

**Progressive Environmentalism:
A Pro-Human, Pro-Science, Pro-Free Enterprise
Agenda for Change**

**Task Force Report
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Progressive Environmentalism: Outline of Task Force Report

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Introduction: A Conflict of Visions

“Environmentalism” is the term used to describe people who have a special appreciation for the natural world, who see nature not merely as a means of gratifying human wants but as a valuable end in itself. So defined, there are millions of environmentalists in countries around the world.

For the vast majority, appreciation of the natural world needs to be integrated with such other values as respect for the unique role of human beings on the planet, respect for science and appreciation of the benefits of technology and economic growth. These people are “progressive” in the sense that they believe in human progress and in the achievement of environmental goals as one of the measures of progress.

A small minority of environmentalists, however, do not believe in human progress, asserting that there is nothing to progress to. Often idealizing the life of the American Indian or life in medieval communities, they believe that the best of all possible worlds lies not in the future, but in the past. These people are “reactionaries” in the truest sense of the word. They oppose science, technology, industrialization and economic growth. At times they imply that humans are an unfortunate accident of evolution and have no natural place on our planet.

If the sway of the environmental debate were determined by a head count, the reactionary environmentalists would be unimportant and could be safely dismissed. Unfortunately, this is not the case. Because they are very vocal, prolific and energetically committed to their cause, the reactionaries have achieved an influence far disproportionate to their numbers. They control some of the largest and best-funded environmental organizations. And they have many apologists among the leadership of mainstream environmental groups.¹

Reactionary Environmentalism²

Under the slogans “small is beautiful,” “nature is better” and “big industry — especially capitalist industry — is bad,” reactionary environmentalists oppose most man-made things that make our world a pleasant place in which to live. Nor is this mere sentiment. The hard-core reactionaries really mean it.

What would their ideal world look like? For Rudolf Bahro (founding member and theoretician of the German Green movement), people would live

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in socialist communities of no more than 3,000, consuming only what they produce and rarely trading with other communities. There would be no automobiles, airplanes, computers and virtually no other modern technology.³

For E. F. Schumacher (author of *Small is Beautiful*), the world was much better in medieval times, when “the movement of populations, except in periods of disaster, was confined to persons who had a very special reason to move, such as the Irish Saints or the Scholars of the University of Paris.”⁴

Whatever differences there are among them, reactionary environmentalists are almost always united by a distaste for modern industrial society and what borders on worship of the peasant way of life. They are literally “time rebels,” in the words of Jeremy Rifkin (unabashed advocate of extreme green ideology).⁵ “In living in the world by his own will and skill,” writes Wendell Berry, “the stupidest peasant or tribesman is more competent than the most intelligent workers or technicians or intellectuals in a society of specialists.”⁶ The book *Deep Ecology* quotes approvingly the following passage from the *Tao Te Ching*:⁷

“Reactionary environmentalists are ‘time rebels’ who prefer the way things were in the medieval period.”

“Let people recover
The simple life:
Reckoning by knotted cords,
Delighting in a basic meal,
Pleased with humble attire,
Happy in their homes,
Taking pleasure in their
Rustic ways ...
Folks grown gray with age
May pass away never having
Strayed beyond the village.”

These extreme views appeal to only a handful of people, as does the Earth First! slogan, “Back to the Pleistocene.” But many of the values of the reactionaries are accepted by a much larger number of environmentalists. The following is a brief summary.⁸

Anti-Human. Underlying reactionary environmentalism is a preference for nature over human beings. David Brower (founder of Friends of the Earth and former Executive Director of the Sierra Club) suggests that while the death of young men in war is unfortunate, it is no more serious than the touching of mountains and wilderness areas by mankind.⁹ “I know social scientists

who remind me that people are part of nature, but it isn't true," writes National Park Service research biologist David M. Graber. "Until such time as *Homo sapiens* should decide to rejoin nature, some of us can only hope for the right virus to come along."¹⁰ "We are a cancer on nature," says David Foreman (cofounder of Earth First! and former lobbyist for the Wilderness Society).¹¹ "Debased human protoplasm" is how Stephanie Mills (author of *Whatever Happened to Ecology?*) describes her fellow human beings.¹²

Reactionary
environmentalism:

"Until such time as *Homo sapiens* should decide to rejoin nature, some of us can only hope for the right virus to come along."

If man does it, it's bad; and if nature does it, it's good — even if it's the same action. Only on that theory can we explain some of the puzzling views of reactionary environmentalists. For example:

- While the reactionaries worry about emissions of carbon dioxide and global warming caused by man, they are generally silent about the much greater temperature cycles and carbon cycles produced by nature.
- While the reactionaries oppose even trace amounts of man-made carcinogens in our food, they are generally silent about natural carcinogens which appear in 10,000 times greater quantity in a normal diet.
- The reactionaries oppose all man-made nuclear-generated power, although nuclear power (which brings us sunlight in the day and lights the stars at night) is one of the most natural phenomena found in the entire universe.¹³

Anti-Technology. "Not war, but a plethora of man-made things ... is threatening to strangle us, suffocate us, bury us, in the debris and by-products of our technologically inventive and irresponsible age," wrote Margaret Mead in a review of Rachel Carson's *Silent Spring*.¹⁴ But it would be a mistake to believe that the reactionaries oppose man-made things *because* they can harm the environment. The true reactionary opposes man-made things *on principle*.

Reactionary
environmentalism:

"It is a spiritual act to shut down DuPont."

Not long ago there was considerable excitement over the possibility of cold fusion — a way to have all of the energy we want with no adverse effects on the environment. For normal people, cold fusion would be an environmentalist's dream. Not so for the reactionaries. It would be "like giving a machine gun to an idiot child," said anti-population growth guru Paul Ehrlich.¹⁵ "It's the worst thing that could happen to our planet," said Jeremy Rifkin.¹⁶

Consider the case of John Todd, an environmental biologist who discovered a way to mix the toxic sludge that comes out of sewage treatment plants with microbes that metabolize it and produce clean water. Rather than applauding Todd's innovative solution, many of his environmentalist friends stopped speaking to him. "By discovering a solution to a man-made offense," reports Gregg Easterbrook, "he takes away an argument against growth."¹⁷

Todd's progressive environmentalism was in direct conflict with reactionary ideology, which has an almost theological aversion to technology and industrialization. "It is a spiritual act to try to shut down DuPont," says Randall Hayes (director of the Rainforest Action Network).¹⁸

Some reactionaries are very specific about the man-made things people should do without. These include 747 airplanes (Rifkin),¹⁹ automobiles (Kirkpatrick Sale),²⁰ eyeglasses (Joan McIntyre),²¹ private washing machines (Murray Bookchin)²² and tailored clothing (Schumacher).²³ Others admit the changes won't be easy. Mills, for example, wonders what life will be like without toilet paper. ("Every time I have to replenish the supply of this presumed necessity, I wonder what we're going to substitute for it when the trucks stop running.")²⁴

Anti-Science. From the beginning, the role of scientific inquiry created tension within the environmental movement. On the one hand, science is needed to clarify the relationship between humans and the environment. On the other hand, the reactionaries tend to approach environmentalism as a religion and are often hostile to science.

Reactionary
environmentalism:

"What do I miss as a human being, if I have never heard of the Second Law of Thermodynamics? The answer is: Nothing."

Fritjof Capra (author of *The Tao of Physics*) claims to find in modern physics a justification for a "cultural revolution" which he elaborates in *Green Politics*.²⁵ But if physics no longer differs from Eastern mysticism, why bother with physics? Why not jump directly to mysticism? "What do I miss as a human being, if I have never heard of the Second Law of Thermodynamics?" asks Schumacher. "The answer is: Nothing."²⁶

In the ideal world of the reactionary environmentalist, life is simple. Things are to be learned intuitively, not by the scientific method. After all, in peasant communities there are very few scientific labs. "People can then oppose nuclear power without having to read thick books," says Arne Naess (an apostle of the deep ecology movement) "and without knowing the myriad facts that are used in newspapers and periodicals."²⁷

Anti-Growth. In the opinion of most social scientists, the best antipoverty program is economic progress. "Industrialization is the only hope

of the poor,” wrote the British socialist C.P. Snow.²⁸ Yet although some reactionary environmentalists are former socialists (for whom helping poor people was an avowed goal), in their new intellectual garb the reactionaries have discarded that concern. Poor peasants living in primitive villages, with an average life expectancy of 30 years, are fine just as they are. Industrialization is seen as a threat to the planet, rather than a boon to mankind.

Reactionary environmentalism:

“We shall attack both the products and the technology, the motivation to work and the motivation to buy.”

The 1972 publication *Limits to Growth* predicted that the world would run out of many natural resources.²⁹ Twenty years later, that prediction has been thoroughly discredited in the eyes of almost all economists. But the reactionary environmentalists cling to the faith.

“The danger lies not in the odd maverick polluting factory, industry, or technology, but in ... industrialization itself — a ‘super ideology’ embraced by socialist countries as well as by the capitalist West,” write British Greens Jonathon Porritt and David Winner.³⁰ “We shall attack both the products and the technology, the motivation to work and the motivation to buy,” says German Green theoretician Bahro.³¹

Nature is best left undisturbed. The greatest sin is to make the desert bloom.

Anti-Free Enterprise. Almost everyone has come to the conclusion that capitalism is the only economic system that really works. Thus, hostility to economic growth is often synonymous with hostility to private property and free markets.

Reactionary environmentalism:

“Capitalism is the earth’s number one enemy.”

Capitalism is the earth’s number one enemy, says Barry Commoner, who now openly advocates a democratic socialist system — devoid of the profit motive and almost all current technology.³² “The capitalist mode of production,” writes Bahro, is “markedly self-destructive, outwardly murderous and inwardly suicidal.”³³ “The plundering of the human spirit by the marketplace is paralleled by the plundering of the earth by capital,” says Murray Bookchin.³⁴ Free markets “take the sacredness out of life, because there can be nothing sacred in something that has a price,” says Schumacher.³⁵

Being *against* free enterprise usually means being *for* big government. Although the original German Green movement favored decentralized approaches, today’s Greens are going after power. As a German Green told columnist Alston Chase, “Grass-roots democracy sounded wonderful before we were elected to Parliament. But now we are in power, centralized solutions seem far more effective.”³⁶

And the government favored by the reactionaries is not necessarily democratic. When Stephanie Mills contemplates a battle over whether to allow a golf course to be built, she writes, “The ecofascist in me finds it hard to trust even the outcome of a democratic process. I fear that our culture is so confused and our information systems so polluted with irrealities that people will vote, time and time again, to let the golf course be built.”³⁷

The Disaster Lobby.³⁸ Reactionary environmentalists have a financial, psychological and professional investment in crises. Virtually every fundraising letter features a crisis, described in vivid detail, with the implication that if the organizations do not receive large contributions the industrial establishment and technological advance (what the Greens call the “Big Machine”) will do irreparable harm.

Reactionary environmentalists are not opposed to crises. They *thrive* on them. They *need* them.³⁹ And this may explain the growing rift between the reactionaries and the scientists. As environmental science becomes increasingly politicized, responsible scientists who question whether the end of the world is near find they incur the wrath of the reactionary environmentalist movement.⁴⁰

Today we are experiencing the unfortunate consequences of more than two decades of predictions of disaster — most of which were ignored by responsible people in the scientific community. In 1969, Don Price (Dean of the John F. Kennedy School of Government at Harvard) said that “the possibility of a complete and apocalyptic end of civilization cannot be dismissed as a morbid fantasy.”⁴¹ Philosopher Alan Watts wrote that “scientists of all kinds are warning us most urgently that we are using our technology disastrously, eating up all the natural resources of the earth.”⁴² The following year, 1970, was especially rich in apocalyptic predictions:

- “Nothing less than a profound reorientation of our vaunted technological way of life will save this planet from becoming a lifeless desert,” wrote Lewis Mumford.⁴³
- Robert Disch (editor of *Ecological Conscience*) added that “the present threat to the life support system demands changes in values, institutions and societal goals.”⁴⁴
- “The ecology of the Earth’s life support system is disintegrating,” said Michael McCloskey (Sierra Club).⁴⁵

Reactionary environmentalism (1970):

“There will be not more than 35 to 100 more years to the end of all human life on earth.”

“Progressive environmentalists are pro-human, pro-science and pro-free-enterprise.”

- “Modern society is literally undoing the work of organic evolution,” said Murray Bookchin.⁴⁶
- “The institutions we have created are destroying the livability of the whole world,” said Senator Gaylord Nelson.⁴⁷
- Biologist G. Evelyn Hutchison predicted that “the length of life of the biosphere as an inhabitable region for organisms is to be measured in decades rather than in hundreds of millions of years.”⁴⁸
- Not to be outdone, FCC Commissioner Lee Loevinger declared that “if present trends continue, there will be not more than 35 to 100 more years to the end of all human life on earth.”⁴⁹

Those predictions were made more than 20 years ago. That none of them shows even the remotest chance of coming true, that by most measures environmental quality in Western market economies has improved, and that this improvement has been accompanied by sustained economic growth has not made reactionary environmentalists any less alarmist.

Progressive Environmentalism

The vast majority of environmentalists are progressive. They are pro-human, pro-science and pro-free enterprise. They not only differ with the reactionaries on tactics and style, they also hold fundamentally different values. The following is a brief summary.

A Realistic View of the Past. Progressives are under no illusion that American Indian communities were Gardens of Eden or that the Indians lived “at one with nature.” Alston Chase has described how Indian tribes set fires in order to drive herds of frightened buffalo over cliffs, killing far more than the Indians could ever consume. So extensive was the Indians' use of fire that they virtually created the treeless prairies of the Midwest long before the white man arrived, and their zeal for hunting often decimated the quarry they depended upon to survive.⁵⁰ For example, once Indian tribes acquired horses and rifles, they almost wiped out the buffalo herds in some parts of western America.⁵¹ Some tribes were more environmentally responsible than others, but on the whole Indians, like other people, appear to have used nature to their own ends — constrained only by the technology available to them.

“Indian tribes set fires to drive herds of frightened buffalo over cliffs, killing far more than the Indians could ever consume.”

Nor are progressives under the illusion that medieval communities were good for the environment or for humans. The use of livestock in agriculture and of animal power in agriculture, trade and transportation led to increased

"In 13th- and 14th-century England, air pollution was so bad that coal burning for home heating was made punishable by death."

animal waste and significant water pollution, contributing to the high rate of human mortality from infectious diseases. In the 13th and 14th centuries, navigation on the Thames was greatly impeded by human, horse and industrial wastes. Air pollution was so bad that England made coal burning for home heating punishable by death.⁵² The replacement of the horse by the automobile was universally and correctly viewed as a major environmental improvement. The modern city has different forms of pollution. But it is "certainly ... an improvement on the relatively tiny, but incredibly filthy, streets and waterways of medieval and Renaissance cities."⁵³

Unlike the reactionaries, progressive environmentalists look to the future. They hope to use human intelligence, creativity and technological prowess to solve problems that have never been solved before.

A Realistic View of Man and Nature. Progressive environmentalists recognize that nature is not all good or all bad — from a human point of view. Nature produces marvelous wonders, such as the Grand Canyon and the tropical rain forests. But it also produces earthquakes, volcanic eruptions and hurricanes. For the future, nature almost certainly has another ice age in store for us and very probably a cataclysmic collision with a large meteorite — unless we can figure out ways to avoid these catastrophes. The challenge is to use science and technology to preserve the good and avoid the bad.

Unlike the reactionaries, the progressives know that we do not have the ability to turn the earth into a "lifeless planet." We do have the ability to destroy ourselves and most animals and plants with which we currently share the planet, however.

"Progressives want to preserve the current environment precisely because they are pro-human as well as pro-nature."

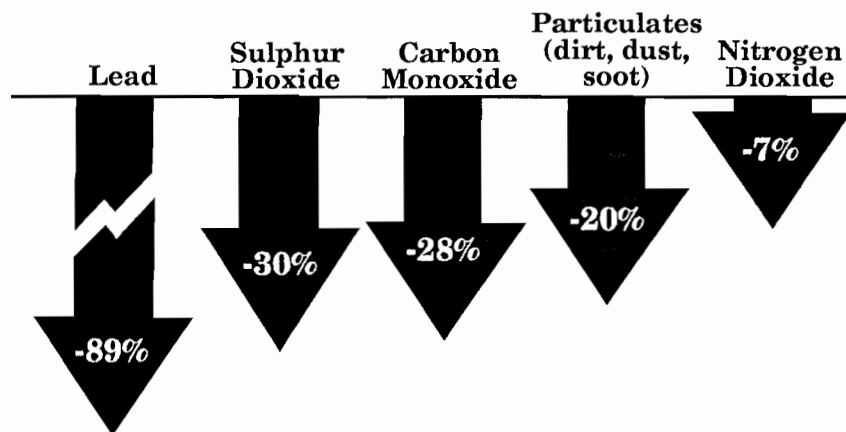
Suppose the worst happened. Suppose a nuclear war wiped out all human life and most animal and plant life as well. What would the world look like beyond that point? According to Harvard scientist Stephen Jay Gould, we don't have the ability to kill all insects and bacteria. So the process of evolution would begin again. Fifty million years from now (a short period on the geological scale), the earth would be teeming with life. Perhaps a new species of dinosaur would ultimately appear. Or perhaps other life forms would emerge that are beyond our ability to imagine.⁵⁴ Progressive environmentalists prefer the current state of the world not because it's the best, but because it's the one in which *we* happen to live. Progressives want to preserve the current environment precisely because they are pro-human as well as pro-nature.

The Benefits of Technology. Far from being enemies of technology and the industrial base that produces it, progressives realize that technology is the single most important weapon environmentalists have. Technology has allowed us to clean up rivers and lakes, improve the quality of air in our cities [see Figure I], and reduce the impact of oil spills. For the future, reliance on technology, not its avoidance, will allow us to meet the challenge of global warming — if that really does turn out to be a serious problem.

To progressives, the development of cold fusion (a cheap, nonpolluting source of energy) would be a welcome event — as would any other technological breakthrough that allows us to meet human needs with less environmental harm. To the Green question, “Industry or a Livable World?”, progressives respond that industry is what makes a livable world possible.

FIGURE I

U.S. Urban Air Quality (1979-1988)



Source: Environmental Protection Agency

“Technology has allowed us to clean up rivers and lakes and improve the quality of our air.”

The Benefits of Economic Growth. In response to the development of reactionary environmentalism in the 1950s, C. P. Snow wrote:

“It is all very well for us, sitting pretty, to think that material standards of living don’t matter all that much. It is all very well for one, as a personal choice, to reject industrialization — do a modern Walden, if you like, and if you go without much food, see most of your children die in infancy, despise the comforts of literacy, accept twenty years off your own life, then I respect you for the strength of your aesthetic revulsion.

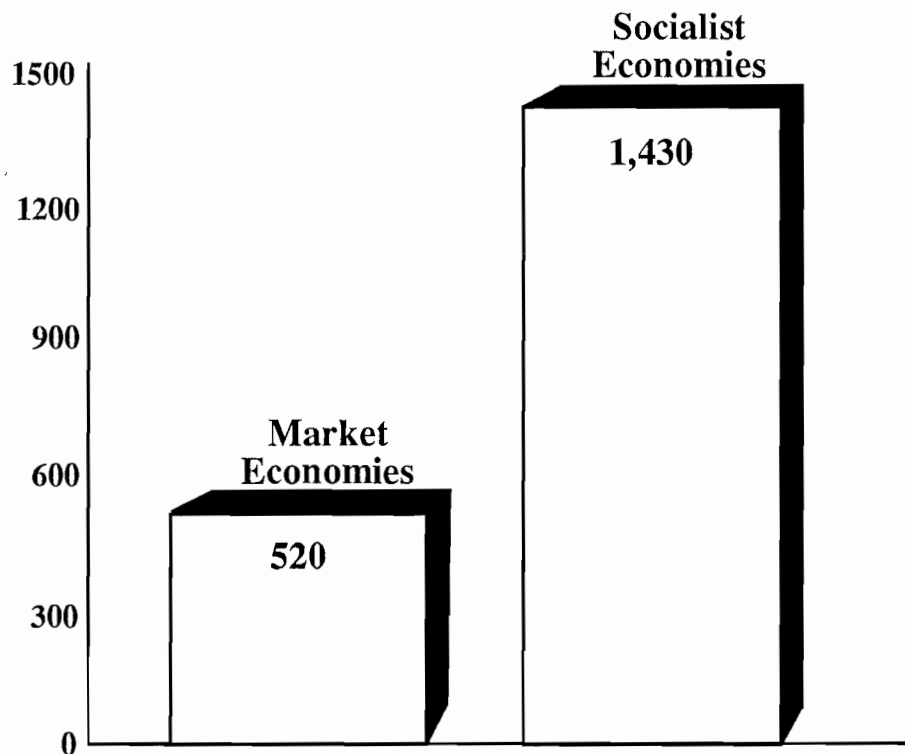
"Only when their basic needs are met can people become environmentalists."

But I don't respect you in the slightest if, even passively, you try to impose the same choice on others who are not free to choose. In fact, we know what their choice would be. For, with singular unanimity, in any country where they have had the chance, the poor have walked off the land into the factories as fast as the factories could take them."⁵⁵

In addition to the fact that economic growth is the only antipoverty program that works, progressive environmentalists have another reason for favoring it. They know that economic growth is what makes environmentalism possible. People who are struggling to meet basic needs rarely show much concern about the environment. Only when their basic needs are met can people become environmentalists.

FIGURE II

Energy Use Per \$1,000 of GNP (1986)



"Per dollar of GNP, socialist economies use almost three times as much energy as market economies."

Note: Energy consumption is measured in kilograms of coal equivalent. Market economies are: the United States, Canada, Japan, the United Kingdom, West Germany, France, Belgium, Switzerland, Austria, Denmark, Sweden and South Korea. Socialist economies are: the USSR, Czechoslovakia, former East Germany, Hungary, Poland, Romania and North Korea.

Source: Mikhail S. Bernstam, *The Wealth of Nations and the Environment* (London: Institute of Economic Affairs, 1991), Table 5, p. 24.

The Benefits of Free Enterprise. With the opening of the communist countries to the Western media, we have been treated to a litany of environmental horror stories from behind the iron curtain. Mikhail Bernstam has shown that these are not isolated cases of misdirected policies. Higher levels of pollution are inherent in all socialist economies. Because they are so inefficient, socialist economies necessarily use more resources and emit more pollutants than market economies to produce a given amount of goods and services. Take energy use, for example:⁵⁶

- The per capita use of energy in socialist economies is at least as high as, if not higher than, in market economies, even though their per capita GNP (the amount of goods and services produced) is only 40 percent as high.
- Per dollar of GNP, socialist economies use almost three times as much energy as market economies. [See Figure II.]

This comparison holds not only for socialist and capitalist economies in general, but also for countries that are very similar except for their political systems. For example:⁵⁷

- North Korea consumes 70 percent more energy per person and three times as much energy per dollar of GNP as South Korea.
- What was formerly East Germany consumes 40 percent more energy per person and 3.5 times as much energy per dollar of GNP as West Germany.

Measures of specific types of pollutants tell a similar story. For example:⁵⁸

- Discharges of air pollutants per capita in socialist economies are as much as 2.3 times as high as in Western market economies.
- Per dollar of GNP, socialist economies produce from three to six times as much air pollution.⁵⁹

Reactionary environmentalists tend to assume that pollution increases in proportion to economic growth. The facts say otherwise. From the start of the Industrial Revolution in 1786, to 1986, the world's GNP has expanded 110-fold. But human emissions of carbon dioxide have increased only 12-fold. Industrialization allows us to produce more with less.⁶⁰

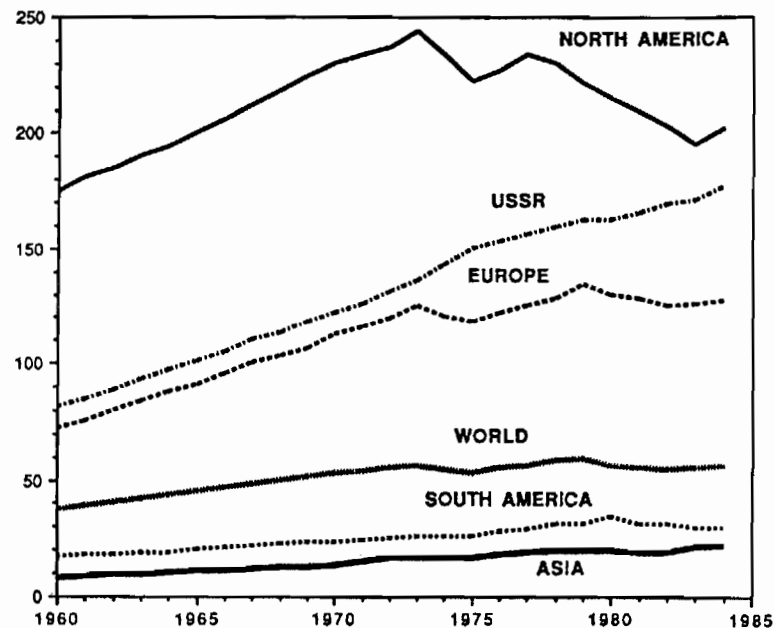
"Per dollar of GNP, socialist economies produce from three to six times as much air pollution as market economies."

In the 20th century, a remarkable divergence took place between socialist and market economies. Bernstam calls it “the most important reversal in economic and environmental history since the Industrial Revolution.”⁶¹ In market economies a steady decline in the resources needed to produce a given level of goods and services led to a decline in resource use per person (even though the economy kept growing) and to a decline in total resource use (even though the population kept growing.) For example:⁶²

- In the United States, the amount of energy needed to produce a dollar of GNP (in real terms) has been declining steadily at a rate of 1 percent per year since 1929.
- By 1989, the amount of energy needed to produce a dollar of GNP was almost half of what it was 60 years earlier.
- Moreover, since the 1970s there has been a steady decline in the amount of energy used per person. [See Figure III.]

FIGURE III

Energy Consumption Per Capita



¹Measured in 10⁹ joules.

Source: UN Environment Programme, *Environmental Data Report* (London: Basil Blackwell, 1987), p. 247. Reprinted in Mikhail S. Bernstam, *The Wealth of Nations and the Environment* (London: Institute of Economic Affairs, 1991), Figure 1, p. 26.

“Market economies have reduced the amount of energy used per person, while per capita energy used in socialist economies continues to rise.”

The *total* amount of coal and electricity used in the United States continues to rise. But the use of many other resources in the production process has been declining for some time — even though the economy has been expanding at a brisk rate. The lower absolute use of resources is apparent for oil and gas, iron ore, iron-originated materials and outputs, and the stock of farm animals.⁶³ This trend is reflected in the measurements of pollutants in the United States and in other market economies:⁶⁴

- During the 1970s and 1980s, the annual pollutant discharges from fuel combustion and industrial processes fell between 12 and 37 percent, depending on the country.
- By 1986, annual emissions in the United States were 13 percent lower than in 1940, although the U.S. population rose by 82 percent and real GNP rose by 380 percent over the time period.
- These reductions were so significant that the total concentration of pollutants in the air over U.S. cities began to decline after 1977. [See Figure I.]

"In the United States, the amount of energy needed to produce a dollar of GNP has been declining at the rate of 1 percent per year since 1929."

Quite the opposite has occurred in socialist countries, where per capita energy consumption has continued to rise. [See Figure III.] While the use of steel and many other production inputs has declined in absolute terms in the West, in socialist economies resource use has been constrained only by economic collapse.⁶⁵

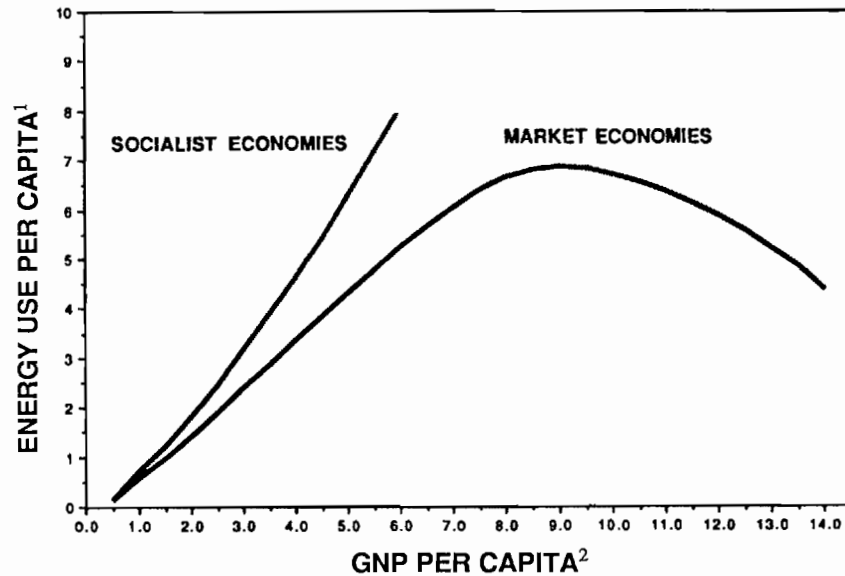
Socialist economies use ever more resources just trying to maintain the status quo, giving little thought to the environmental consequences. For example, when East and West Germany merged, it was discovered that half the towns and villages in the former communist country either lacked sewage treatment plants or had ones that did not work properly. To bring East German sewage treatment up to West German standards will cost an estimated \$36.3 billion — about \$2,420 for every East German resident.⁶⁶

In market economies, an “environmental invisible hand” is at work: competitive pressures to reduce costs cause a reduction in the use of resources and a reduction in pollution. For example, in the 1960s, 164 pounds of aluminum were needed to make 1,000 soda cans. Today it takes only 35 pounds.⁶⁷ Bernstam has accumulated a wealth of data showing that developed countries cannot continue to grow unless they continue to economize on resources — thus contributing to environmental improvement. [See Figure IV.]

“The environmental invisible hand: pressures to reduce costs cause a reduction in the use of resources and a reduction in pollution.”

FIGURE IV

Energy Use and GNP



¹Measured in tons of coal equivalent.

²Measured in thousands of constant 1982 U.S. dollars.

Source: Mikhail S. Bernstam, *The Wealth of Nations and the Environment* (London: Institute of Economic Affairs, 1991), Figure 6, p. 55.

Progressive environmentalists favor free markets not only because markets deliver the goods and meet human wants, but also because market economies are much better for the environment. It is increasingly clear that environmental improvement, economic growth and market economies go hand in hand. But having a market economy isn't enough. Within the context of a market economy, we need intelligent public policies to help us reach specific environmental goals.⁶⁸

The Tragedy of the Commons

In a classic article published in 1968, Garrett Hardin argued that most environmental problems stem from a single cause: the misuse of resources that are *owned in common*.⁶⁹ Since the air, the water, most species of mammals and fish and public lands have no private owners, they have no protectors or defenders. The use of these resources creates private benefits. But their misuse results in costs that are borne collectively — which means by no one in particular. As a result, people who use the “commons” bear only a small portion of the social costs of their own actions.

Done /

The problem is not new. It has been around for as long as human beings have occupied the planet. Take the case of commonly owned grazing land. If a single cattle herder conserves some grass for the coming year, the odds are small that he will derive any benefit from that action — since the grass is then available for consumption by all of the other herders. With commonly owned grazing land, no single herder can reap the full benefits of his “good” behavior. Nor does he bear the full costs of his “bad” behavior. Thus all herders find it in their *self-interest* to overgraze the land, even though in the long run all are worse off as a result.

“Most environmental problems stem from a single cause: the misuse of resources which are owned in common.”

Hardin’s analysis can easily be extended to other environmental problems. Most of us wouldn’t even consider dumping trash in our neighbor’s privately owned backyard. But since air and water are commonly owned resources to which we have free access, we find it in our self-interest to use them as dumping grounds for all manner of waste. Private timber companies are often exemplary environmental stewards of their own land. Indeed, much of what we know about forest management comes from pioneering discoveries by private companies.⁷⁰ By contrast, some of these same companies have caused environmental harm in the federally owned commons of the U.S. forests. The lessons can also be applied to endangered species:

- One hundred years ago, there were three billion passenger pigeons and very few chickens. But because chickens were privately owned, whereas pigeons were common property, today there are three billion chickens and the passenger pigeon is extinct.⁷¹
- Two hundred years ago, buffalo greatly outnumbered cattle in America. Today, privately owned cattle flourish, while the buffalo is almost extinct.⁷²
- In those African countries where elephants are owned in common, their numbers are dwindling rapidly — the victims of poachers in search of ivory. But in India, where elephants are owned by villagers, they are almost never killed for their tusks.⁷³

What can be done about the tragedy of the commons? To many reactionary environmentalists, the answer is to change human nature — to remake humans so they no longer act in their own self-interest. “We need a transformation of the human spirit,” says John Boorman (British Green who directed the movies *Hope and Glory* and *The Emerald Forest*.) “If the human heart can be changed, then everything can be changed.”⁷⁴ But since there is not the slightest chance that human nature really will be changed, the reactionaries invariably turn to government.

"Spending at the EPA is inversely related to the importance of environmental problems."

Why Government Solutions Often Don't Work. Most environmentalists, regardless of other differences, agree on one thing: U.S. government agencies charged with protecting the environment have done a poor job. And this is a judgment about the most environmentally conscious country in the world. In every other country, government management is even worse.

- In an internal study at the Environmental Protection Agency (EPA), staffers were asked to rank EPA programs in order of their environmental importance.
- When this ranking was compared to a ranking of programs based on the amount of money the EPA spends, the findings were almost the reverse of each other.

The EPA spent the most on those programs which were politically popular and very little on those which might advance environmental objectives.⁷⁵ This finding was echoed in an outside review of the EPA by scholars at Harvard University.⁷⁶

Studies of other government agencies also have documented a poor environmental record. These include the U.S. Park Service, the U.S. Forest Service, the Bureau of Land Management, the Army Corps of Engineers, the Atomic Energy Commission, the Federal Highway Administration and the World Bank. The results of some of these studies will be discussed below.

The problems of government mismanagement of environmental resources do not arise because government has too little power. As noted above, even worse problems exist in the Soviet Union, where government power has been enormous. In 1921, Lenin signed a decree prohibiting any development of natural resources in Soviet national parks. Yet under the pressure of five-year plans, bureaucrats increasingly saw protected resources as raw material for economic growth. Only Lenin's personal interest prevented complete surrender to the development-at-any-cost mentality. Once the Stalinists came to power, Lenin's concerns were totally ignored.⁷⁷

"We cannot solve our problems by substituting a 'political commons' for an 'economic commons'."

The principal reason why government solutions usually don't work is that the political process is itself a "commons."⁷⁸ People who support bad policies bear only a small part of the costs of those policies. The vast bulk of the costs are borne by others. On the other hand, people who support good policies reap only a small portion of the benefits. As a result, the pursuit of political self-interest all too often results in environmental harm.

Progressive environmentalists know that we cannot successfully reach environmental goals by substituting a “political commons” for an “economic commons.” In fact, trying to achieve environmental goals by simply turning the problem over to government often creates even more environmental destruction.

Solving Problems Through Market-Based Institutions. A primary reason why private property came into existence was to solve the “commons” problems. For example, in the early West, cattle ranchers established private property rights on the open range. Cattle management associations were formed to enforce these rights and to arrange for compensation when one rancher’s cattle grazed on another’s land. They also protected ranchers’ rights in the cattle by warding off cattle thieves. To help enforce grazing rights, branding was introduced and cowboys were hired as human fences. And because the costs of enforcing these arrangements were so high, innovators had strong incentives to find a cheaper solution — thus leading to the invention of barbed wire.⁷⁹

“The problem of the open range was solved with market-based institutions.”

Today, the solution to the problems of the open range seems quite simple. But in an earlier era it was comparable to some of our most difficult “commons” problems today. The problem of the open range was solved because it was in people’s self-interest to find solutions and because they had the freedom to implement those solutions.

Can the lessons of cattle ranching be applied to modern-day environmental problems? Progressive environmentalists believe that in many cases they can. The message coming to our shores from virtually every country on every continent is: markets work far better than government bureaucracies. Cognizant of that message, progressive environmentalists seek ways of creating market-based institutions within which people will find it in their self-interest to solve environmental problems.

Empowering Individuals vs. Empowering Bureaucracies

The world’s 150 governments often have great difficulty accomplishing very basic tasks, such as protecting people from crime. By contrast, its five billion people have shown that they can be incredibly resourceful and innovative in pursuing their own interests.

Yet environmental legislation over the last two decades has tended to empower governments rather than people. With the full backing of the reac-

tionary environmentalists, governments around the world pass laws which people find in their self-interest to evade or distort in order to satisfy some private purpose. Progressive environmentalism, by contrast, seeks to empower people — recognizing that environmental goals will always be unreachable unless the attainment of those goals in their individual self-interest.

Private Success, Government Failure. One reason for empowering individuals rather than governments is that people are often right when government is wrong. For example:

“Individuals are often right when government is wrong.”

- At a time when state governments awarded bounties for killing birds of prey (and when many people regarded the sport as patriotic because it gave young boys practice shooting live targets, thus preparing them for war), a concerned citizen helped found the private Hawk Mountain Sanctuary in eastern Pennsylvania to prevent the slaughter of thousands of hawks, falcons, ospreys, eagles, owls and other endangered birds.⁸⁰
- At a time when state governments awarded bounties for killing seals and sea lions, a for-profit corporation protected the only mainland breeding area for the endangered Steller sea lion.⁸¹
- While the federal government owns only 4.7 million acres of wetlands and has encouraged the destruction of private wetlands, about 11,000 private duck clubs have managed to protect from five to seven million acres of wetlands from destruction.⁸²
- At a time when the federal government was encouraging environmental destruction on the Barrier Islands, the commercial interests at Hilton Head Island discovered that conservation was good business.⁸³
- While the federal government has subsidized environmental destruction in our national forests, companies such as International Paper have discovered that good conservation pays on private forestland.⁸⁴

Given the record of so many private sector successes, one would think that any reasonable environmental agenda would encourage even more private sector action. Yet the trend of recent policy has been in the opposite direction.

“When people make their property attractive to endangered species, often they suffer huge penalties at the hands of bureaucrats.”

How Government Policy Penalizes Individual Environmental Accomplishments. One of the most surprising developments in environmental policy is the degree to which government penalizes and punishes environmental stewards in the private sector.

- After a farmer in Florida discovered a bald eagle nesting in one of his trees, federal bureaucrats ordered him not to operate his tractor within one-half mile of the tree. The message to other farmers was: don’t attract eagles.⁸⁵
- After a rancher in southern Oregon turned one of his fields into a marshland for wildlife, the state of Oregon declared his artificial marsh a “wetland” and prohibited him from altering it. The message to other farmers and ranchers was: don’t create wetlands or other wildlife habitats.⁸⁶
- After a group of investors established a sea turtle farm in the Cayman Islands, the U.S. government banned the importation of sea turtle products, causing the venture to fail. As a result, there are now fewer sea turtles and the message to others is: don’t find profitable ways of protecting endangered species.⁸⁷

These are not isolated examples. With few exceptions, the laws of every state outside of Texas prevent people from owning (which means protecting and defending) any indigenous wild game. When people make their property attractive to endangered birds and other species, they too often suffer huge costs once the bureaucrats discover that the activity actually works.

Finding Progressive Solutions To Environmental Problems

Progressive environmentalism is very skeptical about the ability of the world’s governments to solve environmental problems. The progressive agenda, therefore, includes finding ways to assure that achieving environmental goals is in the self-interest of individuals. This means that individuals, *in their role as individuals*, should derive personal gain from environmentally good behavior and bear personal costs for environmentally bad behavior. The following brief discussion applies this progressive approach to some of our most serious environmental problems.

Endangered Species

The approach of reactionary environmentalists is to ban markets. Thus the reactionaries support bans on the importation of ivory, sea turtles, parrots and products obtained from other endangered species. Reactionaries propose bans on wood and virtually every other product produced in tropical rain forests. They also oppose private ownership.

"Progressives put their faith in the world's five billion people rather than in the world's 150 governments."

Progressive environmentalists recognize that banning markets and private ownership is the worst possible way to achieve environmental goals. Nothing communicates as rapidly as market prices to people in remote villages all over the world. A high price means that things are rare and valuable. Private ownership gives people the right to protect and defend what the market says is valuable.

Save an Elephant; Buy Ivory.⁸⁸ In Kenya, the sale of ivory has been banned for decades. In Zimbabwe, by contrast, ivory is openly bought and sold, with part of the profits returned to the country's national parks. Which country has a growing elephant population?

- In Kenya, where ivory sales are banned, the elephant population has dropped from 65,000 to 19,000 over the past decade and faces extinction in the next five years.
- In Zimbabwe, where ivory sales are encouraged, the elephant population has grown from 30,000 to 43,000 over the past decade.

"Where villagers have an economic self-interest in protecting elephants, the elephants thrive."

Economic incentives make the difference. In Kenya, elephants are not viewed as a valuable economic resource — except insofar as they boost tourism. Legally, elephants are valuable only to look at in Kenya. Poachers succeed in killing elephants largely because no one else has an economic incentive to protect them. In Zimbabwe, elephants have an economic value of about \$5 million per year to about two dozen tribal villages. As a result, villagers protect elephants from poachers, cull elephant herds to prevent overpopulation and jealously guard their investment in future ivory production and safari income.

Throughout Africa, similar patterns prevail. Contrary to conventional wisdom, when American consumers buy ivory, on balance they help save elephants. Buying ivory helps increase the economic value of elephants and gives African villagers more economic incentives to protect them.

Eliminating Poaching. As consumers, our biggest problem is that when we buy ivory we don't know whether it comes from a place where endangered elephants are being preserved (in which case our purchase encourages more conservation) or from poachers (in which case our purchase encourages illegal killing.) A similar problem existed in cattle ranching in the last century, and there is a similar solution.

The problem of cattle rustling was greatly diminished by branding individual cows. If trace elements (or some other way of "fingerprinting") could be used to establish the origin of products from endangered species, consumers and government authorities could distinguish between legal and illegal products.⁸⁹ Such labeling would not be costless. But it would help protect endangered species by protecting the ownership rights of people who have custody of the species, thus making these ownership rights more valuable.

Rivers and Streams

Rivers and streams represent a classic example of the problem of the commons. Historically, they have been misused as a *source* (e.g., overfishing) and as a *sink* (e.g., pollution.) Fortunately, there are progressive alternatives.

Private Ownership in Britain. In England and Scotland, there are private property rights to fish in certain rivers and streams. As a result, many voluntary associations have been formed to fiercely protect these rights against the threats of overfishing and pollution. One fishing club, the Pride of Derby, won a landmark lawsuit against an upstream municipal polluter.⁹⁰ The case set a precedent which to this day puts potential polluters on notice that endangering fish is not acceptable.

- Since the 1950s, the Anglers' Cooperative Association in England "has handled more than fifteen hundred cases of pollution [and] recovered hundreds of pounds in damages to enable club and riparian owners to restore their fisheries; [and] it has also defeated the attempt by various governments to alter the common law in relation to pollution."⁹¹
- In Scotland, "virtually every inch of every major river and most minor ones is privately owned or leased, and while trespassing isn't quite as serious a crime as first degree murder or high treason, it isn't taken lightly."⁹²

"Because of private property rights, rivers and streams in Britain are protected from over-fishing and pollution."

Public Ownership In the United States. In this country, virtually all state governments have disallowed private ownership of instream flows on the theory that government should hold these rights in “public trust.” As a result, public streams are often subject to overfishing and pollution, allowed because of special-interest pressures put on government.⁹³

“In the United States, rivers and streams are held in ‘public trust’.”

One exception exists in the Yellowstone River Valley, south of Livingston, Montana — where spring creeks offer some of the world’s best trout fishing. Because the creeks begin and end on private property, restrictions on private ownership do not apply. The owners charge fees to sportsmen who come from all over the world for fly-fishing. To protect the value of their assets, property owners limit livestock grazing on stream banks and protect the area’s wildlife, land and fish. By contrast, state-owned Spring Creek in Lewistown, Montana, has similar potential, but “free access” for everyone has produced crowding and reduced the fish population.⁹⁴

With respect to pollution control, it is interesting to compare the record of private enforcers in England and Scotland with that of government bureaucracies in the United States. Under the administration of the Clean Water Act, politically favored polluters (such as municipalities) are treated preferentially — with less stringent cleanup goals and more lenient cleanup schedules. To politicians, the source of the pollution is as significant as the pollution itself. Yet to the river and the fish, pollution is pollution.

Lakes and Bays

“Where fishing rights exist, they can be purchased and retired — to protect the value of ocean fisheries.”

By protecting privately owned fishing spots from pollution, British fishing clubs not only protect their own portion of the river, they protect downstream areas as well. Can a similar principle be applied to larger bodies of water? Many think that it can.

Property Rights in Scotland, Canada, Iceland and Greenland.

Consider the case of British salmon sport fishermen. They not only must be diligent in preventing upstream pollution, they also must be concerned about what happens downstream — since the salmon swim to the commonly owned coastal waters and then return to the privately owned streams to spawn.

Because commercial fishermen were depleting salmon stocks in the coastal waters, the Atlantic Salmon Conservation Trust of Scotland has been buying up ocean netting rights from private owners and the government and retiring them. The idea of buying out ocean fishing rights began in Canada, where the government bought and retired commercial netting rights in New

Brunswick, Nova Scotia and Quebec. Private interests in Iceland are considering the possibility of buying the Greenland and Faeroese fisheries and shutting them down completely. But for this approach to work, there must be *rights* that can be purchased.⁹⁵

Public Ownership In the United States. With few exceptions there are no property rights — either to pollute or to fish in U.S. coastal waters.

Because there are no well-defined property rights, virtually every major species of commercially valuable marine life is being over-fished and stocks are being depleted. Yet at privately owned (or leased) oyster beds and private salmon fisheries, studies show that the stocks are carefully maintained.⁹⁶

Among the sources of pollution, more than 1,300 major industrial facilities and 500 municipal plants dispose of wastes in estuaries, which flow to coastal waters. An additional 70 municipal plants and about 15 major industrial facilities dump pollutants directly into coastal waters. One consequence is that, during the 1980s, about one-third of U.S. shellfish-producing areas were closed to commercial harvests because of actually or potentially contaminated marine water. In 1988, more than 50 miles of New York City and Long Island beaches were closed to sunbathing and swimming because of medical waste contamination.⁹⁷ Among the filthiest water bodies in the United States are Commencement Bay in Puget Sound and Boston Harbor.⁹⁸

Government restrictions on discharges have led to some improvement. But one reason why it's difficult for government to solve the problem is that a significant amount of pollution is caused by governmental entities (e.g., municipal treatment plants) or by private parties operating under government contract. In addition, under the current system, interested parties can bring about improvements only by doing battle in the political arena.

Tradeable Pollution Permits. A welcome move toward a better approach is the system of tradeable pollution permits that exists on the Lower Fox River, which flows from Lake Winnebago to Green Bay, Wisconsin. The river is lined by ten pulp and paper mills and four municipalities — all of which discharge pollutants. But since well-defined *rights to pollute* can be bought and sold, discharging pollutants has a clear cost and each polluting entity has an economic incentive to reduce its discharges.⁹⁹ If this system were in general use, private parties (including conservation groups, commercial and recreational fishing interests, etc.) could buy many of these rights and retire them. The more valuable clean water is to others, the more expensive it would become to discharge pollutants (by using rather than selling rights to pollute) and the more attractive nonpolluting methods of production would become.¹⁰⁰

"Tradeable pollution rights give polluters economic incentives to reduce pollution and environmentalists opportunities to protect important resources."

The Ocean

Like the open range of the Old West, the ocean today is one of the world's largest commons. Outside of the territorial limits of sovereign countries, only weak treaties limit the use of the ocean for fishing, mineral and energy development, shipping and garbage disposal. Can there be an ocean equivalent of "homesteading," "fencing," "branding" and the prosecution of "rustlers" on the high seas? That idea is less far-fetched than it might appear.

Aquaculture. "Aquaculture" is the term for ranching and farming in the sea. Although still in its infancy, aquaculture holds great promise. It requires technological innovation in order to create a system of property rights under which people will find it in their self-interest to preserve the value of ocean resources. The problem is that government policies distort incentives. As a result of these policies, the vast majority of innovations have enhanced people's ability to deplete rather than to conserve ocean resources.¹⁰¹

Take commercial fishing, for example. Like the Cattle Management Associations of the Old West, commercial fishing interests have made many attempts to prevent overfishing through unions, trade associations and informal contracting. But unlike the private pastureland solutions, the courts struck down these agreements as violating U.S. antitrust laws. In ocean waters, government solutions have replaced private ones.

Through a succession of policies, government has attempted to prevent the depletion of fish stock by restricting the days and times of fishing, the number of boats and the methods of fishing. These restrictions have spurred entrepreneurs to develop bigger boats, more efficient nets, sonar equipment and other innovations which allow commercial interests to catch more fish and further deplete the fish population. There are, however, a few welcome exceptions.

Property Rights in Fisheries in Japan, Australia and New Zealand. Japan has privatized aquaculture by creating private property rights in fisheries. Under the Japanese system, each fisherman has an incentive to make investments and discover new technology that enhances the value of his rights. Another approach is used by Australia (for bluefin tuna) and New Zealand (for abalone). In both cases, the government establishes a total allowable catch, and individual tradeable quotas (ITQs) permit fishermen to catch a specified percentage of the total. Since ITQs can be bought and sold, a system of property rights has been created under which holders of ITQs have a self-interest in preserving and maintaining the value of their property.¹⁰²

"Aquaculture faces the same problem in the ocean that cattle ranchers faced on land."

This brief discussion by no means covers all of the problems or the progressive solutions to maintaining the value of ocean resources. It does show that progressive solutions not only are possible, but in many instances are being employed.

Ground Water

Because more than half of our drinking water comes from ground water, ground water is one of our most important environmental resources. Among the problems are overuse of water and too much pollution. Because there are no property rights to ground water, each user has a tendency to take too much since there is no guarantee that water left in the ground will not be taken by other users. (In other words, people have no *right* to the water they conserve.) The lack of property rights also means that there are no owners and defenders to deter people who trespass by polluting the water.¹⁰³

"Because no one owns ground water, people have perverse incentives to pollute it and overuse it."

Interestingly, a similar problem existed in the oil industry. Like an aquifer, an oil pool is an underground liquid resource which is subject to the problems of too rapid depletion and quality deterioration. But unlike the governmental approach to ground water, the oil industry solved the problem with market-based institutions. The oil industry developed a property rights approach called "unitization," which assigns ownership rights to an entity called the "unit." The unit manager operates the oil field in an integrated fashion and each owner receives a share of the income from the field. As in the case of cattle grazing, solving the "commons" problems of oil recovery was extremely difficult. But because solutions were perceived as valuable, people had a self-interest in discovering them.¹⁰⁴

Forests

The reactionary approach to saving forests and trees is to turn ownership rights over to government. Often this involves replacing private owners and defenders with property owned in common.

Yet when government acquires power over resources, special-interest pressures invariably assert themselves. As a result, decisions tend to be made on the basis of *political* rather than economic or environmental costs and benefits. To the horror of environmentalists, governments in the United States, Canada, Sweden, Finland and Brazil frequently destroy forests in order to create jobs for loggers and pressure private owners to do the same. For example:¹⁰⁵

"All too often, government subsidizes the cutting down of trees to create jobs for loggers."

- The government of Ontario, Canada, is deforesting government lands, while private woodlot owners refuse to harvest their timber as fast as the government would like.
- Sweden, where most of the forest land is privately owned, has more standing forest today than at any time in the past, yet private owners are *required* to harvest at least half of their trees within a decade after maturity.
- In Finland, which also has more forest than ever before, the government is using tax incentives to encourage tree owners to harvest.
- In Brazil's Amazon basin, the government has subsidized the stripping and burning of a forested area larger than France. The land was seized from local inhabitants.
- Subsidized logging on more than half of the U.S. Forest Service's lands costs taxpayers more than \$800 million a year.¹⁰⁶

Progressive environmentalists recognize that common ownership almost always creates perverse incentives under which people have a self-interest in causing environmental harm. By contrast, private ownership gives people strong incentives to preserve and protect that which they own.

Auto Air Pollution

For as long as there have been cities, the air shed over them has been a commons, used as a dumping ground for various forms of waste. In the past, wood burning and coal burning to heat homes were the major sources of urban air pollution. Today, it's the automobile.

The Bureaucratic Approach. The current approach to curtailing tail pipe pollution is collectivist and ignores the behavior of individuals. Instead of imposing costs on people who pollute and rewarding those who don't, regulators are attempting to tell the entire automobile industry how to produce cars. One consequence is that cars are never cleaner than when they leave the assembly line. Individual car owners have weak incentives to reduce tail pipe pollution by, for example, getting regular tune-ups. The current approach is also inequitable. Higher auto prices penalize drivers in rural areas where pollution problems are nonexistent (and incomes are generally lower) in order to meet more cheaply the concerns of urban residents who actually have a pollution problem (and higher incomes).

"Getting old (polluting) cars off the road makes much more sense than imposing costly regulations on new cars."

To make matters worse, the current approach may be leading to more emissions and pollution. Studies show that 50 percent of the tail pipe pollution is caused by 10 percent of the cars (mainly old ones). But because federal regulations increase the prices of new cars, people have incentives to continue driving their older, more polluting cars.

An Individualistic Approach. Can auto pollution be reduced more intelligently? Indeed it can. The technology now exists to detect emissions from each car as it passes a monitor on the roadway. (See the case study below.) Car owners could be subject to fines and fees based on the pollution they create — the higher the emission level, the higher the fee. Under such a system, each car owner would have a financial interest in keeping emissions low. For people driving solely in cities, emission performance would become an attractive automobile feature. For people driving outside the cities, this feature would be less important.¹⁰⁷

Industrial Air Pollution

As in the case of auto air pollution, the traditional approach to industrial air and water pollution in the United States is for government to literally tell producers how to produce things. For example, under the Clean Air Act, the federal government tells coal burning factories (mainly utility companies) that they must install scrubbers in order to reduce their emissions of sulphur dioxide (SO₂), which causes acid rain.

One problem with this approach is that it leaves factories with no further incentive to reduce pollution. As long as they are in legal compliance, factory owners experience no economic gain if they further reduce sulphur emissions, and no economic cost if their emissions increase. A second problem is that such regulations create perverse incentives that may make the pollution problem worse. By raising the cost of new factories relative to old ones, the regulations inadvertently encourage the retention of older (more polluting) factories and discourage investments in newer (cleaner) ones. A third problem is that factory owners have no incentive to invest in discovering newer and better pollution abatement technology.¹⁰⁸

“Because of special-interest politics, we have dirtier air and bear much higher costs.”

A fourth problem is politics itself. For many utilities, burning low-sulphur Western coal is a cheaper way to control pollution than installing scrubbers, which are needed primarily for high-sulphur Appalachian and Midwestern coal. The federal government’s requirement that all factories install scrubbers — regardless of the quality of coal used — is an example of

"Trading pollution permits is a good idea in theory; in practice government does not treat them as property rights."

special-interest pressure to prevent utilities from switching to Western coal. The program is actually an expensive jobs program for coal miners in Appalachia and the Midwest, which leaves the air dirtier than it would be with far cheaper control methods.¹⁰⁹ For every \$1 of additional costs (added to people's utility bills), coal miners receive only 5 cents of added benefits, and there is virtually no gain in air quality.¹¹⁰

Tradeable Pollution Permits. A better approach is to establish a permissible level of pollution and allow companies to buy and sell rights to pollute. Under this approach, government does not tell industry how to produce. It establishes pollution levels and lets producers find the least-cost method of reaching those levels. Under this approach, producers always have a financial self-interest in reducing pollution. If they pollute more, they have to buy more pollution rights. If they pollute less, they can sell their rights to others. A market for pollution rights tends to minimize the cost of achieving any given level of clean air and the hardship for workers and employers, while giving entrepreneurs incentives to devise better, cheaper pollution control methods.¹¹¹

The idea of a tradeable market in pollution rights looks good in theory and is embodied in the amendments to the Clean Air Act, passed in the fall of 1990. Yet in practice, things are different. In the past, regulators have arbitrarily limited the rights and even revoked them whenever it seemed politically popular to do so. Thus politics has taken away many of the potential advantages of this approach.¹¹²

A Property Rights Approach. A different approach has been suggested by Fred Smith, a former EPA analyst, who is now president of the Competitive Enterprise Institute in Washington, DC. Smith sees polluters as trespassers. If there were a way to identify which pollutants come from which polluters, we could fine or tax each for the harm done to individuals who use the air shed. How can we "fence" air sheds and make individual trespassers pay? Technology may provide an answer:

Tracers (odorants, coloring agents, isotopes) might be added to pollutants to [detect the identity of the polluter]. Detection and monitoring schemes would evolve as environmental values mounted and it became appropriate to expend more on fencing. ... Lasimetrics, a technology which can already map atmospheric chemical concentrations from orbit, might in time provide a sophisticated means of tracking transnational pollu-

“New technology may make it possible to charge polluters based on the pollutants they discharge and the damage they cause.”

tion flows. If that system were combined with a system under which each nation adopted ... fingerprinting ... to identify its major greenhouse gases (a type of chemical zip code system), it would become possible to trace [worldwide] pollution to its source and thus make it possible to make the polluters pay.¹¹³

To some degree, these imaginative solutions are already being used. For example, in Canyonlands National Park in southern Utah, tracers were used to determine whether nearby power plants were contributing to haze-causing pollutants in the park.¹¹⁴

The United States Coast Guard has demonstrated that new sensing technology can be used to identify which oil tanker is the source of an oil spill with a probability of 99.9 percent.¹¹⁵ As a definer and enforcer of property rights, government has an important role to play in this solution. Just as states registered cattle brands and prosecuted rustlers, the government could move us in the right direction if it would register pollutants, monitor the flow of atmospheric pollutants and enforce liability for damages.

Global Warming

The theory behind global warming is that a buildup of greenhouse gases (especially carbon dioxide) will cause the earth to warm, with potentially harmful effects. We will review the predictions and evidence for the theory below.

Currently, scientists disagree on whether global warming has already occurred, whether significant global warming will occur in the future, whether warming would be harmful or somewhat beneficial to humans and whether, if harmful, it is better to adjust to the warming or try to prevent it. At least two of the world’s leading climate scientists — Arizona State physicist Sherwood Idso¹¹⁶ and Soviet climatologist Mikhail Budyko¹¹⁷ — argue that we should welcome a CO₂ buildup with open arms. In general, those scientists who welcome global warming, or at least do not worry about it, take the longer view — considering the historical variations in the earth’s temperature and cycles in carbon dioxide (CO₂) concentration.

Natural Temperature Changes. Most historical evidence suggests that warmth is life-enhancing and life-sustaining, whereas cold is life-threatening:

"After 17 major climate cycles, the next ice age is almost certain to come and is probably overdue."

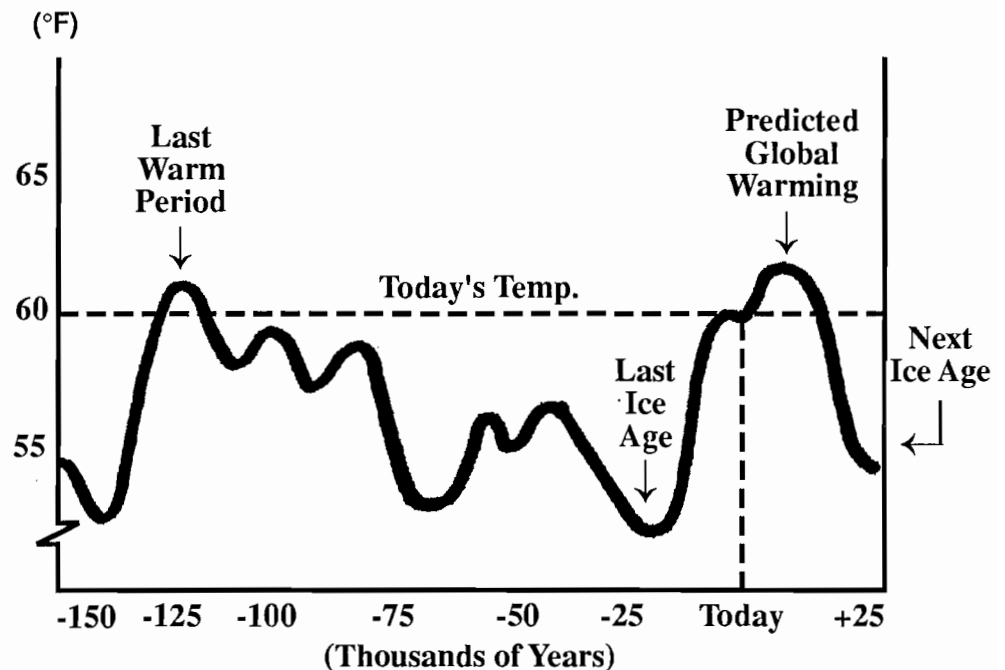
- In the past two to three million years, the earth's temperature has gone through at least 17 climate cycles, with ice ages typically lasting about 100,000 years interrupted by warm periods lasting about 10,000 years.¹¹⁸ [See Figure V.]
- Since by some calculations the current warm period is about 13,000 years old, the next ice age is overdue.¹¹⁹

About 25,000 years ago, during the last ice age, half of North America was completely covered by ice. A significantly cooler world would be disastrous for humans as well as plants and animals, and some have argued that we need global warming to prevent that disaster.

Natural Changes in Carbon Dioxide Levels. Those who worry that the human use of carbon-based fuels is sending too much CO₂ into the atmosphere may be surprised to learn that atmospheric CO₂ levels have varied radically as life on earth has evolved. Moreover, just as warmth has always been unambiguously good for life, so has CO₂.¹²⁰

FIGURE V

Average Global Temperature



"All the evidence suggests that warmth and CO₂ are life-enhancing and life-sustaining, whereas cold is life-threatening."

Source: Adapted from William K. Stevens, "In the Ebb and Flow of Ancient Glaciers, Clues to a New Ice Age," *New York Times*, January 16, 1990, p. C-1.

- When dinosaurs walked the earth (about 70 to 130 million years ago), there was from five to ten times as much CO₂ in the atmosphere as there is today, and the average temperature was 5°C to 10°C warmer.
- Those conditions must have been extremely life-enhancing, since they permitted the huge creatures to find plenty of food and survive — a task that is difficult for today's largest land animal, the elephant.
- The ancestors of the earth's plants evolved at a time when plant-life-enhancing CO₂ was so abundant that some scientists fear today's plants are suffering from CO₂ deprivation.
- This may explain why plants thrive when exposed to more CO₂, a phenomenon greenhouse operators have observed for years.

Although CO₂ levels in the atmosphere have fluctuated over time, a secular decline in CO₂ has been going on throughout the 4.5 billion-year history of the earth. If this trend continues, and there is no scientific reason to think it will not, eventually our planet will become as lifeless as Mars.¹²¹

Unworkable Solutions. Although scientists now disagree about global warming, suppose it becomes clear that global warming is a real threat, and we all agree that worldwide reduction in atmospheric CO₂ is desirable. What's the best way to achieve this goal? The collectivist approach focuses entirely on governments. An international treaty would be negotiated and each country would agree to reduce its CO₂ emissions by regulating the behavior of its citizens. How likely is this to work? Consider a similar approach used by a fairly homogeneous group of countries (OPEC) to reduce the annual output of oil. OPEC agreements continue to fail miserably because each nation has a financial interest in cheating on the agreement, while hoping that all others will keep their word.

If OPEC agreements routinely fail to restrict oil production, how much more likely would failure be for an agreement to restrict CO₂ emissions among 150 heterogeneous governments? The agreement would require each country to sacrifice for the common good. Yet each country, and each individual within each country, would have a self-interest in not sacrificing.¹²²

Progressive Solutions. A progressive approach to global warming recognizes that people are far more likely to act in their self-interest than to sacrifice for abstract (and hard-to-understand) common goals. Accordingly,

"International agreements to restrict the use of carbon-based fuels would work no better than OPEC agreements to reduce oil production."

this approach would seek to empower individuals and make it in their self-interest to enhance carbon sinks (which absorb CO₂), create alternative energy sources and develop new technology to deal with the problem. (See the case study below.)

Techniques for Empowering Individuals

The bureaucratic approach to environmental problems asks: How can we empower politicians to force people to do what is not in their self-interest? The results of the bureaucratic approach are rules and regulations which everyone has an incentive to violate, manipulate or distort.

The progressive approach asks: How can we use government policy to empower people and create positive incentives for problem-solving? Under this approach, private citizens have a self-interest in protecting the rules which government establishes. Progressive environmentalism does not assume there is a once-and-for-all solution to every environmental problem. Instead, it seeks to create institutions under which individuals acting in their own self-interest can continue to solve problems which large bureaucracies can never solve. The following is a brief list of techniques for achieving this objective.

“Progressives ask: How can we empower people and make the achievement of environmental goals in their individual self-interest?”

Wherever Possible, Let Government Be a Protector of Rights Rather Than Owner and Manager of Natural Resources. Some of the worst environmental atrocities, as we shall see, have occurred on land owned and managed by government agencies — atrocities that never would have occurred without government subsidies, financed by taxpayer dollars. Better results are achieved when there are many diverse owners — each pursuing different ways of protecting and enhancing the value of their property. Governments can set the broad framework and the parameters, leaving people free to solve the millions of unique problems found around the world.

Wherever Possible, Create Ownership Rights to Achieve Environmental Goals. Many people regard property rights as a restriction on freedom because the owners are able to thwart trespassers who otherwise would have used the resource for “free.” In fact, property rights expand freedom of action, giving people opportunities they otherwise would not have. Property rights empower owners by giving them the right to protect and defend their resource. But property rights also create opportunities for everyone else. All nonowners are *potential* owners, and the existence of property rights makes everyone else a potential buyer of those rights.

Many environmental groups (for example, the Nature Conservancy) have been able to obtain and preserve ecologically sensitive land precisely because land can be bought and sold. Private environmental organizations have been far less successful in preserving rivers, streams, lakes and bays, and in protecting endangered species, because often no rights to these resources can be purchased.

Wherever Possible, Let Market Prices Allocate Resources. Market prices give people economic incentives and change behavior much more quickly than arbitrary regulations. The price system is also the most efficient mechanism for communicating with people all over the world. As is the case for ivory from elephant tusks, once people realize that something is valuable they have incentives to protect and defend it and prevent its destruction.

Many people regard a price for activities such as fishing, hiking and recreational activities as an unfair barrier to the use of resources which should be “free.” But a price of zero for these activities communicates the worst possible message: that the use of rare and valuable resources has no social cost. When fishing clubs in England charge, they are communicating to fishermen that far from being a costless resource, rivers and streams are valuable. A market price encourages users to conserve — to limit their use of the resource in order to maintain its value. At the same time, high prices for the use of resources give entrepreneurs strong economic incentives to find ways of making more areas available for fishing and recreation.

Create Opportunities for Homesteading and Adoption in the Environmental Commons. Homesteading was the method used to administer the largest privatization of land in history. The principle was that when people made improvements to land, they should benefit by acquiring ownership rights. If this principle were extended to ground water or to ocean resources, people would have economic incentives to invest in conservation.

A similar principle governs adoption statutes in some African countries — whereby villagers can acquire ownership rights in rare animals such as elephants. These techniques need to be expanded to encourage people to protect and defend endangered fish and wildlife which would otherwise be abandoned to the “commons.”

Adopt the Polluter-Pays Principle. Whether in driving a car or working in a factory that contributes to air or water pollution, in most places people realize no economic gain from the reduction of pollutants and bear no

“Nothing communicates more quickly to remote villages all over the world than a market price.”

“People should benefit from environmentally good behavior and bear a cost for environmentally bad behavior.”

economic cost if they cause an increase in pollutants. If we agree that clean air and clean water have value, and if we want people to perceive and act on that premise, then pollution deterrence should be as individualized as possible. Through fines and fees, the establishment of ownership rights and the use of new technology, we should strive toward a system under which people who pollute bear a direct cost that rises with the amount they pollute and the damage their pollutants cause.

Give People Choices Over the Allocation of Their Environmental Tax Dollars. Currently, a number of state governments allow people to divert a fraction of their state tax dollars to environmental programs — private, nonprofit as well as governmental.¹²³ This practice should be expanded. If people were allowed to allocate some portion of their taxes to any qualified nonprofit organization or public agency, where the money went would be governed by competition and individual choice rather than by politicians.

Ten Principles of Progressive Environmentalism

Although the vast majority of all environmentalists are progressive, they are becoming voiceless in the political capitals of most industrialized countries. Outside the United States, the political agenda is increasingly being set by the reactionary values of the greens. Even within the United States, the leaders of mainstream organizations all too often accept and endorse the reactionary environmental agenda.

For these reasons, it is vital that a new policy agenda be devised — one which is pro-human, pro-science and pro-free-enterprise. What follows is a brief discussion of the principles that should guide the development of this agenda.

1. Private Property Rights Can Unite Environmentalism and Self-Interest.

Reactionary environmentalism almost always opposes private ownership of property. For example, Stephanie Mills (*Whatever Happened to Ecology?*) equates land ownership with slavery, and reactionary environmentalism with abolitionism.¹²⁴ By contrast, progressive environmentalists know that virtually all of our environmental problems originate with respect to the “commons” — resources that are owned by no one.

Case Study: The Legacy of Love Canal. To many people, Love Canal is a symbol of corporate greed and irresponsibility — providing irrefut-

"Progressives know that virtually all our environmental problems originate from resources that are owned in common."

able evidence of the need for government to control land use. The facts show otherwise. The crisis occurred after the Niagara Falls school board (a governmental entity) purchased a toxic waste site which had been lined with clay, filled and capped with clay by the Hooker Chemical Company (a private enterprise). The company demonstrated to the school board that the site was potentially dangerous. Under threat of eminent domain, however, it relented and accepted a one dollar purchase price for the property — after writing into the documents of transfer the nature of the dangers and including a disclaimer of liability for future damages, once ownership of the site was transferred.¹²⁵

Despite the warnings from Hooker, the school board built a school on the site, later selling the remaining land to a developer. Even before the land was developed, the city built water and sewer service lines through the clay walls that were in place to contain the wastes. These gaps in the walls provided pathways for the chemicals, which were later found in the soil and even the basements of area residents.

"Resources that are not owned have no protectors or defenders."

The Environmental Protection Agency (EPA) was called in to investigate. In a very quick statistical study,¹²⁶ later discredited, the EPA announced that it had found evidence of long-term health problems — an increase in chromosome aberrations in a sample of residents. Federal funds were quickly made available to purchase the homes in the area. These homes were boarded up and the affected neighborhoods effectively destroyed. Later, additional federal money purchased more homes. To date, however, detailed studies have turned up no clear evidence of cancers or other long-term health threats present in the neighborhoods. And two decades later, in September 1988, about two-thirds of the area was declared habitable by the New York State Department of Health.¹²⁷

The lessons of Love Canal are: (1) private companies respond to economic incentives to follow environmentally safe practices, and (2) voters need to exercise much greater scrutiny of the behavior of their elected representatives, who usually do not bear the costs of their environmentally destructive behavior. Instead of following these lessons, Congress gave us Superfund (see below).

Case Study: How Environmental Groups Manage Their Own Lands. Some of the most visible environmental disputes arise over what is to be done with *someone else's* land. Environmental groups have filed thousands of lawsuits against the federal government and private property owners. It is one thing to tell others how to manage their property. Decisions are often quite different when environmental groups manage their own property.¹²⁸

"In making decisions about their own land, the behavior of environmental groups is quite different and far more responsible."

- Ten miles south of Intercoastal City, Louisiana, lies the Rainey Wildlife Sanctuary, a 26,800 acre marshland owned by the Audubon Society.
- The sanctuary is a home for deer, armadillo, muskrat, otter, mink and more than 50,000 snow geese.
- It also is the site of a number of oil and gas wells and provides grazing land for private cattle herds.

What are oil and gas wells and grazing cattle doing in a wildlife sanctuary? The Audubon Society has been vocal and critical of oil exploration and cattle grazing on lands owned by the federal government. In making decisions about its own property, however, Audubon's perspective is quite different and far more responsible. The managers of Rainey found that the timing, placement, operation and structure of oil exploration could be carefully planned in conjunction with the seasonal requirements of wildlife, and adverse environmental effects could be avoided. They also found that carefully controlled cattle grazing actually improves wildlife habitat.

Under the Audubon plan, everybody wins. The birds and wildlife keep their habitat, the public gets its oil and beef, and the Audubon Society receives funds to buy additional wildlife preserves.

This example is not unique. The Bernard N. Baker Sanctuary (run by the Michigan Audubon Society) was the nation's first sandhill crane sanctuary — created at a time when the cranes were in serious decline. Today, the society receives substantial royalty checks from oil and gas leases — which were carefully negotiated to insure that the crane's nesting grounds are not disturbed.¹²⁹

2. Environmental Bureaucracies Really Are Bureaucracies.

Reactionary environmentalists have a schizophrenic attitude toward government. On the one hand, they consider government bureaucracies a great evil and a threat to the environment. On the other hand, in political debates they almost always favor transferring more power to government. Progressive environmentalists, by contrast, know that environmental bureaucracies behave like other bureaucracies.

Case Study: Government Mismanagement of our Natural Resources. The United States is generally thought of as a country devoted to the principle of private property. Yet about 42 percent of all U.S. land is owned by government — 33 percent by the federal government and 9 percent by state and local governments.

“The federal government has been a poor manager, often adopting policies that have led to environmental destruction.”

Among the lands owned by the federal government are treasured resources — rare and beautiful tracts that are home for countless species of foliage and wildlife and contain some of the most ecologically interesting wonders on earth. Yet mounting evidence suggests that the federal government has been a poor manager, often engaging in policies that have led to environmental destruction. For example:¹³⁰

- Because of Park Service policies, the white-tailed deer, mountain lion, lynx, bobcat, wolverine and fisher all have vanished from Yellowstone National Park, and the Rocky Mountain gray wolf is now extinct.
- The Park Service also is responsible for a serious decline in the numbers of black bears, grizzlies, bighorn sheep, mule deer and beaver in Yellowstone. (See the case study below.)

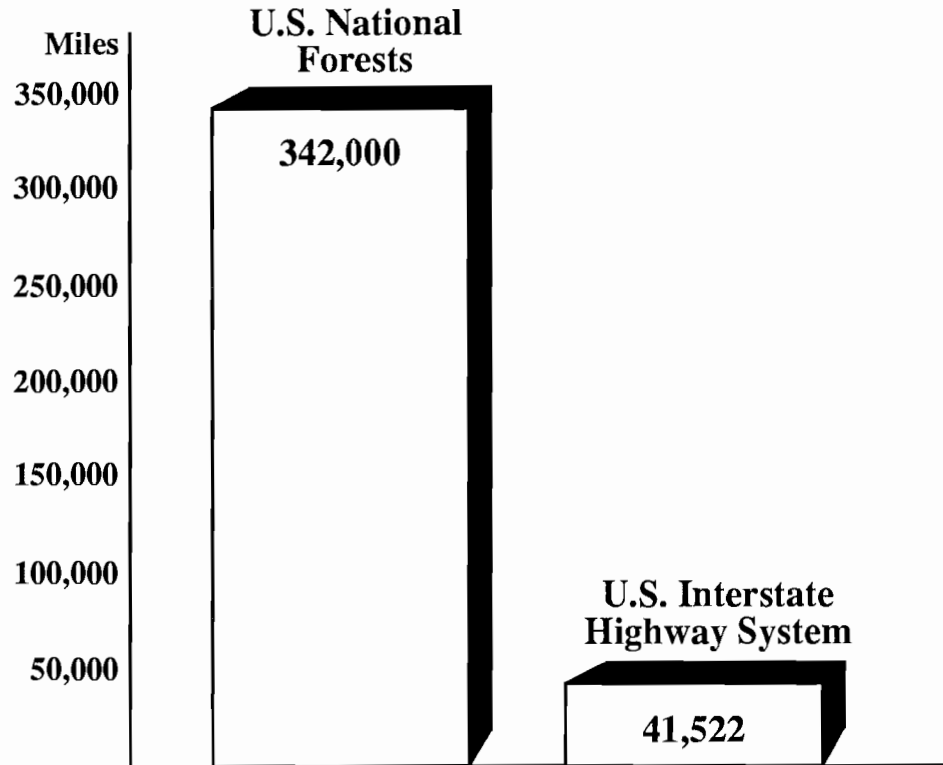
The record of the U.S. Forest Service is probably worse than that of the National Park Service.

- About 342,000 miles of roads have been built in our national forests — more than eight times the total mileage of the U.S. Interstate Highway System.¹³¹ [See Figure VI.]
- These roads, primarily designed to facilitate logging, extend into the ecologically fragile backcountry of the Rocky Mountains and Alaska, where they are causing massive soil erosion, damaging trout and salmon fisheries and causing other environmental harm.¹³²
- In many cases, the costs of these logging activities far exceed any commercial benefit from the timber acquired; so this environmental destruction would not have occurred in the absence of government subsidies.¹³³

“At eight times the length of the U.S. Interstate Highway System, Forest Service roads subsidize the logging of trees in the ecologically fragile backcountry of the Rocky Mountains and Alaska.”

FIGURE VI

Miles of Roads



Source: National Center for Policy Analysis

Taxpayers also have been subsidizing environmental destruction by other federal agencies responsible for environmental stewardship:

- Bureau of Reclamation projects have eliminated one national wildlife refuge (see the case study below) and others are threatened by water shortage and contamination.¹³⁴
- Because of the Bureau of Land Management, more than three million acres of wildlife habitat were cleared with huge chains (600-foot anchor chains weighing 100 pounds to the link drawn across the landscape by 200,000-pound D-8 crawler tractors) and replaced with fields of crested wheatgrass for domestic livestock.¹³⁵

Space does not permit a full discussion of all of the ways in which federal bureaucracies cause environmental harm. However, a host of other rules, regulations and policies buried within the labyrinth of the huge federal

bureaucracy also encourage environmental destruction in sometimes subtle, and sometimes not so subtle, ways. For example:¹³⁶

“600-foot anchor chains, at 100 pounds to the link, were used to destroy three million acres of wildlife habitat.”

- Special provisions in the tax code, in addition to low-interest Small Business Administration (SBA) loans, have subsidized uneconomic development on the periphery of ecologically fragile areas, including Yellowstone National Park.
- Conservation measures intended to reduce soil erosion very often have fostered farming practices that cause increased erosion.
- Price supports for agricultural products have encouraged uneconomical farm development and led to the draining of marshes that formerly provided important habitats for waterfowl.
- Federal subsidies for flood and hurricane insurance, grants from public utility and highway funds, and projects sponsored by the Army Corps of Engineers all have contributed to destruction in the Barrier Islands along the Atlantic and Gulf Coast regions.
- The federal government’s Animal Damage Control Program still employs 700 trappers whose job it is to kill bears, mountain lions, bobcats, lynxes, coyotes and wolves in order to protect domestic livestock.

Case Study: The Not-So-Superfund. In response to the Love Canal crisis, Congress passed the Superfund bill in 1980 to establish an emergency fund for cleanup of the nation’s hazardous waste sites.¹³⁷ Yet Superfund appears to have benefitted trial lawyers and politicians a lot more than the public:¹³⁸

- After seven years of operation, Superfund had paid for cleanup efforts at only about a dozen hazardous waste sites, most of which were still leaking toxic waste into the ground water.
- Of the first \$1 billion Superfund spent, more than half went toward litigation, and the situation has not improved despite billions more being spent.
- Every state was entitled to at least one hazardous waste site worthy of federal cleanup, enabling every Senator to claim credit for at least one cleanup effort.

- The Environmental Protection Agency (EPA) also was originally instructed to find at least 400 waste sites, roughly matching the number of congressional districts.

Has Superfund made us safer? Few now think so. Superfund's primary method of cleanup has been to transfer hazardous waste from a waste site to a disposal site at which the waste is stored for a period of time. Often, this system has simply spread the waste problem. For example, the Government Accounting Office determined that most Superfund disposal sites are leaking themselves.¹³⁹

"Superfund transfers hazardous waste from one waste site to another, where it often starts leaking after a period of time."

Nor is it clear how anyone could find out if Superfund has made us safer. Except for Love Canal, identified before the creation of Superfund, not a single Superfund site has been analyzed to determine the actual health risks for area residents. In fact, there is only one site for which the government has a complete list of people exposed to the hazardous wastes.¹⁴⁰

Perhaps the worst damage done by Superfund is that it has discouraged private sector solutions to the problem of hazardous waste disposal, especially voluntary cleanup efforts. Prior to Superfund and other environmental legislation, firms sufficiently solvent to be accountable for their torts generally did a responsible and competent job. In the case of Love Canal, for example, the protection built in by Hooker (presumably to avoid liability for potential damages from leaks) was judged decades later to be sufficient to meet even the tough EPA standards of the 1980s.¹⁴¹

3. Wealthier Is Healthier and Better for the Environment.

A common attitude among reactionary environmentalists is that in formulating health, safety and environmental regulations we should ignore the economic costs of those regulations. As Laurie Mott of the Natural Resources Defense Council put it, there is "no room for consideration of the benefits of pesticides."¹⁴² Yet from the point of view of health and safety, it's hard to imagine worse advice. As it turns out, higher incomes for countries and for individuals contribute more to good health and life expectancy than all government health and safety regulations combined. In general, the higher our income, the more options we have — to change our lifestyle, regulate our diet and select our risks.¹⁴³

Case Study: Life Expectancy and Economic Growth. The higher our income, the more likely we are to fly rather than drive, to drive larger and therefore safer cars, to pay for safety equipment and safety-enhancing mainte-

"Higher incomes contribute more to good health and life expectancy than all government health and safety regulations combined."

nance on our automobiles, to maintain working smoke alarms in our homes, etc. Higher incomes open the door to literally thousands of opportunities to improve our health and safety.

Table I presents life expectancy data from countries around the world. As the table shows, people in more developed countries have considerably longer life expectancies than people at lower levels of economic development. What is true of whole societies is also true of the individuals within them. For example:¹⁴⁴

- In England, adult males in the highest socioeconomic class earn more than twice as much as individuals in the lowest socioeconomic class.
- Death from cancer among males in the highest socioeconomic class is 25 percent below the national average and death from respiratory disease is 63 percent below.
- In contrast, death from cancer and respiratory disease is 31 percent and 87 percent above the national average, respectively, among males in the lowest socioeconomic class.

Similar evidence exists for the United States. One study of mortality and income for U. S. counties found that a 20 percent increase in income reduces mortality by 1.0 percent.¹⁴⁵ Based on this study, Peter Huber calculated that increasing the income of a 45-year-old man working in manufactur-

"Economic growth and life expectancy go hand in hand."

TABLE I

Life Expectancy and Economic Development: International Evidence

Level of Economic Development (Average Energy Consumption) ¹	Average Life Span (Years)		
	1950	1960	1970
10	45	52	56
100	48	53	57
1,000	64	66	65
10,000	67	71	72

¹Measured as kilograms of coal (or the energy equivalent) consumed per person per year.

Source: Aaron Wildavsky, *Searching for Safety* (New Brunswick: Transactions Books, 1988), Table I, p. 62.

ing by 15 percent would do more to extend his life expectancy than eliminating every single hazard from his workplace.¹⁴⁶

Case Study: Government Regulation of Health and Safety. Government regulation in general, and health and safety regulation in particular, may have done far more harm than good when measured solely in terms of effects on health. For example:¹⁴⁷

“By reducing productivity and workers' incomes, government regulators may have done more harm than good in the area of health and safety.”

- Between 1959 and 1969, productivity in U. S. manufacturing increased by almost one percent annually.
- Between 1973 and 1978, however, manufacturing productivity fell by more than one-half of one percent annually.

Studies indicate that a significant portion of this drop was caused by regulations imposed by the Occupational Safety and Health Administration (OSHA) and the EPA. In particular:¹⁴⁸

- Thirty-one percent of the overall drop in manufacturing productivity was due to regulatory burdens created during the 1970s by OSHA and the EPA.
- Nineteen percent of the drop in productivity growth was due to OSHA regulations and 12 percent to regulation by the EPA.

Moreover, the productivity drop between 1973 and 1978 did not affect all industries equally. Productivity fell by more than two percent per year in highly regulated industries, yet rose during the same period in less regulated ones.

“Are we getting our money's worth for the \$115 billion we spend each year to clean up the environment?”

Increases in workers' incomes are roughly equal to increases in productivity, thus the damage to health and safety OSHA and the EPA have caused by reducing income growth may have more than offset any health improvements these agencies have made through regulation.¹⁴⁹

4. Money Matters.

According to the Environmental Protection Agency, the United States spends \$115 billion per year to clean up the environment. This equals 2.3 percent of our GNP, 40 percent of the defense budget and almost three times the amount spent on the environment by the entire European Community.¹⁵⁰

Are we getting our money's worth? Progressive environmentalists recognize that there is a limit to society's willingness to spend money to achieve environmental goals. As a result, progressives support spending in ways that assure the "biggest bang for the buck."

Case Study: The War Against Cancer.¹⁵¹ About one in every three Americans will get cancer. About one in five will die from it. What should be done? An executive of the Environmental Protection Agency (EPA) says that the most effective way to combat cancer would be to give the entire EPA budget to the American Cancer Society.¹⁵²

But that's not what the bureaucrats are doing. Despite the fact that industrial products and food additives cause less than 3 percent of all cancers,¹⁵³ the federal government is imposing billions of dollars of costs on the American public in its efforts to prevent exposure to trace amounts of chemicals in our environment. The most common government standard is that a chemical should be outlawed if one person out of one million exposed over a lifetime could theoretically get cancer from it. Even though 300,000 people out of one million will get cancer anyway, regulations cost the public billions to prevent the theoretical death of one more.

Typical EPA methods for evaluating the public health risks from air pollution greatly overstate those risks. For example, the EPA calculates potential risks from exposure to an air pollutant by testing the chemical for toxicity in laboratory animals:

- The chemical is administered to rats and mice in massive daily doses just below the amount that would kill them immediately.
- At these high levels of exposure, one out of every two chemicals ever tested (both natural and man-made) eventually causes cancer in at least one species of rodent.
- The EPA then extrapolates from rodents to humans and estimates the human risk of cancer from exposure to the same chemical.

Scientists are increasingly skeptical about the value of extrapolating from these rodent experiments the risk to humans from ordinary exposure. Many are also skeptical about what the EPA does next:

"Chemicals are given to rats and mice in massive doses just below the amount that would kill them immediately."

"One in every two chemicals tested in rodents has produced cancer when administered at extremely high doses."

"The best way to combat cancer: give the entire EPA budget to the American Cancer Society."

- To calculate the "risk" to human populations, the EPA postulates an imaginary "Most Exposed Individual" (MEI) who lives on the property line of the emissions source and breathes the highest level of emissions from that source for 70 years, 24 hours each day.
- The EPA then assumes that everyone is an MEI.¹⁵⁴
- Even with these pessimistic assumptions, the EPA estimates that only 1,700 to 2,700 cancers are caused each year by exposure to approximately 90 potentially hazardous air pollutants.
- While that hypothetical number may seem large, it is a small fraction of the almost one million cancer cases occurring each year in America.¹⁵⁵

Even if the EPA's risk assessments were correct, the cost of preventing cancer through EPA regulations is extremely high. Some estimate that the air toxics section of the amended Clean Air Act will cost from \$20 billion to \$30 billion — about 10 to 15 times the entire budget of the National Cancer Institute. But because the regulations target only the largest polluters, the maximum reduction in cancer cases is 350 to 500 per year. That represents a cost of between \$40 million and \$86 million per cancer avoided.¹⁵⁶

The EPA's extreme risk models are notoriously faulty, however. A new study of the largest concentration of industrial coke ovens in the country (Allegheny County, PA) concludes that the EPA's estimate of cancer caused by coke emissions is exaggerated by a multiple of 100:¹⁵⁷

- By the EPA's own calculations, its regulations on coke emissions cost \$6.8 million per cancer prevented.
- Based on more realistic calculations, the cost is \$682 million to prevent a single instance of cancer.

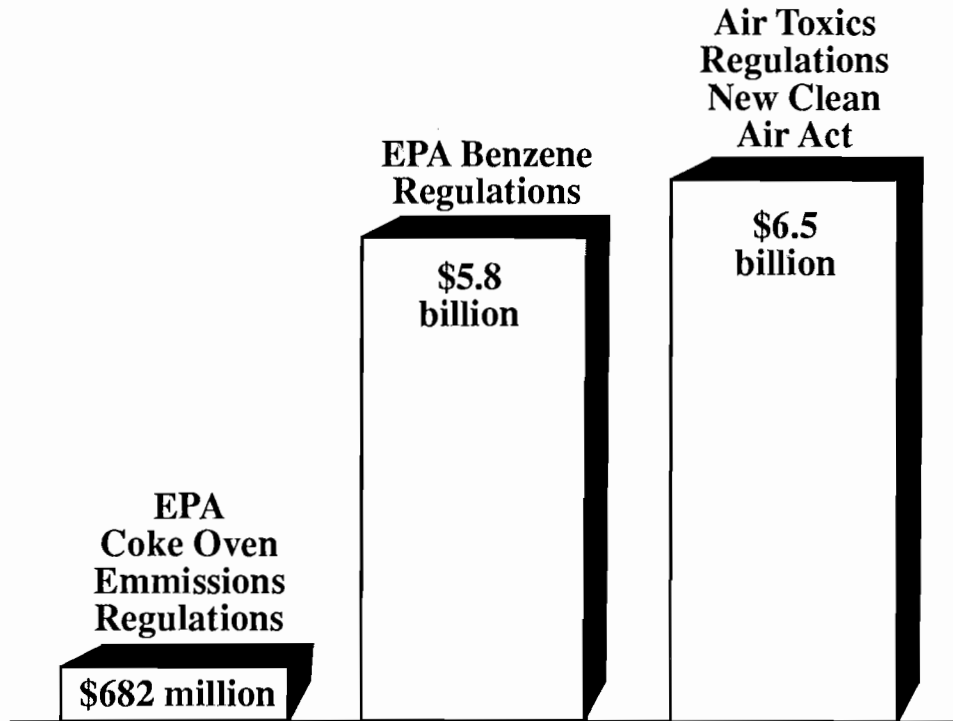
The EPA's cost-is-no-object approach is also reflected in its new benzene regulations, which impose a cost of \$200 million a year to prevent an EPA-estimated 3.4 cases of cancer:¹⁵⁸

- By the EPA's own calculations, its new benzene regulations will cost \$59 million to prevent a single instance of cancer.
- By more realistic calculations, the cost of each cancer prevented will be \$5.8 billion.

FIGURE VII

The Cost of Preventing a Single Cancer

"Although cancer researchers need funds, we're spending billions to avoid a single cancer death in the workplace."



Applying this more realistic method to all air toxics, it appears that the Clean Air Act's new air toxic regulations may prevent three to five cancers per year rather than 350 to 500. The cost per cancer prevented will be between \$4 and \$9 billion per year. [See Figure VII.]

The National Cancer Institute's goal is to reduce the nation's 470,000 annual cancer deaths by one-half by the year 2000. Yet the institute does not even mention reducing carcinogenic chemicals in the environment as one of its objectives. Maximizing gains from the use of resources is not necessarily a goal of Congress however.

Case Study: Government Efforts to Reduce Smog. Perhaps the greatest "success story" under the old Clean Air Act is that automobile tail pipe emissions of carbon monoxide and hydrocarbons are down 96 percent, and emissions of nitrogen oxides have decreased about 76 percent. This has cost consumers dearly. But the "easy" gains, as expensive as they were, have all been made. Future reductions in automobile emissions, which would be even more expensive, might not produce any benefits.

"Ten percent of the cars on the road cause 50 percent of auto air pollution."

All new cars and about 75 percent of the oldest cars on the road currently meet the EPA's tail pipe emission standards. The older cars that don't meet these standards are causing most of the problems. In fact, only 10 percent of the cars on the road produce about 50 percent of the pollution. Since more stringent new car standards will not reduce the pollution from this dirtiest segment of the U.S. car fleet, the new Clean Air Act calls for a mandatory switch to "clean" fuels in nonattainment areas. Clean fuels including methanol, ethanol and natural gas are so called because they produce fewer major pollutants when burned than does gasoline. However, each fuel has its own drawbacks, such as limited supply, difficult refueling processes or extreme toxicity to humans. For example, the most highly favored gasoline substitute, methanol, is both dangerous and expensive.¹⁵⁹

"So-called 'clean fuels' are often more dangerous and more expensive."

- Methanol emits 10 times more formaldehyde (a potential carcinogen) than gasoline and is 25 times as toxic to humans.
- By one estimate, the widespread use of methanol would increase annual health care expenditures by \$50 to \$100 million.
- The use of methanol would virtually double the price of motor fuel per gallon at the pump.

Incidentally, methanol appears to be the cheapest alternative to gasoline overall, and no large sources of *any* alternative fuel currently are available to satisfy transportation needs.

Case Study: A Better Way to Reduce Smog.¹⁶⁰ Millions of dollars are already being spent in Arizona, Colorado, Nevada and New Mexico on the mandated use of oxygenated fuels in vehicles as a carbon-monoxide control measure. Oxygenated fuels cost more, decrease gas mileage and damage vehicle components. Data from the EPA show that simply tuning up the small minority of dirty cars is twice as effective — and much cheaper and simpler:

- Of 84 vehicles studied, 80 emitted a total of 397 pounds of carbon monoxide, while the dirtiest four emitted 338 pounds.
- When the entire fleet was put on oxygenated fuel, the total emissions reduction was 203 pounds, with the dirty cars contributing 107 pounds of the improvement.
- If the dirty four were tuned to emit the average of the rest of the fleet, they would emit a total of 20 pounds—a 318-pound reduction.

"Simply tuning up old cars has much more environmental impact for much less money than switching all cars to 'clean fuels'."

Similar findings were produced by a Colorado Department of Health study:

- Using 10 percent ethanol fuels reduced the fleet emissions of 10 vehicles from 434 pounds of carbon monoxide to 335 pounds.
- Tuning up only the two dirtiest cars and using normal fuel reduced fleet emissions to 294 pounds.

A team of researchers led by Donald Stedman, a chemistry professor at the University of Denver, has developed a device that can measure the carbon monoxide emissions of an automobile as it passes a sensor. Using the device would enable municipalities to detect precisely which cars pollute and require corrective action. A program based on remote sensing and tune-ups of the worst polluters would cost about \$40 per ton of carbon monoxide removed—versus an estimated \$500 per ton with mandated oxygenated-fuel programs.

5. Big Risks Matter More than Small Risks.

At a workshop sponsored by the Environmental Defense Fund, the Sierra Club and the Natural Resources Defense Council, Tom Hayden (former husband of Jane Fonda) said that he hoped California would “lead other states down the path that will ultimately lead to legislation that will eliminate all carcinogens and toxic substances that the American people are subjected to.”¹⁶¹ Progressive environmentalists know that if Hayden’s goal were achieved, people would die of starvation. As a result, the progressives favor more sensible goals.

Case Study: Cancer Risks. Based on experiments in which chemicals are tested at near toxic doses in rodents, carcinogens are everywhere. Without any help from man, they are present in apple, banana, broccoli, Brussels sprouts, cabbage, cantaloupe, carrot, cauliflower, celery, cherry, coffee (brewed), comfrey tea, eggplant, grapefruit juice, grape, honey, honeydew melon, kale, lettuce, mango, mushroom, mustard (brown), orange juice, parsnip, peach, pear, pineapple, plum, potato, radish, raspberry, strawberry, and turnip.¹⁶²

In fact, the amount of man-made (rodent) carcinogens in a typical diet is trivial when compared to the natural (rodent) carcinogens to which we are routinely exposed.

- There are more known carcinogens consumed by drinking a cup of coffee than the amount of potentially carcinogenic pesticide residues the average person eats in a year.¹⁶³

“The carcinogens from all pesticides consumed in a year is less than that from the natural carcinogens in one cup of coffee.”

“Ironically, pesticide regulations could actually cause cancer rates to increase.”

- The amount of carcinogens in the browned and burned foods we eat in a day (carcinogens which are produced by cooking) is several hundred times greater than the amount we inhale when we breathe severely polluted air.¹⁶⁴

At the microscopic level, nature is a virtual carcinogen factory. The plants in our diet contain tens of thousands of natural pesticides to kill off fungi, insects and predators. About 99.99 percent of the pesticides we eat are natural (10,000 times the level of synthetic pesticide residues) and half (27 of 52) of the natural pesticides tested in rodents have proved to be carcinogenic at very high dosage levels.

Yet, although fruits and vegetables contain natural carcinogens, eating them is necessary in order to combat cancer from other sources. Vitamin C and other antioxidants, as well as folic acid and the other micronutrients found in fruits and vegetables, are required as defenses against the carcinogenic oxidants that are generated as part of the metabolism in all cells. Diets that contain too few fruits and vegetables and too much fat create major health risks. Ironically, any regulation that increases the price of fruits and vegetables (such as pesticide regulations) are likely to decrease their consumption and increase cancer rates!¹⁶⁵

Human beings also produce carcinogens through everyday activities. Baking bread, browning meat, cooking bacon and eggs — all of these activities cause chemical reactions that produce carcinogens. Allowing a sliced apple to become slightly brown involves an oxidation reaction that produces carcinogenic peroxides. Carcinogens also occur naturally inside the human body. For example:¹⁶⁶

- Isotopes of potassium, produced naturally in the body, expose us to natural radiation.
- Our normal metabolism produces byproducts (oxidants, such as hydrogen peroxide and other reactive forms of oxygen) which are the same carcinogens produced by radiation.
- Many common metal salts naturally present in our bodies are rodent carcinogens, including chromium, selenium and arsenic.

Arsenic is not only carcinogenic, it is a well-known deadly poison in large quantities. Yet in small quantities it is apparently essential to life.

How important is the risk of consuming carcinogens? An estimate of the relative risk from substances that may cause cancer is presented in Table II. This table, taken from a survey article by Bruce Ames and his colleagues, ranks possible cancer risks (based on rodent experiments) with ordinary human exposure levels.¹⁶⁷ In each case, the risk has been normalized for comparison with ordinary tap water, which contains a tiny amount of the carcinogen chloroform.

Note that all of the items listed in Table II, in the quantities indicated, are believed to create a trivial risk for human beings. The items are presented here only to help establish perspective.

Not long ago, it was widely believed that most foods we consumed and most chemical-containing products we used were completely safe. That has changed, in part because scientists can now detect trace elements of chemicals in amounts as small as one part per trillion. Scientists can also test these chemicals on rodents in large doses. For example, in one test on a decaffeinating agent for coffee, rodents were given the equivalent of 12 million cups a day.¹⁶⁸

Of all known chemicals, only a tiny handful have been tested. Of the chemicals tested so far (both natural and synthetic), about half have proved to be carcinogenic at the high dosage level used. Moreover, there is every reason to believe that further tests will indict literally hundreds of thousands of additional synthetic and natural chemicals as rodent carcinogens.

What do these results mean? That's not clear. For example, about one-quarter of the tests that produced cancer in mice failed to do so in rats, or vice versa. Since rats and mice are biologically similar and both are dissimilar from humans, extrapolating to statements about risks for people is a considerable leap. More importantly, it is not clear what we can infer from high-dosage rodent experiments about the risk faced by humans exposed to low dosages.¹⁶⁹ Many scientists think the high-dose tests mainly show effects which are unique to high doses.

In general, the risks of cancer from man-made chemicals are far smaller than one might gather from the impassioned rhetoric of some reactionary environmentalists and sensationalist news reports. A fundamental principle of toxicology is that "the dose makes the poison." Substances such as vitamins and minerals which are essential to human life in small doses are deadly in large doses. Also, what is a deadly poison to one species may be quite safe for another, even in the same dosage relative to body size. Rodents, for example, vary in their sensitivity to certain toxins by a factor of many thousands.

"The amount of carcinogens in browned and burned food (produced by cooking) are several hundred times greater than the amount we inhale when we breathe severely polluted air."

TABLE II

Potential Risk of Getting Cancer

(Relative to Drinking Tap Water)

Water

<u>Relative Risk</u> ¹	<u>Source/Daily Human Exposure</u>	<u>Carcinogen</u>
1.0	Tap Water — one liter	Chloroform
4.0	Well Water — one liter (worst well in Silicon Valley)	Trichloroethylene

"These cancer risks (based on rodent studies) are ranked relative to the risk of drinking tap water."

Risks Created by Mother Nature

<u>Relative Risk</u>	<u>Source/Daily Human Exposure</u>	<u>Carcinogen</u>
30.0	Peanut butter — one sandwich	Aflatoxin
100.0	Mushroom — one, raw	Hydrazines, etc.
2,800.0	Beer — 12 oz.	Ethyl alcohol
4,700.0	Wine — one glass	Ethyl alcohol
0.3	Coffee — one cup	Hydrogen peroxide
30.0	Comfrey herbal tea — one cup	Symphytine
400.0	Bread — two slices	Formaldehyde
2,700.0	Cola — one	Formaldehyde
90.0	Shrimp — 100 g.	Formaldehyde
9.0	Cooked bacon — 100 g.	Dimethylnitrosamine, Diethylnitrosamine
60.0	Cooked fish or squid, broiled in a gas oven — 54 g.	Dimethylnitrosamine
70.0	Brown mustard — 5 g.	Allyl isothiocyanate
100.0	Basil — 1 g of dried leaf	Estragole
20.0	All cooked food — average U. S. diet	Heterocyclic amines
200.0	Natural root beer — 12 oz. (now banned)	Safrole

"In all cases, the risks are believed to be trivial."

Food Additives and Pesticides

<u>Relative Risk</u>	<u>Source/Daily Human Exposure</u>	<u>Carcinogen</u>
60.0	Diet Cola — 12 oz.	Saccharin
0.4	Bread and grain products — average U.S. diet	Ethylene dibromide
0.5	Other food with pesticides — average U.S. diet	PCBs, DDE/DDT

Risks Around the Home

<u>Relative Risks</u>	<u>Source/Daily Human Exposure</u>	<u>Carcinogen</u>
604.0	Breathing air in a conventional home — 14 hours	Formaldehyde, Benzene
2,100.0	Breathing air in a mobile home — 14 hours	Formaldehyde
8.0	Swimming pool — one hour (for a child)	Chloroform

"The risk from natural carcinogens in a cola is 45 times greater than the risk from saccharin in the same drink."

Risks At Work

<u>Relative Risks</u>	<u>Source/Daily Human Exposure</u>	<u>Carcinogen</u>
5,800.0	Breathing air at work — U. S. average	Formaldehyde

Commonly Used Drugs

<u>Relative Risks</u>	<u>Source/Daily Human Exposure</u>	<u>Carcinogen</u>
300.0	Pain Relief pill (Phenacetin) — 300 mg.	Phenacetin

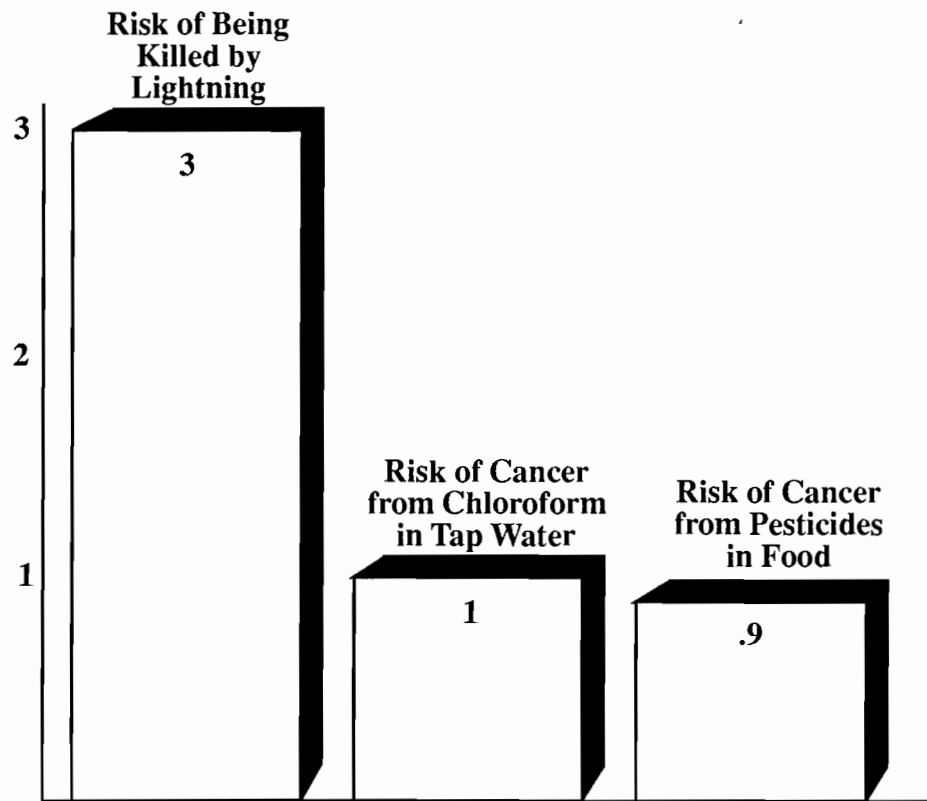
Note: The items listed above are for illustrative purposes only, and are not intended as a guide for safe behavior. Relative risk is based on experiments subjecting rodents to very high dosages. The risk of these items to humans, in the quantities given above, is thought to be trivial.

Source: Bruce N. Ames, Renae Magaw, Lois Swirsky Gold, "Ranking Possible Carcinogenic Hazards," *Science*, Vol. 236, April 17, 1987, pp. 271-236.

¹The underlying measure of risk used here is a HERP value: Human Exposure dose divided by Rodent Potency dose. The measure of rodent potency is the milligrams of substance per kilogram of rodent body weight necessary to produce cancer in one-half the rodents, given daily exposure over the rodents' lifetime. Human exposure is measured by the daily consumption indicated in the table per kilogram of human body weight. In the table above, the HERP values have been normalized with respect to the HERP value for water. A value of 100,000 means that the human exposure dose per kilogram of weight is exactly equal to the amount of the substance per kilogram of weight necessary to produce cancer in one-half of the rodents.

FIGURE VIII
Relative Risks

"The risk of cancer from pesticides is less than the risk of cancer from ordinary tap water — which is one-third the risk of being killed by lightning."



Source: National Center for Policy Analysis

Case Study. Putting Cancer Risks in Perspective. How important is the risk of consuming chemicals, which are carcinogenic for rodents at very high doses, compared to other risks we face? Table III compares the relative risk of a number of everyday activities, indicating for each how it increases the probability of death by one in one million — a level often used by federal and state governments in setting required levels of safety. As the table shows:

- The risk of getting cancer by drinking tap water for a year is less than the risk of cancer from increased exposure to cosmic radiation during two round-trip airline flights between Los Angeles and New York City.
- The risk of getting cancer from the saccharin in 30 diet colas is equivalent to the risk of cancer from living two months in Denver.
- Virtually all of the dietary cancer risks are trivial compared to the risk of driving to work each day.

TABLE III

Risks Which Increase the Chance of Death By One in One Million

<u>Activity</u>	<u>Cause of Death</u>
Smoking 1.4 cigarettes	Cancer, heart disease
Drinking 1/2 liter of wine	Cirrhosis of the liver
Living 2 days in New York or Boston	Air pollution
Living 2 months in Denver on vacation from N.Y.	Cancer caused by cosmic radiation
Living 2 months in average stone or brick building	Cancer caused by natural radioactivity
Traveling 6 minutes by canoe	Accident
Traveling 10 miles by bicycle	Accident
Traveling 300 miles by car	Accident
Flying 1,000 miles by jet	Accident
Flying 8,000 miles by jet	Cancer caused by cosmic radiation
One chest x-ray	Cancer caused by radiation
Eating 40 tablespoons of peanut butter	Liver cancer caused by aflatoxin B
Drinking Miami water for 1 year	Cancer caused by chloroform
Drinking 30 12-oz. cans of diet soda	Cancer caused by saccharin
Eating 100 charcoal-broiled steaks	Cancer from benzopyrene

Source: Richard Wilson, "Analyzing the Daily Risks of Life," *Technology Review*, February 1979, p. 45.

"Virtually all the cancer risks in our diet are trivial compared to the risk of driving to work each day."

Table IV presents a number of risks from occupational, sporting and other activities from a different perspective. Combining it with Table II, note that many voluntary human activities such as hunting, boating and farming are hundreds of times more dangerous than consuming pesticides.

TABLE IV

Annual Fatality Rates Per 100,000 Persons at Risk

<u>Activity/Event</u>	<u>Death Rate</u>
Motorcycling	2,000
Aerial acrobatics (planes)	500
Smoking (all causes)	300
Sport parachuting	200
Smoking (cancer)	120
Fire fighting	80
Hang gliding	80
Coal mining	63
Farming	63
Motor vehicles	24
Police work (nonclerical)	22
Boating	5
Rodeo performer	3
Hunting	3
Fires	2.8
1 diet drink per day (saccharin)	1.0
4 tbs. peanut butter per day (aflatoxin)	0.8
Floods	0.06
Lightning	0.05
Meteorite	0.000006

Source: Adapted from E. L. Crouch and R. Wilson, *Risk/Benefit Analysis* (Cambridge: Balinger, 1982). Reported in Paul Slovic, "Informing and Educating the Public About Risk," *Risk Analysis*, Vol. 6, No. 4, 1986, Table 1, p. 407.

"The cancer risks in our diet are trivial compared to everyday risks from voluntarily chosen activities."

The scientific evidence cited above is not secret. It is available to all, in the scientific literature. Yet federal and state legislators often give little weight to these facts. Instead, the outrage of citizens, uninformed about toxicology and swayed by articulate rhetoric condemning each potential danger — usually without regard to the problems of alternative courses of action — has led from the Love Canal tragedy to the Superfund fiasco, and from largely phantom carcinogenic chemical threats in California to the passage of Proposition 65.

Case Study: California's Proposition 65. Drafted by the Environmental Defense Fund and the Sierra Club, introduced by Tom Hayden, and backed by his former wife, Jane Fonda, and other Hollywood celebrities, Proposition 65 is the most sweeping chemical regulatory law ever enacted by a state government. Among other provisions, Proposition 65 requires warnings for individuals exposed to chemicals "known" to cause cancer or reproductive harm in rodents at very high doses.¹⁷⁰

Those accused of a failure to warn bear the burden of proving that a chemical exposure did not put anyone at significant risk — a burden that is scientifically impossible to meet. What Proposition 65 does is produce a lineup of suspects doomed to remain just that — suspects. Lacking viable ways to prove their innocence, businesses will tend to compound the problem by posting unnecessary warnings. This has already happened in the housing industry, where many builders post warnings on all new houses.

Yet if everything is labeled, especially if all labels contain the same warning, then warning labels lose their value. Warning labels affect behavior only if consumers can distinguish the few, especially dangerous risks from the thousands of minor risks they take every day. (See the accompanying chart.) The worst feature of the California law, however, is the wording of the required warnings. The statement, *This product contains a chemical known to the state of California to cause cancer*, is very different from the statement, *There is one chance in 100,000 that a lifetime of consumption of this product will cause cancer*.

The first statement is the warning Californians see. The second is the standard California currently uses to decide whether a warning is required. The first statement implies certain danger. The second implies a very low-probability risk, based on hypothetical consumption patterns.

If the goal is to convey useful information, a better warning would relate the risk in question to risks associated with everyday activities. In most cases, the risk of consuming a product is lower than the risk of driving to the store to buy it.

Case Study: Why Safety Regulations Often Make Us Less Safe. As regulators respond to the latest media blitz, or to uninformed public rage about a specific chemical, no one should be surprised when the resulting new regulations make the world less safe. Nor is this phenomenon confined to the regulation of pollutants and food additives.

Reactionary
environmentalism:

"The goal is to eliminate all of the carcinogens and toxic substances that the American people are subjected to."

Should Everything Be Labeled?

When the worry is focused on phantom or insignificant risks, it diverts personal attention from risks that can be reduced.¹

Milton Russell
Former Assistant Administrator
Environmental Protection Agency and Pro-
fessor of Economics at University of Tennes-
see

Everyone knows that if you spend all of your time on trivia and don't focus on important problems, it is completely counterproductive. If we devote too much of our attention to traces of pollution and away from important public health concerns . . . we do not improve public health, and the important hazards are lost in the confusion.²

Bruce N. Ames
Chairman of the Department of Biochemistry
University of California at Berkeley

It will be very difficult to convey information to people in a meaningful fashion about low-probability risks. Perhaps the greatest danger from any risk-communication effort is that instead of informing people these programs will serve to unduly alarm them and cause overreaction.³

W. Kip Viscusi
George G. Allen Professor of Economics
Duke University

¹*Insight*, May 23, 1988, p. 14.

²Bruce N. Ames, Testimony before the California Assembly Committee on Water, Parks, and Wildlife, October 1, 1986.

³"Predicting the Effects of Food Cancer Risk Warnings on Consumers," *Food Drug Cosmetic Law Journal*, Vol. 43, 1988, pp. 287-288.

"If every product has a warning label, labels lose their meaning and value."

“To meet the government’s fuel economy standards, auto makers are producing smaller cars — which may lead to as many as 3,900 additional highway deaths each year.”

Out of a concern for the environmental effects of fuel consumption, Congress has mandated Corporate Average Fuel Economy (CAFE) standards for U. S. automobile manufacturers. Starting in 1989, U. S. automobiles had to average 26.5 miles per gallon. However:¹⁷¹

- In order to comply with CAFE standards, automakers are producing smaller cars, which are less safe for occupants when accidents occur.
- By one estimate, for the 1989 model year alone, the standards may have caused between 2,200 and 3,900 additional annual fatalities.
- Over the next decade, existing CAFE regulations may cause as many as 20,000 additional deaths, and there are Congressional proposals to increase the the current standards by more than 50 percent by the end of the decade.¹⁷²

The regulations of the Food and Drug Administration (FDA) are notorious for systematically depriving Americans of lifesaving drug therapies in the name of safety. In a recent episode:¹⁷³

- The FDA delayed for two years the sale of Streptokinase to treat heart attack victims, despite the drug’s potential to save 11,000 lives per year.
- This foot-dragging by the FDA may have cost as many as 22,000 lives.

In the area of transportation, there has been mounting pressure to re-regulate airlines to improve passenger safety. Yet not only has there been no noticeable increase in fatalities among airline passengers since 1978, greater access to air travel has substantially reduced the use of the automobile and, therefore, motor vehicle accidents:¹⁷⁴

- On the average, because of airline deregulation there are 66,000 fewer automobile accident injuries each year and 1,700 fewer deaths.
- Overall, airline deregulation has saved more lives each year on our highways than the total number of lives lost in domestic airline crashes in the last 12 years.

Safety regulations often make us less safe because politicians want to be seen as “doing something,” and because action is often believed to be better than inaction — even if it turns out that the action was wrong:¹⁷⁵

"In the name of health and safety, government regulations often make us less safe."

- As a result of the Clean Air Act, many local power plants were required to build smokestacks 1,000 feet or more in height in order to disperse the pollutants. Later, the government maintained that this dispersal was contributing to acid rain.
- After banning EDB as a fumigant, the EPA approved the use of methyl bromide phosphine gas as an alternative. Yet phosphine and methyl bromide are more poisonous and have contributed to far more worker accidents than EDB.
- Asbestos is virtually harmless as long as it remains in walls and is not being dispersed as dust that can be inhaled. Yet asbestos removal programs make asbestos dust airborne and often create far more hazardous conditions than if it had been left alone.
- Because of safety fears, the use of whooping cough vaccine has dropped in a number of countries. This has resulted in outbreaks of the disease in Sweden, Britain and Japan — where a whooping cough epidemic killed at least 40 children.
- In the Silicon Valley, the semiconductor industry was required to place storage tanks for solvents underground as a safety measure in the 1960s. Yet this made leaks in tanks more difficult to detect, and solvent residues are now showing up in drinking water.
- In the early 1970s, the Consumer Products Safety Commission (CPSC) required that children's sleepwear be treated with the fire-retardant chemical TRIS. Later it was discovered that TRIS is highly mutagenic and possibly also carcinogenic.

Not all safety regulations make us less safe. But all too frequently regulators forbid one activity and insist on another with no knowledge of the consequences. Small wonder these regulations often do more harm than good. As noted above, regulation in the name of health, safety and environmental protection also has made us less safe in another way: it has lowered workplace productivity and workers' incomes.

6. Competition Is Better than Monopoly.

Among responsible environmentalists there are considerable differences of opinion about how best to manage national forests, parks and other ecologically sensitive areas. People learn from the successes and failures of others. By maintaining a diversity of private land ownership in the United

"The worst thing we could do is turn over control of all our natural resources to the people who manage Yellowstone."

States, we maximize this learning ability and hence, maximize the opportunities for environmental stewardship.

For example, we hope the ecological destruction caused by the mismanagement of Yellowstone National Park has taught valuable lessons to the managers at the Audubon Society, the Nature Conservancy and other private organizations. Diverse ownership and competition for ownership responsibilities is a wise political course. The worst thing we could do is turn over control of all our natural resources to the people who manage Yellowstone.

Case Study: Playing God in Yellowstone. The Greater Yellowstone ecosystem covers almost 20 million acres. Almost 70 percent is owned by the U.S. government and managed by five separate agencies. How is Uncle Sam as a steward? Public debate tends to focus on the "let it burn" policy of the Park Service. But other government policies also deserve scrutiny:

- Yellowstone Park Rangers have killed at least 261 grizzly bears in the last 18 years, and only 200 are alive in the park today.
- Because the Park Service closed the garbage dumps to the bears, they look for food elsewhere — causing a steady rise in the number of humans killed by grizzlies.
- Because the Park Service has allowed the elk and bison populations to grow out of control, their grazing has caused considerable ecological damage, including the virtual disappearance of the beaver.

In his groundbreaking study of Yellowstone, Alston Chase described how the park managers have transformed the area from the pristine wildlife habitat that so impressed Teddy Roosevelt years ago into its current condition. According to Chase:

Over the last seventy years nearly every conceivable mistake that could be made in wildlife management has been made by the Park Service in Yellowstone. Not a year has gone by since it assumed responsibility there when the National Park Service ... did not kill an animal in the name of an environmental ideal. Today its management policies threaten the very capacity of the park to sustain life.¹⁷⁶

"In the last 70 years, not a year has passed without the Park Service killing an animal in the name of an environmental ideal."

In contrast to the management of Yellowstone, there are numerous examples of exemplary land management. But to find them we must turn to the private sector.

Case Study: Private Land Management. Although the federal government owns a lot of land in the West, in other parts of the country land is largely in private hands. For example:

- Although the federal government owns 404 million acres of land outside of Alaska, about 421 million acres of farmland are in private hands.¹⁷⁷
- In the South, about 73 percent of forestland (132 million acres) is owned by private individuals and another 33 million acres by corporations. By contrast, public agencies own only 18 million acres.¹⁷⁸
- In Maine, which contains numerous ecologically sensitive areas, less than seven percent of the land is owned by the federal government.¹⁷⁹

Moreover, even in areas where large tracts of land are federally owned, the wildlife frequently depends on private lands for food. By one estimate, 80 percent of the food supply for wild birds in the form of insects, weed seeds or crop residues is on private land.¹⁸⁰

The private sector, therefore, has long played a crucial role in determining environmental quality throughout the U.S. And as it turns out, the private sector frequently has outperformed government in achieving sensible economic and environmental goals. Frequently, people have discovered that maintaining environmental quality not only is profitable but in some cases is more profitable than any other alternative:

- Many U.S. ranchers and farmers have discovered that maintaining wildlife preserves for hunting or birdwatching is more profitable than cattle ranching or farming.¹⁸¹
- In the Southeast (especially in Georgia, Florida and Alabama), private timber companies have a history of managing hunting preserves — often employing staffs of biologists and wildlife managers to improve the habitats.¹⁸²
- A for-profit company (Sea Lion Caves) in Oregon owns the nation's only mainland breeding area for the once-endangered Steller sea lion and operates it as a tourist facility.¹⁸³
- Several ranchers in Texas have converted their properties into game preserves for rare mammals gathered from around the world.¹⁸⁴

“Several ranchers in Texas have converted their property into game preserves for rare animals.”

- Edison Electric Institute has worked diligently to create artificial nesting platforms for ospreys, peregrins and eagles — partly out of a financial interest in preventing power outages that can occur as a result of the electrocutions of these birds along their power lines in western states.¹⁸⁵
- For decades, Hilton Head Island (one of the largest Barrier Islands between New Jersey and Florida) has served as a model for balancing economic development goals with environmental goals. The private developers discovered that preserving the environment raised property values and was good for business.¹⁸⁶

7. Science Matters.

With few exceptions, reactionary environmentalists have adopted their beliefs and values not because of science but in spite of it. The reactionaries are not averse to using the authority of science when the findings of scientific studies happen to fit. But when their beliefs are at odds with the scientists, they simply ignore science. Progressives know that any intelligent environmental policy must be based on scientific facts. And when progressives take a close look at the facts, they find the reactionaries are often wrong.

Case Study: Acid Rain. One controversial provision of the new Clean Air Act seeks to reduce the amount of acid rain in order to reduce the acidity of our lakes. Its regulations are based on the assumption of a lengthy causal chain: Midwestern utility companies burn coal, which releases sulphur dioxide, which is carried across the continent by wind. The sulphur dioxide accumulates in clouds and is deposited in lakes and streams in places as distant as the Northeast and Canada by “acid rain.”

Fortunately, the theory is mostly wrong. Beginning in 1980, the federal government funded a ten-year, \$500 million study of acid rain, the National Acid Precipitation Assessment Program (NAPAP).¹⁸⁷ It was the most comprehensive study ever conducted on a single environmental issue. Its principal finding: acid rain has very little impact on the acidity of lakes.

- Although all rainfall is naturally acidic, some man-made emissions, primarily oxides of sulphur, can increase the acidity of rain, fog or snow.¹⁸⁸
- Yet there is almost no correlation between acid rain and acid lakes.
- Instead, almost 80 percent of the acidity in lakes is caused by the acidity of nearby topsoil.

“We could neutralize all the acid lakes in the Northeast for a fraction of the cost of the Clean Air Act regulations.”

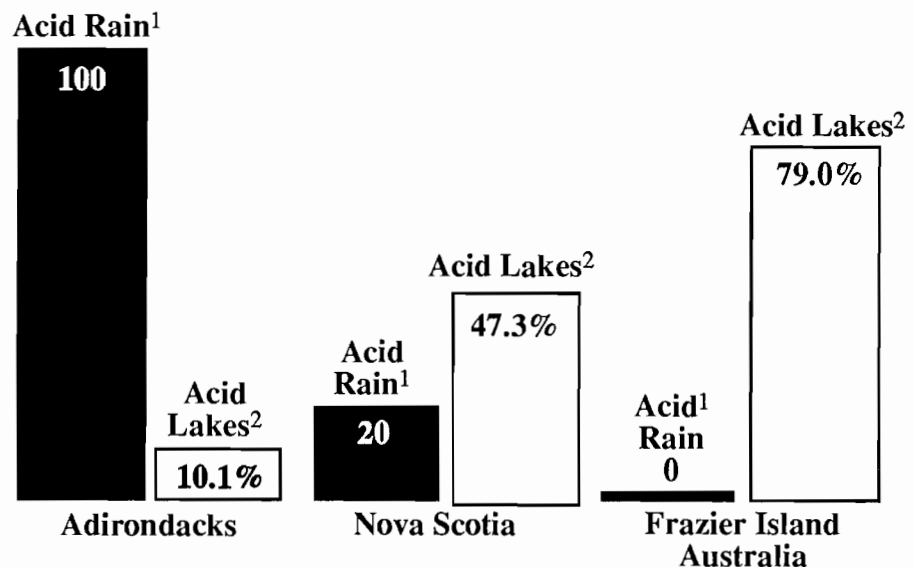
Lakes and streams get more than 90 percent of their water not from rain but from surface runoff, which is filtered through topsoil around the lake. The topsoil can become acidic because of a natural buildup of decayed and decaying vegetation. The myth that acid rain is the chief culprit is disproved by evidence collected in this country and around the world. [See Figure IX.]

- Rain in Florida is only one-sixth as acid as rain in the Adirondacks, yet the concentration of acid in Central Florida lakes is six times higher than in Adirondack lakes.
- Frazier Island in Australia receives no man-made emissions, yet 78 percent of its lakes and 98 percent of its surface water are highly acidic.

A major conclusion of the NAPAP study is that the approach taken under the new Clean Air Act is an expensive way to accomplish very little:

- If the proposals cut sulphur emissions by 50 percent, we would have to wait decades for any observable effect, and the cost would be in excess of \$100 billion.
- Even then, NAPAP estimates that only about 80 lakes would improve.

FIGURE IX
Acid Rain



"A \$500 million government study of acid rain concluded that: there is very little relationship between acid rain and acid lakes."

¹Index: Adirondacks = 100

²Percent of all lakes in the region

By contrast, scientists can reduce the acidity of lakes directly by using crushed limestone. We can neutralize all the acid lakes in the Northeast, whether the acidity is natural or caused by man, by liming at a cost of only \$500,000 per year.¹⁸⁹

Case Study: Global Warming. For years, the most extreme alarmists have warned that a significant increase in average temperatures would cause ecological disaster. Some have suggested that palm trees would grow in Canada, tropical rain forests would become deserts, the ice caps would melt, coastal regions would be flooded, major crop-growing regions of the world would experience recurrent droughts, and hurricanes would become more frequent and destructive. U.S. Senator and presidential candidate Albert Gore, Jr. even compared global warming to the Holocaust.¹⁹⁰ Are these predictions justified?

Many of the climate modelers who made dire predictions about global warming a few years ago have substantially changed their tunes:

“Forecasters who made dire predictions about global warming several years ago have substantially changed their tunes.”

- Whereas in 1988 global warming theorists were predicting a temperature rise (from doubled carbon dioxide in the atmosphere) of between 4.5 and 6.0 degrees Celsius, the most likely projection now is 1.5 degrees; and the respected Max Planck Institute is predicting only 0.7 degrees.¹⁹¹
- Whereas the climate modelers in 1980 were forecasting an increase in sea level of 30 feet, that forecast fell to three to five feet by 1988, and the current worst-case forecast is only 12 inches.¹⁹²
- New evidence shows that the polar ice caps are growing, not melting, and almost all of the warming at the poles is occurring during the polar winters, when no melting can occur.¹⁹³
- New research on hurricanes shows that they are not produced by global warming and, if anything, warmer temperatures make hurricanes less severe.¹⁹⁴
- Most of the warming so far has occurred at night, reducing the number of frosts and increasing the growing season for farmers — 1990, one of the warmest years in recent history, was also a record year for crops.¹⁹⁵

"Satellite data show no global warming over the past decade."

Moreover, as scientists look more closely at temperature data, the evidence of warming is becoming more elusive:

- In the U.S., which has the best climate records in the world, data adjusted for urbanization show no statistically significant temperature increase in the 48 contiguous states over the last century.¹⁹⁶ [See Figure X.]
- Similarly, new urban-adjusted temperature records in Europe and Canada show no evidence of global warming there.¹⁹⁷
- A recent MIT study shows no significant warming in ocean temperatures over the past 120 years.¹⁹⁸
- Satellite measurements of global temperature, which are not distorted by their surroundings, show no warming trend over the past decade.¹⁹⁹ [See Figure XI.]

In the scientific community, there is a debate over global warming. Media coverage tends to assume the debate is between those who say climate will change and those who say it won't. This is misleading. The actual debate is between those who argue that there will be a large and catastrophic increase in global temperatures and those who believe that any climate change will be quite small, generally beneficial and possibly indistinguishable from normal climate variability. Increasingly, scientists are moving toward the latter position, yet most media reports remain wedded to the idea of an apocalypse.

8. Technology Is Not the Problem; It's the Solution.

"Reactionary environmentalists claim we're running out of resources, but the world price of raw materials continues to fall."

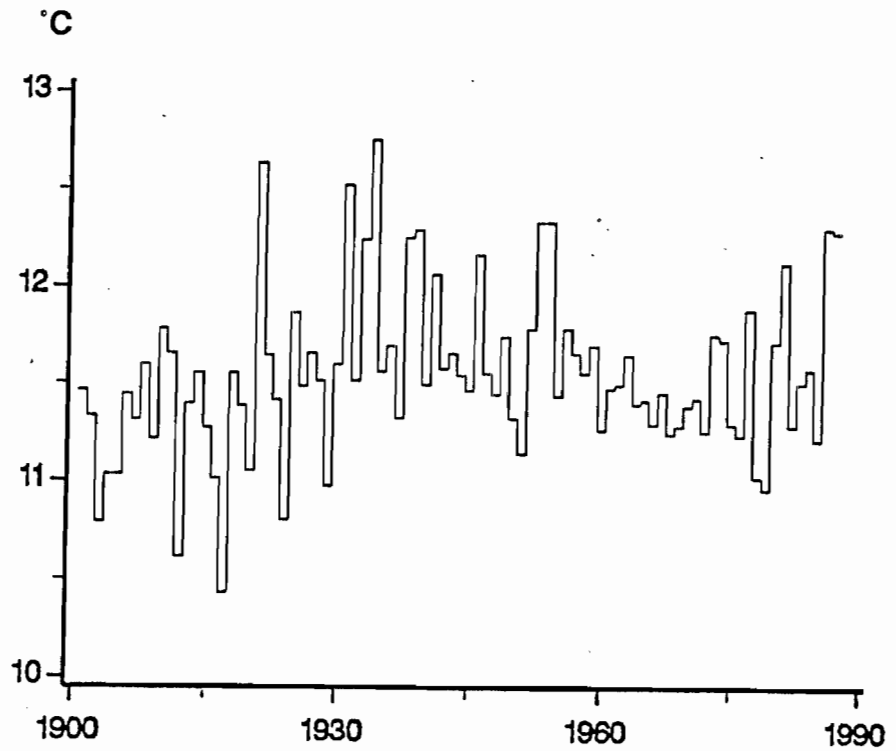
Just as Thomas Malthus predicted in the 19th century that the growth of the human population would outstrip the world's food supply, so reactionary environmentalists have been predicting for decades that we will run out of food and all other natural resources. Malthus and the modern Malthusians are wrong for the same reason — they ignore the role of technology.

Perhaps because of their antitechnology bias, reactionaries are oblivious to the way in which technology makes it possible to use resources without exhausting them. For example, despite 20 years of predictions that the world was running out of oil, international oil prices fell during the 1980s, and the U.S. domestic price of gasoline (in real terms) hit an all-time low.²⁰⁰ The reason is technological innovation which has allowed us to economize on the use of oil. For example, oil consumption over the past decade fell 9.3 percent in the United States and Canada and 15.8 percent in Western Europe and

"U.S. climate records show no global warming over the last century."

FIGURE X

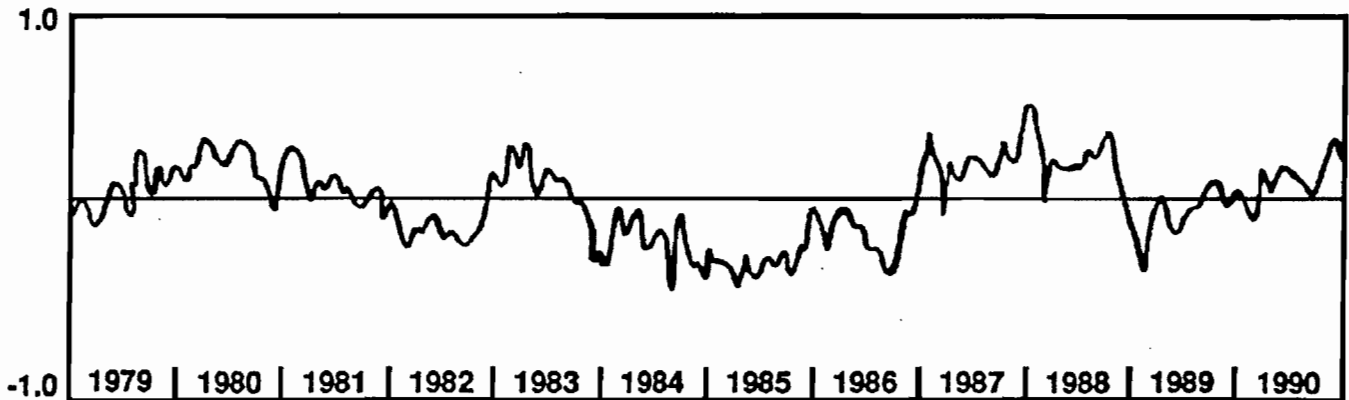
Average Annual Temperature In the United States



Source: "Trends '90: A Compendium of Data on Global Change," from the Carbon Dioxide Information Analysis Center of Oak Ridge National Laboratory, August 1990.

FIGURE XI

Satellite Measurement of Global Temperature



Source: Henry Christopher, *Washington Times*, February 5, 1991.

Japan.²⁰¹ Similarly, despite the fact that there is only a finite amount of copper in the world, copper prices are down, not up. The reason is the development of fiber optics, made of silicone (sand), which can carry thousands of times more messages than copper wire.

The reactionaries not only ignore the role of technology in making the supply of resources almost infinite, they also persistently ignore ways in which technology can mitigate many of the other disasters they keep predicting.

Case Study: Betting the Planet.²⁰² Ecologist Paul R. Ehrlich says population growth is outstripping the earth's resources. Economist Julian L. Simon says that human ingenuity keeps the planet's resources from being finite. In 1980, they put their money where their mouths were and made a bet. Simon offered to let anyone pick any natural resource and any future date, and he bet that the price would decline by that date. If the resource really became scarcer as the world's population grew, he reasoned, then its price should rise over time.

Ehrlich and two associates picked five metals—chrome, copper, nickel, tin and tungsten—then worth a total of \$1,000, and chose a ten-year period. If combined prices of the metals were higher in 1990 than in 1980, Simon agreed to pay the Ehrlich group the difference in cash; if the combined prices were lower, they would pay him the difference. Without ceremony last fall, Ehrlich sent Simon a sheet of calculations and a check for \$576.07.

"If resources are getting scarcer, their price should be rising, not falling."

- Over the ten-year period, each of the five metals had declined in price when adjusted for inflation.
- The drop was so sharp that Simon would have come out slightly ahead even without the adjustment for inflation.

Prices of food and most natural resources have been falling for decades because of entrepreneurship and continuing technological improvements. Despite that fact, Ehrlich, who had predicted that "before 1985 mankind will enter a genuine age of scarcity" including food shortages, now says it will happen sometime in the next century.

Case Study: Using Technology to Prevent Global Warming. A recent report from the Environmental Protection Agency indicates that U.S. greenhouse gas emissions will remain stable for decades.²⁰³ But if further research fails to silence calls for emissions reductions, there are many sensible policies we could adopt.

“All man-made emissions of carbon dioxide since 1850 would equal only 2 percent of the carbon absorbed by the world’s oceans.”

Nuclear generation of electricity emits no pollutants and no carbon dioxide. About 110 nuclear power plants provide about 20 percent of U.S. electricity today. Yet more than 100 additional plants have been cancelled or deferred indefinitely since the early 1970s.²⁰⁴ This was the direct result of an intense antinuclear-power campaign, carried out by many of the same individuals who are now demanding domestic reductions in carbon dioxide emissions. The issues surrounding nuclear power are political, not technological. Before politicians wreck the economy with an international treaty on greenhouse gases, they should establish a rational policy on nuclear power.

Most of the proposals to deal with greenhouse gas emissions seek to eliminate them. Particularly with regard to CO₂ emissions, the economic costs of restrictions would be astronomical.²⁰⁵ However, CO₂ is absorbed by plants on land and in the oceans.²⁰⁶ The possibility of increasing the rate of absorption offers an alternative to draconian cutbacks in energy use.

Fertilizing the oceans to enhance their ability to absorb carbon dioxide may soon be technologically feasible. Man-made emissions of CO₂ are only about 5 percent of the size of natural carbon cycles, including volcanic emissions and oceanic absorption of CO₂. In fact, all of the fossil fuel CO₂ emitted since 1850 would equal only 2 percent of the carbon dissolved in the top 1,000 meters of the world’s oceans.²⁰⁷ Thus an increase of only 2 or 3 percent in the rate of uptake of CO₂ by the oceans could be sufficient to offset man-made emissions of carbon dioxide.²⁰⁸

The carbon cycles of the oceans and atmosphere are not well understood. Fertilizing the oceans to stimulate the natural process (akin to fertilizing terrestrial crops) should be explored as an alternative to unworkable international controls on energy consumption.

9. Bad Advice Is Often Worse Than No Advice.²⁰⁹

In recent years, numerous groups (including agencies of the federal government) have offered unsolicited advice on how Americans can be a “good environmentalists.” Advice on what products are environmentally “good” and “bad” is routinely given to consumers, to legislators and even to children through TV and school materials. All too often the advice reflects the reactionary environmentalists’ theological dislike of man-made things rather than a true concern for the environment. As a result, this advice often encourages environmentally destructive behavior.

“Advice on what products are environmentally ‘good’ or ‘bad’ is often wrong.”

Case Study: The Attack on Disposables. To reactionary environmentalists, anything “disposable” is bad and “recycling” is always good. Yet progressive environmentalists know that recycling itself has environmental side effects. Curbside garbage recycling programs usually require more collection trucks — one set for recyclables, the other for the remaining waste — which means more fuel consumption and more air pollution. Some recycling programs produce high volumes of water waste and use large amounts of energy. Cradle-to-grave studies (which look at all of the environmental impacts of a product’s production and consumption) show what sensible people should have guessed anyway: sometimes recycling makes sense and sometimes it doesn’t.²¹⁰

One area where recycling seems to make sense is in the disposal of aluminum cans. Since recycling requires 10 percent less energy than transforming bauxite into aluminum, it pays for producers to use recycled cans and a market for these cans encourages entrepreneurs to find efficient ways to collect them.²¹¹

One area where recycling doesn’t make sense is juice containers for school children. Aseptic (disposable) packages — little juice boxes — have been banned in Maine, and they are a frequent target of reactionary environmentalists. Yet consider that:²¹²

- Filling aseptic boxes requires about half as much energy as filling glass bottles.
- For a given beverage volume, transporting empty glass bottles requires 15 times as many trucks as empty aseptic boxes — thus using more fuel and causing more air pollution.
- Because the end product is lightweight, small and rectangular, filled aseptic packages can be transported more efficiently than full glass bottles — using 35 percent less energy.
- And since aseptic boxes are the only containers which do not require refrigeration, they do not contribute to CFC production (said to pose a threat to the ozone layer) by conventional refrigerants.

Another area where the attack on disposables can lead to environmentally destructive behavior is the use of disposable diapers — which a number of states are threatening to ban. Cradle-to-grave studies show that when all environmental effects are considered, cloth diapers have no clear advantage over disposable diapers.²¹³ Moreover, in certain areas of the country, the case

“Disposable juice boxes are much better for the environment than recyclable bottles.”

for disposables is exceptionally strong. In California and other western states, there is relatively abundant landfill space (but for the normal political obstacles) and a shortage of water. California residents who avoid disposables and wash cloth diapers with scarce water may think they are being good environmental citizens. But they may be actually causing environmental harm.²¹⁴

“Californians who avoid disposable diapers and wash cloth diapers with scarce water may be causing environmental harm.”

Case Study: The Attack on Non-biodegradable Products. In the theology of reactionary environmentalism, anything that degrades (nature’s recycling) is “good,” anything that doesn’t is “bad.” The facts say otherwise. Modern landfills (about one-third of all landfills) are completely sealed, thus preventing biodegradation of anything. In the landfills that are not sealed, the items that don’t degrade (such as plastic) cause no harm. The real threat to humans and the environment comes from the products that do degrade. Degradation can lead to leaching as chemicals reach our water supply and cause a health threat to fish, wildlife and humans.

Several cities, including Portland, Oregon and Newark, New Jersey, have essentially banned polystyrene food packages — used, for example, to hold McDonald’s hamburgers — and reactionary environmentalists recently bullied McDonald’s into switching from polystyrene to paperboard containers. Yet studies show that:²¹⁵

- Production of the polystyrene hamburger shell uses 30 percent less energy than paperboard.
- Its manufacture results in 46 percent less air pollution and 42 percent less water pollution.

Many of the same issues apply to the reactionary attack on polystyrene cups. For example:²¹⁶

- The average 10-gram paper cup consumes 33 grams of wood and uses 28 percent more petroleum in its manufacture than the entire input in a polystyrene cup.
- The paper cup requires 36 times as much chemical input as the polystyrene cup, partly because it weighs seven times as much.
- It takes about 12 times as much steam, 36 times as much electricity and twice as much cooling water to make the paper cup.
- About 580 times as much waste water, 10 to 100 times the residual effluents of pollutants and three times the air emission pollutants are produced in making the paper cup.

“On balance, polystyrene cups and hamburger shells are less harmful than their paper alternatives.”

"Because of packaging, the U.S. can meet its food consumption needs while producing less food."

In addition to all that, paper cups cost the consumer about two-and-one-half times as much as polystyrene cups. And polystyrene is completely recyclable, which isn't always true of the paper used in cups.

Another area on which the reactionaries have set their sights is product packaging. In general, they advise that packaging is bad and products without a package are environmentally preferable. But is this always true? Packaging conserves resources by reducing breakage and spoilage. Precisely because of state-of-the-art packaging, the United States wastes less food than any part of the world except Africa, where the threat of starvation means that even rotten food is consumed.²¹⁷ Because of packaging, we can meet our consumption needs while producing less food—which means fewer pesticides, less pollution and less energy use. This general principle applies to other products as well.

10. Use the Power of the Marketplace to Reach Environmental Goals.

Economists have known for 200 years that markets are a powerful mechanism for achieving social goals. Despite many attempts in different countries with different cultures, no one has discovered a more efficient mechanism for changing behavior and resolving social problems. Yet markets have been suppressed or outlawed in key areas of our economy, with important environmental side effects. These areas include road use, water and garbage disposal.

Case Study: Roads. In virtually every large city in the United States, major thoroughfares are crowded and congested — especially at rush hours. In a normal market, when a good is scarce we expect its price to rise — which has the social benefit of encouraging people to consume less of it. Yet despite the fact that roads and highways are expensive to build and maintain, we pay no price at the time we use them. Except for the gasoline tax, there is virtually no relationship between our use of road space and the individual cost we bear; and even the gasoline tax is unrelated to whether we use fuel on crowded or uncrowded roads.

"Instead of rationing road space with prices, we ration with congestion — thus contributing to urban air pollution."

Instead of rationing road space with market prices, we ration by congestion — with important environmental side effects. If the average speed is reduced from fifty to five miles per hour, the running time of automobiles is increased tenfold, contributing to urban air pollution and adding to the accumulation of greenhouse gasses.²¹⁸

A toll road from the North Dallas suburbs to downtown Dallas is using new technology with the promise of revolutionary change. Cars with “toll tags” pass monitors that “read” them and bill the auto owner’s account for the toll automatically. Although drivers are supposed to slow to ten miles per hour as they pass through the toll booths, the monitors can read a toll tag number on vehicles travelling at 50 mph or faster.

In principle, the toll tag system could be extended to all roads and highways. Drivers could be charged on the basis of their road use, making it possible to reduce other taxes now used to finance roads. Congestion could be eliminated or greatly reduced by charging high prices for travel on major arteries during peak periods. In the face of higher prices, people would have a self-interest in finding cheaper alternatives. Studies show that half the traffic in the morning rush and two-thirds of the traffic in the afternoon rush is driving other than home-to-work or work-to-home.²¹⁹ For regular commuters, car pooling would become a more attractive option. Currently, the average car contains 1.3 people. If this average could be raised to 2.0 people, the number of cars on the highways would drop by one-third.²²⁰

An efficient system of market prices for road use would make a major dent in urban air pollution — far greater than the most optimistic goals of the current regulatory approach. Even better results could be obtained if we combined toll tag monitors with the emissions monitors described earlier in this report. Drivers could be charged both for road use and for the pollutants their cars emit.

Case Study: Water. “Whiskey is for drinkin’ and water is for fightin’,” wrote Mark Twain. And because there is no market for water, we can be assured the fighting will continue. In most cities, household use of water is either “free” or the price charged is well below the real cost of delivering it. Industrial users and farmers also usually have access to government-subsidized water. In fact, by one estimate the 150,000 farms which benefit from federal water projects cost taxpayers in excess of \$100,000 for a single, 160-acre farm.²²¹ Since users will consume water until the value of the last amount used is equal to the price they have to pay, overuse and waste are virtually guaranteed. On the supply side, people cannot generally own water and buy and sell it in a free market. As a result, suppliers of water have weak incentives to conserve and maintain a valuable resource.

Consider the problems facing California. Droughts over the last several years have exacerbated water shortages in Southern California, where city officials plead with residents to curtail water use. But since the “price” of

“California cities facing a water shortage must pay \$500 an acre-foot for new water, while California farmers get subsidized water for as little as \$5 an acre-foot.”

water to residents is zero, each household has a self-interest in consuming water until the last amount used was zero. The cost of water to California cities is nowhere near zero, however. They currently pay \$200 an acre-foot and that cost will soar to \$500 for any new storage facilities.²²²

An obvious source of additional water is the water now being supplied to San Joaquin Valley farmers at government-subsidized prices as low as \$5 an acre-foot. If the farmers could sell some of their water rights to city dwellers, they would quite likely turn to conservation and recycling alternatives, with costs ranging from \$10 an acre-foot for recycling tail water to \$175 for using drip sprinkler systems. These alternatives would be profitable if the farmers could sell their water rights for \$200.²²³

Unfortunately, federal policy discourages such transactions. Farmers cannot sell their water without consent of the Bureau of Reclamation, which provides it. The Bureau has funded massive water projects that supply 35 percent of the West's delivered water — most of it sold to irrigators who pay only about 15 percent of the actual cost.²²⁴

By forbidding markets and encouraging the wasteful use of water in farming, the Bureau of Reclamation has caused even more environmental harm:²²⁵

- Trace elements, such as selenium, have been leached from the soil and carried in drainage water.
- One consequence is demonstrated at Kesterson Wildlife Refuge, where the pollution has killed largemouth and striped bass, catfish and carp, and has caused newly hatched water birds to develop crippling deformities.
- Over the years Kesterson has been transformed from a fish and wildlife sanctuary into an environmental disaster.

If there were a market for water, if people paid the full cost of the water they used, and if water rights could be freely bought and sold — none of these tragedies would have occurred.

Case Study: Garbage. As we have seen, there has been a fairly steady decrease in the amount of energy used per person in the United States since the 1970s. Because of competition, pressures to reduce costs and the incentives of the price system, we are producing more output with fewer resources.

"The Bureau of Reclamation has turned the Kesterson Wildlife Refuge into an environmental disaster — where newly hatched birds develop crippling deformities."

At the other end of the production-consumption stream, however, the reverse has occurred. Since 1960, the amount of garbage disposed of per person has increased from 2.7 pounds of trash per day to 3.5 pounds — a 30 percent increase.²²⁶ Why the difference? One reason is that we use capitalism to produce things and socialism to dispose of them.

For example, most consumers in most cities are not charged prices that reflect the social cost of disposing of the garbage they produce:²²⁷

- A survey of 246 cities with populations ranging from 5,000 to 1.75 million showed that 39 percent of the cities did not charge any user fee for garbage collection.
- Of those that did, about half charged a flat fee, regardless of the amount or weight of the garbage collected.
- Thus, in more than two-thirds of the cities surveyed, households have no financial incentive to reduce the amount of garbage they produce.

In general, we get what we subsidize; and since we subsidize solid waste disposal, we are getting more solid waste.

Government interference does not end there. Although there was considerable privatization of solid waste collection in the 1980s, a large number of cities still operate government-owned garbage collection services. They also operate their own landfills and solid waste incinerators. As every student of public finance knows, most cities have no idea what their real production costs are when they operate government enterprises and, perhaps for that reason, they are notoriously slow to take advantage of cost-reducing alternatives.

Even when private contractors are involved, they often operate under rules and regulations that make cost-reducing innovations impossible. For example, New Jersey regulates the solid waste disposal industry as a public utility — discouraging investments in new facilities, including landfills. As a result, New Jersey cities must now haul their garbage out of state at a cost of more than \$130 per ton, compared to a nationwide average of just over \$20 per ton.

Rather than use market approaches to solve the problems of solid waste disposal, most cities and states are using the techniques of command economies:²²⁸

"In more than two-thirds of our cities, people have no financial incentives to reduce the amount of garbage they dispose of."

- In 1989, 38 states and the District of Columbia enacted more than 125 laws on recycling.
- Laws that require comprehensive recycling as a component of state, regional or local waste management plans are present in 26 states and the District of Columbia.
- And more than 1,500 cities and towns have initiated curbside recycling collection.

In principle, most waste products can be recycled into some other product: iron and steel, aluminum, glass, oil, paper and even tires, plastic and polystyrene. But does it make economic sense to recycle all of these products and is it good for the environment to do so? Without a price system in which each price reflects real social costs, who could possibly know?

The lesson coming from the Soviet Union and Eastern Europe is that central planners cannot manage complex economies. Bureaucrats and computers are no substitute for market prices in economizing on information and giving people incentives to change behavior. So far, that lesson has been largely ignored in the market for solid waste.

Conclusion

Most proposed solutions for environmental problems focus on bureaucracies rather than on individuals. Yet when we look at the record of government, the results are disappointing. More often than not, government has proved to be the natural enemy of the environment, whereas individuals are often its protectors and defenders.

This task force report has taken a totally different approach. We have sought to understand how and why individual entrepreneurs have been successful in preserving and maintaining ecologically sensitive natural resources. We have discovered that individuals succeed provided there are institutions which make the achievement of environmental goals consistent with the pursuit of self-interest.

The institutions that have worked so well for us in other areas of economic life include private property, free markets, a price system and methods of punishing people who trample on the rights of others. Until recently, most people assumed that these institutions could never be used to solve environmental problems. Yet when we look carefully around the world, we find that

"Progressive environmentalism seeks to create market-based institutions which make the pursuit of environmental goals in people's self-interest."

they are already being used to achieve worthy environmental goals by different people in diverse places. Moreover, new technological developments promise to allow us to extend market-based institutions into new frontiers — the air, the ocean, ground water and endangered fish and wildlife.

This report has sought to create a framework for taking advantage of new insights and new technologies — empowering people to achieve environmental goals that were previously thought to be unachievable. That framework, however, requires a new vision of the relationship between man and nature. The name we have chosen for this vision, appropriately, is “progressive environmentalism.”

Note: Nothing contained in this report necessarily represents the views of the institutions represented on the task force. No recommendations made should be construed as an attempt to influence legislation before Congress or any state legislature.

Footnotes

- ¹Mainstream environmental groups rarely criticize, and often apologize for, the views of the reactionaries. "I think groups like Greenpeace and Earth First! make a significant contribution to the educational process," says Gaylord Nelson, a former U.S. Senator now with the Wilderness Society. "Hopefully with the different strategies of different environmental organizations, something better will happen for the world," adds National Audubon Society Vice President Robert San George. Quoted in Brandon Mitchener, "Out on a Limb for Mother Nature," *E*, Jan/Feb 1990, p. 46.
- ²We are indebted to Virginia Postrel for assembling much of the material in this section. See Postrel, "The Green Road to Serfdom," *Reason*, April, 1990, pp. 22-28.
- ³Cited in Richard L. Stroup, "The Green Movement: Its Origins, Goals and Relevance for a Liberal Society," *Policy* (Australia), Winter 1990, pp. 57.
- ⁴E. F. Schumacher, *Small Is Beautiful* (New York: Harper and Row, 1973), p. 68.
- ⁵Jeremy Rifkin, "Time Wars: A New Dimension Shaping Our Future," *Utne Reader*, September 1987, p. 57.
- ⁶Wendell Berry, *The Unsettling of America* (New York: Avon, 1977), p. 21.
- ⁷Bill Devall and George Sessions, *Deep Ecology* (Salt Lake City: Gibbs Smith, 1985), p. 177. Translation by Tom Early.
- ⁸NOTE: People who endorse any one of the values listed below do not necessarily endorse all of the others.
- ⁹David Brower, *For Earth's Sake, The Life and Times of David Brower* (Salt Lake City: Gibbs Smith, 1990), p. 125.
- ¹⁰David M. Graber, "Mother Nature as a Hothouse Flower," *Los Angeles Times Book Review*, October 22, 1989, p. 9.
- ¹¹See "Only Man's Presence Can Save Nature," *Harpers*, April 1990, pp. 48.
- ¹²Stephanie Mills, *Whatever Happened to Ecology?* (San Francisco: Sierra Club Books, 1989), p. 106.
- ¹³See James Lovelock. *The Ages of Gaia* (New York: Bantam Books, 1988), pp. 171-177. Technically, the nuclear power of the sun is "fusion," whereas for nuclear reactors it is "fission," which is less "clean." Reactionary environmentalists oppose both fusion and fission power developed by humans.
- ¹⁴Margaret Mead, passage from a book review on the cover of the paperback edition of Rachel Carson, *Silent Spring* (Greenwich, CT: Fawcett, 1962).
- ¹⁵Paul Ciotti, "Fear of Fusion: What If It Works?," *Los Angeles Times*, April 19, 1989, Section 5, p. 1.
- ¹⁶*Ibid.*
- ¹⁷Gregg Easterbrook, "Everything You Know About the Environment Is Wrong," *The New Republic*, April 30, 1990, p. 26.
- ¹⁸Randall Hayes, statement at *Utne Reader* "Early Warnings" conference in Minneapolis, May 18, 1990.
- ¹⁹Jeremy Rifkin, *Entropy: A New World View* (New York: Bantam, 1980), p. 216.
- ²⁰Kirkpatrick Sale, "Presidential Matters," *Resurgence*, No. 132, January/February 1989, p. 33.
- ²¹Mills, *Whatever Happened to Ecology?*, p. 106.
- ²²Murray Bookchin, "Death of a Small Planet," *The Progressive*, August 1989, p. 22.
- ²³Schumacher, *Small Is Beautiful*, pp. 57-58.
- ²⁴Mills, *Whatever Happened to Ecology?*, pp. 167-168.
- ²⁵Fritjof Capra, *The Tao of Physics* (New York: Bantam, 1983), p. 298.
- ²⁶Schumacher, *Small Is Beautiful*, p. 87.
- ²⁷Devall and Sessions, *Deep Ecology*, p. 75.
- ²⁸C. P. Snow, *The Two Cultures: And a Second Look* (New York: New American Library, 1963), p. 30.
- ²⁹Donella H. Meadows, et. al., *The Limits to Growth* (New York: Universe Books, 1972). A similar report, produced by the Carter Administration (*Global 2000 Report*), has also been totally discredited. See Julian L. Simon and Herman Kahn, eds., *The Resourceful Earth: A Response to the Global 2000 Report* (Oxford: Basil Blackwell, 1984).
- ³⁰Jonathon Porritt and David Winner, *The Coming of the Greens* (London: Fontana, 1988), p. 11.
- ³¹Cited in Stroup, "The Green Movement," p. 58.

- ³²"Turning the Other Cheek," *Executive Alert*, Vol. 4, No. 4, July/August 1990, p. 1.
- ³³Stroup, "The Green Movement," p. 57.
- ³⁴Murray Bookchin, "Toward an Ecological Solution," *Ramparts*, May 1970, p. 14.
- ³⁵Schumacher, *Small Is Beautiful*, p. 45.
- ³⁶Alston Chase, "For Radical Ecologists, Government Is the Answer," *Orange County Register*, November 22, 1989.
- ³⁷Mills, *Whatever Happened to Ecology?*, p. 190.
- ³⁸We are indebted to Edith Efron for assembling much of the information in this section. See Efron, *The Apocalypitics: How Environmental Politics Controls What We Know About Cancer* (New York: Simon & Schuster, 1984), pp. 28 - 30.
- ³⁹See Mary Douglas and Aaron Wildavsky, *Risk and Culture* (Berkeley: University of California Press, 1983). John Baden has pointed out that many reactionary environmentalists are "crisis entrepreneurs," who provide channels through which people can express their good intentions regarding the environment. Both the giver and the receiver need crises for this purpose, whether the crises are real or imagined.
- ⁴⁰The desire to capitalize on crises, even when none exist, is not limited to private groups. The same tendency can be found among government agencies anxious to increase the size of their budgets. For example, the scientists who analyzed water forecasts for the Carter Administration's *Global 2000 Report* concluded there were no useful forecasts of the world's water supplies. Yet the authors of the report ignored the scientists and made frightening predictions. See Stephen H. Hanke, "On Water: A Critique of *Global 2000*," in Simon and Kahn, *The Resourceful Earth*, pp. 267-271.
- ⁴¹Don K. Price, "Purists and Politicians," *Science*, Vol. 163, 1969, p. 31.
- ⁴²Alan W. Watts, "The Individual as Man/World," in Paul Sheppard and Daniel McKinley, eds., *The Subversive Science: Essays Toward an Ecology of Man* (Boston: Houghton Mifflin, 1969), p. 142.
- ⁴³Lewis Mumford, *The Pentagon of Power: The Myth of the Machine* (New York: Harcourt Brace Javonovich, 1970), p. 413.
- ⁴⁴Robert Disch, ed., *The Ecological Conscience: Value for Survival* (Englewood Cliffs, NJ: Prentice-Hall, 1970), p. XIV.
- ⁴⁵Michael McCloskey, "Foreword," in John G. Mitchell and Constance L. Stallings, *Ecotactics: The Sierra Club Handbook for Environmental Activists* (New York: Simon and Schuster, 1970), p. 11. Cited in Efron, *The Apocalypitics*, p. 527, n. 28.
- ⁴⁶Bookchin, "Toward an Ecological Solution," p. 10.
- ⁴⁷Senator Gaylord Nelson, quoted by Tony Wagner, "The Ecology of Revolution," in Mitchell and Stallings, *Ecotactics*, p. 43. Cited in Efron, *The Apocalypitics*, p. 527, n. 24.
- ⁴⁸G. Evelyn Hutchison, "The Biosphere," *Scientific American*, 223, 1970, p. 53.
- ⁴⁹Lee Loevinger, quoted in Melvin J. Grayson and Thomas R. Sheppard, Jr., *The Disaster Lobby: Prophets of Ecological Doom and Other Absurdities* (Chicago: Follett, 1973), pp. 133 - 134.
- ⁵⁰Alston Chase, *Playing God in Yellowstone: The Destruction of America's First National Park* (Boston: Atlantic Monthly Press, 1986), pp. 92-115.
- ⁵¹Richard L. Stroup and John A. Baden, *Natural Resources: Bureaucratic Myths and Environmental Management* (San Francisco: Pacific Research Institute, 1983), Ch. 3.
- ⁵²Mikhail S. Bernstam, *The Wealth of Nations and the Environment* (London: Institute of Economic Affairs, 1991), p. 13.
- ⁵³William J. Baumol and Wallace B. Oates, "Long-run Trends in Environmental Quality," in Julian Simon and Herman Kahn, eds., *The Resourceful Earth: A Response to Global 2000* (Oxford: Basil Blackwell, 1984), p. 442.
- ⁵⁴Interview with Stephen Jay Gould (Harvard University zoologist) in *American Way*, February 1, 1991.
- ⁵⁵Snow, *The Two Cultures*, p. 30.
- ⁵⁶Bernstam, *The Wealth of Nations and the Environment*, Table 5, p. 24.
- ⁵⁷*Ibid.*
- ⁵⁸*Ibid.*, p. 22.
- ⁵⁹The lower-bound estimate is a multiple of 2.5; the upper-bound estimate is a multiple of 5.8.
- ⁶⁰Bernstam, *The Wealth of Nations and the Environment*, p. 14.
- ⁶¹*Ibid.*, p. 15.
- ⁶²*Ibid.*, pp. 28-29.

⁶³Ibid., p. 29.

⁶⁴Ibid., p. 18.

⁶⁵Ibid., pp. 24 -25.

⁶⁶See *Financial Times* (London), March 28, 1991.

⁶⁷Lynn Scarlett, "Make Your Environment Dirtier — Recycle," *Wall Street Journal*, January 14, 1991.

⁶⁸See the discussion in E. C. Pasour, Jr., *Agriculture and the State: Market Processes and Bureaucracy*, (Oakland, CA: The Independent Institute, 1990), pp. 199-213.

⁶⁹Garrett Hardin, "Tragedy of the Commons," *Science*, Vol. 162, Nov. 11, 1968, pp. 1243-1248. See also Garrett Hardin and John Baden, *Managing the Commons* (New York: W.H. Freeman & Co., 1977).

⁷⁰Terry L. Anderson and Don R. Leal, *Free Market Environmentalism* (San Francisco: Pacific Research Institute for Public Policy Research, 1991), p. 68.

⁷¹Not all passenger pigeons were shot by humans. The ultimate cause of their demise was the destruction of their habitat.

⁷²See the discussion in Walter E. Block, "Environmental Problems, Private Property Rights Solutions," in Block, ed., *Economics and the Environment: A Reconciliation* (Vancouver, BC: Fraser Institute, 1990), pp. 307-308.

⁷³Ibid., pp. 315-318. In India, elephants are domesticated and used as beasts of burden. In Africa, elephants are wildlife.

⁷⁴Porritt and Winner, *The Coming of the Greens*, p. 266.

⁷⁵Environmental Protection Agency, *Unfinished Business: A Comparative Assessment of Environmental Problems*, 1987.

⁷⁶K. Landy, Marc J. Roberts and Stephen R. Thomas, *The Environmental Protection Agency: Asking the Wrong Questions* (New York: Oxford University Press, 1990).

⁷⁷Fred Smith, "Free Market Environmentalism." Paper presented to a Cato Institute conference on changing the Soviet system, September 10-14, 1990, Moscow, p. 22.

⁷⁸See Rodney Fort and John Baden, "The Federal Budget as a Common Pool Resource," in John Baden and Richard L. Stroup, *Bureaucracy vs. Government: The Environmental Cost of Bureaucratic Governance* (Ann Arbor: University of Michigan Press, 1981).

⁷⁹See Terry Anderson and P. J. Hill, "The Evolution of Property Rights: A Study of the American West," *Journal of Law and Economics* 12 (1975), pp. 163-179.

⁸⁰"Special Report: The Public Benefits of Private Conservation," in *Environmental Quality: The Fifteenth Annual Report of the Council on Environmental Quality* (Washington, DC: CEQ, 1984) pp. 387-394. (Note: This section of the CEQ report is based on a report by Robert J. Smith entitled *Inventory of Private Sector Natural Resource Conservation Activities*, prepared under contract for the President's Council on Environmental Quality and the U.S. Department of Interior.)

⁸¹Ibid., pp. 394-398.

⁸²Ibid., p. 399.

⁸³Ibid., pp. 402-408.

⁸⁴Ibid., pp. 425-427.

⁸⁵Source: R. J. Smith, Cato Institute.

⁸⁶Doyton Hyde, *Yamsi* (New York: Lyons & Burford, 1988).

⁸⁷Competitive Enterprise Institute, "Readings in Free Market Environmentalism," 1990, Section IV, B.

⁸⁸See Robert K. Davis, Steve H. Hanke and Frank Mitchell, "Conventional and Unconventional Approaches to Wildlife Exploitation," *Transactions of the Thirty-eighth North American Wildlife and Natural Resources Conference*, Washington, DC: Wildlife Management Institute, 1973, pp. 75-89; and Randy Simmons and Urs Kreuter, "Herd Mentality: Banning Ivory Sales Is No Way to Save the Elephants," *Policy Review*, No. 50, Fall 1989, pp. 46-49.

⁸⁹Governments already "label" high explosives manufactured in various countries as part of a worldwide antiterrorist program.

⁹⁰Jane S. Shaw and Richard L. Stroup, "Gone Fishing," *Reason*, August/September 1988, pp. 34-37.

⁹¹Anglers' Cooperative Association Pamphlet. Reprinted in Anderson and Leal, *Free Market Environmentalism*, p. 148.

⁹²Ed Zern, "By Yon Bonny Banks," *Field and Stream*, 86, September, 1981, p. 120.

⁹³Anderson and Leal, *Free Market Environmentalism*, pp. 110-114.

⁹⁴Ibid., pp. 108-109.

⁹⁵Ibid., pp. 129-130.

⁹⁶Ibid., pp. 121-134. On the difference between privately owned and publicly owned oyster beds, see Richard J. Agnello and Lawrence P. Donnelley, "Prices and Property Rights in Fisheries," *Southern Economic Journal*, 42, October 1972, pp. 253-262.

⁹⁷Ibid., pp. 137-138.

⁹⁸Ibid., p. 150.

⁹⁹Very few rights to pollute have actually been sold, however, partly because the threat of government interference has made the rights insecure and of uncertain value. See the discussion below.

¹⁰⁰Ibid., p. 146.

¹⁰¹Anderson and Leal, *Free Market Environmentalism*, pp. 121-134.

¹⁰²Ibid., pp. 130-132.

¹⁰³Ibid., pp. 115-116 and pp. 148-149. Although the establishment of well-defined property rights will become increasingly important as a deterrent to future pollution, the extent of current pollution has been greatly exaggerated. In the most comprehensive survey ever conducted, the EPA found less than 1 percent of all drinking water aquifers have synthetic chemical concentrations in violation of federal health standards. See Environmental Protection Agency, *National Survey of Pesticides in Drinking Water Wells: Phase I Report*, November 1990, p. vii.

¹⁰⁴In Louisiana, unitization is compulsory, but in most other places it is based on voluntary agreements. See Gary D. Libecap and Steven N. Wiggins, "Contractual Responses to the Common Pool: Prorating of Oil Production," *American Economic Review*, Vol. 74, March 1984, pp. 87-98; and David T. Fractor, *A Property Rights Approach to Groundwater Management*, Ph.D. dissertation from University of Oregon, 1982 (available from University Microfilms).

¹⁰⁵Warren Brookes, "Man and Trees," *Executive Alert*, Vol. 4, No. 4, July/August 1990, p. 7.

¹⁰⁶Robert H. Nelson, "Privatization of Federal Lands," in Meiners and Yandle, *Regulation and the Reagan Era*, p. 139. The net subsidy (costs minus benefits) is probably closer to \$350 million a year. See Randall O'Toole, *Growing Timber Deficits: Review of the Forest Service's 1990 Budget and Timber Sale Program* (Oak Grove, OR: CHEC, 1991), p. 14.

¹⁰⁷See Rick Henderson, "Going Mobile," *Reason*, August/September, 1990, pp. 32-36 and Donald L. Stedman, "Dirty-Car Tuneups Beat Oxy-Fuels by a Mile," *Wall Street Journal*, February 6, 1990.

¹⁰⁸See James D. Gwartney and Richard L. Stroup, *Economics: Private and Public Choice*, 5th ed. (New York: Harcourt Brace Jovanovich, 1990), pp. 721-723.

¹⁰⁹See Bruce A. Ackerman and W.T. Hassler, *Clean Coal/Dirty Air, or How the Clean Air Act Became a Multi-billion-Dollar Bail-Out for High Sulphur Coal Producers and What Should Be Done About It* (New Haven, CT: Yale University Press, 1981); Robert W. Crandall, "Ackerman and Hassler's *Clean Coal/Dirty Air*," *Bell Journal of Economics*, 12, Autumn 1981; and Robert W. Crandall, *Controlling Industrial Pollution: The Economics and Politics of Clean Air* (Washington, DC: Brookings Institution, 1983).

¹¹⁰George Daly and Thomas Mayor, "Equity, Efficiency and Environmental Quality," *Public Choice*, 51, 1986, p. 154.

¹¹¹Anderson and Leal, *Free Market Environmentalism*, pp. 158-159.

¹¹²Smith, "Free Market Environmentalism," p. 30.

¹¹³Fred L. Smith, Jr., "Controlling the Environmental Threat to the Global Liberal Order." Paper presented to the Mont Pelerin Society, Christchurch, New Zealand, November 1989.

¹¹⁴See Mark Crawford, "Scientists Battle Over Grand Canyon Pollution," *Science*, Vol. 247, February 23, 1990, pp. 911-912.

¹¹⁵Ross Eckert, *The Enclosure of Ocean Resources* (Stanford, CA: Hoover Institution, 1979), p. 185.

¹¹⁶Idso, who has reviewed more than 2,000 scientific articles on CO₂, argues that the CO₂ buildup we have experienced is partly responsible for the "green revolution" and that more CO₂ and a warmer planet would produce a virtual Garden of Eden. See Idso, *Carbon Dioxide and Global Change: Earth in Transition* (Tempe, AZ: IBR Press, 1989).

¹¹⁷Budyko argues that global warming is necessary in order to prevent the next ice age. See Hugh W. Ellsaesser (Lawrence Livermore National Laboratory), "The Benefits of Increased CO₂ Have Been Ignored and the Warming Exaggerated." Paper presented to the 1989 Pacific Environment Conference, Montana State University, Bozeman, MT, October 22-25, 1989.

¹¹⁸Ibid.

¹¹⁹William K. Stevens, "In the Ebb and Flow of Ancient Glaciers, Clues to a New Ice Age: Greenhouse Effect Could Delay the Onset of the Cold, Glaciologists Say," *New York Times*, January 16, 1990, p. C-1.

¹²⁰Ellsaesser, "The Benefits of Increased CO₂ Have Been Ignored and the Warming Exaggerated."

¹²¹Ibid.

¹²²The Montreal Protocol on CFCs is often cited as a successful example of a cooperative international agreement which led to a reduction in the production of chlorofluorocarbons. Control of CFC production, however, is much easier since they are produced in large plants in a few countries, chiefly the United States, Canada and Britain. Even at that, a number of countries refused to sign the agreement, including China and India, and China threatens to become a major CFC producer.

¹²³Only a small number of people take advantage of these options, perhaps because the amount of money they can divert is so small it does not justify the effort.

¹²⁴Mills, *Whatever Happened to Ecology?*, p. 190.

¹²⁵The origins of the Love Canal crisis were revealed by the investigative journalism of *Reason* magazine. See Eric Zuesse, "Love Canal: The Truth Seeps Out," *Reason*, February 1981, pp. 16-33.

¹²⁶Dante Picciano, "A Pilot Cytogenic Study of the Residents Living Near Love Canal, A Hazardous Waste Site," *Mammalian Chromosome Newsletter*, 21, (3).

¹²⁷For additional details on the Love Canal crisis and the similarly tragic case of dioxin exposure in Times Beach, Missouri, see Richard L. Stroup, "Chemophobia and Activist Environmental Antidotes: Is the Cure More Deadly Than the Disease?" in Walter Block, ed., *Economics and the Environment: A Reconciliation*, pp. 193 - 213.

¹²⁸Richard L. Stroup and John A. Baden, *Natural Resources: Bureaucratic Myths and Environmental Management* (San Francisco: Pacific Institute for Public Policy Research, 1983), pp.49-50 and pp. 107-108. See Also, Stroup and Baden, "Saving the Wilderness," *Reason*, 13, July 1981, pp. 28-36.

¹²⁹"Special Report: The Public Benefits of Private Conservation," pp. 371-372.

¹³⁰Chase, *Playing God in Yellowstone*.

¹³¹Peter Kirby and William Arthur, *Our National Forests: Land in Peril* (Washington, DC: The Wilderness Society and the Sierra Club, 1985) p. 4.

¹³²John Baden, "Destroying the Environment: Government Mismanagement of Our Natural Resources," National Center for Policy Analysis, NCPA Policy Report No. 24, October 1986.

¹³³Ibid.

¹³⁴Ibid.

¹³⁵Ibid.

¹³⁶Ibid.

¹³⁷Superfund, technically the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), provided for "liability, compensation, cleanup, and emergency response for hazardous substances released into the environment and the cleanup of inactive hazardous waste disposal sites." It provided \$1.6 billion to clean up abandoned sites. The Superfund Amendments and Reauthorization Act (SARA), passed in 1986, authorized an additional \$8.5 billion to finance the Superfund site cleanup effort. In addition, SARA enlarged the enforcement authorities for the purpose of compelling private cleanups. It intends also to shift waste management practices toward long-term prevention, rather than containment of wastes.

¹³⁸James Bovard, "The Real Superfund Scandal," Cato Institute Policy Analysis No. 89, August 14, 1987.

¹³⁹Ibid. See also Aaron Wildavsky, *Searching For Safety* (New Brunswick, NJ: Transaction Publishers, 1988), pp. 201-202.

¹⁴⁰Bovard, "The Real Superfund Scandal."

¹⁴¹According to EPA's chief of Hazardous Waste Implementation, William Sanjour, "Hooker would have had no trouble complying with these (Resource Conservation and Recovery Act) regulations." Only paperwork would have been required, he said. See *New York Times*, June 30, 1980.

¹⁴²Reported in Thomas W. Hazlett, "Ingredients of a Food Phobia," *Wall Street Journal*, August 5, 1988.

¹⁴³See Wildavsky, *Searching for Safety*, Ch. 3.

¹⁴⁴Ibid., Table 2, p. 63.

¹⁴⁵Jack H. Hadley and Anthony O. Osei, "Does Income Affect Mortality? An Analysis of the Effects of Different Types of Income on Age/Sex/Race-Specific Mortality Rates in the U.S.," *Medical Care*, Vol. 20, No. 9, September 1982, pp. 901-914.

¹⁴⁶Peter Huber, "The Market for Risk," *Regulation*, March/April, 1984, p. 37.

¹⁴⁷Wayne B. Gray, "The Cost of Regulation: OSHA, EPA and the Productivity Slowdown," *American Economic Review*, Vol. 77, No. 5, December 1987, pp. 998-1006.

¹⁴⁸Ibid.

¹⁴⁹By contrast, after some of the most costly and least effective environmental, health and safety regulations were repealed, the rate of lost workday cases due to injury and illness reversed the upward trend of the three federal administrations prior to 1980, falling 10 percent afterward and 16 percent since its peak in 1979. See Thomas Walton and James Langenfeld, "Regulatory Reform Under Reagan — the Right Way and the Wrong Way," in Roger Meiners and Bruce Yandle, eds., *Regulation and the Reagan Era: Politics, Bureaucracy and the Public Interest* (Oakland, CA: The Independent Institute, 1989), pp. 42-43.

¹⁵⁰EPA, *Environmental Investments: The Cost of a Clean Environment*, February, 1991. Cited in *Inside EPA*, February 8, 1991, p. 1.

¹⁵¹See Frederick Rueter and Wilbur Steger, "Air Toxics and Public Health," *Regulation Magazine*, Cato Institute, Winter 1990; and Lester Lave, *How Safe Is Safe Enough? Setting Safety Goals*, 1990, Center for the Study of American Business.

¹⁵²Reported by Warren Brookes.

¹⁵³A study by Oxford professors Richard Doll and Richard Peto, commissioned by the Office of Technology Assessment, examined U.S. national cancer mortality records from 1933 to 1978 and found that only approximately 2 percent of all cancers are caused by environmental contamination or pollution. See Doll and Peto, "The Causes of Cancer: Quantitative Estimates of Avoidable Risks of Cancer in the United States Today," *Journal of the National Cancer Institute*, Vol. 66, 113-1308, 1981. The EPA's own findings via toxicological risk assessment corroborate Doll and Peto's analysis. According to the EPA, only between 1 and 3 percent of all cancers are caused by "pollution." See EPA, *Unfinished Business*. The EPA figures were extrapolated in Michael Gough, "Estimating Cancer Mortality," *Environmental Science & Technology*, August 1989, p. 925.

¹⁵⁴The risk for any person developing some form of cancer is one in four, since 25 percent of the American public will suffer from cancer during their lives. The EPA's high estimates of risk are generally hidden behind the large probability that any given individual will develop some type of cancer. However, its method of calculation so exaggerates risk that in at least one case (a Texaco plant at Port Neches, TX) the EPA estimated that the added risk of cancer from living near the plant was one in ten. This is such a high figure that it should show up in public health figures. The EPA tries to avoid direct contradiction by arguing that these risk estimates should be used only for purposes of comparing relative risks.

¹⁵⁵Rueter and Steger, "Air Toxics and Public Health."

¹⁵⁶"Air Toxic Madness," *Executive Alert*, Vol. 4, No. 3, May/June 1990, p. 5.

¹⁵⁷Rueter and Steger, "Air Toxics and Public Health."

¹⁵⁸Ibid.

¹⁵⁹Anthony Woodlief, *The Environmental Crisis* (San Diego, CA: Greenhaven Press, 1991), pp. 221-224.

¹⁶⁰Donald L. Stedman, "Dirty-Car Tune-ups Beat Oxy-Fuels by a Mile."

¹⁶¹Quoted in Jerome H. Heckman, "California's Proposition 65: A Federal Supremacy and States' Rights Conflict in the Health and Safety Arena," *Food Drug Cosmetic Law Journal*, Vol. 43, 1988, p. 271, n. 3.

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¹⁷⁴Richard B. McKenzie and John T. Warner, "The Impact of Airline Deregulation on Highway Safety," Center for the Study of American Business, December 1987.

¹⁷⁵Wildavsky, *Searching for Safety*, p. 195-203.

¹⁷⁶Chase, *Playing God in Yellowstone*, p. 233.

¹⁷⁷"Special Report: The Public Benefits of Private Conservation," p. 408.

¹⁷⁸*Ibid.*, pp. 408-409.

¹⁷⁹*Ibid.*, p. 387.

¹⁸⁰*Ibid.*, p. 420.

¹⁸¹See, for example, "Special Report: The Public Benefits of Private Conservation," pp. 398-401.

¹⁸²*Ibid.*, p. 426. Similar efforts have been less successful in those parts of the country where the property owners have insecure property rights, making it difficult to control public access to their land.

¹⁸³*Ibid.*, pp. 394-398.

¹⁸⁴*Ibid.*, p. 367.

¹⁸⁵*Ibid.*, p. 393.

¹⁸⁶*Ibid.*, pp. 402-408.

¹⁸⁷The National Acid Precipitation Task Force created by PL96-294.

¹⁸⁸Emissions of nitrogen also increase the acidity of rain, but vegetation absorbs nitrogen as a nutrient, so almost none of it remains in streams or lakes. Sulphur levels, however, exceed the nutrient requirements of plants in the eastern United States, so some sulphur ends up in surface waters.

¹⁸⁹See Edward C. Krug, "Fish Story: The Great Acid Rain Flimflam," *Policy Review*, Spring 1990; and J. Laurence Kulp, "Acid Rain: Causes, Effects, and Control," *Regulation*, Winter 1990.

¹⁹⁰Sen. Albert Gore, Jr., "An Ecological Kristallnacht. Listen," *New York Times*, March 18, 1989.

¹⁹¹Warren Brookes, "After the Warming Hype Cools," *Washington Times*, November 14, 1990.

¹⁹²*Ibid.*

¹⁹³H. Jay Zwally, et al., "Growth of Greenland Ice Sheet: Measurement," *Science*, Vol. 246, December 22, 1989, pp. 1587-1591; and Warren Brookes, "Warmer, Greener, Better?," *Washington Times*, January 11, 1991.

¹⁹⁴William Gray of the Department of Atmospheric Science, Colorado State University, has discovered a strong correlation between severe Atlantic hurricanes reaching the United States and an approximate 20-year cycle of wet and dry periods going back for hundreds of years in the western Sahel region of Africa. See William M. Gray, "Strong Association Between West African Rainfall and U.S. Landfall of Intense Hurricanes," *Science*, September 14, 1990, pp. 1251-1256. Gray suspects that a new 20-year wet cycle may have begun at the end of the 1980s. He writes, "With such a rainfall increase, we should also expect a return of more frequent intense hurricane activity in the Caribbean Basin and along the U.S. coastline. The historical data imply that such an increase in intense hurricane activity should be viewed as a natural change and not as a result of man's influence on his climate." *Ibid.*, p. 1255. To the degree that temperature makes any difference, the historical record indicates that a warmer climate results in weaker hurricanes, while cooler temperatures produce more powerful storms. See S. B. Idso, R. C. Balling, Jr. and R. S. Cervany, "Carbon Dioxide and Hurricanes: Implications of Northern Hemispheric Warming for Atlantic/Caribbean Storms," *Meteorology and Atmospheric Physics*, Vol. 42, December 1990, pp. 259 - 263.

¹⁹⁵Kent Jeffreys, Competitive Enterprise Institute, "Why Worry about Global Warming?," National Center for Policy Analysis, NCPA Policy Report No. 96, February 1991, p. 6.

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- ¹⁹⁷Warren Brookes, "Greenhouse Hysteria," *Executive Alert*, Vol. 4, No. 1, January/February, 1990, p. 3.
- ¹⁹⁸*Global Ocean Surface Temperature Atlas*.
- ¹⁹⁹R. W. Spencer and J. R. Christy, *Science*, Vol. 247, March 30, 1990, p. 1558.
- ²⁰⁰Robert J. Beck, *Oil Industry Outlook* (Tulsa, OK: PennWell Publishing Co., 1990), pp. 74 and 84.
- ²⁰¹*Ibid.*, p. 11.
- ²⁰²John Tierney, "Betting the Planet," *New York Times Magazine*, December 2, 1990.
- ²⁰³Reported in William K. Stevens, "Hopeful EPA Report Fans a Debate as Talks on Warming Near," *New York Times*, January 13, 1991, p. 18.
- ²⁰⁴*Interim Report: National Energy Strategy*. A Compilation of Public Comments, U.S. Department of Energy, April 1990, DOE/S-0066P, p. 81.
- ²⁰⁵One recent study on CO₂ emission reductions, jointly conducted by Stanford University and the Electric Power Research Institute, pegged the economic costs of governmental greenhouse effect legislation at between \$800 billion and \$3.6 trillion by the year 2100. Others believe that these projections are too optimistic. Professor William Nordhaus, an economist at Yale, estimates that just to stabilize CO₂ emissions at 1990 levels would cost society between 1 and 2 percent of national income annually by 2050 (\$50 billion to \$100 billion annually today). See Peter Passell, "Staggering Cost Is Foreseen to Curb Warming of Earth," *New York Times*, November 19, 1989, p. 18.
- ²⁰⁶Natural sources of CO₂ are far greater than human sources, perhaps twenty times as large. It is often assumed that natural sources and natural "sinks" (or methods of absorption) of CO₂ are in approximate equilibrium over the short term. Paleohistory teaches us, however, that CO₂ levels can vary widely in the absence of man. Any increase — or decrease — in the rate of natural emissions or natural absorption has the potential to overwhelm human contributions.
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The National Center for Policy Analysis is a nonprofit, nonpartisan research institute, funded exclusively by private contributions. The NCPA originated the concept of the Medical IRA (which has bipartisan support in Congress) and merit pay for school districts (adopted in South Carolina and Texas). Many credit NCPA studies of the Medicare surtax as the main factor leading to the the 1989 repeal of the Medicare Catastrophic Coverage Act.

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Not all task force members agreed with every recommendation. In some cases, the authors have made other recommendations in other publications. The consensus was that the proposals made here would be a vast improvement over the current system, however. Task force members served as individuals, not as representatives of institutions.