10 Living with Toxic Risks

Nothing so fair, so pure, and at the same time so large as a lake, perchance, lies on the surface of the earth.
—Henry David Thoreau

To waste, to destroy, our natural resources, to skin and exhaust the land instead of using it so as to increase its usefulness, will result in undermining in the days of our children the very prosperity which we ought by right to hand down to them amplified and developed.
—Theodore Roosevelt

The United States does not now face an environmental crisis . . . . Looking ahead, however, there is a set of complex, diffuse, long-term environmental problems portending immense consequences for the economic well being and security of nations throughout the world, including our own.
—Administrator of the U.S. Environmental Protection Agency William Reilly

When EPA officials become discouraged over progress in cleaning up America, they often console themselves by saying, "We're doing better. We're only feeling worse." Many of us surely are feeling worse as the experts uncover new sets of environmental problems each year. More sensitive analytical chemistry techniques reveal previously unrecognized traces of man-made chemical contaminants in food and water and in the air of our nation's living rooms. As bulldozers excavate below the ground's surface to prepare building foundations or simply to level the land, they unearth chemicals which were discarded or spilled and hidden with dirt. Some of these chemicals have slowly spread like

unbounded oil spots. Around the globe, evidence of human wastes is appearing everywhere, from toxic metals in the purportedly pristine Bering Sea to acid deposition in uninhabited deserts. Finally, we need no reminder about the hot summer of 1988 which some believe surely portended a future of hothouse living under a blanket of air pollutants.

But are we doing better? Washington has enacted extensive environmental legislation, and all state capitals are issuing regulations that seem to touch every facet of our lives. In many regions of the country, rivers have come back to life and air pollution levels have declined. The government has restricted the use of a number of potent pesticides and other dangerous chemicals. Moreover, a number of U.S. attorneys, supported by many investigators often called eco-cops, work full time tracking down violators of environmental regulations. Every major manufacturing company now claims an environmental conscience. Ecological issues have risen to the top of the agendas of summit meetings of heads of state. Green organizations are on the alert in almost every country.

Yet the gains in mitigating pollution pale in comparison with the potential severity of environmental problems. Even with the anticipated reductions in emissions of air pollutants, in some areas the remaining levels will still cause harm to people and to ecological resources while steadily adding to the overall contaminant burden placed on the Earth. Water pollutants may be temporarily out of sight as they cling to sediments at the bottom of rivers only to resurface when the sediments are disturbed. Pollutants that have been accepted as safe at low levels may not be totally benign. While they may not cause recognizable diseases or disorders, some have very subtle effects on genetic systems which in time can change human or ecological characteristics. Indeed, we can no longer limit environmental concerns only to the "adverse" effects of exposures to chemicals entering the environment. "Adverse" defies definition, and all types of chemical side effects must now receive attention.

In terms of regulations and cleanup activities, we as a nation are doing much better than in 1970, in 1975, in 1980, or in 1985. But we're not doing well enough for the 1990s. In homes, consumption patterns remain wasteful and in many ways incompatible with environmental improvement. If Americans really need to use two billion disposable razors each year, communities must learn to handle plastic

wastes. Americans now have so many automobiles that the entire population of the United States can ride in the front seats. If Americans insist on driving 10 to 20 miles to work, gas guzzlers must become a historical artifact. If our megacities continue to grow, support for fume-free mass transit must find a place in city budgets.

In undeveloped countries, population growth has skyrocketed with attendant pressures on the land, forests, and rivers. This population explosion can no longer continue unchecked. If the Chinese begin to use their low-grade coal on a massive scale, the skeptics who doubt the likelihood of future greenhouse summers will rapidly lose their skepticism.

Fortunately, national governments around the world have finally awakened to the severity of environmental problems. They recognize that human life is fragile and that survival is at stake. We have no alternative but to do better in the 1990s.

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How much should the United States invest now to protect its ecosystems and its people from eventual destruction? How does society decide how much is warranted?

Unless human activity stops altogether, the environment cannot be free of man-made contaminants. In all areas of environmental protection, the core issue is how clean is clean enough. When should an aquifer be abandoned as a source of drinking water? When should fishing grounds be closed? How deeply should leaking waste sites be excavated? When do traces of toxic chemicals in the air reach an unacceptable level?

Human factors compound the difficulty confronting governmental bodies and individuals in reaching day-to-day environmental decisions that determine the future of the nation and the planet. Decisions must be made despite the uncertainties of science and the uncertainties as to how society will react to new ground rules for living. Some government officials are uncomfortable with uncertainties and too often prefer to procrastinate when faced with doubt about environmental hazards and economic costs. Many scientists are reluctant to acknowledge uncertainties in their judgments lest their views be dismissed. At the same time, the public is no longer hesitant to question the assertions of

experts, and lawyers seize on uncertainties to discredit their opponents.

The preceding chapters have presented a few signposts that I hope will be helpful in charting the many routes that America should follow. Our society can successfully navigate the shoals of environmental hazards only with a rudder of boldness since time is too short to accommodate all the social biases of the past. Now, national debates over our environmental future must give greater attention to core issues that were easier to avoid in previous years: the use of federal lands as sites for chemical disposal, the intrusion of federal and state authorities into local zoning decisions, the acceleration of the development and use of nuclear power, the introduction of higher gasoline and energy taxes, and the commendation as well as the condemnation of industry for their environmental activities. The EPA must have the backbone to resist political pressures to try to solve every problem at once and thereby solve none. For example, it makes much more sense to thoroughly clean up a limited number of chemical waste sites each year than to find partial solutions for every waste site in order to satisfy the demands of local political constituencies—partial solutions that require additional solutions in future years.

America will founder on the rocks of self-destruction if the hands on the tiller of environmental policies steer by concepts that insist on the primacy of near-term economic betterment over environmental quality and concepts that are wedded to how it was rather than how it must be. Every American has a stake in the environment, and every American will have some influence on the quality of life on the planet. We will all decide our environmental future. Elected leaders, appointed officials, economic barons, and articulate journalists may have the most visible votes. But 250 million Americans are shareholders in this enterprise, and every day they are redefining the meaning of proxy votes.

* * *

How can the entire population effectively participate in determining the future environmental quality of the nation when even the experts disagree on almost every major prevention or abatement program that is proposed?

Our system of "modern" education will be tested as never before.

Parents must stress environmental literacy in the home at the earliest age. Learning about ecological resiliency and sustainable development must continue in the schools, the universities, and beyond. Teachers and professors, camp counselors and park rangers, museum and exhibit directors, television and press commentators, and friends and colleagues all play important roles in this educational process. But self-instruction will be critical as Americans increasingly experience the impacts of environmental degradation and are confronted with environmental rules and regulations which constrain personal behavior.

Within the formal system of education, the state of Pennsylvania, for example, has long required every high school student to take at least one course in environmental studies, and other states are now following suit. Many states provide outdoor classroom experiences in parks, in coastal areas, or in other nature settings, and a growing number of young students across the country are pursuing serious environmental projects. However, well-trained teachers and appropriate instructional material are in short supply in many regions of the country, despite specialized teacher training programs that have been under way for many years. Unfortunately, the financial resources devoted to preparing the youth of the nation to participate in environmental programs have been grossly inadequate.

Let us look to the day when all high school graduates know that an estuary is a confluence of freshwater and saltwater bodies and that estuaries are vital marine habitats. Let us hope that bearers of high school diplomas will know that groundwater is more like an underground sponge than an underground river and that radon is formed during the radioactive decay of uranium in naturally occurring rock formations.

Many faculty members of our universities and colleges have an intense interest in important environmental issues and are eager to present courses, developing their own texts when necessary. Some higher educational institutions take great pride in their well-established environmental studies programs which combine mixes of science and the liberal arts. Other institutions offer environmental "familiarization" programs which we hope will not degenerate into simply easy courses for fulfilling mandatory science requirements. To participate effectively in the public debates on environmental issues, college graduates should understand that a standard deviation is a measure of uncertainty, and

they should know how to find environmental regulations in the *Federal Register* which lines the shelves of libraries throughout the country.[1]

Formal education programs in the environmental field should stress the rigor of science and the centrality of ethics in environmental decisions. Many students are not equipped to deal with complex chemical formulas or intricate physical reactions. However, they all should appreciate the importance of care and precision in physics and chemistry which differentiate useful science from voodoo science. They should recognize the significance of encasing scientific conclusions within statements of certainty or uncertainty. While environmental ethics is still an evolving field, one moral precept is crystal clear. The environmental ethic demands a respect for the rights of future generations to continue to enjoy life on this planet.

The media will continue to dominate educational processes outside the classroom, and environmental disasters will always be featured on television and in the press. Environmental successes are simply less newsworthy. Who wants to hear about nontoxic coolants being used in new transformers when firemen are coping with the ecological threats of PCBs leaking from old transformers? Perhaps in the near term this bias toward sensationalism in the education of Americans is acceptable given the historical neglect of the environment and the need for more corrective actions now than in the past. However, in the longer term, more balanced reporting of environmental successes as well as problems will surely be needed.

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Public support for governmental decisions is essential if national and local environmental policies are to achieve their aims. Public support cannot be commanded, nor can it be purchased. Support cannot be expected from an uninformed public nor from a public which has been excluded from the debates leading up to the decisions. The public wants to be heard, and indeed demands to be heard.

During the past decade the public trust of government has declined, and perhaps rightfully so. But public opposition to any proposal of government which is new can be self-defeating. Unfortunately, the public's Pavlovian response to government initiatives too often is, "An-

other cockamamy idea from Washington." And public enthusiasm for established environmental policies is often lethargic at best.

The EPA is slowly emerging from the depths of public mistrust where it has been mired following the outrageous behavior of some of its leaders in the early 1980s. Still, suspicions about the agency's actions abound in Washington and in other parts of the country. In particular, the EPA must become more sensitive to the importance of quantitative measures of environmental progress. The agency takes great pride in boasting that the levels of lead pollutants in the air have declined by 90%. Yet it pushes aside widespread concerns that only one-tenth of 1% of the 30,000 sites, which, in part, have been characterized as hazardous, have been completely cleaned up and that more than a decade is required to clean up a site. Also, the large number of cities which are out of compliance with air pollution standards after several decades of environmental controls is very disturbing to environmental constituencies, as are the tons of air toxic discharges every year and the hundreds of commercial chemicals which were identified in the 1970s for testing but have yet to be sent to the laboratory.

Of course the EPA is not the only federal agency which riles the anger of environmentalists. We have discussed the environmental liabilities at the nuclear weapons facilities of the Department of Energy. Many Army, Navy, and Air Force facilities throughout the country also have major environmental problems.[2] In addition, chemical contamination can be found at the wood and metal workshops of the Bureau of Prisons, in laboratories confiscated in federal drug raids, in silos filled with toxic fumigants owned by the government's Commodity Credit Corporation, and near abandoned mines on federal lands. No one can begin to estimate the environmental problems which will be encountered in the seizures of the assets of failed savings and loan associations.

The EPA and other agencies need to become more proactive in convincing the Congress and the public that they are putting their houses in order and that they are going beyond the requirements of environmental laws. If the number of cleaned up sites or facilities and the size of laboratory testing programs are not true indicators of progress, then the agencies should develop and articulate other easily understood indicators. Clearly, the government must constantly show its

environmental commitment by both words and deeds if the public is to support the national effort.

Views of experts diverge on the details of almost every significant environmental proposal, old or new, and this divergence has to be accepted as a given. As indicated, of greater importance is a national commitment to stronger environmental protection and a public perception that public officials are living up to that commitment. Details of proposals will then be worked out with pain for a few but satisfaction for many. Arguing that regulations must accommodate compromises, many EPA officials smugly say, "If everyone is a little unhappy, we must have made the right decision." However, greater care is needed to ensure that such compromises do not erode the national commitment.

The United States sorely lacks charismatic leaders to rally the environmental instincts of a nation plagued by eco-risks. Such leaders could help bridge the gap between the suspicion of the public and the efforts of the government. A Jacques Costeau, a Carl Sagan, or a Ralph Nader for the environment simply has not emerged during the past 20 years. The administrators of the EPA are viewed as temporary captains of the ship. I hope that during the 1990s new leaders will step forth who can stir the emotions of the general public and command the attention of the government while promoting the ideas set forth by John Muir earlier in the century.

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For 45 years we survived the cold war that divided East and West. As we prepare to enter the next century, we could be on the threshold of a hot war between nature and humanity. Environmentalists have joined the diplomats, generals, and bankers as full-fledged members of the national security establishments of most countries. Indeed, ecological security is rapidly becoming as important as military or economic security. All nations have been fighting local skirmishes to preserve their cities and towns, their rivers and beaches, and their forests and parks. Now we need broader alliances to combat the environmental mercenaries of global warming and ocean pollution. Since only humanity can be the winner or loser in environmental battles, all nations should be on the same side.

The United States should be among the leaders and not the followers in this international struggle confronting all nations. But we will be able to lead only if we have our own problems under control. The United States is the world's largest polluter and needs to reduce its own emissions if, for example, it is to encourage preservation of forests in the Amazon to help absorb these emissions.

The United States is the world's richest nation. If it is to lead, it needs to reorder budget priorities. Is one B-2 stealth bomber really twice as important as the annual research budget of the EPA? Should the United States continue to be among the stingiest of all donors of foreign aid? Can the states really be expected to shoulder the increasing economic burden of pollution control without greater help from Washington?

* * *

We can avoid an environmental apocalypse, but we don't have much time. According to the Administrator of the EPA, William Reilly, ". . . the United States does not now face an environmental crisis. Progress continues in abating some types of pollution problems in some places, and in the short haul no impending disasters can be predicted from a failure to address any of the lengthy list of environmental issues. Looking ahead, however, is a set of complex, diffuse, long-term environmental problems portending immense consequences for the economic well being and security of nations throughout the world, including our own . . . ."[3]

U.S. environmental policies during the 1990s, together with policies of other countries, will determine whether the next century is a time of prosperity or simply a time of survival. In its "Good Sense Formula for the 1990s," *Newsweek* wisely advocates:

> Stop splitting hairs: The most effective environmental standards are based on what's technologically feasible, not on arcane estimates of potential health hazards.
>
> Arrest the NIMBY (Not in My Back Yard) patrols: By blocking construction of new waste facilities, they keep bad old ones in operation.
>
> Regulate farms, not just factories: Only 9 percent of the pollutants flowing into America's streams come from industry. Sixty-five percent come from nonpoint sources.

> Save the swamps: Wetlands and mundane woods may lack the sex appeal of national parks and wildlife preserves but their ecological significance is greater.[4]

As to reasonable environmental targets for the United States, by the year 2000 all passenger automobiles should achieve 40 miles per gallon using cleaner fuels. Discharges of toxic pollutants into the air and water should be cut in half. With few exceptions our cities should be in compliance with ozone standards, and 95% of rivers and streams should be ecologically alive. Further degradation of groundwater should be capped, and chemicals used for farming should be reduced by more than 50%.

Within manufacturing industries, technologies which minimize waste and facilitate recycling should replace scrubbers and filters as the principal means of attacking pollution. Indeed, efficiency of plant operations is synonymous with pollution prevention. Leaking valves, wasted electricity, and discarded but valuable metals and organic chemical residues don't make sense—economically or environmentally.

While economic disparities among countries will persist, all countries can contribute to reducing the global pollution burden, to preserving the genetic richness of the flora and fauna, and to tempering the pressures on the natural resource base. By the year 2000 the United States should have shifted considerable financial resources from the Pentagon to foreign aid programs for resource conservation and pollution control. These activities should displace the Strategic Defense Initiative and mobile missiles in the national security debates in Washington. We must respond to new challenges to our security with our pocketbooks. At the same time, international cooperation in attacking environmental problems can build trust and confidence among countries which have been sorely lacking during the second half of the 20th century.

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In sum, Americans have no choice but to pay now or pay later for their long-term survival. Actions or inactions during the 1990s will determine the costs during the next century. The environmental debt is accumulating, and the price tag for healing America's chemical wounds increases every year.

3. See, for example, Schneiderman, Howard A., and Will D. Carpenter, "Planetary Patriotism: Sustainable Agriculture for the Future," *Environmental Science and Technology,* April 1990, pages 466–473.
4. *Introduction of Recombinant DNA-Engineered Organisms into the Environment, Key Issues,* National Research Council, National Academy Press, 1987.

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1. See, for example, Weis, Judith S., "The Status of Undergraduate Programs in Environmental Sciences," *Environmental Science and Technology,* August 1990, pages 1116–1121.
2. The report for 1987 and 1988 of the White House Council on Environmental Quality presented an unwarranted optimistic view of the environmental situation on the lands and at the installations of the Department of Defense, for example. See "Environmental Quality," Council on Environmental Quality, Executive Office of the President, undated but released in late 1989, pages 149–181. Shortly after its publication, *Newsweek* provided an insightful revelation of the very severe environmental problems at some of the worse sites of the Department of Defense. See Turque, Bill, and John McCormick, "The Military's Toxic Legacy," *Newsweek,* August 6, 1990, pages 20–23.
3. *State of the Environment: A View toward the Nineties,* A Report of the Conservation Foundation, Washington, D.C., 1987, page xxxix.
4. Easterbrook, Gregg, "Cleaning Up," *Newsweek,* July 24, 1989, page 29.