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# EPA JOURNAL

**An Environmental Ethic:  
Has It Taken Hold?**



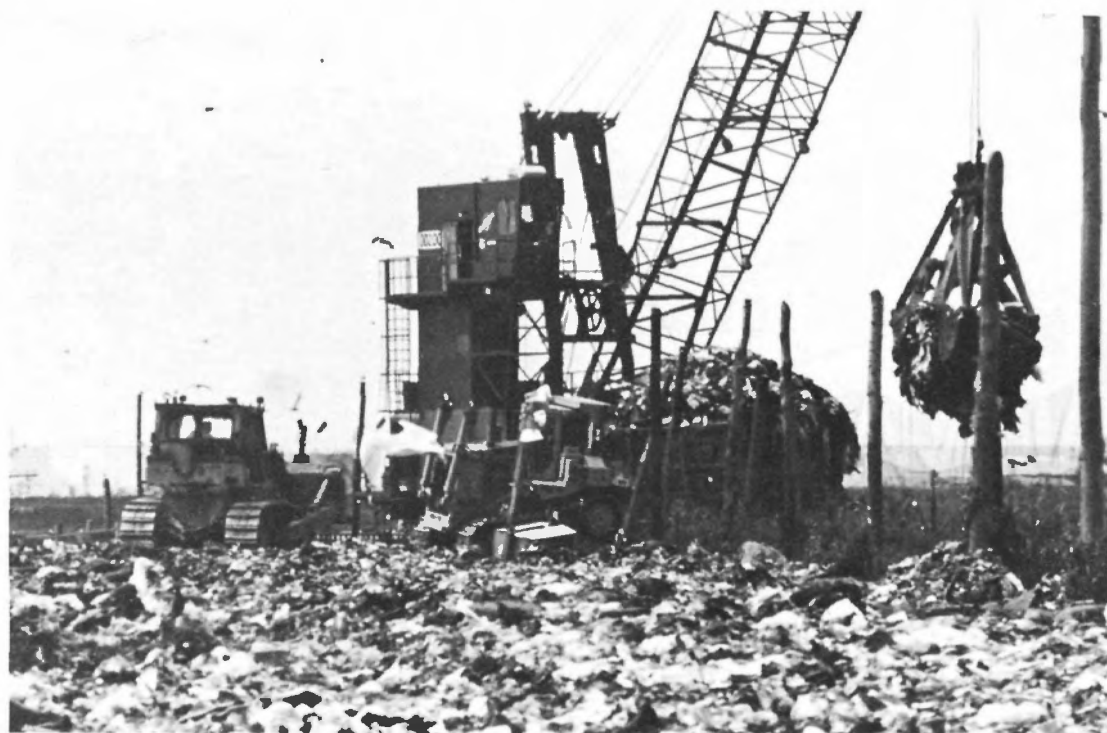
# An Environmental Ethic: Has it Taken Hold?

**E**arth Day and the creation of EPA in 1970 symbolized the increasing concern of the nation about environmental values. Now, 18 years later, has an environmental ethic taken hold in our society? This issue of *EPA Journal* addresses that question and includes a special section on a facet of the environmental quality effort, environmental education.

The issue begins with an article by Pulitzer Prize-winning journalist and environmentalist Robert Cahn proposing a definition of an environmental ethic in America. A *Journal* forum follows, with five prominent environmental observers answering the question: has the ethic taken hold? EPA Administrator Lee M. Thomas discusses whether American individuals have gotten serious about environmental protection as a practical matter in their own lives, and a subsequent article analyzes the findings of recent public opinion polls.

Next are two articles through the looking glass since Earth Day, one by former Democratic Senator Gaylord Nelson, who founded Earth Day, and one by John C. Whitaker, who was an environmental staffer in President Nixon's White House.

Two articles about industry and the environmental ethic follow. The first is by Kent Gilbreath, an educator and member of the Dallas Federal Reserve Bank Board, discussing industry's environmental attitudes generally. The second is by W.R.O. Aitken, Executive Vice President of the International Nickel Co. (Inco Limited), explaining his company's environmental experience and views.



On Staten Island, Fresh Kills Landfill—the world's largest garbage dump—receives waste from all five of New York City's boroughs. Here a crane unloads waste from barges and loads it onto trucks for distribution elsewhere around the dump site. William C. Franz photo, *Staten Island Register*.

Broadening the issue's perspective, Gro Harlem Brundtland, the Prime Minister of Norway and a world environmental leader, explains the imperative for a global environmental ethic. An editorial by the editor of the *Journal*, John Heritage, follows.

Next an "environmental literacy test" is offered to assist readers in evaluating their own environmental awareness.

A special section is included on environmental education, a subject which received a boost in national priority from the public concern which flowered in the early 1970s. In the first article, Jack Lewis, who writes for the *Journal*, traces the evolution of environmental education in

this country up to the present; a box provides a summary report on educational activities in the states. The role of environmental education in the future is the subject of an article by educators John Paulk and Lynn Hodges.

Two teachers, Belva Peterson of Cuthrie Center, Iowa, and Melvin Marcus of Brooklyn, New York, describe the school projects they directed that won President's Environmental Youth Awards. Then writer John Falk explores the question, are children getting an environmental protection message outside the classroom?

Concluding this issue's coverage of environmental ethics and education is an *Environmental Almanac* feature with author and bird-watcher Lola Oberman reporting on the return of waterfowl to the Potomac

River in the nation's capital.

On another environmental issue, the *Journal* notes that EPA recently proposed new standards for the protection of agricultural workers from pesticide exposure. In a point/counterpoint feature that follows, two observers—Claudia Fuquay of the United Fresh Fruit and Vegetable Association and Dr. Marion Moses, a physician who is actively involved in farm safety issues—comment from different vantage points on the adequacy of EPA's proposal.

This *Journal* concludes with a regular feature, Appointments, and a report on the EPA winners of the 1988 Presidential Rank service awards. □

# EPA JOURNAL

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Front Cover: Earth Day, 1970, symbol of a national environmental awakening. A scene in New York city is pictured in this photo by Jason Lauré, Woodfin Camp, Inc.

Announcements:  
Beginning with the next issue, EPA Journal will be published bimonthly, or six times a year.

The next issue of EPA Journal will be on environmental priorities for the nation as seen by different observers.

Correction: The back cover photograph in the last issue of EPA Journal was incorrectly identified to the magazine staff by a photo rental house as being an aerial picture of Cape May, N.J. In fact the photo is of a nearby section of shoreline. The Editor and the photo house, Woodfin Camp, Inc., regret the error.

## EPA Journal Subscriptions

The annual rate for subscribers in the U.S. for the EPA Journal is \$11.00. The charge to subscribers in foreign countries is \$13.75 a year. The price of a single copy of the EPA Journal is \$1.75 in this country and \$2.19 if sent to a foreign country. Prices include mail costs. Subscriptions to the EPA Journal as well as to other federal government magazines are handled only by the U.S. Government Printing Office. Anyone wishing to subscribe to the EPA Journal should fill in the form at right and enclose a check or money order payable to the Superintendent of Documents. The requests should be mailed to: Superintendent of Documents, GPO, Washington, DC 20402.

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# What is an Environmental Ethic?

by Robert Cahn

Pilgrims to Yellowstone Park, established in 1871 as the first U.S. national park. This late 1920s photo shows throngs arriving at the Gardiner, Montana, train station, near the northern entrance to Yellowstone. National Park Service photo.

Throughout 20 years as an environmental journalist and during the period from 1970 to 1972 when I was a member of the newly formed President's Council on Environmental Quality (CEQ), one concept that has particularly interested me is the nurturing of a genuine environmental ethic in America.

What is an "environmental ethic?" Perhaps ecologist/writer Aldo Leopold says it best in his essay "The Land Ethic" from *A Sand County Almanac and Sketches Here and There* (1949):

All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively, the land ... a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it .... It implies respect for his fellow-members, and also respect for the community as such.

Reading Leopold's essays in the late 1960s, and realizing that the word "land" implied the total environment, made me aware of the urgent necessity for every citizen to have a feeling and awareness that the earth is not here for humans to manipulate, but that humanity exists as part of an interrelated world. "We abuse land because we regard it as a commodity belonging to us," Leopold also wrote. "When we see land as a community to which we belong, we may begin to use it with love and respect."

Researching a series of articles on America's national parks at about that time also brought an awareness of how the environmental ethic could be put into practice. It was just such an ethic that led to the starting of national parks in the world. An early explorer of Yellowstone, Cornelius Hedges, stated, "It is impossible that any individual should think he can own any of this country for his own in fee. This great wilderness does not belong to us. It belongs to the nation. Let us make a public park of it and set it aside never to be changed but to be kept sacred always."

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***Each individual—corporate executive, public official, or aware citizen—must make fewer demands on non-renewable resources ....***

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While visiting the national parks I came to recognize that people felt the parks belonged to them, as a part of their heritage, and they felt fiercely protective of them ... that to harm or threaten a national park is to touch a sensitive nerve in the American public. Many visitors and park employees seemed to live by a set of values rarely seen elsewhere. They were not seeking economic benefit, but instead seemed to feel that they were part of a whole natural system. Most of them behaved as if they did not want to leave that system any worse off than they found it, so that others, and even future generations, could share and enjoy it.

After being disappointed by finding little of an environmental ethic practiced in government and business during my almost three years as a member of CEQ, my journalistic curiosity led me in 1974 to start looking into the existence of the ethic and resulted four years later in a book,

*Footprints on the Planet: A Search for an Environmental Ethic* (1978). Specifically, I sought to discover what impacts the actions of each citizen were having on the environment of which man is a part. What responsibility did we—as writer or banker or government official or corporate executive or worker or homemaker or student or architect or scientist—have to tread lightly wherever we go and leave footprints that do not mar the planet, or better yet, no footprints at all.

My search was for practical, not merely philosophical, evidence of an environmental ethic, and for ways to develop new structures or types of institutional organizations through which environmental concerns could be raised, considered equally with economic and other social concerns, and listened to at high enough levels to make a difference in decisions and actions. I was seeking executives who asked—before giving a go-ahead for a new product or development—"What is the cost to our neighbors, to our surroundings, and to future generations of not adequately considering the environmental impacts of these decisions?"

Most of the research was aimed at determining whether environmental concerns were really a factor in management decisions. I neither anticipated finding an environmental ethic to be the dominant factor nor expected altruism. But I did hope to find executives who understood that the environment, in addition to being a social responsibility, is a legitimate component of the pool of information on which to base their decisions, as important a factor in its way as market research, current technology, and the cost of materials and labor.



What I found was that America's free enterprise system had not yet adopted a true environmental ethic. Most business decision-makers seemed to feel they had done enough if they simply stayed within the letter of the law. Some evaded, resisted, and delayed complying with environmental laws because they found doing so more profitable than compliance.

Although I found no corporate model of excellence where environmental concerns were adequately considered in all parts of the decision-making process, there were some commendable examples. The Cummins Engine Company of Columbus, Indiana, for example, used what it called a "stakeholders" concept of corporate responsibility. Instead of putting priority on the concerns of just the shareholders—the investors for whom it was supposed to show a profit, Cummins applied a process of trying to give adequate attention to all of the company's stakeholders. These included investors, employees, customers, suppliers, cities in which they operated, regulatory agencies with jurisdiction over products, and the various general publics involved with the products, such as people in areas in which Cummins truck engines emitted exhaust

gases, or people who might be impacted by the location of a new plant.

In 1975, for instance, Cummins split away from the solid position of other major makers of heavy-duty truck engines who were opposing a proposal by a Congressional committee to adopt tough target goals or standards for emissions. Most of the industry felt the proposals were unachievable and unworkable. Cummins sent a representative to Washington to work with the committee to help develop standards and compliance procedures that took into account human health and yet could be met by manufacturers; this effort helped to provide a compromise that became a part of the Clean Air Act Amendments passed by Congress in 1977.

In the private sector I also discovered non-profit organizations such as The Nature Conservancy and The Trust for Public Land, which in cooperation with dedicated citizens or environmentally concerned corporations and foundations were involved in protecting land for future generations. They all practiced an environmental ethic in preserving wetlands, open space, and potential park and wilderness lands that were threatened by development.

In the corporate world, as well as in government, there were a few organizational structures through which environmental effects could be factored

into decisions before actions were taken. But those structures proved effective only when some person with influence—a business leader, lawmaker, public official, or local activist—was sufficiently imbued with an environmental ethic to give force to environmental concerns and who cared enough to lead the way. Those environmentally caring decision-makers showed a kind of enlightened self-interest. Instead of acting only in their own personal or corporate interests, they considered their neighbors, their community, and the natural world in their decisions. And they were concerned with the future as well as the present.

Since doing the research for the book a decade ago, I have seen an increase in the understanding and application of the environmental ethic by individual citizens and some limited progress in the corporate sector and in government. But there has not been enough to overcome the severe national and global threats now becoming apparent. Without doubt, the development of a true, widely practiced environmental ethic will be increasingly important as the global consequences of population growth, loss of rain forests, impacts on the ozone layer from excessive burning of fossil fuels and from the use of



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chlorofluorocarbons, pollution from toxic wastes, and depletion of natural resources become increasingly acute.

Each individual—corporate executive, public official, or aware citizen—must make fewer demands on nonrenewable resources, replacing a self-only, short-range outlook with long-term and broader—even global—values, and exercising the Golden Rule by behaving toward others as they would desire others to behave toward them.

Practicing an environmental ethic should not interfere with economic and other social responsibilities or obligations. It must be integrated into overall systems of belief and coordinated with economic systems. Environmental advocates, in turn, need to consider the full consequences of their objectives just as they demand of others the consideration of the environmental consequences in decision-making. It makes no sense to preserve the environment if that objective produces national economic

collapse. Nor does it make sense to maintain stable industrial productivity at the cost of depriving the country of breathable air, drinkable water, wildlife species, parks, and wilderness.

"I incline to believe we have overestimated the scope of the profit motive," wrote Aldo Leopold. "Is it profitable for the individual to build a beautiful home? To give his children a higher education? No, it is seldom profitable, yet we do both. These are, in fact, ethical and aesthetic premises which underlie the economic system. Once accepted, economic forces tend to align the smaller details of social organization into harmony with them."

"No such ethical and aesthetic premise yet exists for the condition of the land these children must live in .... There is as yet no social stigma in the possession of a gullied farm, a wrecked forest, or a polluted stream provided the dividends suffice to send the youngsters to college."

The belief held by some that technology can solve all problems is incompatible with the environmental ethic. Technology that does not provide

adequate protection against environmental and social impacts often brings more problems than solutions. Time and again in recent years, what looked like a technological panacea has brought unforeseen and undesirable side effects and as yet unknown future consequences.

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***The belief held by some that technology can solve all problems is incompatible with the environmental ethic.***

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One thing is certain. Decisions and actions by individuals faced with ethical choices collectively determine the hopes and quality of life for everyone. As ecological knowledge and awareness begins to catch up with good intentions, it will be essential for people in all walks of life to live by an environmental ethic so that our world can be brought back into balance. □

(Cahn is a Pulitzer prize-winning environmental journalist, a former member of the President's Council on Environmental Quality, and a long-time environmentalist who has received the U.S. Department of the Interior's Conservation Service Award.)

(This article has been adapted by Cahn from his book *Footprints on the Planet: A Search for an Environmental Ethic* (Island Press 1978).)

# Has the Ethic Taken Hold? A Forum

*Has an environmental ethic really taken hold in America? EPA Journal asked five observers who have different viewpoints to respond to this question. Their answers follow:*

**H**as the nation gone far enough in adopting an environmental ethic? If progress in the past 20 years is any indication, we've come a long way. In many U.S. cities, the air is cleaner and water quality has held its own, on balance, despite substantial economic growth. Large acreage has been added to our parks and wilderness systems. Backing these achievements are unwavering support by Americans and sizable expenditures for cleanup.



Yet as scientists and policy-makers learn more about pollution, they are seeing a new generation of environmental problems, typically involving less visible pollutants and highly diffuse sources. Toxics leaking from waste sites into ground water, incinerated PCB residues settling from the air into Great Lakes' water, greenhouse gases accumulating in the atmosphere—these are current problems that largely escape existing controls.

To address them, we will need to reinvigorate our already strong environmental ethic, for some of the issues we face will surely test our commitment to environmental progress and require changes in attitudes and actions:

- *Reducing wastes before they enter the air or water or are deposited in the ground.* This is the most important approach to cutting pollution, especially toxics; it may mean revamping environmental laws and changing consumer attitudes about packaging, recycling, and paying the true costs of goods and services.
- *Stopping piecemeal degradation of the American countryside as population and development spread out across the landscape.* Americans are still seeking ways to reconcile long-held preferences for single-family homes, surrounded by a plot of land and coupled with widespread use of automobiles, and the consequences—loss of wetlands, farmlands, historic sites, and other productive lands; traffic jams; overloaded public facilities; and so on—as development spreads.
- *Making choices in what we buy and support that reflect the imperative of saving biologically rich rain forests in distant lands.* Like local people who benefit economically from the forests, we, too, depend on their sustained yields for products useful in agriculture, medicine, and industry. Moreover, rain forests may be a stabilizing influence on regional, perhaps even global, weather patterns.

How we respond to these problems will test whether the nation's environmental ethic is up to the challenge ahead. □

*(Train, formerly Administrator of EPA, is the Chairman of the Board of World Wildlife Fund and The Conservation Foundation.)*

**D**espite promise and positive signs, our society has a long, long way to go in accepting the environmental ethic as a part of life. As I observe the scene, we are still losing ground, rather than gaining. I say this without despair, for Americans have the capacity to tackle and lick tough challenges. Once the needs are explained clearly and boldly, people will respond to them. That is as much the American way as the chronic concept of the modern "throwaway society."

The 1960s were rich in landmarks, like the Wilderness Act, recognizing in law the value of saving substantial fragments of the original America. That the National Wilderness Preservation System, which came into being with passage of the act, should now embrace nearly 90 million acres of federal land clearly demonstrates public concern for our natural heritage and desire to save it for the future.

The 1970s began with Earth Day and the National Environmental Policy Act (NEPA), and I don't think there has been any retreat from the principles implicit in either of them. With both Earth Day and NEPA, national environmental organizations emerged as prominent influences in shaping popular attitudes and government policies. I think, for instance, of a group like Defenders of Wildlife, which has helped people to understand the beauty and value of predators like the wolf and raptors like the golden eagle, so that we are now inclined to protect rather than to destroy these superlative critters with which we share the continent.

But we all have still to come to grips with issues of growth, greed, and

overconsumption. We need to live within our means, using less and enjoying more. Professions need to re-examine their purposes. Architecture, as I see it, is at its best in restoring sites, not developing them while destroying them in the process. Journalism, too, is better in my view when it explains values to be lost as well as gained from the arrival of any new industry or the construction of another suburban mall.

I picture the community in which I lived at the turn of the century, then envision it with overlays marking each decade since. I see little change until the end of World War II, and accelerated change ever since. The same, I daresay, is true of almost every community. And the change is simply not for the better. More people, congestion, pollution, open space gone—you can fill in the rest.

The environmental ethic won't cure it all, but we cannot have the cure without it. Laws and regulations have their place, but people make things work. Once Americans have the environmental ethic in their hearts, their minds, pocketbooks, and voting, and business and political institutions will respond. That day will come and I plan to be around for it. □

*(Frome is Environmental Journalist in Residence at Huxleer College of Environmental Studies, Western Washington University, Bellingham, Washington.)*

The United States has made remarkable progress in protecting the environment during the past 25 years. We have adopted scores of increasingly strict programs to clean up the air and water and to safeguard scenic and other environmental values. But the job is certainly not finished by any means.



involved—government, industry, and the environmental leadership—must do a much better job of communicating with each other.

We also need to develop a credible system of risk assessment, to make certain that our environmental decisions are based on scientific fact, not political rhetoric. To do otherwise could impose unnecessary financial burdens on U.S. industry at a time when American business faces tough international competition.

Industry is ready to do its part. Business recognizes the need for a more cooperative approach. If the interested parties work together, we can solve the complex environmental challenges we face—at a price our nation can afford. □

*(Keller is Chairman of the Board, Chevron Corporation.)*

In fact, I believe the next few years will be a critical test of our society's ability to deal effectively with environmental concerns on a long-term basis. To develop intelligent, informed, and workable environmental solutions will require a broad consensus among all parts of our society. It will also require the kind of problem-solving technical leadership that is the special genius of America's industrial system.

Unfortunately, at the very time when the battle for environmental awareness has been largely won, the public dialogue on this subject has become increasingly polarized.

Our nation cannot afford this kind of political stalemate. To establish a more constructive atmosphere, I believe all the constituencies

Representing such a relatively pristine state as North Dakota, I find that environmental quality can easily be taken for granted. The Peace Garden State is but one of a handful of states in compliance with the ambient air quality standards established by the Clean Air Act. We have very few Superfund sites, and our



water quality is second to none. North Dakotans have been willing to pay a steep price to maintain a high level of environmental quality. In the past decade alone, nearly three quarters of a billion dollars have been expended for air pollution controls on facilities in our small state.

For example, over the years there has been overwhelming and consistent public support for a broad array of programs designed to protect the environment and public health. In almost two decades since the establishment of EPA, we Americans have made tremendous strides in improving the quality of our environment. In many respects we have completed the easy initial tasks involving environmental protection.

However, the emerging environmental concerns that bombard us daily in newspapers and on television are much more complex, interrelated, and global in nature. The greenhouse effect, global warming, toxic

contamination of our air and water, ozone depletion, and the safe disposal of our waste, are all issues looming on the horizon. Paradoxically, the solutions to these problems are vastly more dependent upon decisions made by each of us individually. The countless collective actions of individuals have a significant impact upon our global environment. Unlike simpler times when we could easily identify the major polluters, distinguish the "bad actors," and dramatically point the finger at offending parties, these emerging environmental problems are more pervasive and insidious and less conducive to simple solutions.

Personal decisions made by individuals are at the root of whether or not we choose to purchase only substitutes for CFCs, decide to share rides under transportation controls designed to help our communities attain clean air standards, or separate and recycle our household solid waste. Much more can and should be done to educate the public regarding the relationship between individual actions and collective impact on our environment.

As an old country lawyer, I can only say that the jury is still out on whether or not America has developed an environmental ethic. One thing is certain. You and I can make a difference. While the environmental problems we face are numerous and intricate, I continue to be optimistic. Only when we implicitly understand that we all occupy one planet and that our individual actions do indeed directly affect our environment, will we establish a uniquely American environmental ethic. □

(Senator Burdick (D-ND) is Chairman of the U.S. Senate Committee on Environment and Public Works.)

Nearly everyone prefers a safe, clean, and beautiful environment. Ethical questions arise when our preference for such an environment conflicts with other values such as jobs or wealth.

I recommend Peter Wenz's *Environmental Justice* (SUNY Press, 1988) and Kristin Shrader-Frechette's



Olan Mills Photo

"Environmental Ethics and Global Imperatives" (in Robert Repetto, ed., *The Global Possible*, Yale University Press, 1985) to readers who wish to inquire more deeply than is possible here. Both demonstrate that a rationally consistent new environmental ethic is not feasible. Rather, we need to systematically apply the egalitarian ethics (we are our brothers' and sisters' keepers) that we already accept. Our moral obligation to care for other people, future generations, and other sentient creatures is sufficient to justify rejuvenation and continual stewardship of our ecosphere.

Most of us perceive ourselves as being morally responsible; we avoid inflicting injustice. Yet if we simply go on doing what we have always done (and believed to be morally correct), we will so injure the ecosphere that our own lives will be diminished and we will unjustly injure future generations and other species. Even if people are thoughtful and caring, and even if government splendidly carries out clean-up programs, our environment will continue to deteriorate. The problem lies more with our way of thinking, our beliefs about how the world works, than it does with our ethics. Therefore, the meaningful question is: *How far have we come in recognizing that our dominant ways of thinking and behaving have unjust consequences that we would not desire, or believe to be moral, if only we were able to foresee the long-run outcomes of our behavior?*

Surveys I conducted in the early 1980s showed that about 20 percent of Americans believe our present societal trajectory is wise and sustainable. In contrast, another 20 percent are convinced that in order to avert environmental catastrophe we must transform our society into a more sustainable, harmonious relationship with nature. The majority of people have less clearly worked-out beliefs. Most people know that we do many seriously wrong things to the environment. However, they do not comprehend the long-run dire consequences of continuing to do what we have always done.

Our environmental stewardship is not adequate. The impact of our swiftly growing numbers (world population will double to 10 billion in 50 years) and the awesome power of our science and technology will

so drastically injure physical systems that they will no longer work the way we have always counted on them to work. Nature will be our most powerful teacher (witness the painful lessons from the drought this summer). We must connect our ethical principles to a much broader and deeper understanding of how the world works if we hope to be morally responsible in our thinking and actions. □

(Dr. Milbrath is Director of the Research Program in Environment and Society at the State University of New York at Buffalo and author of several books, including *Environmentalists: Vanguard for a New Society*.)

# Speaking Frankly

by Lee M. Thomas

If a nation's laws and institutions reflect its ethical character, then an environmental ethic has been evident in the United States since early in its history. Even as our fledgling nation explored a vast expanse of territory that eventually would be admitted into the Union as new states, it was concerned about conserving natural resources for future generations. We completed the land purchases that would create the continental United States in 1867; in 1871 we set aside two million acres to create Yellowstone, our first national park.

Our national conservation ethic was voiced by President Theodore Roosevelt in 1908 when he said: "The wise use of all our natural resources, which are our national resources as well, is the great material question of today." The creation of our extensive national park and wilderness system over the past century demonstrates that the people of this country have long understood the need to balance economic development with the wise stewardship of natural resources.

Our national environmental ethic was demonstrated again during the decade of the 1970s, when a wave of environmental legislation was passed to protect human health and the quality of natural ecosystems. In 1970 President Richard Nixon established the Environmental Protection Agency, and Congress required that environmental impacts be explicitly considered when planning federal actions. Over the next 10 years Congress enacted a dozen major laws affecting air quality, water quality, endangered species, pesticides,

drinking water, toxic substances, hazardous wastes, coastal zones, and ocean pollution. These actions reflected deeply held environmental beliefs that had been expressed by writers like Rachel Carson and were an important part of the value system of the American people.

These public expressions of our national environmental ethic have measurably improved the quality of life of the American people, and they have set an example that other nations often study when they act to preserve their

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***We have to recognize that each of us is responsible for the quality of the environment we all live in ....***

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own natural resources or protect their own people's health. In short, our national environmental ethic has led to the enactment of laws and the creation of institutions that are an invaluable legacy to future generations, both here in the United States and in other countries as well.

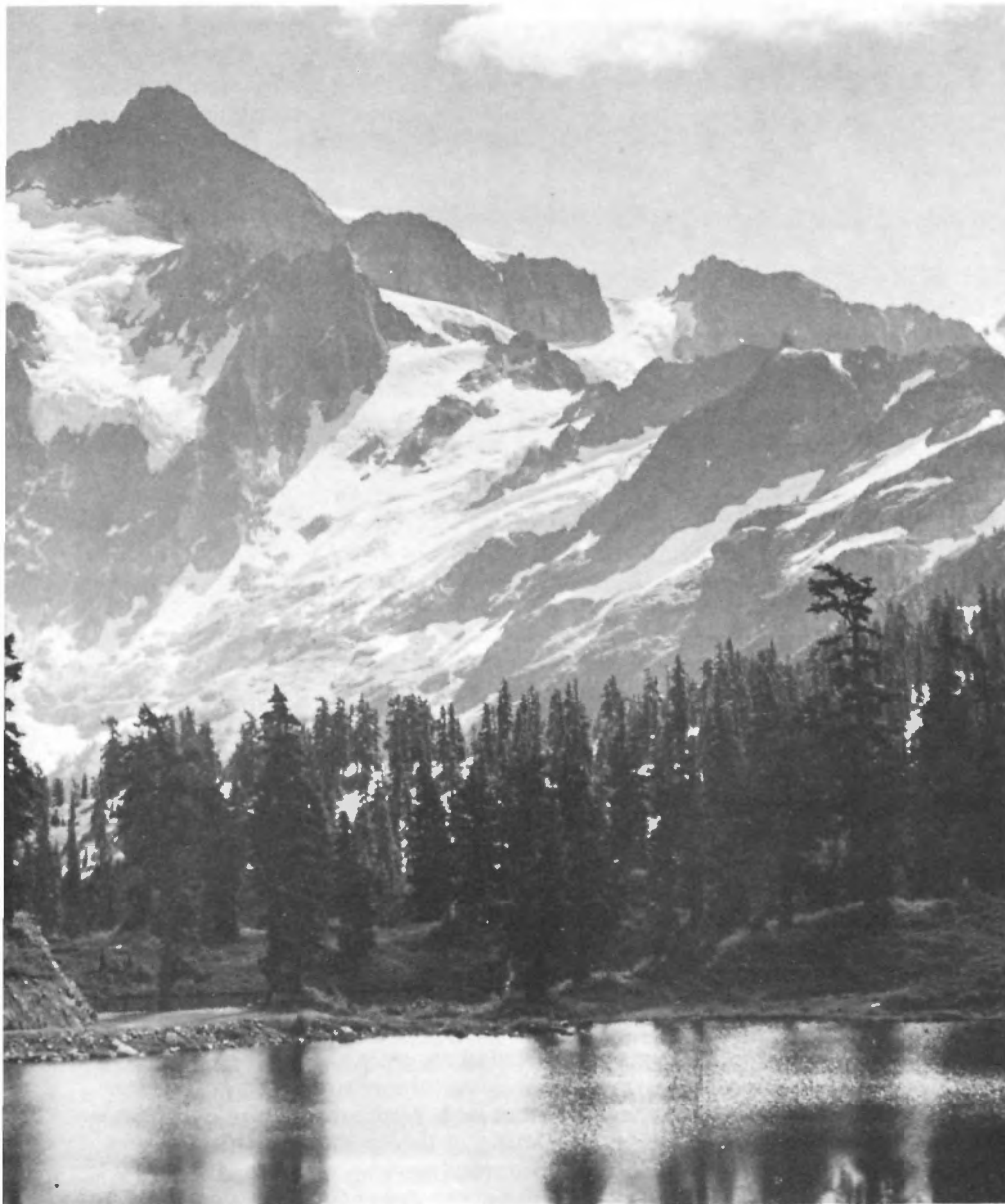
However, as we approach the last decade of the 20th century, that legacy may not be sufficient to protect the health and well-being of people living here and around the globe in the 21st century. As human populations and economic activity continue to grow both nationally and internationally, we are facing a number of environmental problems that threaten not only human health and the productivity of ecosystems, but in some cases the very habitability of the globe. Those problems—like waste disposal, loss of species and habitat, ocean pollution, and global warming—are not caused solely by specific sources of pollution like cars or power plants. Rather, they

National Park Service photo



are linked to our personal and community patterns of behavior. They are the accumulated result of individual actions that may seem insignificant by themselves, but in the aggregate pose a threat to the overall quality of life of people everywhere.

If we are to respond to those problems successfully, then our environmental ethic must express itself in broader and more fundamental ways. We have to recognize that each of us is responsible for the quality of the environment we all live in, and our personal actions affect environment quality, for better or worse. This recognition of individual



As a nation, we demonstrated an early concern for natural resources by acting to create a national park system. Established in 1899, Mount Rainier National Park in Ashford, Washington, encompasses the greatest single-peak glacial system in the United States.

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Marine wetlands and other fragile ecosystems still would be threatened by the wastes and contaminants that result from extensive population and economic growth along all three U.S. coasts and around the Great Lakes.

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***Environmental laws will not be effective unless they are supported by a widely accepted environmental ethic.***

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Our response to ocean pollution, like our response to a number of other current or emerging environmental problems, must involve a personal commitment from each of us to live environmentally ethical lives—not because it is a requirement of law, but because it is an essential component of our inherent responsibility to ourselves, our neighbors, our children, and our planet. In fact, environmental laws will not be effective unless they are supported by a widely accepted environmental ethic. Thus the legacy we leave for future generations must include not only the laws and institutions of which we are so justifiably proud, but also the net environmental effects of our daily lives. In the long run, that may be the most valuable gift of all. □

(Thomas is Administrator of EPA.)

responsibility must then lead to real changes in individual, family, community, and business behavior. In other words, our environmental ethic must begin to express itself not only in federal and state law, but also in subtle but profound changes in the ways we all live our daily lives.

For example, the problem of ocean pollution has received front-page attention this past summer. Some people have called for stronger federal laws, and stricter enforcement of existing laws, to stop the ocean dumping of wastes. There is no doubt that we have to stop using the ocean as a waste-disposal alternative. Over the last several years, in fact, we have strictly limited the number of communities that can dump sewage

sludge in the ocean, and we have reduced the ocean dumping of industrial wastes by over 95 percent.

However, even if the federal government completely eliminated all ocean dumping of wastes tomorrow, our marine water quality problems would not disappear. Estuarine and near-coastal areas still would be polluted by the fertilizers and pesticides that are washed off farms and lawns far inland. Ocean waters and beaches still would be degraded by the trash that individuals throw overboard or leave on streets and parking lots to be washed through storm sewers into the sea.

# Environmental Polls: What They Tell Us

by Frederick W. Allen  
and Roy Popkin

National polls consistently show a strong and broadly held interest in a cleaner environment. This suggests the presence of a strong environmental ethic. But is this the whole story? When one looks beyond the available polling data, it is clear that people frequently oppose the specific measures needed to achieve this goal, especially when such measures involve personal sacrifice. The attitude seems to be, "Someone else should bear the burden." This is a recipe for frustration for both government officials and the public they serve.

The most recent Roper poll data show that Americans continue to be quite concerned about environmental issues and favor greater efforts by both government regulators and the business community to protect the environment. These data are consistent with many other national polls taken during the past two decades.

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***What the people are telling the pollsters is important, but it is only part of the story on the present state of the environmental ethic.***

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As a priority for increased spending, the environment ranks fifth on a list of 13 national problems surveyed by Roper, exceeded in concern only by health, education, drug abuse, and crime, and above such activities as energy, public transportation, space, military expenditures, and foreign aid. It ranks in the middle of another list of issues that people are considering in voting for president.

This support is broad-based. The poll results show relatively little difference in response according to sex, family size, income, education, job level, or geographic location. The only notable variations are that the concerns of people in the Northeast are often stronger than those of the South, and respondents at the lowest educational and economic levels appear less concerned (but not unconcerned) about some issues.

Moreover, respondents with divergent political beliefs do not differ significantly in supporting increased expenditures and regulation. The levels of such support are just about as high for Republicans, Democrats, and independents, and for respondents who described themselves as conservatives, moderates, or liberals. When the polls separate out "PSAs," people who are "politically and socially active" (and who, as a result, represent a certain amount of community influence and/or leadership), the percentages reflecting environmental interest are even higher than those for the general public.

The results of some of the other questions asked by Roper show a consistent story. Over half (54 percent) of the respondents feel that the United States spends too little on the environment, an increase from a decade ago. In contrast, 31 percent say we are spending about the right amount, and only 7 percent say we are spending too much.

Do people feel that business is meeting its responsibility to clean up its own pollution? While 78 percent feel that business has a definite responsibility in this area (exceeded on a list of 12 responsibilities only by making safe products and providing good quality products and services), just 37 percent feel that business is meeting the responsibility. A bare 11 percent believe business would clean up its own air and water pollution without governmental oversight. In fact, 85 percent of Americans (and 90 percent of

those in the PSA category) feel that government must "keep an eye out to be sure that business cleans up any air and water pollution it creates," says Roper Vice President Richard Baxter, adding,

Neglect of the environment—polluting air and water—stands in first place as a criticism of business management, showing a striking increase in mentions from 1976 to 1982 to 1987. It is named by many more people than the runner-up—inattention to product quality. In 1987, 73 percent of the public (84 percent of the PSAs) held this view.

Asked whether they feel that each of 22 special interest groups has too much, too little, or about the right amount of influence, only 13 percent thought environmental groups are too influential, ranking them 17th on the list.

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***Large numbers of people oppose many of the specific measures needed to improve environmental quality ....***

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With evidence of such widespread support for environmental protection, it might seem that the issue ought to be pretty well decided. However, it is obvious to even the most casual observer of environmental regulation that large numbers of people oppose many of the specific measures needed to improve environmental quality, especially when such actions affect them as individuals.

In a recent speech before the Air Pollution Control Association, EPA Administrator Lee M. Thomas commented that many people favor clean air but oppose mandatory auto inspection, and favor clean water but oppose construction of new sewage treatment plants in areas near their homes. They want wetlands protected, but frequently oppose restrictions on waterfront development. He noted that even though polls may reflect vast public support for a clean environment, large numbers of people oppose many of the specific measures needed to achieve this goal. "The public tends to balk," he added, "if they find they've got to do something differently."



The possibility of risky levels of radon in some homes is presenting a big challenge for environmental specialists to communicate their concern to the public. Photo by Peter Garfield, Folio, Inc.

This observation is supported by the polling data cited earlier about business, the environment, and the role of regulation. Many people simply feel that environmental quality is a problem and someone else ought to take care of it.

This attitude is also illustrated by the manner in which people rank the seriousness of different environmental problems. There are great variances in the way the public and professional experts rank these problems, and there is a variety of reasons for the differences. (See "The Situation: What the Public Believes; How the Experts See It," *EPA Journal*, November 1987.) Just a quick look at the public ranking shows one of the interesting patterns. The problems at the top of the public concerns list—hazardous waste sites, worker exposure to toxic chemicals, industrial water pollution, etc.—tend to be problems for which companies ("someone else"), especially with perceived "deep pockets," are presumed to be responsible, and for which there are "technical fixes" that should not affect personal routines. The records from public hearings at many waste sites suggest that the public is not willing to accept any risks at all.

In contrast, the public downplays the seriousness of vehicle exhaust, the first problem listed about which many individuals understand that they themselves can do something. The public ranks this problem 17th out of 28 problems covered in the survey. By contrast, scientists rank this problem as relatively quite serious. Indoor air pollution and indoor radon, two other problems on the list about which individuals can take direct action, are also considered high risks by the experts, but are ranked 25th and 27th, respectively, by the public. Not surprisingly, in view of these rankings, society at large is spending comparatively little for mitigation of indoor air pollution and radon. In fact, other EPA data show that even in the areas shown to be most affected by radon, fewer than 25 percent of homeowners have even tested their homes to see if they have a radon problem.

The positive support for a cleaner environment, at least in the abstract, and the frequent lack of support for individual action to achieve that goal raise difficult issues and frustration levels for all involved.

Many of the issues that experts find most serious in terms of health and environmental effects do require actions on the part of individuals. The

emergence of indoor air pollution and radon as important "new" issues suggests a trend in this direction. How should a democratic government proceed under these circumstances? When individual actions are needed, is the communications approach enough (as is being tried in the case of radon) or are more forceful measures justified, such as mandatory testing of homes in the manner of automobile inspections?

In this connection, it is interesting to consider the possible effects of the new emergency planning and community right-to-know regulations. While there has been much speculation about the degree to which these provisions will make people more adamant about environmental protection, very little, if any, attention has been paid to the fact that the information being collected and made public relates entirely to the activities of organizations and does not include the more individually oriented environmental problems mentioned above.

In a broader context, there is the issue of how government officials and the public they serve should deal with the inevitable frustration that occurs when "more" is wanted, as indicated by the polling data, but some of the necessary measures are deemed unacceptable by the same public if they, as individuals, are required to take action.

Good communications and increased public understanding are obviously a key. Administrator Thomas's answer to the dilemma is quite forceful. "They're going to have to change their habits by sorting their garbage for recycling instead of just throwing it out. They're going to have to change their habits by properly maintaining their auto emissions systems, maybe even riding with a friend to work. They're going to have to change their habits in determining whether they want to protect coastal wetlands or live in a beachfront development."

Clearly, what the people are telling the pollsters is important, but it is only part of the story on the present state of the environmental ethic. □

(Allen is Associate Director in the Office of Policy Analysis of EPA's Office of Policy, Planning, and Evaluation. Popkin is a Writer/Editor for EPA's Office of Public Affairs.)

# Earth Day Recollections: Where We Were And Where We Are

by Gaylord Nelson

**O**f all the issues that challenge mankind on the planet, the one that stands out above all others concerns man and his environment. No other issue is more relevant to our physical well-being than the status of our natural resources.

Unfortunately, we are preoccupied with responding to pressures of daily events, postponing hard decisions on pervasive, long-term problems under the delusion that delay won't cost very much, and that we can address the problem at some other time. Until we understand that the problems of the environment are urgent—that every delay exacts a price, levies a hidden tax, imposes a cost which will ultimately impoverish us—until we understand that, and believe, and are willing to act on the proposition that the highest and first priority of our society must be to preserve the integrity and viability of those ecosystems that sustain us and all other creatures: until then, we will continue to delude ourselves with the seductive notion that we are addressing the heart of the matter when, in fact, we are merely tinkering at the periphery of the problem.

I don't mean to suggest that we haven't made significant progress in the last decade and a half or so. Indeed we have come a long way, much more quickly than I thought possible in 1970 and '71. A whole series of legislative initiatives have been adopted involving air pollution, water pollution, pesticides, hazardous wastes. We have designated 90 million acres of public lands a wilderness. We have made extensive additions to our National Park System and Wildlife Refuges. We have an endangered species protection act which is a modest success but needs to be improved. We are close to agreement on a national program on acid rain control.

Most important of all, there has been a revolutionary change in the public



The Santa Barbara oil spill of 1969 was one event that helped catalyze the new environmental consciousness of Earth Day and the 1970s. The full measure of social and ecological costs to be borne in the wake of environmental contamination is not easily quantifiable in cost-benefit terms. *Santa Barbara News-Press* photo.

attitude and understanding of environmental issues. For the first time, the environment is part of the political dialogue of the nation. No politician can totally ignore it. Even those who have no serious interest in the issue pay lip service to it because they need to respond to the concerns of their constituents. But one more revolution is needed. That will come when our President, the Congress, and the public put this issue on the agenda of top national priorities along with the economy and war and peace.

That is bound to happen, but will it be soon enough? We still have to deal with those powerful forces in the

country who do not believe the problem is serious, and therefore that the environmental laws and standards are unnecessary and should not be enforced. There are others who think we cannot afford a clean environment, and there are those who oppose any governmental interference in the marketplace. They believe good intentions and competition will somehow resolve this problem in due time.

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1971.***

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There are those—"supply side environmentalists"—who believe that self-help, free market, do-it-yourself environmentalism will work if we all just calm down and give it a chance for a decade or two. If you go into the free marketplace to buy some fresh air and none is available, just hold your breath, and as the demand increases, the price will rise and the classic forces of supply and demand will take over. Then there will be an abundant supply, the price will fall, and even the poor people will be able to buy some. It all sounds pretty good if you don't think about it too hard.

Over the past four or five years we have, ever more frequently, heard the argument that high environmental standards cost too much. They put an excessive and unnecessary burden on business and industry. The costs exceed the benefits. They want to institute a system that weighs benefits against costs to provide ammunition in support of proposals to weaken environmental standards. And on the other hand, there are others who support such assessment because they believe that the overwhelming weight of the evidence will demonstrate that most environmental mandates need to be strengthened.

The reason the two parties reach opposite conclusions while appearing to support the same proposition is that they, in fact, are not supporting the same kind of benefit-cost assessment. Those who want to use the benefit-cost approach to weaken support for environmental mandates do not include all societal costs and benefits, only those that are easily quantifiable in current dollar costs to the polluter and measurable on the consumer price index. They do not include the societal cost of a polluted river, a lake or forest destroyed by acid rain, an aquifer poisoned by toxic chemicals, or a wildlife refuge destroyed by selenium.

If all such costs and benefits are included, the case is clear beyond question that preserving a clean environment is a profitable investment.



Litter in Yosemite National Park. National Park Service photo.

This argument is aimed at a major proposition being advanced by some environmental critics who insist that at some point we must make a choice between a prosperous economy and a dirty environment, or a clean environment and a poor economy.

Those who would dramatically weaken environmental protection claim we must, indeed, make a choice between the two, assuming the two are separable and must be addressed as discrete entities standing alone. They are wrong by every rational standard of measurement. I assume we are using the word "environment" in its broadest context to include all physical resources. They are all part of the environment. The appropriate generalization to be made is that the economy and the environment are inextricably intertwined; a degraded environment and a poor economy travel hand-in-hand. While you can have a country rich in resources with a poor economy, you cannot have a rich economy in a country poor in its resources or its access to them. Each incremental degradation of nature's resources—the air, the water, the soil, forests, scenic beauty, habitats—is a

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***We still have to deal with  
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dissipation of capital assets which will ultimately be paid for by a lower standard of living and a lower-quality environment.

Can anyone tell us what the economic and recreational loss to the nation will be unless we move now to save our lakes from acid rain? What is the economic value of the protein sources in the oceans and the water in our rivers? If we continue to destroy the salt water marshes and pollute the estuaries and the shallow waters of the continental shelf which provide the breeding habitat of most marine creatures, we ultimately will destroy the productivity of the oceans. Has that been factored into the economic equation in the debate over clean water standards?

These and other questions can be asked and every time the answer will be that it is far better for the economy and cheaper to maintain a clean environment than a dirty one. In the short run, some very modest temporary benefit to the economy might result from relaxed air and water quality standards, but it would be dangerous and enormously expensive. If we do that, it simply means we are borrowing capital from future generations and counting it on the profit side of the ledger.

Quite apart from the ethical questions involved, there is simply no way that a future generation could replace the capital we borrow from them, because we cannot restore a polluted ocean or a polluted lake. The ultimate test of a man's conscience is his willingness to sacrifice something today for a future generation whose words of thanks will never be heard. □

(Nelson, a former U.S. Senator from Wisconsin, was the founder of Earth Day, which first took place in April 1970. He is now Counselor of the Wilderness Society and associated with the University of Wisconsin at Stevens Point.)

# Earth Day Recollections: What It Was Like When The Movement Took Off

by John C. Whitaker



Concerned students wore masks and decorated garbage trees to pay homage to Earth Day, 1970. Where are they now?  
Don Hogan Charles photo, NYT Pictures.

When President Nixon and his staff walked into the White House on January 20, 1969, we were totally unprepared for the tidal wave of public opinion in favor of cleaning the nation's environment that was about to engulf us. If Hubert Humphrey had become President, the result would have been the same.

During the 1968 presidential campaign, neither the Nixon nor Humphrey campaign gave more than lip service to environmental issues. Rather, their thoughts focused on such issues as Vietnam, prosperity, the rising crime rate, and inflation. Nixon made one radio speech on natural resources and the quality of the environment, which seemed adequate to cover an issue that stirred little interest among the electorate.

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***During the 1968 presidential campaign, neither the Nixon nor Humphrey campaign gave more than lip service to environmental issues.***

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In the Humphrey camp, things were just as quiet. He dedicated a park in San Antonio, Texas, and the John Day Dam in Oregon, using both occasions to discuss the environment and conservation. Otherwise, Humphrey said nothing on the issue.

If the candidates showed little interest in the issue, so did the national press corps. In fact, Nixon staff members do not recall even one question put to him about the environment.

Yet only 17 months after the election, on April 22, 1970, the country celebrated Earth Day, with a national outpouring of concern for cleaning up the environment. Politicians of both parties jumped on the issue. So many politicians were on the stump on Earth Day that Congress was forced to close down. The oratory, one of the wire services observed, was "as thick as smog at rush hour."

A comparison of White House polls (done by Opinion Research of Princeton, New Jersey) taken in May 1969, and just two years later in May 1971, showed that concern for the environment had leaped to the forefront of our national psyche. In May 1971, fully a quarter of the public thought that protecting the environment was important, yet only 1 percent had thought so just two years earlier. In the Gallup polls, public

concern over air and water pollution jumped from tenth place in the summer of 1969 to fifth place in the summer of 1970, and was perceived as more important than "race," "crime," and "teenage" problems, but not as important as the perennial poll leaders, "peace" and the "pocketbook" issues.

In the White House, we pondered this sudden surge of public concern about cleaning up America and providing more open spaces for parks, and a heightened awareness of the necessity to dedicate more land for wildlife habitat. Why, we asked, after it was so long delayed, was the environmentalist awakening so much more advanced in the United States than in other countries? What motivated millions to so much activity so long after publication of Rachel Carson's *Silent Spring* in 1962? Many factors seem to have been involved.

First, the environmental movement probably bloomed at the time it did mainly because of affluence. Americans have long been relatively much better off than people of other nations, but nothing in all history compares even remotely to the prosperity we have

enjoyed since the end of World War II, and which became visibly evident by the mid-fifties. An affluent economy yields things like the 40-hour week, three-day weekends, the two-week paid vacation, plus every kind of labor-saving gadget imaginable to shorten the hours that used to be devoted to household chores. The combination of spare money and spare time created an ambiance for the growth of causes that absorb both money and time.

Another product of affluence has been the emergence of an "activist" upper middle class—college-educated, affluent, concerned, and youthful for its financial circumstances. The nation has never had anything like this "mass elite" before. Sophisticated, resourceful, politically potent, and dedicated to change, to "involvement," it formed the backbone of the environmentalist movement in the United States.

Other factors included the rise of television and the opportunities it provides for advocacy journalism.

Also, science contributed another dimension to the national agitation. To the obvious signs of pollution that people could see, feel, and smell,

science added a panoply of invisible threats: radiation, heavy metal poisons, chlorinated hydrocarbons in the water, acidic radicals in the atmosphere, all potentially more insidious, more pervasive, and more dangerous than the familiar nuisances. This could happen only in a country able to support a large, advanced scientific community with an immense laboratory infrastructure, marvelously sensitive instruments, intensive funding, computers, data banks, and vast interchanges of information able to isolate and trace the progress through the ecosystem of elements and compounds at concentrations measured in parts per billion, and to establish their effects upon living organisms in the biosphere.

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***In the Gallup polls, public concern over air and water pollution jumped from tenth place in the summer of 1969 to fifth place in the summer of 1970 ....***

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The press served the pollinating function of a honey bee, transporting the latest scientific findings to the public, which reacted with fear and misgivings. These in turn were relayed by the press back to the scientific community, which was stimulated by public concern to intensify its investigations, leading to more discoveries of new perils, and so on. This in itself provided a climate in which support for environmentally related causes could be elicited.

The feverish pitch of Earth Day 1970 passed, but the environmental movement did not go away. Instead, the drive for a cleaner environment became part of our national ethic. Now it is taken for granted, the best possible testimonial that progress is being made. Our nation's thinking has changed. Endorsing growth without regard to the quality of that growth seems forever behind us. The failure of the economy to take into full account the social costs of environmental pollution is being rectified. Not only are environmental considerations now factored into federal government decision-making but over and over again Americans pay for



Photo courtesy of The White House.



East Terrace, U.S. Capitol. Washington Convention and Visitors Association photo.

low-polluting or pollution-free products like low-sulfur heating oil, unleaded gasoline, and coal from fully reclaimed strip mines, for automobile emission controls, for electricity from cleaner fuels, and for more parklands and wildlife refuges. More fundamentally, we are beginning to understand that the environment is an independent whole of which man is only a part.

But in the early 1970s it was clear that the executive branch could not respond to public demand to clean up the environment without first creating an organization to do the job. Better coordination of federal environmental programs was needed. There were 44 agencies in nine separate departments with responsibilities in the field of what was then loosely described as "the environment and natural resources." No department had enough expertise to take charge.

At cabinet meetings, HEW Secretary Bob Finch, responsible for air pollution controls, and Transportation Secretary John Volpe, argued over which department should take the lead in developing a research program for unconventional low-polluting

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***So many politicians were on the stump on Earth Day that Congress was forced to close down.***

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automobiles. On pesticides, Walter Hickel at Interior and Finch argued for tighter pesticide controls, while Agriculture Secretary Clifford Hardin emphasized the increased crop productivity resulting from the application of pesticides. And Secretary of State Bill Rogers weighed in expressing concern on whether a ban on DDT in this country might restrict the supply of DDT to the developing countries. Hickel, who at the time handled water pollution control over at Interior, wanted more money for sewage treatment control; Bob Mayo, director of the Bureau of Budget would have none of it. Maurice Stans at Commerce was wary of tighter pollution controls and what effect this might have on corporate profits. Paul McCracken, Chairman of the President's Council of Economic Advisors, worried that we would be uncompetitive in international markets if our product prices reflected the costs of pollution abatement standards that were more stringent than those of other countries. There was hardly a Cabinet officer who did not have a stake in the environment issue. Even the Postmaster General joined the debate, offering to

use postal cars to test an experimental fleet of low-pollution cars.

The cabinet meeting left President Nixon dissatisfied. There was no overall strategy, too many unanswered questions. Should enforcement be done by regulation, or by user fees, or a combination of both? What were the overall costs to industry and the consumer in terms of both the increased price products for various pollution abatement schedules under varying standards and regulations? Finally, what would the various clean-up scenarios do to the federal budget? Nixon clearly needed a "pollution czar" and one agency to look to for the answers.

First, Nixon discarded the option of a Department of Environment and Natural Resources as well as several other reorganization plans. In July 1970 he submitted to Congress the Environmental Protection Agency plan; the new agency came into being on December 2, 1970. Meanwhile, I had interviewed a number of candidates to run the new agency and recommended Bill Ruckelshaus to the President. I've missed the mark on lots of things in my life, but Ruckelshaus was a "bull's eye."

Now, years later, the accomplishments of the Nixon years are plain to see. New clean air, water, solid waste, and pesticide laws, coastal zone management planning seed money, new national parks, including the great urban parks in New York City and San Francisco harbors. In addition, Nixon ordered federal agencies to shed spare federal acreage that would be converted into parks and recreation areas, especially in urban areas. More than 82,000 acres in all 50 states were converted into 642 parks, the majority of them in or very close to cities, really bringing parks to the people.

More money was dedicated to buying wildlife habitat; Congress passed Nixon's controversial proposal to protect endangered species. Nixon's executive orders restricted ocean dumping and tightened environmental standards for off-shore oil drilling. To quell the insatiable development instincts of the Army Corps of Engineers he cancelled construction of the Cross-Florida Barge Canal.

What Nixon—and subsequent presidents—couldn't accomplish is to address in a rational way the cost of pollution abatement control: how fast should the nation clean up and at what cost? In the early 1970s, our polls clearly showed the public demanded a cleaner environment, but data on the public's willingness to pay was ambivalent. Our initial Opinion Research polls showed that about three-fourths of the public supported more government spending for air and water pollution abatement programs, that support existed in all population groups, and that it was particularly high among the young. But this did not mean that taxpayers had committed

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***The feverish pitch of Earth Day 1970 passed, but the environmental movement did not go away.***

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themselves to spending their own money to improve the quality of the environment. Spending for government programs never seems to equate in the public's mind with spending their own money. Opinion Research reported that in May 1971, three-fourths of the public would pay small price increases for pollution control, but six out of 10 opposed large price increases for that purpose.

A Harris poll in October 1971 indicated that 78 percent of the public would be willing to pay (how much was not specified) to have air and water pollution cleaned up, and 48 percent would accept a 10-percent reduction in jobs for a cleaner environment. Poll editor Hazel Erskine indicated that individuals were not "personally anxious" to foot the bill for correcting pollution damage, although willingness to pay for pollution control was growing.

Congress received even stronger messages. Twenty-two congressmen, in a survey of 300,000 Americans in varying kinds of congressional districts, asked constituents if they were willing to pay more for pollution control. Respondents in all but three districts answered affirmatively. Representative Gerald Ford asked his Michigan constituents, "Should the federal government expand efforts to control air and water pollution even if it costs you more in taxes and prices?" The answer:

68.3 percent yes, 27.5 percent no. Subsequently, Ford voted to override President Nixon's veto of the Federal Water Pollution Control Act Amendments of 1972. (Nixon vetoed it largely because of the very heavy federal expenditures, particularly for sewage treatment plants.) Not surprisingly, because the perspective almost always changes inside the oval office, President Ford later tried unsuccessfully to hold down sewage treatment expenditures, as has every president since then.

Nixon knew he would pay a political price by not proposing the "toughest" and costliest pollution control standards, but after looking at the federal budget and the macro-economic impact, he chose a more moderate course. As it turned out, Congress, fanned by the political hurricane of the environmental movement, enacted deadlines that could never be met, like the 1977 deadline for secondary treatment of municipal waste, and an \$18 billion appropriation over the three-year life of the law, which couldn't even be dispensed under the law's cumbersome grant system. Similarly, Congress legislated technology that didn't exist by setting emission standards for automobiles that couldn't be met and later had to be postponed. The missed 1987 year-end ozone deadlines is another glaring example of Congress' tendency to legislate non-existent technology.

Early in the process we recognized that Congress and the executive branch mistrusted each other's cost impact figures for various pollution reduction strategies. Even in executive branch meetings, the EPA staff repeatedly seemed to minimize pollution costs, while other agencies weighed in with high costs to meet the identical pollution standard. Often, we halved the difference, relaxing the standard more than EPA wanted, but keeping it much tighter than Commerce, for example, found acceptable.

We might have missed a chance in those early days to help resolve the debate. Russ Train, chairman of the Council on Environmental Quality, and I proposed setting up a national body with think tank funds plus matching federal funds to study cost-benefit analysis for pollution controls. We hoped that if a body removed from Congress and the executive branch did the number crunching, then perhaps the results would be more acceptable to all parties inside the beltway. The idea never reached the President, largely because Chuck Colson opposed our candidate to head this study group, and Colson beat me out in the White House staff warfare that goes on in any Administration.

Today Americans spend \$77 billion annually for environmental improvements and that cost could easily reach \$100 billion by the end of the century. Rather than ask where the next billion dollars can be spent, we must pause and again ask how clean and how fast? Today we have infinitely more scientific capability and sophisticated cost-benefit analysis to steer a course toward a cleaner environment. The question is, will our elected officials and executive branch regulators be willing to lean into the political winds, as we did, and act on the basis of objective information? □

(Whitaker was President Nixon's Cabinet Secretary (1969); associate director of the White House Domestic Council for environment, energy, and natural resources policy (1969-1972); and Undersecretary of the Department of the Interior (1973-1975). He is now Vice President, Public Affairs, for Union Camp Corporation.)

# Industry's Environmental Attitudes

by Kent Gilbreath

The environmental debate of the late 1980s is notably less adversarial than in the early '70s, but confrontations between environmentalists and industry still occur. In this photograph, Greenpeace activists plug a waste outfall pipe discharging into Fields Brook in Ashtabula, Ohio. Fields Brook has been named to EPA's National Priorities List under Superfund. Greenpeace photo.

If there were ever a time when the business community held the attitude of "damn the environment—full speed ahead," such an attitude no longer characterizes the vast majority of business-people. On the other hand, it is equally wrong for the business community to stereotype environmentalists as being dogmatic and hostile to compromise. There are, of course, individuals in both groups who fit traditional stereotypes, but they now constitute a rapidly diminishing minority.

In the last few years, the debate over the environment has moved away from adversarial rhetoric toward a more reasoned discussion of the issues. While emotions have not disappeared from the conflict, the sharp philosophical differences that characterized the debate in the 1960s and 1970s have diminished.

## Movement Has Public Support

In a way, the environmentalists won the first round of the debate. Public opinion polls show that there is overwhelming support for environmental protection on the part of the American people. Perhaps the support was always there and the environmental movement simply brought the issues to the attention of the nation. But there is little doubt that a strong environmental ethic permeates American society today, and the American business community and individual business leaders have not been immune to the emergence of this ethic.

The strong public support for environmental protection has been reflected in recent public policy issues. The Reagan administration has discovered that any attempt to substantially alter basic environmental protection laws is likely to receive little

support in Congress and even less support from the public in general. Direct administrative methods of decreasing environmental protection activities are also difficult to achieve, as the departures of President Reagan's secretary of the interior and director of the Environmental Protection Agency (EPA) demonstrated. There is just no consensus in the United States for diminishing environmental protection today, and attempts to change direction really have no significant political constituency at the present time.

Part of the genius of American society has been its ability to reconcile conflict through democratic processes. The environmental debate is but another success story in the history of conflict resolution. The final chapter of the debate has not yet been written and is not likely to be written as long as environmental problems exist, but it is clear that a consensus has emerged. While there are differences concerning how clean the air, water, and land should be, there is little real disagreement over basic environmental goals. The focus today is on determining the best way to achieve environmental protection, and the proper balance between environmental protection and economic growth.

Voices on the fringes still urge, at one extreme, removal of environmental protection laws and, at the other, a radical restructuring of society to avoid an environmental Armageddon. But these voices are growing less and less influential. To those seeking less rhetoric, focusing on specific issues, and moving toward a pragmatic search for solutions, the news is heartening.

## Toward Common Ground

Without doubt, the American business community has accepted the challenge of environmentalism. It is now trying to respond to the challenge of giving us a clean environment while, at the same

time, sustaining the nation's economic health.

The spirit of compromise and pragmatism that has succeeded so well in American society would be violated if, after essentially winning the debate over the importance of environmentalism, the environmental community were not to cooperate in establishing environmental policies that also recognize the need for maintaining a viable economic system. Fortunately, the American environmental community is also pragmatic, and numerous cooperative efforts between business and environmental groups are emerging. There will, of course, never be total agreement on issues and policies. Some members of both groups still see the other group as the enemy and believe that the only proper relationship is an adversarial one. Fortunately, uncompromising, adversarial attitudes are decreasingly significant in the mainstream of both groups.

The search for common ground is a search for compromise. The theme of the desired compromise is "how can we have economic growth and affluence and, at the same time, protect the environment?" Environmentalists must continue to foster awareness and help ensure that environmental concerns are kept high on the nation's agenda. But they must also develop policies that bring the goal of environmental quality into harmony with other social and economic goals. Thus, the necessary tactics and methods are far different from those dictated when the only challenge was to increase public awareness of environmental problems.

Those environmentalists who advocate a de-emphasis on technology and de-industrialization of our society are not likely to play a leading role in the mainstream of the environmental movement during the remainder of this century. In fact, it is unlikely that the



current level of public support for environmentalism would be so great if it were perceived that the only way to achieve a clean environment is through a substantial deterioration in the nation's standard of living.

### **A New "Bottom Line"**

The business community, on the other hand, is faced with a different challenge. Taken as a whole, there is no more powerful private entity in American society than the nation's business community. But for business to maintain its profitability, influence, and freedom, it must be sensitive to the concerns of the public—not just in terms of the price and quality of the goods it produces but also in terms of public approval of its social and political influence.

Paradoxically, the environmental movement has been enormously effective in influencing public opinion and in moving the powerful business community toward an ethic of environmentalism. Such success can only be attributed to the power of the environmentalists' ideas and the belief of a large majority of the public that these ideas are, in general, correct.

The result of this changing view of the responsibilities of business will greatly complicate business decision-making in the remainder of the twentieth century. More complex demands by the public and a broadening of horizons on the part of business will be the dominant theme of corporate life during the next few years. That business is accepting this challenge is reflected in the statements of a number of the nation's business leaders. One senses no hesitancy or reluctance in their attitudes. While they do plead for a recognition that achieving our environmental goals will take time and will be costly, they are not opposed to the objective.

People in business like to refer to the "bottom line" or the profitability of their enterprises. In the United States, a new bottom line has been defined for society during the past two decades. It recognizes the importance not only of the level of national income but also of producing that income in a way that preserves our natural environment, protects human health, and provides for the right of future generations to enjoy a similar level of affluence, health, and natural amenities.

America is a pluralistic society and, as any biologist will tell you, there is strength in diversity. However, diversity also means that we are never likely to achieve unanimity of opinion on public issues. Thus, in the quest for a clean environment it will be necessary to accept a progressive compromise—progressive in the sense of moving continually in the direction of improvement while at the same time balancing the diverse goals and interests of our society.

On some environmental issues, continued conflict is inevitable, and there are some pollutants that are potentially so harmful to human health that there will be no room for compromise. But absolutist attitudes, attitudes of "all or nothing," are no longer viable and are not likely to have a dominating influence on either side.

It is still too early to say that we have won the war against pollution, but it is not too early to say that we have made a beginning and achieved numerous successes in the battle. Most people have decided they are willing to pay for environmental quality. We have made progress, but there is still a need for further reconciliation—for greater cooperation between business and

environmental communities. All the signs suggest that this reconciliation will continue during the next decade and that the commitment to a clean environment will grow stronger in our society.

## The Search for Solutions

The environmental issues on which we focus our attention are a shifting target. Environmental issues almost never totally disappear from public discussion, but they change in the degree of importance attached to them. For example, the issues of acid rain and toxic waste disposal have risen in importance in the last few years relative to such issues as energy production and potential natural resource limits to economic growth. Since pollution takes many forms, from the chronic problems of carbon dioxide to the acute problems of dioxin and heavy metals, an enormous range of complex policies must be established. And, much room for conflict obviously exists between the business and environmental communities in their attempts to establish pollution guidelines.

Since there is no absolutely correct or indisputable standard for most forms of pollution, environmental policy decisions will ultimately be political decisions. This reality has brought environmental issues into the political campaigns of individual candidates and political parties. In turn, politicization has leant itself to compromise, as candidates, parties, lobbyists, and private individuals seek to find solutions to environmental problems.

A key challenge in policy-making involves selecting policy instruments that give the best combination of effective control at the lowest possible cost. Should governmental bodies levy pollution taxes, set physical limits on emissions, establish markets in pollution rights, require environmental audits of firms, or institute other policies to control pollution? The fact is that we are still in the infant stages of designing policy tools for achieving our environmental goals. Each new problem requires a pioneering effort in policy making.

We are still trying to decide which characteristics of air and water we should measure, and we have only the beginning of a body of historical data by which to measure our progress in controlling pollution. The measurement and interpretation problems become even greater when international environmental issues are involved.

The remainder of the twentieth century is likely to be a time of "learning by doing" in the area of environmental policy development. There certainly is no monopoly on truth, and there is a lot of room for experimentation. The type of pollutant being dealt with will determine the policy flexibility available to us. Some pollutants are so deadly that zero emissions must be the standard. The vast majority of pollutants, however, allow for substantial flexibility and experimentation.

In most cases, the wisest policies will be those that limit the levels of emissions or tax them but leave the means of control up to individual firms. This will encourage innovation and take advantage of the creativity and incentive systems of the marketplace. More flexible, localized decision-making is the direction in which policy is moving in the mid-1980s.

## Success Depends on Public Support

It is common to think of environmental policy as an area in which government will make most of the decisions, but this is certainly not the case. The vast majority of pollution control decisions are made by thousands, perhaps even millions, of business-people, engineers, consumers, and other private individuals who, on a day-to-day basis, pull the levers, inspect the filters, tune the engines, and handle the chemicals and materials that make the difference between a clean or polluted environment.

Laws, regulations, and guidelines matter, but there will never be a large enough environmental police force to ensure environmental protection in an economy and society as decentralized and individualistic as the United States. For environmental protection to work, there must be a widespread ethic or belief in its importance and a feeling that the rules and guidelines are reasonable, necessary, and not economically crippling to individuals or firms. If government policies are too stringent or too far ahead of public opinion, cheating and non-observance will render them meaningless. If they

are perceived as being fair and reasonable and the public supports them, the need for government enforcement will be greatly diminished.

One of the themes that emerges in the search for acceptable environmental protection policies is the importance of "selling." The business community has to be "sold" or convinced that pollution-control devices will not ruin their profitability. Plant engineers have to sell the EPA on the idea that they sometimes have superior ideas and techniques for achieving environmental goals. Labor unions have to be sold on the idea that pollution controls will not result in the exportation of jobs. And the public has to be sold on the importance of the whole process to its long-term welfare. Selling has always been a critical ingredient in the political and economic processes of democratic capitalism. It is one aspect of American society with which those in the nonprofit sector often feel uncomfortable, but it is an aspect of our system that policy-makers at all levels must not ignore if they wish to see their policies succeed.

Undoubtedly, the next few years will see a great wave of innovation in environmental policies at all levels. New means of measurement will be developed, new technologies of conservation and materials flow will emerge, new environmentally benign products will be created, and new and cleaner production techniques will appear. Hopefully, the inertia and dynamics of change that are so evident today will not be restricted by an inflexible regulatory structure. □

*(Dr. Gilbreath is Associate Dean of the Hankamer School of Business at Baylor University in Waco, Texas, and a member of the Board of Directors of the Federal Reserve Bank of Dallas.)*

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# A View From Inco

by W. R. O. Aitken



W. R. O. Aitken, Executive Vice President of International Nickel Co. (Inco Limited), served as Vice Chairman of Canada's National Task Force on the Environment and the Economy. The following article was excerpted from a speech he delivered to the World Resources Institute on April 29, 1988, in Washington, DC.

**W**hile the environment is clearly a matter of great public importance in the United States, it is of overwhelming importance in Canada. That fact is the backdrop for the work and thinking of Canada's National Task Force on the Environment and the Economy.

An October 1987 opinion survey reported that 80 percent of Canadians are concerned about the impact of pollution on human health and safety, and 70 percent are concerned about the impact on wildlife. A remarkable 87 percent are disturbed by lack of action, and 88 percent believe that an environmental cleanup is within our technical knowhow. While 92 percent believe that corporate executives should be held personally responsible for polluting the environment, 78 percent are willing to pay for the cleanup through higher prices or higher taxes.

This is not the preoccupation of a small group of activists but a national consensus, embracing persons of all political persuasions and from all walks of life.

The National Task Force is an expression of this consensus. It was Canada's response to the report of the World Commission on Environment and Development (WCED), established in 1983 by the United Nations "to propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond."

Membership on the National Task Force consisted of seven environmental ministers, seven representatives from industry, a representative of the Ecology Action Centre, and the Vice President for Research of the University of British Columbia.

Like WCED we felt the need to

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***We talked about what was meant by "conservation," a concept that to industrialists sounds suspiciously like a "shut down."***

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establish common ground. We found it by moving to the view that, in order to attain sustainable economic growth, we must have decisive political action to manage and conserve environmental resources and, by the same token, to succeed in conserving the environment we must have sustainable economic growth. Our decision was to look forward. We didn't want to forget the errors of the past. We are determined

Inco's smelter stack at Sudbury, Ontario, was built in the 1970s as an interim measure to disperse sulfur dioxide emissions while newer control technologies were being developed. At 1,250 feet, it is the tallest smelter stack in the world. Inco photo.

not to repeat them. But we need to put the history of environmental degradation behind us, recognizing that regulations are in place to deal with those problems, so that we can move beyond "react and cure" methods, which are necessarily adversarial, to "anticipate and prevent" systems which are cooperative and constructive.

We talked about what was meant by "conservation," a concept that to industrialists sounds suspiciously like a "shut down." The position that the Task Force ultimately took was that a conservation strategy is a set of principles for development, designed to ensure that the consumption of resources today will neither deny future generations the prospect of maintaining or improving their standard of living, nor deny those less fortunate today in the undeveloped world the opportunity to improve their lot. Long-term economic growth depends upon a healthy environment, we said, and the maintenance of a healthy environment

requires continued development. The two are inseparable.

What do these beautiful words mean in practice? What a conservation strategy means to Inco—and this view seems to have been accepted by the Task Force—is: Don't exploit the resources at a rate which exceeds your ability to develop another or develop a substitute product. The fundamental message is: Don't compromise the sustainability of the host environment, the air, the water, and terrestrial resources.

From philosophy, the National Task Force moved on to concrete recommendations. In the governmental area, we recommended that integration of the environment and the economy should be a regular agenda item at Canada's First Minister conferences, no less important than tax reform and free trade. Major government economic development documents should be required to demonstrate that they are both economically and environmentally sustainable. Formal mechanisms should be established to hold development ministers accountable for the environmental soundness of their projects and environmental ministers accountable for the economic impact of their proposals. Governmental funding programs should be conditioned on meeting environmental standards. Governmental processes for evaluation of economic development projects should include socio-economic and environmental analysis.

On the industry side, we recommended that both the Business Council on National Issues, which consists of the chief executive officers of Canada's 150 largest businesses, and the Canadian Chamber of Commerce, which includes many smaller companies, establish environment/economy task forces. We urged that industry associations endorse, support, and promote environmental assessment and that individual companies adopt clear environmental policies, including annual reviews of environmental performance by corporate boards of directors. We recommended that companies behave outside Canada as they are required to behave inside Canada. In Inco's case, I was able to tell the group, when we established a mine and smelter in Indonesia during the early 1970s, although there were no environmental regulations affecting us, we designed to Ontario standards.

We called attention to the need for improvements in analytical methodologies. In the area of cost-benefit analysis, traditional

methods of determining Return On Investment (ROI) do not work in relation to the environment. For example, Discounted Cash Flow (DCF) ROI renders insignificant benefits arising more than five or six years out, but environmental impact goes on for generations. In the free enterprise world,

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***Inco believes it is in our interest to pursue sound environmental practices.***

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we compete for investment capital, and unless we provide returns that satisfy investors, we don't get it. So we need to find better ways to analyze and evaluate environmental risks and impacts.

We need carrots as well as sticks. I don't much care for contaminant charge schemes and tradeable emission/discharge rights. To me, they smack of buying the right to pollute. We also hear about such devices as performance deposits. In our view, thought also needs to be given to investment tax credits, credits for improving on environmental standards, reduced interest bonds, and other such incentives.

We need to upgrade environmental education at the elementary and junior high school levels and to include courses in environmental economics at the high school and college undergraduate levels.

These recommendations were accepted at the First Ministers' meeting in December 1987, and the Business Council on National Issues has written the Prime Minister endorsing the National Task Force's report and recommendations.

Some members of the environmental community may regard Inco's participation in this effort with suspicion. The waste landscape surrounding our operations in Sudbury and the Inco superstack are familiar environmental nightmares. Practices dating back to the turn of the century may well have justified the image of the Sudbury region as "the backside of the moon" or "Pittsburgh without the orchestra," although I would point out, the technology used even then was state-of-the-art for that period. Heavy lumbering by others to construct railways and to rebuild Chicago after the great fire had denuded Sudbury's hills, and eliminating sulfur from our ores to get at the nickel killed what few trees and vegetation that remained. Erosion completed the process.

By the time the world came to understand that the environment could be exhausted and destroyed, Inco had already begun to turn the corner. During the 1950s, we developed our oxygen "flash furnace" smelting technology, which greatly improved our capacity to capture sulfur dioxide. We also invented a means of magnetically separating pyrrhotite, a high-sulfur iron mineral, which was rejected before it reached the smelter. Sulfuric acid operations were greatly expanded in the 1960s, even though the fertilizer business, its main outlet, was not at all economic, and we began an extensive program of reforestation and of planting grass and grain on eroded mine tailings.

Our tall stack was constructed during this period to replace three smaller existing Sudbury stacks so as to ensure minimum, harmless ground-level concentrations of sulfur dioxide. It turned Sudbury into one of the "clean air" communities of Ontario. Though it was the latest technology at the time and was a decided step forward in our comprehensive program to reduce the environmental impact of Inco's operations, the superstack also became a target of environmental activists and a symbol of growing concern about airborne transportation of pollutants and acid rain.

The symbolism has obscured the fact that Inco's total emissions have been reduced by some 70 percent since the high point in the mid-1960s. That represents the largest tonnage reduction by far of any organization in North America. By 1994, we plan to reduce emissions by a further 60 percent, which would bring total sulfur containment to over 90 percent. During this decade alone, our company has spent \$120 million on its sulfur abatement program, and we are continuing to press ahead on our commitment to reduce sulfur dioxide emissions to 265 kilotonnes per year by 1994 from the current level of 685 kilotonnes. *We will get there.*

Inco believes it is in our interest to pursue sound environmental practices. We are convinced that it is cheaper, easier, and better in the long run to build clean plants than to have to clean them up later under governmental edict. We want to run a sound and successful business for our employees, for our shareholders, and for our customers—today and tomorrow. And we want to leave both a livable environment and a sound economy to our children and grandchildren. □

# Seeking A Global Ethic

by Gro Harlem Brundtland

Forty to 70 thousand years ago, humankind, starting to use simple tools, took up its struggle with the biosphere. Two centuries ago, with the advent of the industrial revolution, humankind gained the upper hand in that struggle.

Since early times we have had the

capacity to lay waste parts of our habitat. At the start of this century, however, neither human numbers nor human technology had the power to radically alter global systems. It was not until we gained access to vast energy resources that we acquired the irrevocable power to destroy the

biosphere. Now, as this century draws to a close, the activities of a greatly increased human population are resulting in major, unintended changes in the biosphere.

The relationship between humankind and the biosphere is like the recurring theme of a symphony: basically it does not change, even though the tone and instruments may do so. Today, the environment and development have emerged as a major challenge on the international agenda, rivalled in importance only by vital issues of security and disarmament.

Twenty years ago we had a much simpler view of development. Indeed it was optimistic. High rates of growth and employment and low rates of inflation were predominant features of the post-war economic recovery. And peoples who had endured centuries of domination were gaining self-confidence, establishing their own identities as free and sovereign nations.

The international institutions we created expanded the scope and scale of their activities, and new institutions were established, especially in the United Nations system. In the UN Charter, we committed ourselves to saving subsequent generations from the scourge of war, which has brought so much untold suffering to mankind.

But in the early seventies it dawned upon us that development had an environmental price. The 1972 Stockholm Conference on the Human Environment was one response to a growing concern that human activities were destroying important ecological recycled life support systems. Existing institutions had not proved capable of dealing with the by-products of our economic activities.

Global conferences on water supply, food, women, human settlement, new and renewable energy resources, and population all offered hope of improved international cooperation on major issues. Yet a sense of frustration and inadequacy prevailed.

This was the background against which the World Commission on Environment and Development was established by the General Assembly of the United Nations in 1983. The call from the General Assembly was an



Panama's lush tropical rain forest. In the last 40 years, about half of the earth's tropical forests have been felled. Mac Chapin photo, Inter-American Foundation, AID.



Parts of Calcutta exemplify poverty and congestion in India. Faced with a population explosion that threatens to wipe out economic gains, India has given high priority to a massive family planning program. In developing countries, population pressures, poverty, and environmental degradation are interrelated problems. AID photo.

urgent one. The Commission was given a broad, global mandate—to take a fresh look at the interrelated issues of environment and development, and to formulate concrete recommendations for action based on shared perceptions of long-term environmental issues.

We found many success stories in different parts of the world. Infant mortality is falling, human life expectancy is increasing, and access to education and equality of opportunity for the sexes are improving in most countries. Global food production is increasing faster than the world population, even if figures for this year seem to be less encouraging. But still, nearly 800 million people live in absolute poverty, and their numbers are growing. In the developing countries, poverty is a main cause—and effect—of environmental degradation. In the developed countries, unsustainable and excessive consumption patterns are among the main pollutants.

It is clear that the present international economic system works against the interests of many developing countries. Adverse external conditions force developing countries to overexploit natural resources as they

struggle to service debts and maintain necessary income levels. Adjustments are called for in developing and developed countries alike, but they will have to be adjustments with a human face. Otherwise, poor people, poor countries, and their natural resources will be the victims of a world economy threatened by serious imbalances.

What is needed is more growth. Growth is necessary to eradicate poverty, and growth alone can create the capacity to solve environmental problems. But this growth must not be a repetition of the development patterns of the past. We can not continue to burn fossil fuel as if the resources were infinite. We can not treat the atmosphere, soils, water, and oceans as sinks for the by-products of human activities. Growth must enhance the environment rather than degrade it. Growth must be distributed in an equitable manner among and within countries.

To achieve these goals, a new global ethic is needed which is based on equity, accountability, and human solidarity—solidarity with present and future generations—rather than on the tyranny of the immediate.

The alleviation of poverty and

preservation of the environment can be cost-effective components of development policies in all countries and should not be considered to be irreconcilable with development itself.

Sustainable development as defined by the World Commission on Environment and Development in its report "Our Common Future" is a concept of growth that can be sustained through the next century. Today we have the knowledge and the capacity to adapt to the limitations imposed by nature.

Will the improved relations between East and West release the human and financial resources needed to address our common challenges? Do the events of 1988, when it was decided to dismantle the INF missiles, when the Soviet Union finally decided to withdraw from Afghanistan, when President Reagan and General Secretary Gorbachev strolled through Red Square together, signify new opportunities in the history of humankind? Will we be able to deal with the vital issues of environment and development in a real climate of change?

A new global ethic needs to be developed which recognizes that there are limits to what we can do to the environment, even if the formal rules and regulations have not yet been adopted. Environmental concerns must become an integral part of decision-making at all levels. At the company level, we see a new awareness. Environmental concerns should be integrated into company policy. Many executives are beginning to see that environmentally benign technology will give them a competitive edge.

The time has come to move forward towards a true revival of multilateral cooperation on issues relating to the environment and development. The international financial institutions are vital to sustainable development. They must integrate environmental concerns firmly into their policies, and they must take drastic action to achieve debt relief and social progress. The present surplus countries have a particular responsibility for increasing their support to the international institutions equipped for leading roles in promoting sustainable development.

Global issues require global solutions. The time has come to take a giant leap forward in the upgrading of civilization. □

(Brundtland is Prime Minister of Norway and Chairman of the World Commission on Environment and Development.)

# An Editorial

by John Heritage

Is it time to broaden the focus of environmental protection? Should we concentrate not just on the big E of government pollution control programs, but think as well of the little e—the whole environment in which we live and strive together?

Why is this question important now? The answer comes from the heart. And it comes from the mind.

While some might argue that there are exceptions, EPA's clean-up efforts have largely been colorblind. Reducing lead in gasoline is as helpful to the health of ghetto residents as it is to people who live in the suburbs. The federally backed drive to clean up hazardous waste sites is as beneficial to the poor as to others. The lungs of inner city people benefit as much from the national push to stop ozone pollution as do the lungs of residents on the fringes of metropolitan areas.

But is something amiss? Many of the people who live in our inner cities are suffering a savage assault on their mental health and well-being because of an environment of poverty, joblessness, crime, poor education, and deteriorating housing. How much good are the billions of dollars of modern environmental clean-up programs doing to help these people deal with the environment that is crippling their lives? From the heart, shouldn't the quality of life of the American inner city be a major concern of the nation's environmental effort? Shouldn't the mental health and well-being of these people be high on the list of priorities for a decent, healthy American environment?

The environmental protection drive wasn't meant to be simply government pollution control programs—the big “E.” The environmental movement that blossomed in the early 1970s was socially oriented and broad-based. It involved tens of millions of people of all ages, incomes, and parts of the country. Its objective, as often articulated by its leaders, was people living in dignity and harmony with each other and with the planet.

In short, the modern environmental movement has a message of hope. It is a hope that people can do a better job of

living together, more respectfully, more sensitively, as corporations, as cities and towns, as individuals. The environmental effort was born with this dream. Is it all that different from the dream of Martin Luther King, Jr? Is the environmental protection effort that has developed from the outpouring of public concern in the early 1970s now thinking as broadly as it should?

There is a second reason for raising the question about a big “E” and a little “e” now. The front pages of the newspapers and the nightly news broadcasts on television feature harrowing reports of a deteriorating international environment. Chlorofluorocarbons stripping the atmosphere of its health-protecting constituents. A Greenhouse Effect that poses threats to crops, climate, and sea coasts. Acid rain that carries its devastation over the borders of states, regions, and nations. Chernobyl-type accidents with effects that span large portions of the globe.

Have these modern environmental problems gotten beyond the reach of the big “E”—the clean-up regulation in the *Federal Register*, or the provisions of a Clean Air Act passed 18 years ago? From the mind, are the institutional capabilities of this nation and other nations broad enough to grapple effectively with these planet-threatening issues?

To this observer, the most moving speech at the U.N. Conference on the Environment in Stockholm in 1972 was by Indira Gandhi, then Prime Minister of India. Her thrust was not toward a big “E”—pollution control—but toward a dream of a human race united in a struggle to save civilization and live in dignity and mutual respect, as concerned about the poverty of the Third World as with the wastes of industrial societies. Not the big “E,” but the little “e,” the environment which everybody shares in common, and an environmental movement concerned with human attitudes and values as much as with natural conditions.

Gandhi's theme continues up to today, if we listen for it. In this issue of *EPA Journal*, the Prime Minister of Norway writes that “global issues

require global solutions. The time has come to take a giant leap forward in the upgrading of civilization." Is this a job for the big "E" as we know it, the effort to clean up rivers and air and be safe from pesticides and toxic industrial chemicals? Or is it more, much more: Institutions in every nation that are concerned with the survival and the quality of the world environment, the little "e" which we must pass on from generation to generation?

A skeptic says: "If you broaden the objective from pollution control, if you open the door to mental health and well-being in the inner city and to the values and attitudes of the human race, where is the end?" It may be that there is no end, only a goal, one that we can strive for, but never completely achieve: Decency, compassion, hope. It may be that every cause must, fundamentally, have this aim. Not simply because it is right, but because, on a planet with great benefits, but also, great risks, it is realistic.

Some observers may say, "When you translate these goals of a healthier, safe inner city and a livable planet into government action, you'll have a \$10 trillion debt." The answer may be that it is not what government can do alone, but what all the participants in the little "e" can do together, from household to school, from community to corporate boardroom. This was the spirit in the birth of the environmental movement—a spirit of togetherness, of common themes, and common efforts. That was the idea: That life is a quilt of billions of lives and thousands of institutions. It moves and grows as one, not as one program, or one agency, but as one with many units, small and big. Government has a role, but it does not provide a single, simple answer. Hope and initiative spring from many voices, from the great diversity of existence.

The *Journal* welcomes the responses of its readers to the questions presented here. We may not have the space to print all of the comments, but we hope that we can stimulate a dialogue which will continue on these pages and elsewhere.

Following this editorial is a box presenting some examples of what something as tame-sounding as environmental education might achieve in helping the youth of inner cities. Awareness, which journalism can promote and teachers can build, can be a beginning. □

*(Heritage is Editor of EPA Journal.)*

## Environmental Education and the Inner City

In spite of concerns about the importance of environmental awareness in the inner city, at present there are relatively few programs aimed at creating such awareness or encouraging minority students to seek professional careers related to environmentalism and natural resource protection. But the number of such programs is slowly growing. Here are some examples:

- **Milwaukee, Wisconsin**—The Schlitz Audubon Center on Lake Michigan, just north of this industrial city, found field trips by inner-city youngsters were exciting for them, but largely irrelevant; the kids' attitude: very nice, but what does it mean to me? We don't even have trees on our street. The Center recognized that environmental awareness must be created where the youngsters live, not in rural surroundings that are "unreal" to them. They developed curriculum guides and materials—"Living Lightly in the City" and "Living Lightly on the Planet." For lower grades, these guides begin with simple approaches to children's feelings

about the urban ecology (like a class walk around the block looking for environmental problems). For high schoolers, more sophisticated activities, like debates on acid rain, are used. According to the Center, 10,000-20,000 Milwaukee school children use the materials annually, perhaps another 50,000-60,000 elsewhere. A survey found that 89 percent of the teachers who had received the curriculum materials were using them.

- **Boston, Massachusetts**—Perhaps the largest such program in existence is run by the Thompson Island Education Center on an island off South Boston. The 15-year old project, which the Center believes may have already reached 100,000 children, is designed to help the Boston public schools teach about ecosystems of both the island itself and various Boston neighborhoods. The Center's special Harbor Environments program brings students from predominantly white and black schools together for four-week summertime study programs on the island, where both academic and ecological studies are shared. The project also provides materials used in after-hours projects during the regular school year, with special emphasis on the ongoing cleanup of Boston harbor, one of the nation's most polluted bodies of water. State and private funding support the Center's activities.

● **Washington, DC**—What can one teacher accomplish? At virtually all-black Ballou High School here, environmental science teacher Carl Keels has taught youngsters to relate to the environment around them—they have studied home and school noise levels, asbestos flaking from school basement pipes, solar heating, Washington's sewage disposal system, and other subjects in addition to formal programs in biology and ecology. The students also visit environmental agencies. Keel's classes have won EPA's President's Environmental Youth Award and have also been filmed by the Agency.

● **Philadelphia, Pennsylvania**—In the vanguard of EPA's Adopt-A-School (or Partners in Education) program, Region 3 employees have adopted three schools. One of these is heavily minority-attended Abraham Lincoln High School in northeast Philadelphia. Now in its third year, the program involves about 600 students in environmental activities, including testing nearby Pennypacker Creek for pollutants and cleaning up the stream, having visits by EPA staff, including the regional administrator, to discuss acid rain, air and water pollution, waste disposal, and other subjects with environmental science classes, taking tours of Agency Superfund response facilities, and holding an annual Environmental Day. Participation has doubled in just two years. The other schools have been adopted by the Region's Black and Hispanic employment offices. Other regions and headquarters plan similar projects.

● **New York City**—For 13 years, mathematical physicist Mario Salvadori has conducted a program in New York City schools that is designed to sensitize students (K-12) to the "built environment" in which they live. In the past two years, the New York City Board of Education has formally sanctioned the program, installing it in a Bronx middle school, where 150 "at risk" urban, black, and Hispanic students were taught math, science, and other subjects with a "built environment" emphasis. Other program components include architectural planning, landscaping, and city planning. Earlier this year, all 150 of these students, more than half of whom were expected to be dropouts, graduated and went on to high school.

● **New Mexico**—A number of minority colleges and universities—black, Hispanic, and Native American—offer specialized programs aimed at encouraging an interest and possible careers in professions related to natural resources and the environment. New Mexico Highlands University, for example, offers both associate and bachelors degrees in environmental science. Considerable emphasis is given to solving pollution problems. About 60 percent of the students are Mexican-Americans. (Also Tuskegee Institute, in Alabama, has a well-known pre-forestry program that is drawing a growing number of black students into the field of forestry-related resource management.)

● **Washington, DC**—Since 1983, the Human Environment Center has provided minority environmental science internships that enable 10 to 25 Washington metropolitan area students to spend their summers working under the tutelage of voluntary mentors at various federal and local environmental and natural resources agencies. This year's program, for example, finds students assigned to the Patuxent Wildlife Research Center, the Urban Ecology Center, and the National Arboretum. Other agencies where they have worked include EPA, the Smithsonian Institutions, the Interstate Commission on the Potomac River Basin, and the DC Department of Public Works. The program's goal is to encourage minority students to seek professional careers in environmental fields, where minorities have long been under-represented. The Center also has programs at the college level, and is currently expanding to include law and pre-law students in the hope that they will ultimately work with environmental agencies or groups.

# Environmental Literacy Test

**P**ublic opinion poll data indicate that Americans are, generally speaking, highly concerned about environmental problems, and certainly public opinion plays a key role in the process of determining environmental priorities and policies. Clearly, then, it is important for the public to be adequately informed on environmental issues.

To assist *Journal* readers in assessing their own understanding of current environmental issues, the following 20 questions are offered as a kind of "environmental literacy test." Readers are invited to take the test by simply circling the proper answer for each question. Answers are given on page 37. (Questions and answers prepared by Arthur Koiner, Regulatory Integration Division, in EPA's Office of Policy, Planning, and Evaluation.)

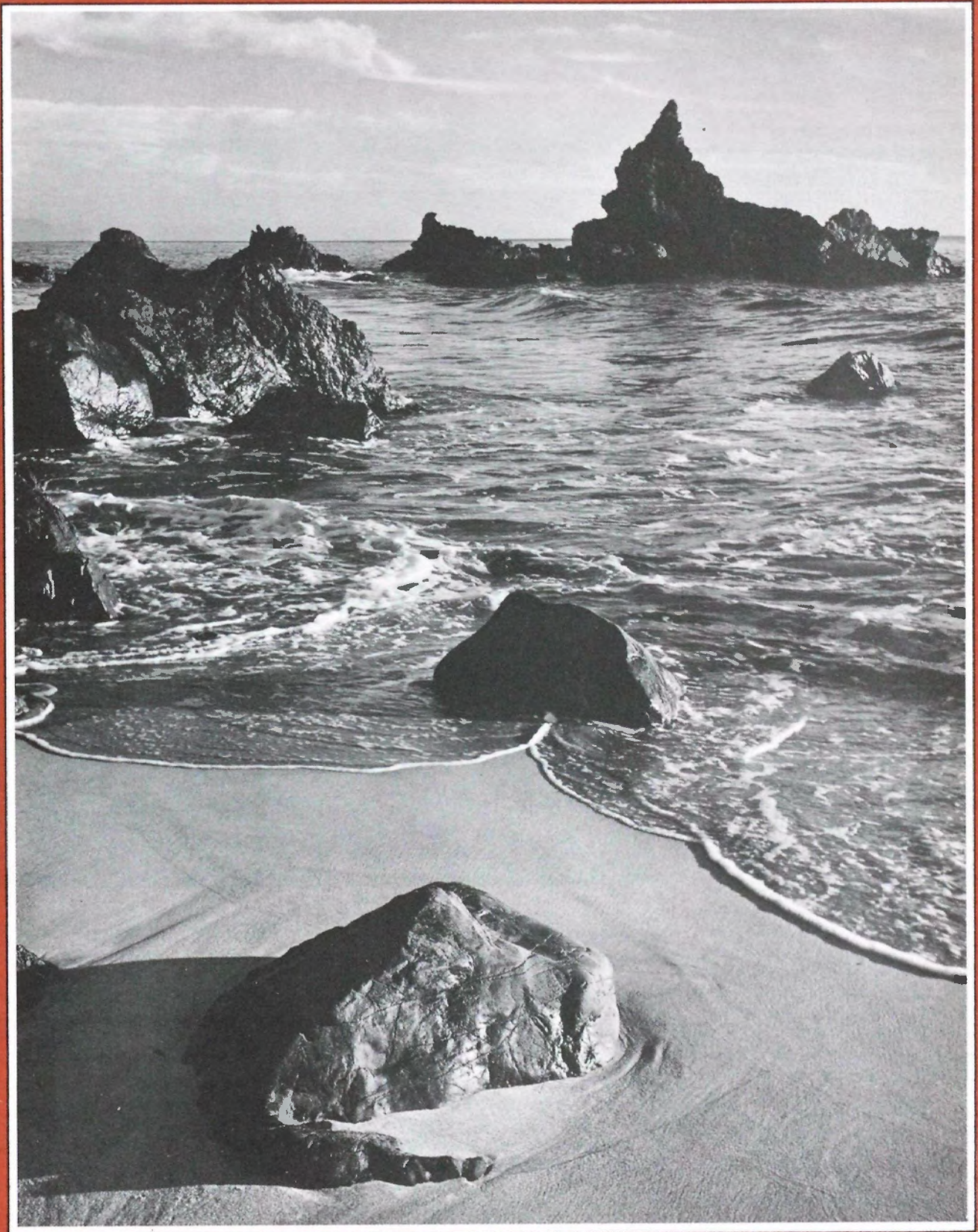
1. Which of the following phenomena is believed to be associated with the greenhouse effect?
  - a. global warming
  - b. melting of the polar icecaps
  - c. sea level rise
  - d. all of the above
2. Which of the following gases is believed to cause the greenhouse effect?
  - a. oxygen
  - b. carbon monoxide
  - c. carbon dioxide
  - d. all of the above
3. Today, 18 years after the passage of the Clean Air Act, nearly all major cities in the United States are in compliance with national air quality standards.
 

☐ True    ☐ False
4. Which of the following environmental problems has EPA found to be the most threatening to public health?
  - a. hazardous waste sites
  - b. radon in homes
  - c. toxic chemicals in drinking water
  - d. leaking underground storage tanks
5. Which of the following environmental problems is the American public most concerned about?
  - a. hazardous waste sites
  - b. radon in homes
  - c. contaminants in drinking water
  - d. leaking underground storage tanks
6. Which of these is a major source of air pollution in homes?
  - a. building materials and furnishings
  - b. electrical heating and cooking appliances
  - c. tobacco smoke
  - d. none of the above
7. Ozone is beneficial to our environment at high altitudes, yet harmful at low altitudes.
 

☐ True    ☐ False
8. If dioxin is such a serious public health threat, why doesn't EPA just ban it?
  - a. It is a key material in the production of vital consumer products.
  - b. Industries that use dioxin are able to exert a powerful political influence on Congress.
  - c. EPA is unable to ban dioxin because it is an unwanted by-product of many industrial activities.
  - d. None of the above.
9. The federal government provides the majority of funding for implementing environmental programs.
 

☐ True    ☐ False
10. In what way can people be exposed to lead in the environment?
  - a. in their drinking water
  - b. in dust from lead paint in their homes
  - c. in lead-contaminated soils
  - d. all of the above
11. What adverse health effects have been associated with human exposure to lead?
  - a. anemia
  - b. learning disabilities in children
  - c. hypertension in adult males
  - d. all of the above
12. Nationally, which of the following is the biggest polluter of our air?
  - a. the chemical industry
  - b. automobiles
  - c. hazardous waste incinerators
  - d. none are big polluters.
13. Which of the following is the source of radon in homes?
  - a. ultraviolet radiation
  - b. defective home heating systems
  - c. uranium in naturally occurring rock formations
  - d. none of the above
14. Which of these answers comes close to the amount of garbage created annually by the average American?
  - a. 10 pounds
  - b. 100 pounds
  - c. 1,000 pounds
  - d. none of the above
15. What do we do with all the garbage we create?
  - a. dispose of it in landfills
  - b. burn it in incinerators
  - c. recycle it
  - d. all of the above
16. A ground-water aquifer is most like:
  - a. an underground lake
  - b. an underground river
  - c. an underground sponge
  - d. none of the above
17. Which of the following best describes an estuary?
  - a. a large inland water body
  - b. an ancient river bed
  - c. the confluence of fresh water and salt water bodies
  - d. none of the above
18. Estuaries are important because they:
  - a. are major sources of drinking water
  - b. are vital marine habitats
  - c. normally occur near large population centers
  - d. all of the above
19. Although the pollutants causing acid rain are generated mainly in the Midwest, what region of the United States has experienced the worst effects from acid rain?
  - a. the Northwest
  - b. the Northeast
  - c. the Southeast
  - d. the Southwest
20. In the past, which of these groups has enjoyed cost savings from inadequate pollution controls?
  - a. industry
  - b. the American consumer
  - c. federal, state, and local governments
  - d. all of the above

# Environmental Education: A Special Section



# Environmental Education: Past and Present

by Jack Lewis

From the very earliest days of environmental awareness in the United States, mankind has been seen as the key to nature's preservation—or destruction. At first the plea was to the sensitive individual, to awaken to the beauty and fragility of nature. But as the decades passed, and U.S. population and industrial might burgeoned, the need for broad-based education entered more and more into discussions of how to curb increasingly obvious environmental decay.

The first traces of the earlier theme can be found in the writings of the great naturalists and moral philosophers who championed the environmental ethic in the 19th and early 20th centuries: Ralph Waldo Emerson, Henry David Thoreau, George Perkins Marsh, John Muir, John Burroughs, and Aldo Leopold. These writers sought through their influence on the reading public to change society, one reader at a time, but often more at a spiritual than a pragmatic level. Needless to say, visible results were slow to surface, and then only among the educated elite.

In 1950, Ansel Adams, the renowned nature photographer, marked a transition to a new frame of mind when he advocated systematic education of the general public, not just isolated sermons by "St. Georges of conservation" to isolated audiences of



**Previous page: "Surf and Rock: Monterey County Coast, California, 1951." Photograph by Ansel Adams. Courtesy of the trustees of The Ansel Adams Publishing Rights Trust. All rights reserved.**

The philosophy of Adams, an early proponent of environmental education, is reflected in this statement from his autobiography: "I have come to the conclusion that to be complacent is to be ineffective, and to be tolerant of obvious error or injustice is unforgivable. Perhaps there is something amiss with the genes of *Homo sapiens* that does not innately command us to protect our home, Earth, as we instinctively protect ourselves."

the already converted: "The dragons of demand have been kept at snarling distance by the St. Georges of conservation, but the menace remains. Only education can enlighten our people—education, and its accompanying interpretation, and the seeking of resonances of understanding in the contemplation of nature."

It was not until the 1960s that a more scientific tone entered writing, thinking, and debate about the environment. Also heard at this point was a growing chorus of pleas for environmental education, both to train specialists and influence society at large.

Rachel Carson's *Silent Spring*, published in 1962, was the most celebrated of this new breed of books and articles—both technical and extremely idealistic—that suddenly appeared in rapid succession. These pioneering investigative studies were packed with scientific findings about pesticide contamination, water pollution, smog, and other environmental problems—the most alarming of which were quickly trumpeted to the general public by newspapers and television.

Scientists from the industrial sector countered these claims with diametrically opposite conclusions of

As a species, redwoods date back millions of years, and individual redwoods can live as long as 2,000 years. These trees are protected in the Redwood National Park, California, but others are being cut for timber. Fred Mang, Jr., photo, National Park Service.



their own. Furthermore, they cautioned that "ecology" was the youngest of the sciences, one that would need years to mature, both through research and education of trained specialists.

But the public was in no mood for debate, delay, or compromise. Citizens all over the United States were already using their eyes, noses, and ears to score their own "report card" on the environment. There were plenty of failing grades, and urgent messages to Washington calling for immediate action.

Action came with a rush in 1970, a year that began with the passage of the National Environmental Policy Act and

ended with passage of the Clean Air Act and the founding of EPA. Two landmarks in environmental education also occurred in 1970:

- On April 22, tens of thousands of demonstrators gathered all over the United States for "Earth Day" speeches, informal "teach-ins," and peaceful acts of protest. Mass action to deal with massive problems: that was the order of the day. Gathered in the open air, under beautiful spring skies, citizens were offered instant education on a host of topics at rallies reminiscent of counter-culture "happenings." Saturation media coverage emphasized an atmosphere of idealism and enthusiasm that was not to dissipate until the advent of the energy crisis in 1973.

- On October 30, President Nixon signed into law the Environmental Education Act. This law, extremely ambitious on paper at least, was to environmental education what Earth Day was to consciousness raising. Like Earth Day, however, it proved to be something of a false dawn. Through most of the 1970s, federal support of environmental education proceeded on what has been described as a "scattershot" basis, under a variety of statutory authorities; all too often, once federal funding ended, so did the state programs it was intended to subsidize only until other funding could be found.

Nevertheless, the rationale for the Environmental Education Act is worth quoting at length, if only as a reflection of the "gung-ho" atmosphere of 1970:

The Congress of the United States finds that the deterioration of the quality of the Nation's environment and of its ecological balance ... is in part due to poor understanding of the Nation's environment and of the need for ecological balance; that presently there do not exist adequate resources for educating and informing citizens in these areas, and that concerted efforts in

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***Citizens all over the United States were already using their eyes, noses, and ears to score their own "report card" on the environment.***

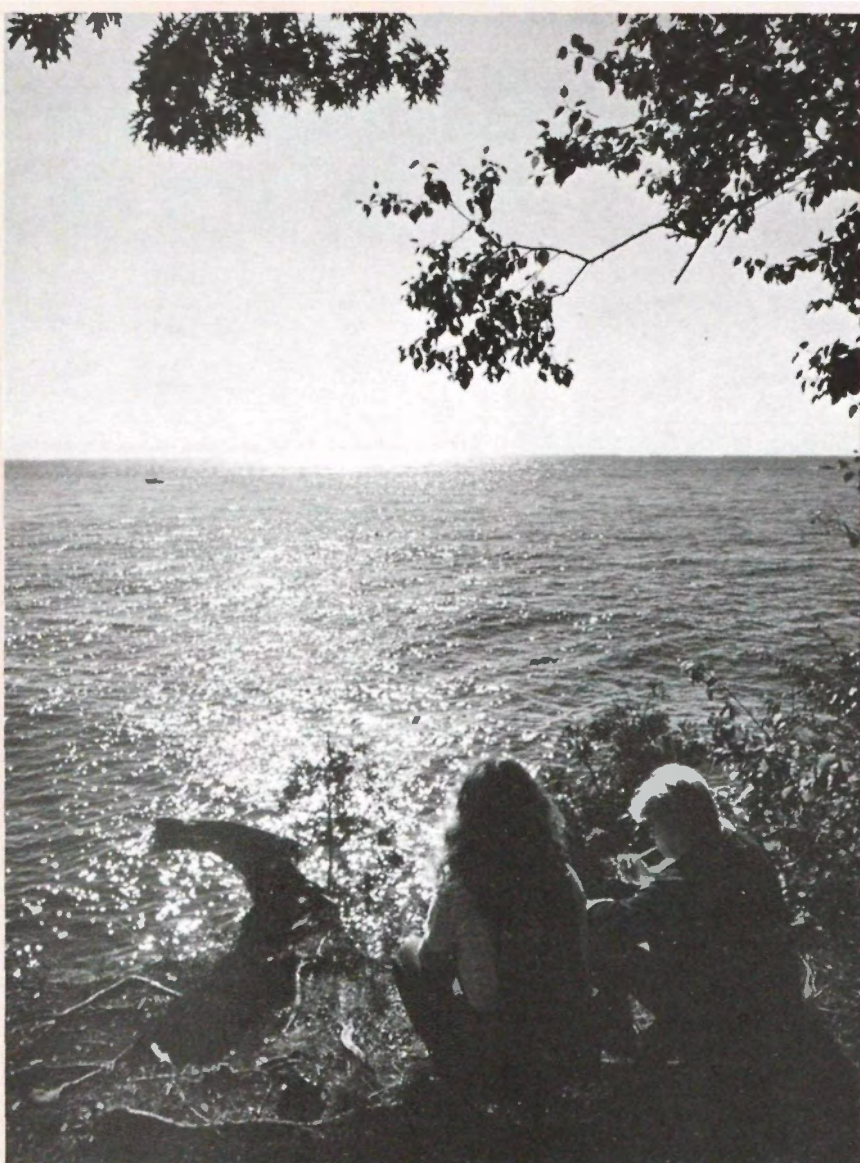
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educating citizens about environmental quality and ecological balance are therefore necessary.

The Department of Health, Education, and Welfare (HEW), faced with a daunting administrative challenge, chose to downplay its role in community education and to focus its efforts on reaching students through existing educational institutions: in other words, to promote formal programs of environmental education leading to conventional academic degrees. EPA, on the other hand, was more inclined to become involved in projects aimed at the citizenry at large; the Agency was geared up for such work because it was at this very time setting up "public participation" programs required by several of its own statutes. However, there was no clear line of demarcation. HEW reached communities, just as EPA did schools, sometimes in direct cooperation with each other.

To reach both constituencies, EPA's Office of Public Affairs created pamphlets and filmstrips suitable for use in "community education" outreach programs. The office also commissioned the highly acclaimed *Documerica* series of environmental photographs and a host of other materials that were disseminated to the print and electronic media—America's mass educators par excellence.

The public schools were also on EPA's agenda. The Agency, with some help from HEW, launched one especially well-received project in 1971. A massive mailing went out to every high school in the United States announcing what were then known as the President's Environmental Merit



Enjoying a day at Whitefish Bay, Wisconsin. Mike Brisson photo.

Awards (now the President's Environmental Youth Awards). There was such a tremendous response that applications were soon sought from junior high and elementary students as well as boy and girl scouts.

Direct action was the theme of early Merit Award projects: students took to roadsides and fields to plant trees; one 16-year-old in New Jersey single-handedly succeeded in gaining approval for a burning ordinance in his community.

EPA also set up a special task force to assist HEW with more traditional forms of environmental education. The task force helped HEW review applications from 100 universities for approximately \$10 million in financial aid grants to students in M.A. and Ph.D. programs related to the environment. It also designed a highly successful two-year environmental studies curriculum for use at the undergraduate level in colleges and junior colleges. Some work was also devoted to the development of a high school curriculum.

In addition, EPA, with funding from the Department of Labor's Manpower Development and Training Act, made pioneering advances in the area of technical training for federal as well as state and local officials. At the Agency's research centers in Cincinnati and in Research Triangle Park, North Carolina, scientists and engineers learned state-of-the-art techniques for the control of water and air pollution. At a later date, fire departments and local government officials were instructed in the best methods for controlling hazardous waste emergencies.

Another aspect of EPA's involvement in environmental education should not be overlooked. Ever since its establishment in 1970, EPA has been fostering the development of the environmental sciences at educational institutions by providing research grants to university scientists. A large part of EPA's research is done "in-house," but a sizable portion has always been undertaken by outside experts. As a result of contact with EPA, academic

experts in the health sciences, biology, engineering, chemistry, and physics have gravitated toward the environmental aspects of those disciplines. After furthering the Agency's specific short- and long-term research needs, these scientist-professors were able to pass along new forms of knowledge to their students.

Simultaneous with these efforts at EPA, HEW's Office of Environmental Education was making significant strides of its own. Its funding levels were higher than at EPA: from 1971 to 1981, HEW expended an average of \$3 million a year for a wide variety of environmental education projects. Heavier expenditures, at HEW as at EPA, tended to be clustered at the beginning of the 1970s and to taper off somewhat as the decade advanced.

Activities directly under the authority of the Environmental Education Act were usually development programs in public schools and community interest groups. These, however, represented only part of the overall equation at HEW. At least six other HEW statutes proved to be appropriations sources for environmental education projects. By far the most important of these was the Elementary and Secondary School Education Act of 1970.

One Elementary and Secondary School Act project is particularly worthy of mention, both for one enormous success it spawned and for the fairly typical failings to which it was otherwise vulnerable. From 1971 to 1974, three groups of states were given \$150,000 each to develop environmental curricula in the public schools. The New York and North Carolina clusters of states allowed their programs to lapse when federal money dried up. The story was quite different in California.

The group of 13 western states headed by California—known as the Western Regional Environmental Education Council—took hold in a very big way.

*Continued on next page*

# What's Happening in the States

This brief report highlights what some of the states are doing to advance the cause of environmental education. Contact your state education agency for complete details about what is happening in your area.

● **Arizona:** The Arizona Department of Water Resources has a Water Education Resource Directory that lists videotapes, films, and slideshows on environmental issues, suggests tour possibilities and guest speakers, and includes a guide to handouts and other teaching resources.

● **California:** California's Department of Education has perhaps the most extensive environmental education programs in the nation. Just a few examples are selected here from a wide range of offerings: the California Outdoor School Administrators, an association that targets its funds at enhancing outdoor school programs; the Class Project, an activity-oriented conservation education program sponsored by the National Wildlife Federation; and Environmental Education Fairs that bring educators into contact with government, business, and private conservation groups that can share with them ideas and materials for courses.

● **Delaware:** Delaware has tentative plans to make environmental education mandatory in all grades. Plans are also being made to offer environmental education to adults.

● **Hawaii:** Hawaii's Department of Education has put together a thematic, interdisciplinary Environmental Education Program for use in its public schools.

● **Indiana:** Indiana requires its secondary schools to offer environmental courses as electives.

● **Louisiana:** Louisiana's Department of Environmental Quality is in the process of preparing course materials on 100 environmental topics. In addition, the department has recently issued a three-volume environmental teaching guide.

● **New Jersey:** New Jersey's Department of Environmental Protection has produced a series of

educational packages on the environment for use in elementary and secondary schools.

● **New York:** New York requires its secondary schools to offer environmental courses as electives.

● **Ohio:** Ohio requires its schools to offer courses in natural science; these courses must teach the concept of conserving natural resources. Ohio's Department of Natural Resources has set up an Adopt-A-School program through which it provides specific programs to adopted schools.

● **Pennsylvania:** Pennsylvania is thus far the only state that requires an environmental course of all high school students.

● **Rhode Island:** Rhode Island is currently developing an environmental education curriculum that will be introduced into the public schools as part of a newly formed Governor's Literacy Program.

● **Virginia:** Concern over the Chesapeake Bay has led to several innovative projects. The "Bay Team" teacher project, funded by Chesapeake Bay Initiatives and the Council on the Environment, brings visiting teachers to classrooms around the state. Another program, conducted by the Chesapeake Bay Foundation, gives students and teachers a chance to visit the Bay. The Virginia Resource-Use Education Council sponsors environmental courses for teachers at four universities during the summer term.

● **Washington:** The State of Washington requires its secondary schools to offer environmental courses as electives. The state's Department of Ecology has issued Environmental Education Guidelines and set up a special course, "A-Way with Waste," to familiarize students with waste management and recycling issues.

● **Wisconsin:** Wisconsin's Department of Natural Resources requires each school board to develop an environmental education curriculum for infusion into kindergarten through grade 12 subject matter. Teachers are trained in how to present the curriculum.

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***An interesting new theme has been emerging in American environmental education: the concept of "curriculum infusion."***

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Permanent sources of state revenue were found, and alliances forged with private organizations such as the American Forest Institute. Several highly praised course modules developed by this council—Project Learning Tree and Project WILD—are now being used by educators in 39 states as well as a growing number of countries throughout the world.

No discussion of environmental education in the 1970s would be complete without some mention of the work undertaken by other federal agencies: most notably, the Tennessee Valley Authority (TVA) and the Department of the Interior. TVA set up a highly praised Environmental Education Program at a 170,000-acre Kentucky site known as "Land Between the Lakes." There teachers were offered special training, then encouraged to return with student groups.

Interior's Park Service sponsored a National Environmental Education Development Project amid the beauty of the national parks, while the same department's Fish and Wildlife Service went even further in the direction of developing environmental education programs for school and community groups.

Coordinating all these federal efforts was a Subcommittee on Environmental Education that was set up by the HEW-headed Federal Interagency Committee on Education. Both the Committee and the Subcommittee continued when Education split off from the Department of Health, Education, and Welfare (now the

Moonrise over Lake Michigan.  
Mike Brisson photo.

Department of Health and Human Services) and became the Department of Education in 1980.

Federal involvement in environmental education tapered off during the early years of the Reagan Administration, which emphasized the primacy of state and local government in all educational matters. The Environmental Education Act was allowed to fade out in 1981 when it was subsumed along with a variety of other laws under an umbrella statute, the Education Consolidation Improvement Act. This law instituted so-called "block grants," appropriations to cover a multitude of different program needs. Whether or not to use any "block-granted" funds for environmental education was left up to each individual state, with no record-keeping requirement and therefore no data as to which did.

The federal government, not just at the Department of Education but at EPA and elsewhere, was releasing its grip on environmental education. By 1983 even the Subcommittee on Environmental Education was in danger of dying out after several years without an Executive Director. But in 1984 it was given a fresh Presidential mandate at the urging of William D. Ruckelshaus, who had returned to serve a second term as EPA's Administrator.

In April 1985, Ruckelshaus' successor, Lee M. Thomas, sought to re-activate EPA's involvement in the process by instructing each of the Agency's 10 regional administrators to appoint a Coordinator for Environmental Education. These coordinators are program personnel recruited to perform their new functions on a part-time basis. Their achievements have been both impressive and varied.

For instance, EPA's Region 3, headquartered in Philadelphia, set up a Center for Environmental Learning in 1986. The center has sponsored many extremely popular meetings, forums, seminars, and conferences; these have been attended by—among others—businessmen, local government leaders, health officials, and environmental groups.

The Agency's Region 8, headquartered in Denver, has set up a Youth Speaker's Bureau that brings EPA professionals into the classroom to speak on a variety of environmental topics. Region 8 has also put together a Resource Materials Index so area educators can more easily identify and obtain EPA materials appropriate for use in the classroom.

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***Perhaps the realization has finally taken hold that in the long run, environmental education could prove to be the best investment of all.***

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In addition, two non-governmental organizations are emerging as major forces in the sphere of environmental education: the North American Association for Environmental Education; and the Alliance for Environmental Education, which has 34 affiliate organizations ranging from the National Wildlife Federation to the United Auto Workers.

The North American Association for Environmental Education, founded shortly after EPA itself, has as members nearly a thousand environmental educators in the United States and Canada. Interest in the organization's annual meeting and professional publications has been growing substantially in the past few years. Its

current president, Ed McCrea, attributes this at least partially to a felt need among the professionals to reinforce the vibrancy and visibility of the discipline during a period of slackened support at the federal level.

Meanwhile, the Alliance for Environmental Education has been busy forming regional networks of colleges and universities for what is intended to be a cohesive and well-coordinated national network. Thirty institutions of higher learning have already agreed to pre-service and in-service training for teachers of environmental subjects; the development of programs relevant to local institutions; community outreach programs; and environmental research.

Other interesting developments have been underway during the 1980s. Just in the past few years, an interesting new theme has been emerging in American environmental education: the concept of "curriculum infusion." Advocates of curriculum infusion are urging public school teachers to "infuse" environmental subject matter and environmentalist values into their



regular syllabus, be it for Social Studies or Mathematics. This "holistic" approach, though reminiscent of Earth Day, has a very practical purpose in the late 1980s: to expedite the spread of environmental education in an age when there is often insufficient funding for more intensive and specialized instruction.

The 1987 "Environmental Education Information Report" that documents the widespread use of "infusion" techniques draws some conclusions about the trends that explain their present-day popularity. The authors of the report—researchers at the Science, Mathematics, and Environmental Education Clearinghouse of the Educational Resources Information Center (ERIC), in cooperation with colleagues at the Center for Science and Mathematics Education at Ohio State University—conclude that "it ... appears that [the] environment is, from a national perspective, a second-order issue in the schools as well as in the political arena, though there are clearly many state and local situations where it thrives—in

varying forms, to be sure." (For a brief summary of state activities now underway, see box on page 33.)

To get a more exact fix on nationwide trends, the ERIC study polled all 50 state education agencies; 40 responded. Of these, 44.7 percent indicated that 81 to 100 percent of their state's elementary schools included environmental education in some manner. However, only five states reported that the subject was taught as a separate course in elementary schools rather than "infused" into other course offerings. As for secondary schools, 31.6 percent of the state agencies reported that environmental education was offered in some form at 81 to 100 percent of high schools. More than one-fourth of all respondents (11 states out of 40) reported that environmental education now enjoys the status of a separate course offering in their state's secondary schools.

From these figures, it appears clear that environmental education, though still a "second-order issue," has far more than a toehold in America's public schools, and current trends indicate that it is here to stay. Admittedly, this is a turbulent time in American education. Intense concern over the slippage of the U.S. economy in foreign markets would seem to favor traditional "meat-and-potatoes" course offerings. And budget shortages at all levels of government do not leave much room for humanistic experiments. But the American public, even in the most recent polls (see article on page 10) shows surprisingly strong support for environmental programs.

Perhaps the realization has finally taken hold that, in the long run, environmental education could prove to be the best investment of all. For as America's "St. Georges of conservation" long ago cautioned, man the enemy of nature must learn to be her friend—or learn to suffer the consequences. □

*(Lewis is an Assistant Editor of EPA Journal.)*

# Environmental Education: The Future

by John Paulk  
and Lynn Hodges

*If you are thinking a year ahead, sow a seed. If you are thinking ten years ahead, plant a tree. If you are thinking one hundred years ahead, educate the people. — Chinese poet, 500 B.C.*

With questions about the greenhouse effect and depletion of the ozone layer very much on the public mind, the authors present a near-future scenario in which solutions to pressing environmental problems are found without resort to litigation. We could be part way there already.

Future needs and strategies to meet them have challenged societies for centuries. Long-term needs are especially challenging, and nowadays changes are occurring faster and faster. Our ideas about future needs change daily, and when people look "one hundred years ahead," they are often overwhelmed by the possibilities and alternative futures.

The future always holds a risk of disaster. Minimizing the risks of such disasters, particularly those that would affect our basic life-support systems—our air, our water, our ability to grow food, our climate—is of concern throughout the environmental and economic sectors of our society.

With only sophisticated guesses about the future to guide us, one strategy remains as valid today as in 500 B.C. "Educate the people" continues to be a valid way to respond to rapid change and future risk. A relatively new field called "environmental education" has become a promising means to focus on the future. Its goal is to empower individuals and organizations to deal with change, to minimize environmental risks, and to promote economic growth and development.

Far too often we hear about conflicts between the corporate world and the "environmentalists." The unfortunate consequences of this continuing battle include unresolved problems, lengthy legal contests which fuel the "we'll-get-you-next-time" syndrome, and expenditure of limited funds for conflict rather than resolution.

Frequently, an examination of issues from a common-sense perspective reveals that a reasonable solution is in the grasp and control of both parties. Often it can be achieved with little loss of pride, minimal "blood-letting," and without enormous legal costs. Both parties must once again learn the art of compromise.

At the heart of most environmental issues are elements that favor the interests of both the corporate sector and the environmentalists. The corporate perspective has profit motivations. It values the free enterprise system as the "American way" and seeks to provide jobs and a healthy economy. The environmental perspective values healthy surroundings. Clean air, clean water, unspoiled land, and wise use of the earth's resources are also the "American way." Both groups are well aware that without a strong economy and jobs—or without clean air and water, unspoiled land, and wise use of resources—there is a dimness to the future. Both conditions are needed to promote a sustainable base of resources and sustainable economic growth. The common ground of sustainability must be recognized by the competing interests and must be accommodated.

The corporate manager must champion and seek solutions to environmental problems through partnerships with the environmental community. Environmental institutions and organizations should be utilized in problem-solving. The environmental organizations must accept and encourage the profit motive, which is the source of jobs and capital. Environmentalists must include basic economics in their vision of the future.

Let's examine an environmental scenario that might provide a future beyond the courts, or even without the courts. It will take a massive swallowing of pride on both sides, but it is palatable because it is essential. For lack of a better term, let's call the future method of developing this unique understanding "environmental education." It will consist of education about the biosphere. The biosphere, according to

Barbara Ward, in her foreword to Erik Peckholm's *Down to Earth*, consists of "a few thin meters of soil, a few miles up into the sky, and a similar depth into the oceans [that] encompasses virtually the whole [environment] in which we and other living things can survive."

It's a tiny sliver of space "where everything lives together." Not a difficult concept! This environmental education will also recognize that man has inserted economic systems into the seamless web of life. These systems of trade, barter, exchange, and competition become undesirable only when they tear the seamless web and reduce the ability of the biosphere to support life. Environmental education will teach that the energies of both natural and human-made systems will be honored.

Further, it will insist that environmental problems be resolved in ways that create or preserve a sustainable balance, encouraging only environmentally sound economic development. From youth, environmental education will train individuals in analysis, negotiation, and problem-solving. Traditional disciplines of language, math, science, art, geography, and social studies will be structured to develop awareness, knowledge, and skills needed to deal with environmental issues. Students will be prepared to deal with future risks, conflicts, and alternatives.

Key "decision-makers" in the environmental education scenario are already among us. Some are still in primary schools; others are at advanced levels. Most are developing a global perspective, both about the environment and about economics. Most see basic economic principles as compatible with basic environmental principles and are adept at solving interrelated problems. But the range of environmental education remains limited. Expansion is necessary and will not be difficult to achieve.

More schools need to use environmental education as a part of their regular studies to energize the curriculum, to teach basic skills, and to lay the foundations for our future. In addition, opportunities for the out-of-school citizens need to be expanded. Current decision-makers, from both the environmental and economic communities, need to have the chance to be environmentally educated. They can put their newly learned skills to immediate use, solving today's conflicts.

The nation's leading professional organizations and educational institutions, including colleges,

universities, and junior colleges, need to reinforce environmental education with their students and members. These groups and institutions with their powerful research capacity and ability to train leaders and teachers possess enormous potential for networking.

The nation's business sector needs to apply its managerial skills in forging a strong alliance for sustainable economic development. The economic benefits of good environmental management need to be strongly vocalized in the business world.

Our political leadership needs to set the pace within the various levels of government to use education to minimize the need for more regulation and to encourage compliance with existing mandates. Education for government employees and lawmakers

should be a part of professional development opportunities throughout government.

Finally, all of these groups should seek opportunities to work together. Neither environmental quality nor economic development derives any benefit from being fragmented. Alliances, partnerships, coalitions, and problem-directed teamwork can forge stronger ties among traditional adversaries and result in faster, longer-lasting, and more efficient resolution of conflicts.

Education empowers individuals and organizations to deal with the rapid changes and risks inherent in the future. Economic and environmental conflicts are among the most challenging problems we face. Environmental education focuses on this need. The

ability of groups to use environmental education for their own benefits and the ability of groups to cooperate in support of these efforts are major unknowns, both in our society and in the global community. Our ability to quickly unify in seeking answers to environmental and economic unknowns will in large measure determine our immediate future. □

*(Paulk is Chief, Skills and Education Development Branch, Tennessee Valley Authority (TVA). Hodges is Program Manager, Environmental Education Program, TVA.)*

## Answers to Environmental Literacy Test

1. The answer is d. These phenomena are believed to be causally related. The greenhouse effect causes global warming. Gradually rising temperatures may be expected to cause some melting of the polar ice caps, which, in turn, causes sea level rise.

2. The answer is c. Of the choices given, only carbon dioxide is a greenhouse gas.

3. This statement is false. In fact, just the opposite is true: today, most major cities are not in compliance with national air quality standards.

4. The answer is b. In the study "Unfinished Business: A Comparative Assessment of Environmental Problems," EPA staff and managers identified radon in homes as the most threatening public health problem of the choices given for this question.

5. The answer is a. According to a recent Roper Poll, 65 percent of the American public felt that active hazardous waste sites were a "very serious" environmental problem. None of the other choices for this question was rated as very serious by as large a percentage. Radon in homes was rated very serious by only 21 percent.

6. The answer is c. Tobacco smoke is acknowledged to be a major source of air pollution in homes where at least one smoker lives and smokes.

7. The statement is true. At high altitudes ozone acts as a shield against harmful ultraviolet radiation from the sun. At ground level, ozone can cause respiratory ailments in people and adverse effects on plant life.

8. The answer is c. Dioxin is an unwanted by-product of industrial activities. The best known examples are its chemical formation in paper manufacturing and in the incineration of municipal waste.

9. This statement is false. Federal funds now account for less than half of most state environmental program budgets. The federal share is decreasing as state programs grow while federal grants to state governments remain constant or are reduced.

10. The answer is d. All of the choices are known routes of human exposure to lead.

11. The answer is d. All of the choices represent adverse human health effects that have been associated with lead exposure through epidemiological studies.

12. The answer is b. Nationally, of the choices given, automobiles are acknowledged to be the biggest polluter of our air.

13. The answer is c. Radon is formed by the radioactive decay of uranium in naturally occurring rock formations.

14. The answer is c. The United States has a population of about 240 million people and generates about 140 million tons of garbage annually. The average is 1,167 pounds (or roughly 1,000 pounds) per person.

15. The answer is d. While landfilling is still by far the most common waste management practice, both incineration and recycling are used by some communities.

16. The answer is c. An aquifer is a soil formation capable of absorbing and storing water. It therefore functions like a sponge.

17. The answer is c. An estuary is the confluence of a river and a salt water body. Some well-known examples of estuaries are the Chesapeake Bay, the Puget Sound, and San Francisco Bay.

18. The answer is b. Estuaries result when a river disgorges into a salt water body. The river supplies nutrients from the land to marine life. The estuary thus creates a vital habitat for marine animals in need of those nutrients.

19. The answer is b. The most serious effects of acid rain have thus far been observed in the Northeast United States.

20. The answer is d. In a narrow sense, all have enjoyed cost savings from inadequate pollution controls. Industry has saved as a consequence of lower production costs; some of these savings have been passed on to consumers in the form of lower prices on goods and services. Governments have saved from lower costs in the production of public goods and services, such as municipal garbage and sewage disposal. In a broader sense, however, all of these cost savings came at the expense of a clean environment—a cost that our society as a whole must now bear.

# What They're Learning: Guthrie Center, Iowa

by Belva Peterson

The President's Environmental Youth Awards program is designed to recognize the achievements of young people in schools, summer camps, and youth organizations for projects that produce environmental benefits or enhance community interest and involvement in environmental activities. It offers young people, individually or collectively, an opportunity to become an environmental force within their community. Each year, winners of the national awards, one from each of EPA's 10 regions, receive an expense-paid trip to Washington, DC, to participate in the annual National Awards Ceremony. Following are articles on two of last year's award-winning projects, involving students from Iowa and New York.

Our school district used most of an apple orchard to build an elementary school, but part was fenced out because it wasn't needed. These six acres grew wild for about 25 years. Only a few brave teachers would venture up there with their classes. There were no paths and it was really wild. The fifth- and sixth-grade science teacher and I would talk about how great it would be to make a really viable place out of this, with paths, so it could be used all the time.

A housing development was building up on the north side of our town, right across from our orchard. I got word that the school was thinking of selling off this piece of land. I couldn't let that happen. I went to our principal, telling him how we had been using it and how important it was to the students and the school. He went to the school board, while I talked to a friend on the Soil Conservation Service (SCS) County Conservation Board. He thought we needed to get a sign up in the old orchard, naming it a classroom as soon as we could.

It just happened that I had a parent who was a builder-contractor. He would donate the lumber and build the sign. Then to get it painted. The art teacher had some high school students who could do that, but no paint. Again, the County Conservation Board came through, and another parent had some tall poles. The Rural Electric Coop (REC) put the sign up in the spring of 1984. The commitment was made; the school wouldn't sell the orchard.

In the fall of 1984, an EPA flyer found its way into my school mailbox. That was when the dream of an Outdoor Classroom began to take shape. I'm not sure, but I think I ran to the science teacher's room, flyer in hand, yelling "We're going to do this!" After reading the flyer many times, we decided on our plan of action. A steering committee of conservation-minded parents and friends was set up. Brainstorming was

done with the students in kindergarten and sixth grade. What were some things they would want in an outdoor classroom? These ideas were taken to the committee and goals were set for the first year, second year, and beyond. At this time the flyer was filled out and sent in to EPA.

The students began to work with guidance from teachers and parents. Trails were cut, and in some places railroad ties were put in to keep paths from eroding. Wood chips given by REC and by Iowa Power and Light were used on the trails. These chips were carried in small pails, big pails, and wheelbarrows. Next on our plan of action was the arboretum, a garden of trees. With help from the SCS office, a plan was laid out for an arboretum on the east side of the Outdoor Classroom. Three rows of trees had to be cut. The sixth graders, with the help of parents and teachers, cut the trees. The students decided that the wood could be sold, so it was cut up and corded by the students. Many grapevines were found in cutting the trails and trees. The students came up with the idea of making wreaths. They made wreaths of all sizes. Since it was the last of November, our school secretary decorated them and many were sold for Christmas gifts. This brought us to the big project.

The kids wanted a lookout tower. One parent donated some oak logs for the building of our tower. A trip was planned to a saw mill to watch the logs become boards. The kindergarteners and sixth graders enjoyed the trip and learned a lot. With the help of fathers, the poles were put in place. Then with the help of our grade school principal and the sixth graders, the tower went up.

Spring came, and with it the first big planting in our arboretum. Trees and shrubs were donated by the Iowa State Nursery and a nursery-owner friend nearby. Our friend from the nursery

# What They're Learning: Brooklyn, New York

by Melvin Marcus



Iowa Governor Terry E. Branstad checked out the view from the lookout tower built by Guthrie Center elementary school students as part of their outdoor classroom. *News Gazette* photo.

helped us decide what trees we should put in our arboretum. The kindergarteners and the sixth graders planted all the plants on two rainy days. But we still weren't finished. We had bird houses to put up, signs to be routed, and wildflowers to plant.

Now it was time to plan the Open House to show everyone what we had done and what we had learned. About this time we got a letter telling us we had been approved for the President's Environmental Youth Award, and Mr. Ronald Ritter, Director of EPA Region 7 Congressional and Intergovernmental Liaison, was coming from Kansas City to present the awards to the students. The students decided that that should be the day of our Open House. Big plans were made; we asked the Governor to come. Few of us thought he would really, but he did. He helped plant an oak tree and cut a ribbon to open our tower. That was a great day! The sixth graders and the kindergarteners gave guided tours through the classroom. That closed our first year. It was a good year and everything really fell in place. And as we are doing this year, we watered trees all summer.

The second year we had to maintain and trim our chip trails, wrap trees, clean birdhouses, and repaint our sign. The new sixth graders and kindergarteners took on all the jobs, even building the swinging bridge. In the spring, with the help of the County Conservation Board, we planted prairie grasses on the hillside between the classroom and the school playground. On Arbor Day, we planted more trees.

The students who were lucky enough to be in kindergarten and sixth grade that first year really experienced what it was like to take an over-grown area and turn it into something that could be used and saved for the students yet to come. It was an experience those students are not going to forget. They found out what nature really is all about and how caring is the first step in saving it. □

(Peterson is kindergarten teacher at Guthrie Center Elementary Community School, Guthrie Center, Iowa.)

Not long ago, New York State put my school on the "must-improve-or-else" plan. To foster innovative and motivating programs, certain funds were set up for the establishment of these programs. So the high and mighty reached out to the old-time teacher with the strange idea to help get them off the hook. I was told, in effect: Your dream can be realized with half the money you request as long as it's done on your own time.

The above scenario occurred two and a half years ago in a junior high school in Brooklyn, New York. The school is in a poor economic area, and the student population has a high absentee rate and is always near the bottom of city schools in reading and math scores.

My plan was relatively simple. Children of this age love animals, and I wanted to get them interested enough to read and write about them. I wanted to have the children seated among the animals and plants so they would be motivated enough to learn about habitats and ecosystems and maybe care enough so they would appreciate and not harm their environment. This is the main difference between my environment program and others. The kids are in the same room and seated among the animals. They don't visit habitats and animals. They live among them.

As I stood in the empty sewing room on the fifth floor staring out the window at the roof, I could feel the eyes of the high and mighty watching every move I made. It is one thing to have ideas in your head for 25 years. It's another to pull them out and make them a reality. Why was I undertaking such a difficult project when I should have been thinking about retirement? Was this thing really going to work, or would it be another project to be placed on the scrap heap in a year or two?

I started by covering a wall with two 8- by 13-foot murals depicting peaceful mountains and river scenes. I needed

Rabbits, turtles, lizards, snakes, frogs, and birds live in terrariums around a Brooklyn, New York, schoolroom. Teacher Melvin Marcus and his student Eric Montez were instrumental in turning the classroom into a living science laboratory. *New York Daily News* photo.



As the second year of my project came to an end, I closed the door of my lab and stared once more onto the roof. I realized, after all the effort and the time put in, that someone did care. No, it wasn't the high and mighty from the District Office. It was the kids in the building who entered my room during period changes to see the animals or ask the "Zoo Teacher" about the care of their pet. It was the kids who asked to see reference books. It was the teachers who came up on their unassigned periods to see what the kids were talking about and what "Dr. Doody" was up to now.

Who cares? I thought. What about the kids I had in regular science classes that have 10 point higher averages in my environmental science class? The reading and math scores in my school have gone way up this year. Maybe, just maybe, my program had a little to do with it.

What about the look on the face of an inner-city kindergarten kid with a five-foot rat snake wrapped around his neck while his teacher runs out of the room? What about kids who touch and hold animals for the first time and realize snakes are not slimy? What about kids who bring me pictures of the rabbits and hamsters I gave them? These are the important people. These are the benefactors of my ideas, and I can tell from knowing them that the time and effort were worth it. □

(Marcus is science teacher at John D. Wells Junior High School Number 50, Brooklyn, New York.)

help to build cages, to clean, to care for animals. Volunteer students came to school early to help. They came on their lunch periods: girls, guys, teachers. They all came. They all contributed.

By the end of the first year the room was rounding into form. We planted trees in barrels on the roof. We raised rabbits and hamsters and gave them to deserving students, with their parents' permission. We built cages and had iguanas, cockatiels, and tortoises living together. We set up a wading pool with turtles and goldfish. Around the perimeter of the room we set up 55-gallon tanks, each with its own ecosystem depicting a swamp, a jungle, and a desert.

Although my dream was coming to life, frustration entered the picture. No one in the District Office seemed to care. I sent pictures of my room, but the high and mighty wouldn't come.

Elementary school children came to visit the room. It was a great place for the teacher to relax while I entertained and taught for an hour on my free time. But the book I wrote for the course was

rejected by publishers because of restricted audiences. My dream seemed to be souring. I felt no one of importance cared.

The following year we added animals and plants, and then we won the EPA Region 2 President's Environmental Youth Award. The winner, Eric Montez, came in at 6:20 each morning to help me feed and care for the living things in my room. The trip to Washington and the warmth of the people at EPA left a lifetime impression on a slum kid from Brooklyn no one ever cared about. It also impressed his teacher, who grew up in the same slum. Winning a national award should have been the crown jewel of my project. However, the more I improved the room the more frustrated I became. I had to wait months to collect the money I had laid out. The custodian wouldn't enter the room to clean. It took a year to get him to empty the garbage. The President of the United States sent a congratulatory letter on winning the President's Youth Award, but my District Superintendent never visited the room.

# Is It Cool To Worry?

by John Falk

In the late 1960s considerable public attention was directed at a broad set of issues related to deterioration of the environment. The results of this public concern were the enactment in the early 1970s of major national, state, and local environmental legislation, and the establishment of regulatory agencies to enforce that legislation. Ideas and attitudes had been translated into social change—at least at one level. How much of the environmental ethic that underlies these laws and organizations has really found its way into the general social structure of the population?

In particular, what can we infer about the attitudes of today's children? How aware are the children born since 1975 of the interdependencies of human and non-human systems? Do they think about pollution and depletions in natural resources? If so, where are these values and ideas coming from?

One place to look for the dissemination of environmental ideas and ethics would, of course, be the schools. Although environmental education enjoyed a brief vogue as a "core" part of the curriculum, the "Back to Basics" movement of the middle to late 1970s pretty much wiped out the bulk of environmental programs, particularly at the elementary school level.

As important as school is for the teaching of ideas and values, it is by no means the only, or perhaps even the most important place for such learning to occur. While a large amount of a child's time is spent in school, the majority of his time is spent outside of the classroom. Research has shown that experiences outside of school, particularly those that occur in the home, account for much of the learning and most of the attitudes children acquire. In fact, the average American child, by the age of 18, will have spent more hours watching television than sitting in a classroom. With this in mind, we can gain some perspective on

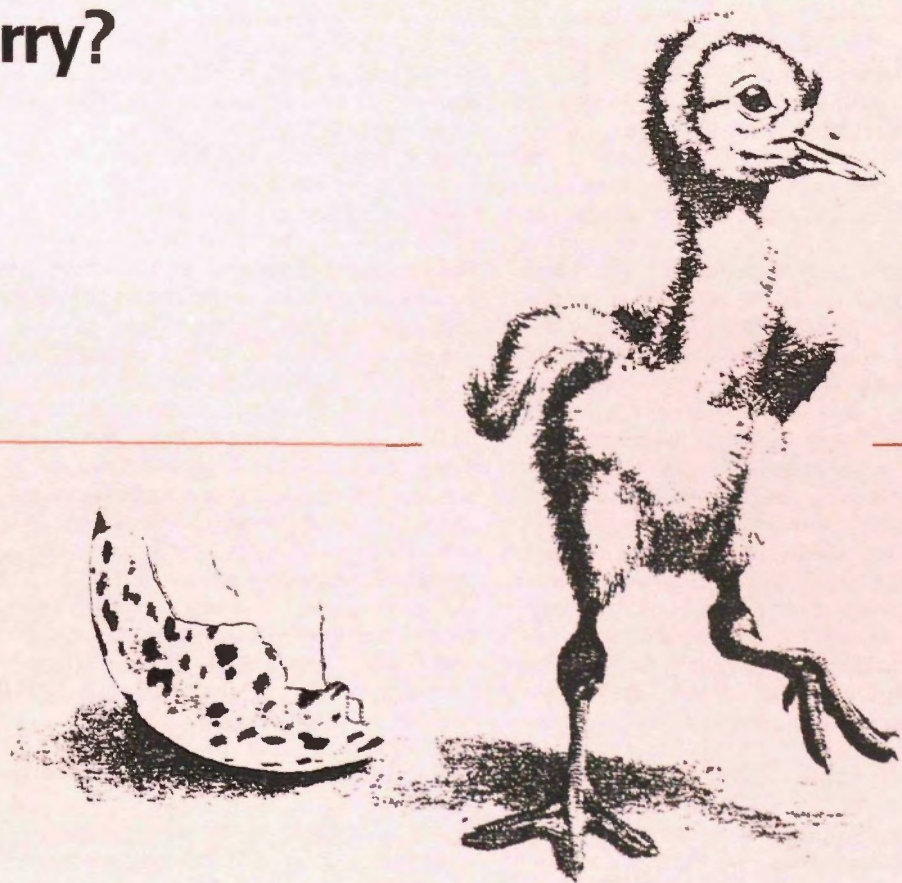


Illustration by Irene Brady. From *Peeping in the Shell: A Whooping Crane is Hatched*, by Faith McNulty. Reprinted with permission of Harper & Row Junior Books.

environmental attitudes by viewing children through the social mirrors of our time: the popular media. Children are profoundly influenced by the curriculum of their everyday lives—the books, popular music, and television they consume.

Do children's books, which have always involved non-human animals, reflect a change in the way these organisms are presented? Does popular music include themes, or champion causes consistent with an environmental ethic? Does the television children watch deal with environmental issues as well as the social and quasi-political issues traditionally depicted? These are places we can look for an understanding of how pervasively those environmental events of 20 years ago have, or have not, become implanted in our society.

## Books

Dinosaurs, wildlife, crabs, estuaries, animal homes, even animal doctors fill the pages of the children's books at the local mall's bookstore. Books on nature or biological themes seem to be very much in vogue at the moment; they represent a large percentage of the titles available to consumers of books for children between the ages of three and

eight. All of the major publishers of juvenile titles seem to have at least one such book, particularly books on animal "babies." A few of these, like the recently published Longmeadow Press series, contain information on the environmental status of the organism they feature, but most do not.

Sitting side by side on the shelf were three "animal baby" books. A comparison provides an insight into the values of the times when they were published: 1963, 1977, and 1988. In 1963, cartoon-like illustrations depict familiar animals such as cows, kittens, chicks, colts, piglets, bunnies, monkeys, and elephants. The book begins and ends with the words: "Baby animals come big and small. They are very young, so they like to be petted and snuggled ... gently." The implied message: these animals are cute and exist for us humans to enjoy as long as we treat them kindly. In 1977, the familiar animals such as pigs and horses are joined by a variety of other animals such as wild turkeys, flamingos, alligators, anteaters, bison, hippos, and koala bears. Life-like drawings show the animals in their natural habitat. The text, no longer overtly child-centered, includes the name and a few facts about

each organism. In the 1988 volume, the illustrations retain a 1977 style of accuracy, but the flavor of the book is once again anthropocentric. Gone are most of the exotic creatures, leaving the old standard foals, lambs, puppies, rabbits, and kittens. The text returns to the 1963 emphasis on animal sounds and concludes with: "Animal babies are big or small, fuzzy or smooth, short or tall." Gone is reference to petting and fondling, but the same basic message is implied: animal babies are cute and cuddly.

The books available for older readers, children ages nine to 13, are a different story. Scientific themes are prevalent, but books on natural history, ecology, and environment are rare. Most of the books deal with issues of growing up in America, which, if these books are any indication, does not require concern about environmental issues. Among the most popular books for this age group are cartoon books such as *Garfield* and *The Far Side*.

Environmental information has crept into a few books. One popular series for early adolescent boys is the *Time Machine*, published by Bantam, which consists of adventure-oriented, multiple-ending stories set in various times before the present. All of the books come with warnings not to kill any person or animal during time travel because of the changes in history (presumably natural as well as human) that will result. A couple of the books deal with time travel back to prehistoric times. In these books, a considerable amount of text is devoted to discussions of the natural history of the animals and the ecological conditions of the time. With a few limited exceptions, other evidence of environmental ideas is difficult to find in books for older juveniles.

## Music

As David Einstein, the program manager of a DC area rock station put it, "Today's pop music for the young kids is flash, no substance. It is tissue paper music." Much like the reversion in children's literature, so too there is a trend in popular music to turn back the clock. Aaron Latham in a recent article in the *Washington Post* stated: "It is as though the entire younger generation had crowded into that silver-winged DeLorean time-machine car and raced back to the future. The future being the late 1950s and early 1960s." Then, as now,

it was "uncool" to be worried, or to express any concern beyond fashion statements and one's love life. Then, as now, eight and 10 year olds were eagerly soaking in the lyrics of a music intended for their older siblings. The rock star of the pre-teen set, Debbie Gibson, George Michael, White Snake, Def Leopard, Madonna, and Michael Jackson, sing songs with social messages as deep as their libidos.

Exceptions can be found. Artists like Natalie Merchant of 10,000 Maniacs, Sting, Chrissie Hynde of the Pretenders, Phil Collins of Genesis, and Karl Wallinger of World Party write and sing songs with an environmental ethic. For example, Sting recently donated his time to sing at benefits for rain forest preservation; both Genesis and The Pretenders had *Billboard* hits with songs having environmental messages and World Party's 1986 album *Private Revolution* was comprised almost entirely of environmentalist themes. Still, as David Einstein points out, all of these artists primarily appeal to an older audience, the audience that came of age in the 1960s and 1970s when it was common, and even important, to use pop music as a vehicle for conveying social messages.

## Television

Bill Carter, TV critic for the Baltimore Sun, said, "Environmental issues are the kind of safe subject that family-oriented TV likes to use. However, at the moment I can't think of a specific episode that dealt with any of these issues." The only show one 10-year-old I talked to could recall that dealt with an environmental issue was a rerun of "The Brady Bunch" (originally produced in the early 1970s). In general, today's prime-time television for young children (e.g., "The Cosby Show," "Alf," "Who's the Boss?" and "Head of the Class") is not dealing with environmental issues any more than are today's popular music or books. In general, the same basic reversion to "simpler concerns of a simpler time" seems to prevail.

As with books and music, there are exceptions. Ironically, the exception for television is cartoons. Cartoons have always been about good and evil and the triumph of the former over the latter. Today's cartoons use environmental concerns as an example of a black-and-white issue; frequently they depict the villain as somehow taking advantage of the poor forest creatures, using up some precious natural resources, or in some way "blackening" the skies or "browning"

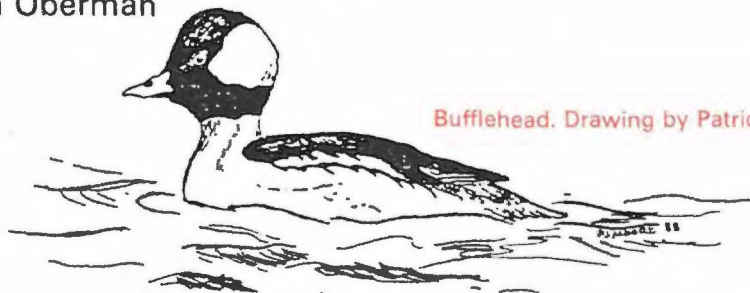
the rivers. The hero or heroine saves the day by protecting the helpless animals and "cleaning up" the environment. Although simplistic, it is at least one sign of positive change in what is emerging as an otherwise dismal scenario.

In conclusion, looking at the shelves of bookstores, listening to the radio, or watching television reveals a complex picture of where we are nearly 20 years after the founding of EPA. Without a doubt, there is evidence that environmental themes have crept into popular children's media. The environmental activity of the last two decades has found expression in popular notions of good and evil, right and wrong. Still, the trends of today suggest a reversion to attitudes and behaviors that pre-date the environmental movement. Accordingly, the dominant themes expressed in popular media are rarely the global, or even national, themes of interconnecting and interacting biomes, but more likely the "closer to home" themes of love, family, and friends. The times do not lend themselves well to larger concerns; it is not cool to worry. Maybe next year! □

(Dr. Falk, formerly Associate Director for Education, Smithsonian Environmental Research Center, is currently President of Science Learning, Inc., of Annapolis, Maryland.)

## Good News On The Potomac

by Lola Oberman



Bufflehead. Drawing by Patricia J. Moore.

A birder's lot is not a happy one, at least not totally. It may sound like a carefree way of life, moving from one place to another, following the birds in all seasons. But following the birds has made us wiser—and sadder.

We have seen bird populations diminish. We have seen species vanish from their accustomed haunts and birding "hot-spots" disappear, almost overnight, to make way for human habitat.

We listened in the past to old-timers who sang mournful refrains of "Gone are the days" and "I remember when," and we distrusted their memories. We suspected that birds were never really that numerous in the good old days. Then suddenly we were old-timers, remembering ....

I remember when I first discovered ducks on the Potomac River, a wonderful assortment of ducks that I had never seen when I was growing up in the Midwest. But I had seen their pictures on little cards that came as prizes in boxes of Arm & Hammer baking soda, and I had learned their magical names. Buffleheads ... goldeneyes ... scaup ... redheads ... mergansers. I knew they had to exist somewhere beyond the world of baking soda boxes, and when at last I saw them on the Potomac, it was like a fairy tale come true.

It was pure delight to watch the bouncy little buffleheads ride the rapids at Little Falls, then fly back to the starting point and ride down again just for the fun of it, like children on a playground slide. No such performance for the sedate canvasbacks. Those we found in great regal flocks farther downriver, at Belle Haven and Dyke Marsh. Scaup were there too, hundreds of them, and ring-necks and wigeon, all in peaceable congregations. There were rafts of the endearing little ruddy ducks, like bathtub toys, with turquoise bills and upturned tails. Sometimes there were hooded mergansers, with profiles too fantastic to be believed.

All of these, besides the mallards and pintails familiar to me from childhood, enlivened the Potomac in winter. They were an endless source of pleasure. Regretfully we watched them depart in spring; eagerly we greeted their return in the fall.

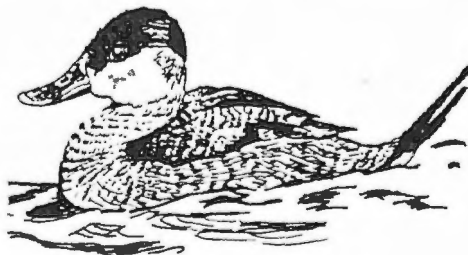
They returned in ever smaller numbers. Suddenly, everyone was saying, "Where are the ducks?" and there was a haunting fear that things would never be the same.

The figures justified our fears. Birders keep records, and our checklists told the story. Numbers tallied on the annual Christmas Bird Count took a plunge. Species that had been abundant became rare; some disappeared entirely.

The Potomac, once a perfect habitat for waterfowl, had become, in the words of environmentalists, "an ecological desert," no longer capable of supporting the animal and vegetable life that had made it a thing of beauty. It was not only unattractive to bird life; it was hazardous to human health. Something had to be done ....

I remember the hydrilla scare of the early '80s. Hydrilla, the green monster, we read and saw, was getting a stronghold on the Potomac, choking its shoreline, impeding boat traffic. Just when the river was getting cleaner, showing signs of renewed life, this alien aquatic weed, which was introduced accidentally, was spreading rapidly and posing a new threat. Alarms were sounded. Something had to be done ....

But before anything radical could be done, another message went out, a



Ruddy Duck. Drawing by Patricia J. Moore.

message of good cheer passed from birder to birder: Ducks were coming back to the Potomac! In great numbers. There were hundreds of canvasbacks, scaup, ruddies, teal—just like the good old days. And where were they? Feeding happily among the hydrilla beds!

Far from being a menace, hydrilla, along with native aquatic vegetation that was making a comeback, gave proof of the renewed health of the river. A significant element in this success story was the upgrading of sewage treatment at the Blue Plains wastewater treatment plant which serves the metropolitan Washington area, emptying 300 million gallons of effluent daily into the Potomac. Improved treatment had reduced phosphate and nitrogen levels and put more oxygen into the water. The river, once thick with sludge, now ran clear and clean. Once again it could support vegetation that, in turn, supports other life. Ducks flocked to feed on the mollusks, insect, larvae, and crustaceans harbored by the plants or on the plants themselves.

Birders flocked to the scene, rejoicing in the abundance and variety of ducks. But it was cautious rejoicing. Wiser now, we knew this was only a part of the total picture. Nationwide, duck populations were in sharp decline. We had seen the dramatic reversal of a trend, here on the Potomac. And what had happened here could happen elsewhere. Not by magic, but by concentrated effort, guided by the knowledge that what's good for ducks is also good for people. □

(Oberman is a bird watcher in the Washington, DC, area and a writer on nature subjects. She has published a book, *The Pleasures of Watching Birds*.)

Editor's note: According to the U.S. Fish & Wildlife Service in Annapolis, Maryland, hydrilla is one of several different kinds of underwater plants that perform a number of important ecological functions, including providing food for waterfowl. Fortunately, say staff at the Fish & Wildlife Office, the hydrilla invasion has not proven to be the terrible scourge that some initially feared it would be in the Potomac River. Hydrilla did not take over and clog the Potomac, as has occurred in a number of Florida's lakes and canals, although there have been some localized complaints of fouled boat propellers, tangled fishing tackle, and plant-clogged boat slips.

# On Another Subject: Agricultural Workers and Pesticides

## Introduction

EPA has recently proposed new worker protection regulations that revise and expand existing standards governing the protection of agricultural workers from pesticide exposure under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Since 1974, when EPA established its original farmworker protection standards under FIFRA, significant numbers of pesticide poisonings have continued to occur due to occupational exposure among agricultural workers. This information, considered together with an apparent need for clarifications on issues such as responsibility, triggered the Agency's initiative to improve the standards.

In 1985, EPA began a "regulatory negotiation," involving the collaboration of the various parties affected by a rulemaking action, to develop a detailed proposal to better protect agricultural workers from pesticides. A committee of 25 members was formed, representing industry, pesticide user groups, farmworkers, state officials, and federal agencies. However, some representatives withdrew in 1986 without a committee consensus; EPA then completed the preparation of the proposed standards recently released for public comment.

The current proposal expands the scope of the 1974 regulations so that, in addition to field laborers, the proposed new requirements cover workers involved in any aspect of the pesticide application process and all workers engaged in agricultural tasks on the premises of farms, forests, nurseries, and greenhouses. Altogether, this includes roughly 2.3 million hired agricultural workers nationwide.

The proposal also revises existing requirements and contains a number of new provisions intended to strengthen the protection of workers and help clarify the respective responsibilities of owners, supervisors, workers, labor contractors, and pesticide application contractors. For example, the 1974 regulations set specific "re-entry intervals" (intervals of time after pesticide application required to lapse before workers may enter pesticide-treated areas without special protection) of either 48 or 24 hours for just 12 individual pesticides. The current proposal includes 48- or 24-hour re-entry intervals for many additional pesticides, particularly the organophosphate and carbamate pesticide compounds now widely used in agriculture. The 1974 regulations established a basic protective clothing requirement for any worker who had to re-enter treated fields before a re-entry period had expired. The current proposal specifies particular items of personal protective equipment based on a combination of factors including the type of task being performed, the circumstances of potential exposure, and the toxicity classification of the pesticide.

EPA's proposal also broadens notification requirements applicable to all workers who will be working in or near a pesticide-treated area and puts forward a number of requirements that are entirely new. Among other things, these include:

- Decontamination provisions requiring employers to provide potable water (and, in some cases, eye wash dispensers) soap, and disposable towels for workers who may be exposed to pesticides during tasks related to pesticide application or re-entry of treated fields.
- Training requirements for pesticide handlers and early re-entry workers.
- Blood testing to monitor organophosphate exposure among commercial pesticide handlers.
- Emergency provisions requiring employers to provide transportation to medical assistance, and information to workers who may have been poisoned.

The formal public comment period on EPA's proposed new regulations closes October 6, 1988. The Agency is seeking as much public input on this proposal as possible. To help focus the debate, EPA Journal has asked two participants in the deliberations of the original Advisory Committee on Worker Protection Standards for Agricultural Pesticides to comment briefly on the proposed new rules: Claudia Fuquay of the United Fresh Fruit and Vegetable Association and Dr. Marion Moses, a physician who has been actively involved in farm safety and occupational health issues. Their summary comments follow:



Marion Moses

**E**PA has clearly decided to take the path of least resistance by proposing weak regulations that are acceptable and "least burdensome" to farming and agrichemical interests, rather than the strong protections needed by workers in agriculture.

In its minimalist approach, the agency has failed to live up to its responsibility to agricultural workers, who—since they are the most ill-served of all workers by their government—are most in need of strong protective standards. Agency officials responsible for drafting these regulations appear to know very little, or choose to ignore, the actuality of field practices in agriculture throughout the United States and the true situation faced by workers for hire in regard to their toxic exposures.

Instead of strong, clear, decisive language, and requirements for firm action, the Agency has weakened the proposed standards with many exceptions and compromises. A particularly egregious example is the dangerous concept of "early re-entry workers," which is an invitation to violate the regulations and has no place in these standards.

The regulations are especially weak in regard to field workers and in the sections on education, training, notification, posting, and re-entry intervals. Workers need specific information, not dilute, generic nostrums—it is not appropriate to downplay hazard and trivialize risk—especially those related to chronic effects, which are not even addressed in the standards.

EPA has failed to apply even the full power of the existing, albeit weak statute (FIFRA), already within its mandate. And shifting the regulatory



Golden Delicious apples being harvested in Yakima Valley, Washington. Doug Wilson photo, USDA.

burden to the already compromised worker by making worker culpability a potential component of assessing penalties can only result in worker reprisals and intimidation, with the real possibility of placing the worker in potentially more hazardous conditions than exist even now.

Such weak and timid standards, coupled with historic and known severe problems of enforcement in this industry powerfully resistant to change, cannot and will not result in the

protections EPA has proposed. The title of the regulations is a misnomer and should be called grower protection standards. The workers deserve better and EPA can do better. □

(Dr. Moses is a practicing physician specializing in environmental and occupational medicine.)

Continued on next page



Claudia Fuquay

**W**e believe the general tone and direction of the proposed regulations are workable. Many of the proposed requirements are already part of good grower practices. Our greatest concern is liability. We are pleased that the regulations do place some responsibility on the worker to follow safety instructions as given. However, the question of liability is still ambiguous in some areas and we believe the language should be more explicit.

If a worker has been informed of the hazards as required by these regulations, but ignores re-entry intervals or removes safety clothes or ignores some other safety warning, then the grower should not be held liable for any health problem that could possibly result from the worker's actions. The regulation also should clarify that the grower does have the right to terminate a worker who refuses to follow approved safety precautions. Perhaps even more important, the regulations should allow pre-hire physicals and permit a grower to deny employment to workers who pose a risk because of previous exposure by other employers.

Another issue that really must be addressed concerns liability when safety requirements are not followed. There are circumstances when the owner is not the grower, when the owner hires someone to manage the farm. In these instances, if the owner can prove that he made all the necessary resources available to the manager in order to meet proper safety requirements, then he should not be held liable. Or, if the owner or manager contracts with a firm for pesticide applications, then that company should be liable for any problems resulting from misapplication.



Harvesting string beans is still a job for stoop labor.

Compliance with these regulations will raise costs substantially, not only for protective clothing, enclosed cabs, and education and training, but also for increased administrative demands. It is crucial to ensure the health and safety of workers, many of whom are owners and family members. But the government should evaluate how these additional costs can be spread among all Americans. Otherwise, U.S. agriculture will take another step backward in the world marketplace and produce imports will increase further. □

*(Fuquay is Director of Congressional Relations for the United Fresh Fruit and Vegetable Association.)*

# Appointments



**Victor J. Kimm**, a career manager who joined EPA in 1972, has been named Acting Assistant Administrator for Pesticides and Toxic Substances, having served for almost three years as Deputy Assistant Administrator in that office.

Kimm, an engineer by training, joined EPA to work in Planning and Evaluation, where he chaired the Agency's Steering Committee which provides an Agency-wide review of EPA standards and regulations. In 1975, he was named to head the drinking water program, a post he held for 10 years prior to joining OPTS.

Kimm received his Bachelor's Degree from Manhattan College in 1956 and a Master's Degree in Sanitary Engineering from New York University in 1960, then went on to consulting engineering and development work in Latin America. Prior to joining EPA, Kimm was associated with the Economic Development Administration and in 1969-70 studied economics at Princeton as a National Institute of Public Affairs Fellow.



Also promoted from within the same office was **Susan F. Vogt**, who was named Acting Deputy Assistant Administrator for Pesticides and Toxic Substances. Since 1986 she had been serving as Deputy Director of the Office of Toxic Substances.

Vogt joined EPA in 1976 as a Policy Analyst in the Office of Water, where she developed guidance for local governments involved with planning programs under the Clean Water Act. In 1979 she became a senior staff member at the National Commission on Air Quality. Subsequently, she was a Special Assistant to the Assistant Administrator for Pesticides and Toxic Substances, Senior Policy Analyst for the Assistant Administrator for Solid Waste and Emergency Response, and Special Assistant to Deputy Administrator Alvin L. Alm, dealing with policy issues and activities in the Superfund program and OPTS. She has also directed the Pesticide Applicator Certification and Training Program and the Asbestos Action Program.

Vogt graduated from Colby College in Waterville, Maine, with a degree in economics in 1963.



**Kenneth F. Dawsey** has been appointed director of the Office of Human Resources Management. Prior to this appointment, he had served as the Office's Deputy Director since mid-1987.

Dawsey joined the federal government as a personnel management specialist with the Navy Department in 1964, after graduating from the University of Maryland with a Bachelor of Science degree in Personnel and Industrial Relations. Before joining EPA he served as Deputy Director of Personnel at the Department of Justice, Chief of Domestic Personnel with the U.S. Information Agency, Director of Personnel for the Agency for International Development, and Deputy Director for Administrative Operations at the Department of Transportation.

In November 1981, Dawsey became Director of the Office of Personnel and Organization at EPA. Two years later he became Deputy Director, Office of Administration, and in 1987 was named Deputy Director in the Office of Human Resources Management.



**Scott A. Hajost**, whose appointment as Deputy Associate Administrator for International Activities was reported in the May 1988, *EPA Journal*, has since been named Acting Associate Administrator for International Activities. Prior to joining EPA, Hajost had worked with the Department of State in the Office of the Legal Advisor as an Attorney Advisor for Oceans, International Environmental, and Scientific Affairs, and had chaired many associations, including the International Environmental and Natural Resources Committee of the International Law Section, Federal Bar Association. □

# The Presidential Awards



Don R. Clay



Dr. Thomas R. Hauser



C. Morgan Kinghorn, Jr.

Fifteen of EPA's Senior Executive Service (SES) employees have been honored with 1988 Presidential Rank awards for their long and exceptional service with the federal government. The awards are in two categories: Distinguished Executive Rank and Meritorious Executive Rank.

Recipients of the Distinguished Executive Rank are EPA employees Don R. Clay, Acting Assistant Administrator for the Office of Air and Radiation, Dr. Thomas R. Hauser, recently retired Director of EPA's Risk Reduction Engineering Laboratory in Cincinnati, Ohio, and C. Morgan Kinghorn, Jr., Deputy Assistant Administrator for Administration and Resources Management.

Clay is a career administrator with a decade of service and a solid record of management at three federal agencies. Prior to his recent promotion, he served as Deputy Assistant Administrator for the Office of Air and Radiation, and from 1981 to 1986 as Director of the EPA Office of Toxic Substances. Through his efforts, the Agency has made significant progress in developing national strategies for dealing with ozone non-attainment, stratospheric ozone depletion, indoor air, and radon.

Prior to joining EPA, Clay held management, planning,

and engineering posts at the Consumer Products Safety Commission and was Deputy Assistant Commissioner for Planning and Evaluation at the Food and Drug Administration.

Dr. Hauser entered the environmental field in 1955, with the Public Health Service air pollution program. He moved to EPA at its inception, when the National Air Pollution Control Administration became part of the Agency. He joined the Environmental Monitoring Systems Laboratory at Research Triangle Park as Deputy Director. He became director of the Cincinnati facility (then called the Hazardous Waste Engineering Laboratory) in 1977, remaining there until his retirement, except for a period in the fall of 1985 when he served as Acting Deputy Assistant Administrator of the Office of Research and Development in Washington, DC.

Kinghorn joined the federal government in 1969 as special assistant to the Minister-Director of the U.S. AID office in India. Since then he served as a Budget Examiner in the National Security Division of the Office of Management and Budget (OMB) and later as OMB Acting Branch Chief and Senior Budget Examiner in OMB's Environment Branch. He was also a special assistant to the U.S. Deputy Commissioner for Higher Education and the U.S.

Commissioner of Education.

Kinghorn joined EPA in June 1980, as Budget Director, became Comptroller in 1983, and assumed his present post in October 1986. He is directly responsible for providing the executive support for all the Agency's programs.

Recognized with Meritorious Executive Rank Awards are Ronald Brand, Director, Office of Underground Storage Tanks in OSWER; Eileen P. Claussen, Director of Program Development, Air, and Radiation; Gerald A. Emison, Director, Air Quality Planning and Standards, RTP; Edward J. Hanley, Director, Office of Information and Resources Management, OARM; William M. Henderson, Director, Office of Human Resources Management, OARM; Barbara Metzger, Director, Environmental Services Division, Region 2; Martha G. Prothro, Director, Permits Division, OW; David F. Ryan, Comptroller, OARM; Nathaniel Scurry, Director, Office of Civil Rights, OARM; Charles H. Sutfin, Director, Water Management Division, Region 5; Edwin F. Tinsworth, Director, Registration Division, OPP; and Gerald H. Yamada, Deputy General Counsel, Office of the Administrator. □



Montana beckons. Rosebud Lake in the Bear Tooth Wilderness makes an idyllic vacation spot, the kind of place we cherish as a retreat amidst natural riches. Montana Chamber of Commerce photo.

Back Cover: Autumn arrives. Photo by James Douglass, Woodfin Camp, Inc.

