One other aspect of materials policy that has received some attention is the subject of strategic materials. These are raw materials of significant importance to the nation's economy or defense. In 1985, the Office of Technology Assessment of the United States Congress (OTA) issued an assessment entitled *Strategic Materials: Technologies to Reduce U.S. Import Vulnerability*.¹³⁴ Among its findings were that the United States utilizes thirteen minerals and materials that are essential to the national economy and are subject to supply interruption. Four of these minerals, chromium, cobalt, manganese, and platinum are pervasively used in our industrial production and have no readily available substitute, and so are considered "first tier" strategic materials. The other nine materials are not as essential and are considered "second tier" strategic materials.¹³⁵ Chromium, cobalt and manganese

133. *Id.*

134. OFFICE OF TECHNOLOGY AND ASSESSMENT (OTA), *STRATEGIC MATERIALS: TECHNOLOGIES TO REDUCE U.S. IMPORT VULNERABILITY* (1985).

135. The nine are industrial diamonds, beryllium, vanadium, graphite, rutile, bauxite, tin, tantalum, and columbium.

are essential to the production of high quality steels. Platinum group metals¹³⁶ are essential in catalytic applications in petroleum refining and chemical processing. Their major use, however, is in automobile catalytic converters, an important component of the Clean Air Program. The United States annually imports over \$1 billion worth of these "first tier" materials. Three nations, South Africa, Zaire, and the U.S.S.R. produce over half the world's supply and therefore, we are vulnerable to supply disruption.

After the 1973-1974 oil embargo, the National Commission on Supplies and Shortages was established.¹³⁷ The Commission was to report on government policies affecting supply and economic stockpiling of natural resources. The Commission reported that the major threats to supply continuation were not foreign embargoes, but were military conflict, regional war or civil disorder. It recommended comprehensive strategic and economic stockpiling of essential resources. But, its report had no significant impact on government policy.¹³⁸

Congress in 1980 enacted the National Materials and Minerals Policy, Research and Development Act.¹³⁹ This Act calls for material and mineral policy making to be coordinated in order to achieve a long-term balance between energy needs, a healthy environment, natural resources conservation, and social needs. The President is required to support research and development to include recycling, conservation, substitution, and new engineering designs for non-fuel minerals.¹⁴⁰ This Act, however, has not led to any structured mineral policy.¹⁴¹ The National Critical Materials Act of 1984¹⁴² establishes a Critical Materials Council reporting to the Executive Office of the President, but it has had minimal impact.¹⁴³

136. Platinum, palladium, rhodium, iridium, osmium, and ruthenium.

137. 50 U.S.C. § 2169(d) (1982).

138. Jones, *United States Dependence On Imports Of Four Strategic And Critical Minerals: Implications And Policy Alternatives*, 15 B. C. ENVTL. AFF. L. REV. 217 (1988).

139. 30 U.S.C. §§ 1601-1605 (1982).

140. 30 U.S.C. § 1603 (1982).

141. Jones, *supra* note 137, at 253.

142. Pub. L. No. 98-373, 98 Stat. 242 (codified at 30 U.S.C. §§ 1801-1811 (1982 & Supp. IV 1986)).

143. OTA, *supra* note 133, at 44.

The Federal stockpiling law, amended in 1979 as the Strategic and Critical Materials Stock Piling Revision Act of 1979,¹⁴⁴ provides for acquisition of strategic and critical materials. However, it has been over thirty years since major additions to the stockpile have been made. The materials in the stockpile do not meet present industrial needs, and the law precludes their release for general economic or budgetary purposes. Thus, the stockpile has little to offer in the way of protection to the civilian economy and is very limited in its value for national defense.

Critical materials, by definition, are materials for which the United States can not develop self-sufficiency. To minimize the danger of dependency, we can use substitution, conservation, stockpiling, and seek more numerous foreign sources of supply. Substitutes for the first tier materials are unlikely in the foreseeable future. Stockpiling to meet basic defense goals would require an investment on the order of \$6 billion.¹⁴⁵ Such investment is politically unrealistic. Improved sources of supply will be difficult to find, require substantial capital investment, and take many years to implement. For platinum metals, new sources are unknown.¹⁴⁶ Conservation through recycling, product life extension, lowering additions of alloys to the minimum, and improved processing techniques have potential in reducing foreign dependence. Platinum offers the best opportunity for successful material recovery if automobile catalysts can be recycled. Critical materials, thus, remains a subject that has been intensely studied but has not resulted in any coherent national policy.

The United States possesses five percent of the world's population, and yet, it consumes eleven times the world's average in energy, six times the steel, and four times the grain. Our consumption patterns, thus, have global impact, and are in turn affected by international events.¹⁴⁷ This is exemplified by the United States' expenditure of \$15 million per month to maintain our military presence in the Persian Gulf, an expenditure that might create greater security if it were spent on energy conservation.¹⁴⁸ Our traditional consumption patterns can not continue.

144. 50 U.S.C. § 986 (1982 & Supp. IV 1986).

145. Jones, *supra* note 137, at 278.

146. *Id.* at 280.

147. Zero Population Growth, newsletter, May 1988.

148. Telephone conversation with Brian McCarten, Center for Defense Information, Washington, D.C., April, 1988.

As natural resources diminish and consequently become more expensive, the other industrialized, developed nations of the world will compete with us for these resources. This will increase prices and drive the lesser-developed nations further into poverty and debt. Increase in petroleum prices, for example, have increased the Third World's dependency on wood for fuel. More than one and a half billion people living in developing nations depend on wood as their only fuel for cooking and heating. This, in turn, has led to an increased rate of deforestation, followed by destructive wind and rain erosion, the silting of rivers and irrigation systems, and increasing severity of drought and floods.¹⁴⁹ In addition, multinational corporations, moving to the developing world, bring increased demand for resources to those countries. For example, the steel-making industry has expanded in Brazil, Korea, Taiwan, and elsewhere.¹⁵⁰ Thus powerful forces exist to deny the United States the right to continue its consumption of a disproportionate share of world resources. The more quickly we achieve a sustainable economy, the better the chance we have for a peaceful and environmentally sound world ecosystem.

C. *Energy*

In the 1950's, the United States was a net exporter of energy. But increased consumption changed the nation into a major importer of energy fuels. Between 1950 and 1965, United States energy consumption grew at an average annual rate of 3.5% and then increased to 4.5% per year until the 1973 oil embargo. Domestic production, however, grew at only three percent per year until 1970, and then growth essentially ceased.¹⁵¹ Oil imports tripled from 1960 to 1973, with much of the increase coming from the Middle East and North Africa. Natural gas provided more than half the growth in energy consumption between 1950 and 1970. But artificially low natural gas prices, regulated by the government, served to encourage use and to discourage production. By the early 1970's, natural gas shortages were common.¹⁵² Coal had been the dominant energy source from the late nineteenth century until 1910. After that year, the use of coal declined from over seventy-five percent of total United States

149. S. Pastel & L. Heise, *Reforesting the Earth*, STATE OF THE WORLD 1988 83 (1988).

150. J. GEVER, R. KAUFMAN D. SKOLE & C. VOROMARTY, BEYOND OIL 123 (1986).

151. CEQ, SIXTH ANNUAL REPORT 109 (1975).

152. *Id.* at 109-110.

energy consumption to about twenty percent in the early 1970's. Inexpensive oil and gas was the major reason for coal's loss of markets, combined with consumer preference for cleaner fuels. Beginning in the late 1960's, coal prices began to reflect the increased costs of meeting safety requirements and for air pollution controls in underground mines and reclamation requirements for surface mines. However, by that time, competing fuels also had pressures that increased their prices.¹⁵³

After the Arab states cut off oil shipments to the United States in 1973, petroleum prices increased up to ten times the level of the previous year. President Nixon announced the start of "Project Independence" to move the nation to energy self-sufficiency by 1980.¹⁵⁴ On March 18, 1974, seven Arab oil-producing countries lifted the embargo. But the United States had been warned, and for at least a few years energy policy concerned the federal government. In May, 1974, the Federal Energy Administration was created to centralize and coordinate energy policy.¹⁵⁵ In October, 1974, energy research, as well as the military and production activities of the Atomic Energy Commission (AEC) were placed in the new independent agency, the Energy Research and Development Administration (ERDA).¹⁵⁶ The AEC was abolished.¹⁵⁷ The Energy Supply and Environmental Coordination Act was also enacted in 1974.¹⁵⁸ It was intended to encourage the use of coal, and the Act provided waivers from requirements of the Clean Air Act. It had little impact and has been largely repealed.

The blueprint for energy self-sufficiency was the Project Independence Report.¹⁵⁹ Released in November, 1974, it was the work of most federal agencies and of many private contractors acting under the direction of the Federal Energy Administration.

153. DEP'T OF ENERGY (DOE), *ENERGY SECURITY: A REPORT TO THE PRESIDENT OF THE UNITED STATES* 166, (March, 1987).

154. President's Address to the Nation Announcing Additional Action to Deal with the Energy Emergency, 1366 WEEKLY COMP. PRES. DOC. 9 (1973).

155. Federal Energy Administration Act of 1974, Pub. L. No. 93-275, 88 Stat. 196 (1974).

156. Energy Reorganization Act of 1974, Pub. L. No. 93-438, Oct. 11, 1974.

157. The regulatory functions of the AEC were given to the newly created NRC while the remaining functions went to ERDA. Title I of the Energy Reorganization Act of 1974 created ERDA; Title II created the NRC. Pub. L. No. 93-438, 88 Stat. 1233 (1974).

158. Energy Supply and Environmental Coordination Act of 1974, Pub. L. No. 93-319, 88 Stat. 246 (1974) (codified at 15 U.S.C. § 791 (1982)).

159. CEQ, *SIXTH ANNUAL REPORT* 111 (1975).

The report conveyed the message that there was no obvious or simple solution to the mess that we, as a nation, had created. Energy policy had to focus on virtually every aspect of the subject and seek improvements that were feasible. The report and its supporting studies were the roots of the energy policy recommendations made by President Ford in January, 1975. President Ford proposed the Energy Independence Act of 1975, which provided for (1) higher energy prices to encourage domestic production and to discourage consumption; and (2) a program of energy conservation through non-price measures. The 94th Congress responded to the President with its own proposals that included regulation of fuel inefficient automobiles. However, the Congress wanted mandatory, not voluntary, conservation and did not want substantial energy price increases.¹⁶⁰ Despite executive and legislative branch differences and jurisdiction battles among the key committees in Congress, many new energy laws were enacted.¹⁶¹

The Federal Non-Nuclear Energy Research and Development Act of 1974¹⁶² directed the ERDA to conduct a comprehensive energy research and development program with particular emphasis on energy conservation, environmental protection and availability of water. The Solar Energy Research, Development, and Demonstration Act of 1974,¹⁶³ the Solar Heating and Cooling Demonstration Act of 1974¹⁶⁴ and the Geothermal Energy Research, Development and Demonstration Act of 1974¹⁶⁵ were all aimed at encouraging non-conventional energy technologies. Most of these programs were eventually budgeted out of existence in the 1980's.

Section 11 of the Federal Non-Nuclear Energy Research and Development Act of 1974¹⁶⁶ directed the CEQ to report annually on the probable environmental consequences of trends in the development and application of energy technologies. The first CEQ report appeared in its 1975 Annual Report.¹⁶⁷ It was based on a

160. DEMOCRATIC POLICY AND STEERING COMMITTEE OF THE HOUSE OF REPRESENTATIVES AND DEMOCRATIC POLICY COMMITTEE OF THE SENATE, THE CONGRESSIONAL PROBLEM OF ECONOMIC RECOVERY AND ENERGY SUFFICIENCY, (94th Cong., 1975).

161. CEQ, SIXTH ANNUAL REPORT 115 (1975).

162. 42 U.S.C. §§ 5902 and 5903 (1982 & Supp. IV 1986).

163. 42 U.S.C. § 5551 (1982).

164. 42 U.S.C. § 5501 (1982).

165. 30 U.S.C. § 1101 (1982 & Supp. IV 1986).

166. 42 U.S.C. §§ 5901-07 (1982 & Supp. IV 1986).

167. CEQ, SIXTH ANNUAL REPORT 427 (1975).

Stanford Research Institute (SRI) study of the economics of alternative energy scenarios for the year 2000. The report estimated that synthetic fuels from coal and oil shale would meet about sixteen percent of the nation's total energy demand, assuming prices of imported oil remained high.¹⁶⁸ But instead of becoming an important source of usable energy, the "synfuels" industry collapsed in the 1980's.

1. The Energy Policy and Conservation Act of 1975

In 1975, total United States energy consumption dropped by more than two percent for the second year in a row. However, imports of petroleum rose to about forty percent of United States oil consumption because domestic oil production continued to fall.¹⁶⁹ In late December, 1975 the Energy Policy and Conservation Act (EPCA) was enacted to address this problem.¹⁷⁰ The first title included a strategic petroleum reserve (SPR) to store 150 million to one billion barrels of oil to cushion the impact of future supply interruptions.¹⁷¹ Title II provided for petroleum rationing and other emergency provisions.¹⁷² Titles III and V included mandatory fuel economy standards for automobiles that required an average of 27.5 miles per gallon (m.p.g.) by 1985.¹⁷³ Title IV was a price control program for domestic oil that terminated after forty months.¹⁷⁴ The Act also mandated energy efficiency labeling requirements for consumer products¹⁷⁵ and provided financial assistance for federal, state, and industrial conservation programs.¹⁷⁶ There were also some minor provisions limiting the Clean Air Act and providing the Federal Energy Administration (FEA) with authority to order power plants and other major fuel-burning installations to convert from the use of oil to the use of coal.¹⁷⁷ The strategic petroleum reserve is considered to be a successful program by the Reagan Administration. In 1987 the

168. *Id.*

169. CEQ, SEVENTH ANNUAL REPORT 102 (1976).

170. Energy Policy and Conservation Act of 1975, Pub. L. No. 94-163, 89 Stat. 871 (codified at 42 U.S.C. §§ 6201-6422 (1982 & Supp. IV 1986)).

171. *Id.* at §§ 151-166, 42 U.S.C. §§ 6232-6247.

172. *Id.* at §§ 201-255, 42 U.S.C. §§ 6261-6275.

173. *Id.* at §§ 501-512, 15 U.S.C. §§ 2001-2012.

174. *Id.* at §§ 401-463.

175. *Id.* at §§ 321-339, 42 U.S.C. §§ 6291-6309.

176. *Id.* at § 361-367, 371-376, 42 U.S.C. §§ 6321-6363.

177. *Id.* at § 101, 106, 42 U.S.C. §§ 6211-6215.

SPR contained 500 million barrels of oil which is about the amount the nation imports in ninety-six days. President Reagan reaffirmed his commitment to the goal of 750 million barrels in the SPR in August, 1986.¹⁷⁸ Since we have not had occasion to use the SPR, it remains an insurance policy of unknown value.

Much of the EPCA has been a failure. Energy conservation took place largely because consumers were price sensitive, not because of legal mandates. The automobile fuel economy standards were initially not a major concern to American automobile manufacturers because consumer preferences and foreign competition assured that the fuel efficiency requirements would be met. When declining fuel prices began to affect the car-buying public, the manufacturers began to lobby for the corporate average fuel economy (CAFE) standards to be relaxed. The Ford Motor Company threatened to take advantage of a loophole in the law and turn its large cars into imports if the CAFE standards were not lowered.¹⁷⁹ The Reagan Administration, through the National Highway Traffic Safety Administration, responded to industry (over the objection of Chrysler Corporation) by lowering the fuel economy standard.¹⁸⁰ In 1986, a task force on governmental regulation chaired by Vice President Bush recommended abolishing the CAFE standards as they were squeezing the manufacturers out of the "muscle car" market.¹⁸¹

While the automotive fuel economy legislation could benefit from technical amendments to close loopholes, the law is both necessary and properly directed. The United States uses sixty-three percent of its oil for transportation, and its combustion releases more than 700 million tons of air-polluting carbon. The average American automobile generates its weight in carbon each year.¹⁸² If the fleet fuel efficiency in the United States had remained at the 1973 level of 13 m.p.g., our gasoline consumption would have grown by one-third. Because fuel economy increased to 18 m.p.g. in 1985, fuel consumption growth was contained. This conservation effort was more important than the supply side

178. DOE, *supra* note 153, at 215.

179. Brown, *Ford Threatens U.S. Over Fuel Economy Rules*, Wash. Post, Nov. 2, 1985 at A1, col. 2.

180. [Current Developments] *Env't Rep.* (BNA) No. 24 at 858 (Oct. 10, 1986).

181. *Fuel Economy Standards Targeted by Task Force*, Wash. Post, Dec. 23, 1986 at A17, col. 5.

182. Flavin & Durning, *Raising Energy Efficiency*, STATE OF THE WORLD 1988 50 (1988).

efforts made to find more oil, and yet it has been almost without support by the government. If fuel efficiency were brought to the 50 m.p.g. level that is technically achievable by existing technology, global gasoline consumption could be cut by almost one-fourth (assuming no growth in vehicle miles traveled).¹⁸³ The vacuity of the supply side approach is obvious, for despite increases in oil prices and a 280% increase in drilling, the United States is producing less oil today than in 1973.¹⁸⁴

Energy efficiency standards for consumer products have also fared poorly at the hands of the Reagan Administration. The EPCA was amended by the National Energy Conservation Policy Act (NECPA) of 1978.¹⁸⁵ This law authorized, but did not require, DOE to establish mandatory energy efficiency standards. It did require energy efficiency labeling.¹⁸⁶ By 1980, DOE had issued proposed standards for only eight classes of appliances.¹⁸⁷ In January, 1981, DOE reversed direction and declared that economics justified only a "no-standards" standard for household appliances.¹⁸⁸ This ended federal rulemaking but also precluded state regulation because of the preemption provisions of the EPCA.¹⁸⁹ Joined by one congressman and three states, the Natural Resources Defense Council (NRDC) challenged DOE's "no-standards." On July 16, 1985, the D.C. Circuit Court of Appeals overturned the DOE standards and remanded the case to the district court.¹⁹⁰ DOE then embarked on rulemaking. Before regulations could be promulgated, Congress enacted the National Appliance Energy Conservation Act of 1987 (NAECA)¹⁹¹ to amend EPCA.¹⁹² The law mandated that by 1993 household appliances be fifteen to twenty-five percent more efficient than 1985 models. It is estimated that the law will reduce electric power demand by an amount equal to the output of 22 large power plants.¹⁹³ NAECA was enacted by Congress to remove the discre-

183. Renner, *Car Crash*, 1 *WORLD WATCH* 35 (1988).

184. Gever et al., *supra* note 150, at 12.

185. 42 U.S.C. § 8201 (1982 & Supp. IV 1986).

186. 42 U.S.C. § 6272 (1982 & Supp. IV 1986).

187. National Appliance Energy Conservation Act of 1987, Pub. L. No. 100-12 § 1, 101 Stat. 103 (1987).

188. Pub. L. No. 100-12 § 5, 101 Stat. 107 (1987).

189. Pub. L. No. 100-12 § 7, 101 Stat. 118 (1987).

190. *NRDC v. Herrington*, 768 F.2d 1355 (D.C. Cir. 1985).

191. 42 U.S.C. § 6201 (1982 & Supp. IV 1986).

192. 42 U.S.C. §§ 6291-6309 (1982).

193. 133 CONG. REC. § 2031 (daily ed. Feb. 17, 1987) (statement of Sen. Cranston).

tion of DOE and the Act passed with the support of industry, which wished to avoid regulation by the states that had found ways to regulate despite the Reagan Administration's "no-standard" approach.

In 1976, the United States economy was recovering and energy use increased again, rising 4.8%.¹⁹⁴ Another natural gas shortage arose in the winter of 1976-1977, leading to the Emergency Natural Gas Act of 1977.¹⁹⁵ That Act set up nationwide allocations of natural gas and provided for higher priced intrastate natural gas to be sold on the interstate market.

Despite renewed oil cutoffs the United States did not actually develop or implement a coherent energy policy. From November, 1978 through April, 1979, six million barrels a day of Iranian production were eliminated from the world market due to political turmoil. Part of this loss was made up by increased production elsewhere, but the net supply loss was over two million barrels per day and caused prices to increase by more than double the previous rate. The outbreak of war between Iraq and Iran in the fall of 1980 again removed from two to three million barrels a day from the world market, but worldwide surplus production capacity and high inventories limited the impact.¹⁹⁶

In 1977 the Department of Energy was created.¹⁹⁷ Into this agency went the Federal Energy Regulatory Commission (the new name for the Federal Power Commission which regulates natural gas and licenses hydroelectric facilities) and the energy programs of numerous executive agencies. The most important transfers were the Federal Energy Administration and the Energy Research and Development Administration (ERDA).¹⁹⁸ ERDA contained the non-regulatory functions of the abolished Atomic Energy Commission as well as the more general energy research and development responsibilities.

2. The Carter Administration

In April 1977, President Carter submitted his National Energy Plan to Congress. The plan encouraged Congress to adopt seven goals to be achieved by 1985. They were to (1) reduce the rate of

194. CEQ, EIGHTH ANNUAL REPORT 61 (1977).

195. National Gas Act, 15 U.S.C. § 717 (1982).

196. DOE, *supra* note 153, at 16.

197. Department of Energy Organization Act, 42 U.S.C. § 7101 (1982).

198. 42 U.S.C. § 7151 (1982).

growth of energy consumption to below two percent per year; (2) reduce gasoline consumption by ten percent below its current level; (3) reduce oil imports from a projected level of sixteen million barrels per day to six million barrels per day; (4) establish a Strategic Petroleum Reserve of one billion barrels; (5) increase coal production by about two-thirds to more than one billion tons per year; (6) bring ninety percent of existing United States homes and all new buildings up to minimum energy efficiency standards; and (7) use solar energy in more than 2.5 million homes.¹⁹⁹

The Carter Administration's energy policy primarily followed the "soft" energy path. Energy conservation was the cornerstone of Carter's plan, which built on the programs developed under Presidents Nixon and Ford. The "soft" energy path embodies the concept of natural limits to growth, with people striving to live within these limits. Conservation is important. This approach also emphasizes the development and use of energy sources that are relatively non-polluting, renewable, small-scale and often decentralized. The "hard" energy path seeks to develop all current energy sources, with a highly centralized, highly electrified energy future. It seeks to satisfy every possible consumption desire.²⁰⁰ Governmental approaches have been stymied because neither approach has achieved a national consensus. The Carter Administration tried to appease both groups by supporting energy conservation and alternative energy development, as well as oil and gas leasing of the Continental Shelf, coal development on public lands, and other supply enhancement policies.²⁰¹ This dual approach was echoed in a February 1979, CEQ report—*The Good News About Energy*. It examined the contribution that increased energy production could make but concluded that the United States "can do well, indeed prosper, on much less energy than has been commonly supposed."²⁰² This fact, which CEQ gave half-hearted recognition to in its 1979 report, had been well-recognized by the private sector which had made intense efforts to conserve energy as energy costs soared. Since 1973, energy efficiency improvements have saved six times

199. CEQ, EIGHTH ANNUAL REPORT 62 (1977).

200. *Id.* at 273.

201. CEQ, NINTH ANNUAL REPORT 343 (1978).

202. CEQ, TENTH ANNUAL REPORT 316 (1979).

more energy than the net capacity generated from all new sources.²⁰³

An error made by the "hard energy" advocates was to assume the nation needs, or benefits from, high consumption of fuels. It is the end use of power for heat, mechanical work, mobility, and other services that consumers desire. This is more easily supplied through increased efficiency of fuel utilization than by expanding the use of fuels. Thus, the private sector pushed energy conservation, while the misguided government leadership looked to increasing consumption.²⁰⁴

In November, 1978, five major energy laws were passed: (1) the National Energy Conservation Policy Act,²⁰⁵ which established a variety of regulatory, grant, and loan programs to enhance conservation; (2) the Energy Tax Act,²⁰⁶ which provided tax credits for conservation and solar energy; (3) the Natural Gas Policy Act,²⁰⁷ (NGPA) which largely decontrolled the price of new natural gas and established measures to encourage production of natural gas; (4) the Public Utility Regulatory Policies Act,²⁰⁸ (PURPA) which encouraged revisions in state public utility rate structures to price energy at, or near, its replacement cost; and (5) the Powerplant and Industrial Fuel Use Act,²⁰⁹ (PIFUA) which was designed to increase the use of coal. The National Energy Conservation Policy Act and the Energy Tax Act, the two acts aimed at conservation, were phased out during the Reagan Administration. The NGPA created a myriad of gas categories by raising the price for "new" gas to a higher level than the ceiling price for old gas. Although this encouraged the production of natural gas, the NGPA price ceiling did not permit the marketplace to determine the price of natural gas. Thus, since present natural gas prices are higher than justified by market conditions, foreign oil is economically more attractive and oil imports continue to rise.²¹⁰

203. Carothers, *Small Wonders: The Energy Efficiency Revolution*, 13 GREENPEACE, March/April 1988, at 11.

204. *Id.* at 13.

205. Pub. L. No. 95-619, 92 Stat. 3206 (1978).

206. Pub. L. No. 95-618, 92 Stat. 3174 (1978).

207. Pub. L. No. 95-621, 92 Stat. 3350 (1978).

208. Pub. L. No. 95-617, 92 Stat. 3117 (1978).

209. Pub. L. No. 95-620, 92 Stat. 3289 (1978).

210. DOE, *supra* note 153, at 115.

PURPA encourages electric cogeneration, in which waste heat from electric power generation is used beneficially, and where renewable resources such as wind, solar, biomass, and small hydroelectric generation (80 megawatts or less) are exploited. It provides favorable pricing provisions and exemptions from certain regulatory requirements. To qualify, the project must be designated a "qualifying facility" (QF) by FERC. PURPA has been enthusiastically received. Between 1980 and 1987, applications for more than 43,500 megawatts of generating capacity were filed with FERC. However, gas and oil-fueled cogenerators made up forty percent of this capacity,²¹¹ thus continuing the use of nonrenewable fossil fuels.²¹²

The PIFUA and other legislation aimed at increasing the use of coal and decreasing the use of petroleum had little effect, even though coal use increased by one quarter of a billion tons between 1974 and 1985. The reason for coal's resurgence was the great increase in oil and gas prices, combined with the reluctance of electric utilities to make further commitments to nuclear power.²¹³

President Carter continued to push for energy conservation and production through hard and soft energy paths, but his efforts during the remainder of his term were largely in vain. The President pressed for an Energy Mobilization Board (EMB) that would accelerate the completion of important non-nuclear energy projects. In June, 1980 the House of Representatives unexpectedly voted down the EMB bill by a large margin.²¹⁴ The President did achieve passage of the Energy Security Act (ESA),²¹⁵ which established the Synthetic Fuels Corporation (SFC) to stimulate the production of two million barrels per day of synthetic fuels by 1992. That industry, as previously noted, collapsed economically in the 1980's. The Act also established a Solar Energy

211. *Id.* at 157.

212. *Id.* at 156. PURPA has been attractive to developers who qualify because prices to be paid for power produced by the projects are set before construction begins. If a developer keeps construction costs and operating efficiencies within projections the project can be profitable. Under conventional electric utility regulation, prices are determined after the project is completed and can be adjusted thereafter. Therefore, under conventional utility regulation, investment can be disallowed in whole or in part. Increasingly this is happening, thus, investment requires assuming the risk of regulatory change. This risk has made investors wary.

213. *Id.* at 162.

214. CEQ, ELEVENTH ANNUAL REPORT 263 (1980).

215. Pub. L. No. 96-294, 94 Stat. 611 (1980).

and Conservation Bank, a biomass financial assistance program, a minimum rate for filling the Strategic Petroleum Reserve, and statutory support for electric and gas utility investments in energy conservation.²¹⁶ All but the last provision have fallen by the wayside.

3. The Reagan Administration

The Carter Administration was replaced by the Reagan Administration which was more comfortable with the "hard" energy path, but most comfortable with no government policy.²¹⁷ The Reagan Administration terminated investment in soft energy approaches, except under PURPA and in energy conservation. The Reagan Administration reverted to an energy policy which seeks to satisfy every consumptive desire by pursuing hard energy paths through the private sector. The Administration's rhetoric exalts the virtue of the free market, but the energy industry is highly concentrated, with fifteen companies accounting for two-thirds of the nation's production of crude oil.²¹⁸ These companies and their Organization of Petroleum-Exporting Countries (OPEC) petroleum suppliers have a vested interest in maintaining the *status quo*.

The Reagan Administration's program has avoided assisting renewable resource development. In fiscal year (FY) 1989, solar and renewable energy technology programs were funded at an estimated \$123.090 million.²¹⁹ This is a little over one percent of the Department of Energy's (DOE) nuclear defense activities. The governments of Japan and West Germany consistently fund basic research in the solar area, particularly photovoltaic research. This may be the reason that Japan has moved ahead of the United States as the world's largest solar-cell producer.²²⁰ Since the world of the present is often the result of the research and development efforts in the past, the future of renewable resources is being decided now. That future is bleak. Energy conservation was also downplayed by the Reagan Administration.

216. CEQ, ELEVENTH ANNUAL REPORT 264 (1980).

217. An important exception was the Carter Administration's synthetic fuel program. It was criticized by conservatives and dropped by the Reagan Administration. See BADEN, EARTH DAY RECONSIDERED 63 (1980).

218. J. GEVER ET AL., *supra* note 150, at 220-221.

219. OMB, *supra* note 48, at I-J4.

220. Best, *Solar Cells: Still A Tough Sell*, SIERRA, May/June, 1988 at 27.

Outlays for energy conservation research and development and grants in FY 1989 are an estimated \$308 million compared with \$2.2 billion for energy supply research and development.²²¹ Market forces responding to higher energy prices are the primary factor in stimulating energy technologies that are more efficient.

We are getting close to the post-petroleum age. If we are going to produce oil at the present level after the year 2000, it must be from fields which have not yet been discovered. Thus, the United States needs to confront its dependency on foreign petroleum by minimizing its demand and by attempting to change its energy fuel mix in an orderly way. The reason that conservation is so important is that OPEC can greatly increase prices when demand grows. Past experience demonstrates that OPEC increases prices when demand reaches eighty-five percent of its capacity.²²²

Minimizing demand, *i.e.*, conservation, is an indispensable part of the solution because of the low net energy of most of our energy options. As we drill deeper for oil, convert coal to liquid and gaseous fuels, or pursue alcohol fuel options, we must use energy to obtain fuels in a usable form. When direct and indirect energy inputs are considered, the net energy produced by many supply-side proposals is minimal or negative.²²³ Consequently many of our energy resources can never be mined at a profit. When the price of energy rises and thereby makes production more attractive, the cost of production also increases. Only programs which increase efficiency in the use of energy and which emphasize non-petroleum energy supplies that have a net energy potential have a future in sustaining a viable ecosystem in a post-petroleum world.²²⁴ The choice as to what energy fuel mix to adopt in the near future is complex. Coal use, for example, leads to acid rain and carbon dioxide buildup. Technologies which limit environmental damage, such as air pollution controls, also utilize energy and thereby decrease the net energy obtained from coal. Nuclear power, a potential alternative, has its associated adverse environmental and safety problems and it is of questionable economic viability. Nuclear energy's net energy production is low because of the large amount of energy used to produce the materials necessary to build the power plants and the supporting fuel cycle in-

221. OMB, THE UNITED STATES BUDGET IN BRIEF, FY 1989 58 (1988).

222. DOE, NATIONAL ENERGY POLICY PLAN PROJECTIONS TO 2010 2-3 (Dec., 1985).

223. See generally, H. ODUM, ENVIRONMENT, POWER, AND SOCIETY (1971).

224. J. GEVER ET. AL., *supra* note 150, at 20, 224.

frastructures, the energy intensive fuel production process, and the energy costs associated with the need to decommission obsolete plants and store the radioactive wastes. New energy production technologies involving oil shale, and coal gasification and liquefaction, have low net energy production because processing the fuel is energy-intensive. In addition, processing uses scarce water, precluding its use for agriculture, and can do considerable harm to human health and the environment because of its toxic chemical byproducts.²²⁵

The role of nuclear power in the United States is unclear. Since 1972, 117 nuclear plant orders have been cancelled; all projects on which construction began after 1973 have been canceled.²²⁶ The Shoreham nuclear power plant in Long Island, for example, is likely to never produce power commercially even though it is completed.²²⁷ Costs of construction, licensing delays, the public attitude since Three Mile Island and Chernobyl, high-level radioactive waste disposal problems, and insurance issues²²⁸ have made investment in nuclear power very unattractive. The nuclear industry is dependent upon extensive government subsidies which makes its survival dependent upon political decisions.²²⁹ But the attractiveness of nuclear power could change with a shortage or substantial price increase in oil. Even, in our anti-nuclear climate, 105 commercial nuclear power plants produce seventeen percent of the United States' electricity. This is the second largest source of electricity and is equal to the entire United States electricity demand in 1952.²³⁰

Outside of the United States, the picture is quite different. Nuclear power is expanding. More than 100 nuclear powerplants have been ordered since 1978, and more than 370 nuclear plants are operational. In France, over seventy percent of the electricity is nuclear-generated, and in Japan twenty-seven percent of the

225. MITRE CORPORATION, HEALTH AND ENVIRONMENTAL EFFECTS OF OIL SHALE TECHNOLOGY (1979); MITRE CORPORATION, HEALTH AND ENVIRONMENTAL EFFECTS OF COAL GASIFICATION AND LIQUEFACTION TECHNOLOGIES (1979). See also CEQ, TENTH ANNUAL REPORT 348 (1979).

226. DOE, *supra* note 153, at 189.

227. Kurtz, *Cuomo's Plan to Mothball Long Island Nuclear Plant Stalls*, Wash. Post, May 17, 1988 at C1, col. 2.

228. Reitze & Rowe, *The Price Anderson Act—Limited Liability For The Nuclear Industry*, 17 ENVTL. L. REP. 10185 (Envtl. L. Inst.) (1987).

229. One estimate of the U.S. government subsidy to the nuclear power industry is \$15 billion per year. Carothers, *supra* note 202, at 17.

230. DOE, *supra* note 153, at 187.

electricity is nuclear-generated.²³¹ The disaster at Chernobyl has increased grass roots opposition to nuclear power, but, so far this has not led to a change in the many nations that are far more dependent upon nuclear power than the United States.

III. CONCLUSION

Since consumption-induced stress can seriously damage our environment, energy policy needs to be formulated as part of an environmental policy. We need to plan how much energy we should use and how it should be fueled. In addition, we must today consider that the Clean Air Act with its stringent environmental controls on new facilities provides a major incentive to keep aging dirty coal plants on line.²³² Expansion of the hydroelectric industry is largely precluded due to the lack of economically suitable sites for new plants and environmental opposition to dams.²³³ Nuclear power expansion in the United States is dead primarily because of mismanagement by the industry.²³⁴ The government seems content to see electrical power production expand and for such power to be generated from aging nuclear plants, the burning of dirty fossil fuels, and imported sources.²³⁵ Solving the problem of acid rain is, we are told, precluded by considerations of employment and economic impacts.²³⁶

Environmental problems are not easy to solve, but we need to avoid focusing excessively upon narrow, isolated issues. We need to look at the important issues which were identified in the 1960's, but that seem to have been lost in the 1980's. The solution to our environmental problems does not lie in tirelessly regulating peripheral details; it lies in adopting basic, overall population, material conservation and energy policies. A great

231. *Id.* at 183.

232. Banks, *EPA Bends to Industry Pressure on Coal NSPS — and Breaks*, 9 *ECOLOGY L.Q.* 67 (1980-81).

233. DOE, *supra* note 222, at B-6; Wild And Scenic Rivers, GAO/RCED-87-39, Dec., 1986. Small low-head hydro-projects do continue to be built over the opposition of many environmentalists. See Reisner, *Power, Profit, and Preservation*, *WILDERNESS*, Fall 1984 at 26 and *Small Hydroelectric Projects and State Water Rights*, 18 *PAC. L.J.* 1225 (1987).

234. Cook, *Nuclear Follies*, *FORBES*, Feb. 11, 1985 at 82; Komanoff & Van Loon, "Too Cheap to Meter" or "Too Costly To Build"? (*How Nuclear Power Has Priced Itself Out of the Market*) 4 *NUCLEUS 3* 1982; but see, Novak and Kaplan, *Power Politics, How the Nuclear Power Lobby Won Big on Capitol Hill*, *COMMON CAUSE MAGAZINE*, Jan./Feb., 1988 at 20.

235. Huber, *Electricity And The Environment: In Search of Regulatory Authority*, 100 *HARV. L. REV.* 1001 (1987).

236. *CEQ*, 16TH ANNUAL REPORT 202 (1987).

deal of research has already been done, but it has not resulted in policy development. Part of the reason is that the Department of Energy is not primarily an energy agency, for it commits about two-thirds of its budget to the production of nuclear weapons.²³⁷ Its environmental mission is even more limited. Materials policy and population issues have been studied, also, but have not been integrated into environmental policy.

There are hard choices to be made. We must choose between an expanding population, an increased material standard of living, or continued high expenditures for national security. We can not simultaneously pursue all three. From 1980-1987 we spent \$2 trillion trying to buy security,²³⁸ in a world whose population has outstripped its resource base. In such a world, a wealthy well-armed population can not continue to consume a disproportionate share of the global resources. Our centralized and complex society is extremely vulnerable to disruption from terrorism, fuel and strategic material cut offs, and wars over access to natural resources.

Since the price at the pump for gasoline does not include the massive defense costs to assure its delivery, the price does not reflect the real cost. This encourages gasoline consumption and the continued growth of the national debt. We have created a runaway national debt that grew from \$1 trillion in 1981 to \$2.6 trillion in 1987 and now threatens the well being of our economy. A large chunk of this national debt was incurred to keep petroleum flowing to the United States. Thus our fuel consumption is a threat to our economy, security, and environment.

Developing the infrastructure to support a post-petroleum fuel mix will be difficult. Curbing consumption through increased efficiency and lifestyle changes will be even more difficult. But this environmental approach offers the best chance we have of sustaining our ecosystem, our economy, our national security, and our world. If the United States had a stabilized population, it could help other nations to do the same through technical, financial, and educational assistance. This proposed solution is simple, perhaps simplistic, but achieving it is very difficult.

237. Total federal funds for DOE in FY 1989 are \$16,079,752,000 and are \$12,529,893,000 after offsets. OMB, *supra* note 48 at 6f-72. Total obligations for atomic energy defense activities are \$10.8 billion and \$8.1 billion after offsets. OMB, APPENDIX BUDGET OF THE UNITED STATES GOVERNMENT, FY 1989, I-J1 (1988).

238. Center for Defense Information, 16 THE DEFENSE MONITOR 7 (1987).

Nevertheless, any success reduces the pressure on our environment and increases the time we have to protect our planet. At the same time, we should focus on lowering our dependency on natural resources, particularly petroleum. This can be accomplished by improved energy efficiency and by lifestyle changes, which would occur if we allow energy costs to slowly rise to reflect, as much as possible, the actual cost. Government efforts to provide a greater diversity of transportation options and a serious effort to reduce dependency on the automobile would assist in reducing the demand for petroleum. Diminished fuel use would be the way to lessen the onslaught of acid rain, the greenhouse effect, oil pollution of the oceans and other environmental problems which have not responded well to the existing regulatory approach. Reducing demand for oil would also slow the rate at which future petroleum prices increase and relieve some of the economic pressure on Third World nations.

A major effort by the United States should be made to reduce the energy used by agriculture. This will be absolutely necessary if we are to continue feeding our population and exporting food in an era of increasingly expensive petroleum. Post-petroleum agriculture could provide an opportunity to reverse the employment trend of this century by producing new opportunities for jobs; human labor would replace the current energy and petrochemical intensive American agriculture. Soil conservation efforts made to improve farm land could provide employment opportunities in reversing the declining fertility of the base of our farm economy. The nation's high paying, blue collar jobs that have been lost to foreign competition are unlikely to ever reappear.²³⁹ But if we focus upon trying to build a sustainable economy, there will be plenty of meaningful work to do.

Investment must be made to develop viable technologies to replace petroleum. A mix is needed and no clear picture of what technologies will evolve is available. But the criteria for the technologies we should support should be: (1) technologies should be sustainable without serious harm to the ecosystem; (2) technologies should be decentralized rather than lead to economic concentration; (3) technologies should produce net energy. If this analysis had been performed in the 1950's, we would proba-

239. Rich, *Economic Fortunes Fading For America's Less Educated*, Wash. Post, June 2, 1988 at A1, col. A18.

bly not have sunk billions of dollars into nuclear technology and its limited payoff. Such an analysis would probably preclude development of an alcohol-fueled economy. Alcohol requires almost as much energy to produce as the product provides. Moreover, the removal of crop residues for alcohol production will increase soil erosion. If food crops or agricultural land is used for alcohol production then the amount of food diminishes.²⁴⁰ Thus, solar, wind, and hydroelectric generation fit these criteria. However, the need for liquid fuels also requires efforts in the synfuel areas, but increased research and development is needed rather than moving environmentally dangerous present day technologies to the production stage.

We can not protect our environment with the approaches which we have vigorously pursued for the past twenty years. Many environmental regulations are requiring close to 100% control of pollution emissions, and the costs of such compliance are approaching infinity. Yet our ecosystems continue to decline in quality. Moreover, all of our problems are exacerbated by the sixty million people added to our population since 1960. Yet our population policy, or lack of one, receives little attention. We need a serious, sustained, interdisciplinary effort to develop and implement policy to resolve these problems. The policy we choose will determine what kind of world we leave our children. This choice is too important to be entrusted to a single mission agency, although many government agencies must be involved. The EPA, with its orientation largely determined by the statutes it implements, has sometimes become part of the problem rather than the source of solutions. The components of EPA lobby for more money to address their numerous existing mandates without much attention being given to the overall needs for ecosystem protection. The appropriate organization for broad environmental planning should be the Council on Environmental Quality (CEQ).

The CEQ has a national constituency and its placement in the Office of the President gives it a good location for carrying out planning functions that will affect many agencies and all levels of our government. Since it does not administer existing statutes or have many operational responsibilities, it is free to adopt new approaches to environmental protection. Its mission is simple; exe-

240. J. GEVER ET. AL., *supra* note 150, at 245.

cution is difficult. CEQ could generate information and create the plan to achieve a sustainable ecosystem that would offer a quality life to succeeding generations.

The CEQ engaged in broad spectrum environmental planning in its early years. Much of the work was valuable but unused. There was little leadership to explain the problem to the public and to move toward consensus. We need to develop environmental policy in a manner similar to the way economic policy evolves. Economic policy is very complex, but we have developed considerable proficiency in appointing qualified professionals to high level advisory groups within government. Political leaders use the work of skilled professionals to develop a political consensus followed by legislation and implementation. We have demonstrated in the economic sphere that we possess the ability to translate an admittedly imperfect, though complex discipline, into public policy within the framework of a democratic society. We need to do the same for environmental policy. We can not afford the *ad hoc* approach that has been used for twenty years. We can not pretend that ecosystem protection can be solved by a large intrusive bureaucracy generating endless regulations while ignoring the population and consumption elements of the equation.

The interest in serious broad spectrum environmental planning peaked in 1980. The anti-environmental agenda of the Reagan Administration began its work in 1981.²⁴¹ The CEQ was downgraded and its staff was significantly reduced. The exercise of leadership in the environmental field by the CEQ ended. In another agency, Surgeon General C. Everett Koop, with a comparably small staff, became a nationally recognized figure for his leadership and moral persuasion concerning AIDS and the dangers of smoking to the public health.²⁴² The CEQ, however, became unimportant. In the Reagan years the subjects of population and energy conservation have nearly disappeared from the annual reports of the CEQ except for a few pages in the 1984 report claiming that the anti-abortion policies espoused by

241. The Reagan Administration's efforts to stop pollution control are documented in Wood, *Principals, Bureaucrats, And Responsiveness In Clean Air Enforcements*, 82 AM. POLITICAL SCI. REV. 213 (1988).

242. Bean, *Surgeon General's Stature Is Likely to Add Force to Report on Smoking as Addiction*, Wall St. J., May 13, 1988 at 21.

the Administration at the International Conference on Population in Mexico City were an environmental policy.²⁴³

A primary responsibility of a new administration should be the rehabilitation of the CEQ. CEQ members should be chosen from the best minds on the subject—as close as we can come to philosopher kings. They should expand the concept of environment to include a long range view of environmental priorities. The CEQ will require a small, but professionally skilled, staff of at least the thirty-two of the pre-Reagan era.²⁴⁴

To bring our planet into harmony with its long term carrying capacity will not be easy. To even begin the task requires confronting and changing long established values of our society. Environmental law has become a technician's field. But this approach, while having value, will eventually lead to collapse. Our habitat can not be sustained by incrementally reducing pollution at extraordinary cost. Environmental law needs to become a revolutionary field that honestly confronts the physical and biological limits of our world and seeks to live within these limits. To do so, we all need to learn a lot more than we know today, but we know enough to now begin. We must start the dialogue that is necessary in a democratic society to produce change. Our problems of the present and the future are not separate individual problems of overpopulation, war, famine, and resource shortages. Our problems are interrelated problems for which harmful environmental impacts are often a symptom. Dealing with these problems requires simultaneous solutions in which the common theme is to cut down waste and to establish a stable and sustainable population. This requires a viable population, material conservation, and energy policy.

243. CEQ, 15TH ANNUAL REPORT 484 (1984).

244. ORLOFF & BROOKS, THE NATIONAL ENVIRONMENTAL POLICY ACT 40 (1980). For fiscal year 1987 the Council on Environmental Quality had 11 full-time permanent positions. OMB, *supra* note 237, at I-C4.