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*Pacific Research Institute's*  
**INDEX OF LEADING  
ENVIRONMENTAL  
INDICATORS  
7<sup>TH</sup> EDITION**

*by*  
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*and*  
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*Index of Leading Environmental Indicators, 7<sup>TH</sup> Edition*

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## PREFACE

**W**E ARE PLEASED TO PRESENT THE 7<sup>TH</sup> edition of our annual review of environmental trends and issues in the United States. The shape of environmental discourse has changed dramatically since the first edition of this report was published in 1994. Back then, there were few efforts at tracking environmental trends — the EPA hadn't published a report on general environmental trends since 1989 — and our researchers had to obtain data the old-fashioned way: by scouring slowly through dozens of thick dusty reports in the government documents section of the library. In the years since then, two important changes have occurred.

The most obvious, of course, has been the Internet revolution, which makes available copious amounts of data online. Now the difficulty is not scarcity but rather a surfeit of data. Not only is more national data available, but information on the state and local level is also becoming more widely available through the Internet. It has become overwhelming just to keep up with all the sources of data and analysis now available.

Hitherto this report has focused on aggregate national data trends, which are useful in determining our general progress. But the environment, properly understood, is not just an aggregation of ecosystems, and the Internet revolution now enables interested citizens and researchers to investigate their local ecosystems in many cases. A new feature of this year's *Index* is a survey and guide to state and local sources of environmental information, all of which can be found on our website, [www.pacificresearch.org](http://www.pacificresearch.org).

The second major change has been an increasing interest in developing systematic environmental indicators of all kinds. The EPA and other government agencies are developing sets of indicators, and the number of university and private sector efforts at developing environmental indicators is burgeoning. The multinational Commission on Environmental Cooperation has produced a report similar to our own, *The North American Mosaic: A State of the Environment Report*, covering all three North American nations. The report is available online at [www.cec.org](http://www.cec.org). One of the most ambitious and comprehensive such efforts, *The State of the Nation's Ecosystems*, will be released soon by the H. John Heinz III Center for Science, Economics, and the Environment; see [www.us-ecosystems.org](http://www.us-ecosystems.org) for updates.

Given this rapid expansion of environmental assessment efforts, the intention of keeping this annual report short enough to be usable to journalists, public policy professionals, and interested citizens requires that it adapt to the changing circumstances. The principal author of the *Index*, Steven Hayward, will continue to offer his often provocative analysis of important aspects of environmental news and hot-button issues. But with the changing circumstances described above, the *Index* is also evolving into a resource guide and review of important recent literature — a starting point for journalists, interested citizens, and public policy professionals to stimulate their own research and reflections on environmental topics.

It is impossible to report all relevant environmental trends without producing a phonebook-sized report that no one can get through. Rather, our main purpose is to track the basic

trends on the core areas of concern, especially air and water quality, to provide thoughts for further reflection and debate, and, more important, to shift the focus to the practical question of *how environmental problems get solved*. One purpose of looking at national aggregates that mostly show improvement is that it breaks the tendency for gloomy hand-wringing over the environment. As the focus of environmental inquiry and policy initiative moves more from the national to the state and local level, developing local measures of environmental conditions will be crucial. Many local problems are not susceptible of uniform, one-size-fits-all standards and regulations emanating from Washington, and local variations in conditions and policy help stimulate human creativity in devising innovative solutions.

Careful assessment of environmental trends will also help us match up and evaluate regulatory regimes and spending on behalf of the environment. The budget of the Environmental Protection Agency has grown significantly over the past decade, and other federal agencies often spend an uncalculated amount of money on the same problems. Private sector spending on the environment now reaches into the hundreds of billions of dollars.

At present there is little sense of how well or badly much of this money is being spent, which is no more acceptable for the environment than it is for public education or national defense. One of the ironies of environmental politics is that we are often told that natural resources are scarce or finite, yet we promulgate regulations as though money was infinite. To borrow from the environmental lexicon, this is not a sustainable policy.

– Sally C. Pipes  
President & CEO  
Pacific Research Institute



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INTRODUCTION:  
THE YEAR IN REVIEW

**WHAT A DIFFERENCE A YEAR MAKES.**  
**W** On Earth Day 2001, it appeared that the United States was heading into a full-scale, 1970s-style energy crisis. Natural gas prices had quadrupled within the previous year, and there were predictions that gasoline would soon top \$3 a gallon. In California the lights were going out because of an electricity shortage — in the winter. The Bush administration was advocating an energy plan that emphasized increased domestic production of fossil fuels, while the more politicized environmental organizations were operating at DefCon 1.

The Bush administration's decision to review, among other proposed regulations, the new arsenic drinking water standard enacted at the last minute by the outgoing Clinton administration was greeted with a hysteria not seen since some fool declared ketchup to be a vegetable 20 years ago. (Sample: "The election of George W. Bush," wrote Jeff Ruch of Public Employees for Environmental Responsibility, "heralds the advent of a new environmental Dark Age.") More serious was the Bush administration's decision to abandon publicly the Kyoto protocol on global warming.

The dirty little secret of the Kyoto protocols was that a Gore administration, had there been one, would have abandoned Kyoto too, at least in deed if not in speech. No administration, except possibly Ralph Nader's, is going to implement a treaty that imposes trillion-dollar costs on the American economy.<sup>1</sup>

If you had stood at a street corner on Earth Day 2001 and predicted that one year later a major war would be underway in the Middle East following a Pearl

Harbor-style attack against the United States, and that *oil and gasoline prices would fall to inflation-adjusted lows in the aftermath*, your auditors would likely have looked nervously for the men in white coats to haul you off to a safe place. If you had then gone on to add that electricity in California would be in surplus, and that the nation's seventh largest corporation — the dynamic energy company Enron — would collapse into bankruptcy, the riot squad might have been summoned, especially if the street corner you were on was Wall and Broad in lower Manhattan.

### THE ENERGY ROLLER-COASTER

The irony of the present moment is that had gasoline actually reached \$3 a gallon last summer, the Bush energy plan would likely have passed Congress easily by the fall. Instead, world markets have moved swiftly to bring prices back into line with intrinsic supply. The price of oil has fallen from a high of about \$30 a barrel in November 2000 to about \$22 today, with spot market prices dipping below \$20, indicating that the underlying price pressure on oil is downward. Gasoline, according to the Department of Energy, has experienced “the widest one-year range in retail prices since the Department began its weekly survey in 1990,” and most of this decline occurred over a five-month period in the second half of 2001.<sup>2</sup>

As recently as March 2001, the Department of Energy forecast that “[oil] prices are likely to remain relatively high

through 2002.” So much for forecasts. Natural gas prices, which had risen from about \$2 per 1,000 cubic feet (wellhead price) to more than \$8 in January 2001, had fallen back to about \$2.50 by the end of the year. The inflation-adjusted price of gasoline in the United States today has fallen by half over the last 20 years, and is lower today than it was in 1973, when the modern era of OPEC-led oil price increases began. (See **FIGURE 1**.)

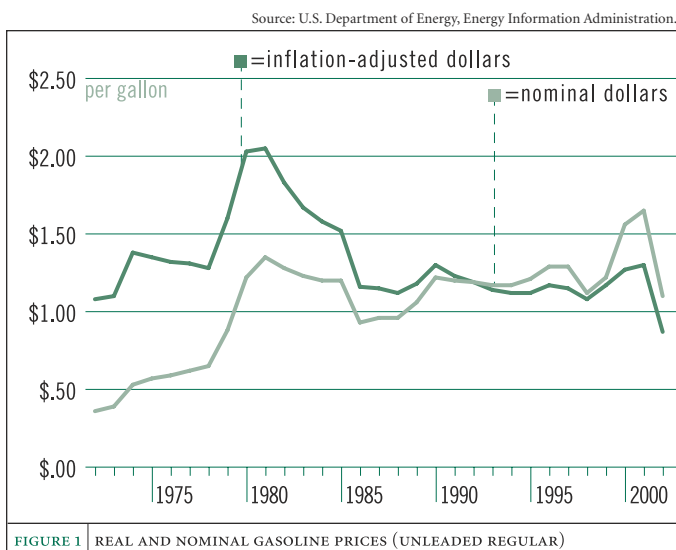
Why has the energy-price roller coaster swooped low so suddenly? And, equally important, can it soar upwards again just as suddenly? “The marketplace at work” is a necessary but not sufficient answer to the question.

At first glance the magnitude of energy price declines seems out of proportion with supply changes. Natural gas production in the United States was up only one percent in 2001, while domestic oil production and foreign oil imports were up only two percent. On the demand side of the ledger, Americans reacted to higher prices by using less energy; residential natural gas use fell 10 percent in 2000–2001. These reductions in demand enabled the energy industry to replenish stocks of gasoline, natural gas, and other fuels, thus relieving upward price pressure.

The slumping world economy is also given as a prominent reason for the easing of energy prices, and while this factor should not be dismissed, the more important point to keep in mind is that the rapid swing in energy markets over the last two years shows how small, short-term factors can have highly leveraged price effects. This price volatility is likely to persist so long as the OPEC cartel enjoys disproportionate power in the world oil market.

Since 1999 OPEC has sought to increase the world price of oil by adhering to production quotas. While these quotas succeeded in stopping and reversing the downward trend in oil prices in the late 1990s, OPEC has been unable to escape the inexorable tendency of all cartels to break down through individual member nations cheating on their quotas. (OPEC has been steadily increasing output month-by-month, even though world demand is flat or slightly falling.) At present, the United States receives approximately 25 percent of its imported oil from OPEC. If present trends continue, according to forecasts by the U.S. Department of Energy, OPEC will account for 50 percent of U.S. oil imports by 2020.<sup>3</sup> This has major implications for domestic energy policy.

Our special focus on energy and the environment in last year's sixth edition of this report sought to illuminate two





points: first, that conventional fossil fuel resources are abundant, which means that the fossil fuel era has a while to go yet;<sup>4</sup> second, that fossil fuel energy is increasingly “sustainable” from an environmental point of view, as technology to reduce pollution continues to achieve steady progress. The rapid fall in energy prices vindicates the first point; the second point is complicated by the problem of carbon dioxide emissions and the issue of climate change, which is now the chief complaint against fossil fuel energy. As this report’s section on air quality will show, levels of noxious pollutants regulated under the Clean Air Act continue their slow decline, despite increased fossil fuel consumption.

The perennial debate over energy and the environment is not likely ever to end, even as alternative energy sources are developed. It is helpful to recall that the Sierra Club and the Students for a Democratic Society, in their founding Port Huron Statement, both *supported* nuclear power. To be sure, the fossil-fuel era will come to an end someday, as alternative energy sources prove themselves genuinely competitive with existing sources. Although the Department of Energy’s long-range projections for alternative energy sources remain modest, the early signs of a transition are apparent.

Lester Brown’s Earth Policy Institute notes that worldwide coal consumption has fallen nine percent since 1995, during a period when coal prices were flat or falling. Wind power capacity grew 30 percent in 2001, though this is a bit of a misleading numbers game since the small base of windpower (only 23,000 megawatts) means that a small nominal gain in capacity will yield a large percentage gain. Wind power accounts for only about one percent of worldwide generation capacity. No energy source could seem so benign as wind power, yet wind power is an excellent illustration of the difficult tradeoffs of most energy alternatives — tradeoffs which are usually discounted or ignored.

As this report pointed out last year, current wind power technology results in high “avian mortality,” i.e., windmills kill lots of birds. More promising, perhaps, is the research and development work on fuel cells.

In mid-January of this year the Bush administration announced that it was pulling the plug on the Partnership for a New Generation of Vehicles (PNGV) program, a \$1.6 billion program the Clinton administration launched in 1993 to subsidize auto manufacturers to develop higher mileage cars and trucks — perhaps as much as 80 miles per gallon. In its

place the Bush administration proposes to emphasize the development of fuel cell technology, which offers the prospect of replacing the internal combustion engine entirely. This decision ironically puts the Bush administration further than the Clinton administration along the path toward Vice President Al Gore’s oft scoffed-at goal in *Earth in the Balance* — phasing out the internal combustion engine within the next generation. Although the Bush administration decision to

**THE INFLATION-ADJUSTED PRICE OF GASOLINE IN THE UNITED STATES TODAY HAS FALLEN BY HALF OVER THE LAST 20 YEARS, AND IS LOWER TODAY THAN IT WAS IN 1973, WHEN THE MODERN ERA OF OPEC-LED OIL PRICE INCREASES BEGAN.**

dump the PNGV program received fierce criticism from some environmentalists for whom higher gas mileage standards are sacrosanct, it was a good move.

The 80 mile-per-gallon goal was never realistic, and the \$1.6 billion spent so far has yielded few practical improvements in the marketplace. Meanwhile, the unsubsidized Japanese auto makers brought to U.S. consumers two hybrid vehicles — cars which run on a combination of electricity and gasoline, and getting up to 70 miles per gallon. Demand has been slight, as it will continue to be so long as gasoline is at record low prices. Gregg Easterbrook noted in *The New Republic* in October 2000 that “the PNGV has distinguished itself mainly in holding conferences and awarding medals to its officials.... Clinton and Gore created a project that essentially guaranteed vehicle fuel efficiency would not improve during their time in office.”<sup>5</sup>

The issue of automobile fuel economy standards offers another illustration of the difficult tradeoffs of potential energy

efficiency mandates. A recent report of the National Academy of Sciences National Research Council concluded that the fuel economy standards adopted in the 1970s, which have resulted in lighter weight autos, have probably resulted in an additional 1,300 to 2,600 traffic fatalities a year.<sup>6</sup> Any other federal regulation that increased mortality risk by this amount would be greeted with riotous indignation.

## LONG-TERM PERSPECTIVE THE LOMBORG CONTROVERSY

Needless to say, the events of September 11 dominate our perspective on all matters at the moment, eclipsing environmental issues along with most others. The upwelling of national unity and purpose led many environmental groups, such as the Sierra Club, to tone down its public criticism of President Bush and to suspend other aspects of political activity.<sup>7</sup> But there are always exceptions. Someone named “Peggy Sue” wrote in the November 2001 issue of *Earth First! Journal* that “When I heard that exploding jets had hit the World Trade Center and the Pentagon, I was elated.... George W. Bush vowed to ‘rid the world of evil doers.’ I wondered, ‘Does this mean he is going to kill himself?’”

While September 11 reminded most of us of the more fundamental aspects of political life, it is a mistake for environmentalists or their critics to suppose that the salience of environmental issues will be diminished over the long run. The very first edition of this report in 1994 noted the words of the late sociologist Robert Nisbet, who wrote that “It is entirely possible that when the history of the 20<sup>TH</sup> century is finally written, the single most important social movement of the period will be judged to be environmentalism.”<sup>8</sup> This may turn out to be an understatement.

As an expression of public sentiment toward the natural world, environmentalism is turning out to be not merely a narrow transient enthusiasm, but something akin to a broad change in public philosophy comparable to the rise of liberal individualism in the 18<sup>TH</sup> century. The analogy may prove to be apt on several levels.

Liberal individualism is the cornerstone of modern democracy, whose full implications required decades if not centuries to work themselves out in practice. So, too, environmentalism will be slow to work its way fully through human

social thought and action. A good example of this progress is waste. Thirty years ago the predominant message to Americans, conveyed by an Ad Council TV campaign, was to *stop littering*; merely to get Americans to stop throwing trash out their car windows was considered a major step in changing behavior. Today the dominant message about waste emphasizes *recycling*, and the pervasiveness of recycling today represents a significant change in the space of one generation.

The analogy has other parallels. Like liberal individualism, environmentalism comes to sight first as an indignant and often bitter complaint against the existing order. Yet liberal individualism quickly transmuted into an optimistic creed, as democracy came to be seen as the cornerstone of progress and enlightenment. When George Washington wrote in 1783 of a “gloomy age of Ignorance and Superstition,” he referred to an era that was happily passing from the human scene, at least where democracy was taking hold. It is just on this point that the analogy diverges.

Despite the rapid progress in terms of practical results and the changing social outlook that environmentalism has brought about, the mainstream movement still offers a visage of gloom and pessimism most of the time.<sup>9</sup> Most environmentalists, like many early modern liberals, are impatient and transfixed by the perceived gap between their ideals and the reality of the present moment. This is understandable; indignation is the mark of rising social movements, as well as the source of much of their energy. In the fullness of time, however, successful social movements tend to become optimistic, forward-looking, and progressive, or they become self-limiting.

The environmental community may give way to optimism and practical problem-solving, as indeed some notable environmental groups already have, but for the moment most environmentalists seem to be stuck in the pathways of gloom and pessimism. The evidence for this proposition can be seen in the most ferocious contretemps of the last year — the ruckus over Bjørn Lomborg’s book *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge University Press).

Lomborg, a professor of statistics at the University of Aarhus in Denmark, ascribes the origin of his book to a chance reading of an interview with the late Julian Simon, whose attacks on environmental pessimism always raised the hackles of environmentalists. Being a self-described “old left-wing Greenpeace member,” Lomborg was appalled at Simon’s views, supposing them to be “simple, American right-wing propaganda.”

“I was provoked,” Lomborg went on to explain. “I had never really questioned my belief in an ever deteriorating environment — and here was Simon, telling me to put my beliefs under the statistical microscope.” Being a professor of statistics, Lomborg made it a class project to check the data and refute Simon. But a funny thing happened on the way to dunking Simon: “Not everything he said was correct but — contrary to our expectations — it turned out that a surprisingly large amount of his point stood up to scrutiny and conflicted with what we believed ourselves to know.”

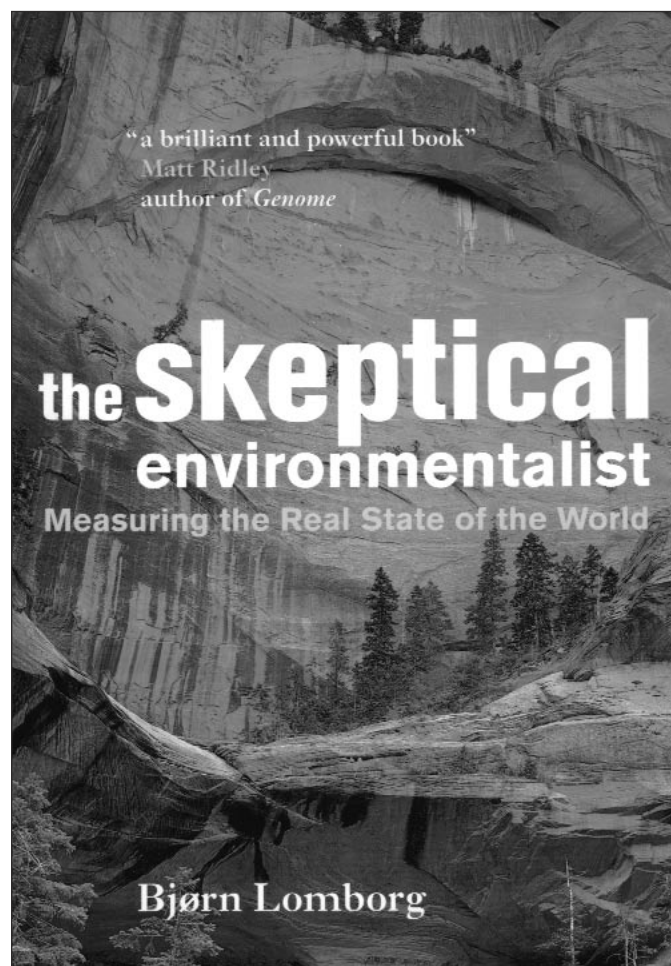
Thus chastened, Lomborg set out in *The Skeptical Environmentalist* to refute what he calls “The Litany.”

We are all familiar with the Litany: the environment is in poor shape here on Earth. Our resources are running out. The population is ever growing, leaving less and less to eat. The air and water are becoming ever more polluted. The planet’s species are becoming extinct in vast numbers — we kill off more than 40,000 each year. The forests are disappearing, fish stocks are collapsing and the coral reefs are dying. We are defiling our Earth, the fertile topsoil is disappearing; we are paving over nature, destroying the wilderness, decimating the biosphere, and will end up killing ourselves in the process. The world’s ecosystem is breaking down. We are fast approaching the absolute limit of viability, and the limits of growth are becoming apparent.<sup>10</sup>

“There is just one problem,” Lomborg adds. The Litany “does not seem to be backed up by the available evidence.” Lomborg is quick to add that he is not saying that the environment is fine, that there is no cause for worry, or that civilization should be content with the current state of things. The point of assessing various environmental trends, as this report has reiterated year after year, is that it helps policymakers set priorities among different environmental problems. “[W]hen things are improving,” Lomborg writes, “we know we are on the right track. Although perhaps not at the right speed.” As the EPA itself found in an internal study a decade ago, often times funding priorities are in inverse proportion to the seriousness of environmental problems.

Stories of scholars changing their mind after setting out to prove or disprove a widely-held view are often sensational news,<sup>11</sup> so it should not have been a surprise that *The Skeptical Environmentalist* received effusive advance publicity in the

United States, Britain, and Canada. A reviewer in *The Washington Post* called the book “the most significant work on the environment since the appearance of its polar opposite, Rachel Carson’s *Silent Spring*, in 1962. It’s a magnificent achievement.”<sup>12</sup> *The New York Times* wrote a positive news feature in its science section on Lomborg’s project.<sup>13</sup> *The Economist* praised the book as “a powerful and persuasive assault on the central tenets of the modern environmental movement,” and invited Lomborg to write a special feature for the magazine. *The Times Higher Education Supplement* wrote that Lomborg “has written probably the most comprehensive, up-to-date and provocative contribution to environmental optimism so far, and a book that is accessible to academics, students and virtually anybody interested in environmental issues.”<sup>14</sup> Britain’s left-leaning *Guardian* newspaper ran four articles from Lomborg, and even the leftist Jesuit writer Andrew Greeley praised the book in a syndicated



**THE MODERN SKEPTIC:** Lomborg’s book challenges the environmental status quo.

newspaper column.<sup>15</sup> Initially, a few environmentalists also reacted positively to Lomborg's book.

The chairman of the Swedish World Wildlife Fund, Lars Kristoferson, provided a dust-jacket blurb, and the executive vice president of the World Wildlife Fund in the United States, David Sandalow, initially made some guardedly favorable comments about Lomborg's approach while criticizing many particular points. "I want to start by saying that there's lots I agree with in what Professor Lomborg has said in his book,"

**PERHAPS BECAUSE CRITICISM OF  
PRESIDENT BUSH IS OFF LIMITS  
FOR THE TIME BEING, ENVIRON-  
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DEGREE OF INVECTIVE TYPICALLY  
RESERVED FOR HERETICS...**

Sandalow said in a public forum with Lomborg in Washington in October, 2001. "I absolutely agree that the end of the world is not nigh. I absolutely agree that we need better information for policy making particularly in the environmental area. And I absolutely agree that many trends are getting better in the world." This mild degree of comity did not last, however.

Perhaps because criticism of President Bush is off limits for the time being, environmentalists have turned their full ire on Lomborg with a degree of invective typically reserved for heretics, setting up anti-Lomborg websites and raising a ruckus in the media.<sup>16</sup> The London *Daily Telegraph* observed: "to the nabobs of the international environmental movement — the researchers, bureaucrats, politicians and protesters whose most passionate beliefs and professional livelihoods are staked on the near-religious conviction that the world is confronting imminent environmental catastrophe — Lomborg

is the anti-Christ." Protesters have slapped Lomborg in the face with cream pies at book signings. "The science magazine *Nature*," the *Telegraph* noted, "went so far as to declare that Lomborg 'employs the strategy of those who argue that gay men are not dying of Aids, that Jews weren't singled out by the Nazis and so on.' The accusation was particularly tasteless since Lomborg happens to be gay." The Union of Concerned Scientists commissioned several authors to provide rebuttals to Lomborg. The World Resources Institute and the World Wildlife Fund distributed an open letter to the Society of Environmental Journalists with an analysis of "Nine things journalists should know about *The Skeptical Environmentalist*."<sup>17</sup>

In a book with such large scope it is inevitable that there will be some factual errors, arguable conclusions, or omissions, and some of these particular criticisms have validity. (A few of these will be taken up elsewhere in this report.) But far from a calm argument, some prominent environmentalists have become, in the words of *The Economist*, "apoplectic," and describe Lomborg's book as a "scam." Some have even said the book should not have been published. The January 2002 edition of *Scientific American* took the usual step of inviting several prominent environmentalists to rebut Lomborg, arguing that *The Skeptical Environmentalist* "is marred by an incomplete use of the data or a misunderstanding of the underlying science." Stephen Schneider blasted Cambridge University Press for not having the book peer-reviewed by scientists, while the usually mild mannered Edward O. Wilson described Lomborg's book as "willful ignorance" and "destructive campaigning." *The Economist* described the *Scientific American* rebuttal as "strong on contempt and sneering, but weak on substance," adding that Edward O. Wilson is exhibiting "insufferable arrogance."<sup>18</sup>

This level of vituperation belies either a disturbing self-righteousness that brooks no criticism and/or a lack of confidence that supposedly superior science can win out in a sustained debate. It is as though Lomborg had suggested that God doesn't exist to a group of Catholic bishops.

The tacit premise of the attacks on Lomborg seems to be that, as *The Economist* put it, suggesting the environment is a cause for optimism is "beyond the pale of respectable discourse." But the second argument against Lomborg is amusingly ironic, and exposes the fissures among environmentalists.

Lomborg's Litany, they say, is a caricature of what environmentalists really think. Allen Hammond of the World Re-

sources Institute argues that Lomborg's Litany is attacking a "straw man." Hammond said the Litany "paints a caricature of the environmental agenda based on sometimes mistaken views widely held 30 years ago, but to which no serious environmental institution subscribes today," while Sandalow said that Lomborg's Litany "ignores all the good news about the environment regularly put out by environmental groups." But if environmental groups are putting out good news, they must be doing it quietly because it has failed to reach the media:

"Green Group Gives Earth Failing Report Card"  
— NATIONALGEOGRAPHIC.COM, JANUARY 10, 2002

"Everyone knows the planet is in bad shape"  
— TIME, JANUARY 2000

Political leaders likewise seem unaware of such optimism:<sup>19</sup>

"Yet today the evidence of an ecological *Kristallnacht* is as clear as the sound of glass shattering in Berlin"  
— ONE OF MANY APOCALYPTIC APHORISMS  
FROM VICE PRESIDENT AL GORE

The public is also unaffected by environmental optimism. Polls repeatedly show that large majorities of Americans think environmental quality in the United States is getting worse. The most startling is a Roper poll in 1998 which found that 57 percent of Americans agree with the statement that "the next 10 years will be the last decade when humans will have a chance to save the earth from environmental catastrophe." This number has been rising, not falling, in successive Roper polls.

Why would the public think this if environmentalists have abandoned a gloom and doom view of 30 years ago and are now putting out good news? Environmentalists say, incredibly, that it is the media that is misleading the public. Well, at last environmentalists and their critics can agree on something, though this is where the most severe irony is evident. Lomborg's critics especially complain about the favorable media attention he has received, yet the publicity for Lomborg's contrary view represents a mere pebble in a lake compared to the favorable publicity environmental alarmism routinely receives.

The deeper answer is that Lomborg is fundamentally correct about The Litany, even though the terms or focus of pessimism may have changed. The noisiest advocacy groups such as the Sierra Club, Greenpeace, and the Worldwatch Institute haven't abandoned their gloom and doom views, and at least the public

face of environmentalism remains highly pessimistic and alarmist. Some environmentalists will candidly admit this.

The president of the Wilderness Society, William Meadows, told the *Sacramento Bee* last year: "Candidly I am tired of the Wilderness Society and other organizations — and we are a culprit here — constantly preaching gloom and doom. We do have positive things to say." But if serious environmentalists have a more balanced view about basic trends and the world's prospects, they have a duty to deprecate the frothy activists and correct media misperceptions. The World Resources Institute's Allen Hammond may have started doing so in a small way.

Hammond dismissed one of the leading figures of modern environmentalism who is one of Lomborg's main targets — the Worldwatch Institute's Lester Brown. Hammond said that "I would not regard [Brown] in fact as a significant figure in advancing environmental concerns." *The Washington Post* describes Brown, who has won both a MacArthur Foundation "genius" award and the United Nations Environment Prize, as "one of the world's most influential thinkers," so it is nothing short of extraordinary for another prominent environmental leader such as Hammond to say that Brown is "not a significant figure." This is akin to a conservative charging that Milton Friedman isn't a significant figure within free-market ideology. Yet it is a healthy first indication that serious environmentalists are beginning to mature, to place environmental issues in proportion, to recognize and celebrate human creativity in solving real problems, and to realize that it is not necessary to scare the daylights out of the public to achieve progress.

Michael Grubb of Cambridge University wrote in a *Science* magazine review of Lomborg that "To any professional, it is no news at all that the 1972 *Limits to Growth* study was mostly wrong or that Paul Ehrlich and Lester Brown have perennially exaggerated the problems of food supply."<sup>20</sup> This may not be news "to any professional," but it is news for most of the news media and the public. Yet Lomborg, and Julian Simon before him, is being pilloried for saying so in a public fashion, which gets to the heart of the argument.

For critics of Lomborg and Simon, the one sin greater than any factual error is the general outlook that the Earth's prospects are getting better. "A lot of my Left-wing friends had a hard time with me being so 'immoral' as to say that the environment was actually getting better," Lomborg relates. It is important to stress that Lomborg is not saying that all environmental conditions are good or good enough, or improving rapidly enough. Rather,

“when things are improving we know we are on the right track.” It is the outlook that our regard for the environment is part and parcel of mankind’s long story of progress and enlightenment that raises hackles.

In many ways, worry about the fate of the Earth is the secular replacement for the biblical apocalypse, and worrying about the environment is a source of fulfillment and metaphysical purposefulness for many environmentalists and much of the public. Even environmentalists with a more balanced grasp of the issues are concerned that good news or optimism about the environment may diminish public support for environmental protection. As suggested at the outset of this section, this outcome is impossible to conceive precisely because environmentalism has become such a settled middle-class value throughout the world. There is as little reason to expect “backsliding” in the case of the environment as there is to expect that the public will call for laying off police and prosecutors, and closing prisons, because the crime rate has declined.

Several critics have noted that Lomborg does not give credit where credit is due for the bright prospects he sees ahead: the environmental movement, they point out, has been responsible for the steadily rising public enthusiasm for environmental protection. This is a fair criticism, though the critics would do well to acknowledge the importance of the connection Lomborg makes between the rise of environmental consciousness and the favorable trends he points out. As **FIGURE 2** shows, there is a close relationship between wealth and environmental conditions, which means that a growing economy is the prerequisite for environmental improvement.<sup>21</sup> While it is true, as affirmed

above, that the rise of the environmental movement has been fundamental to public enthusiasm for environmental protection, the role of economic growth is *more* fundamental.

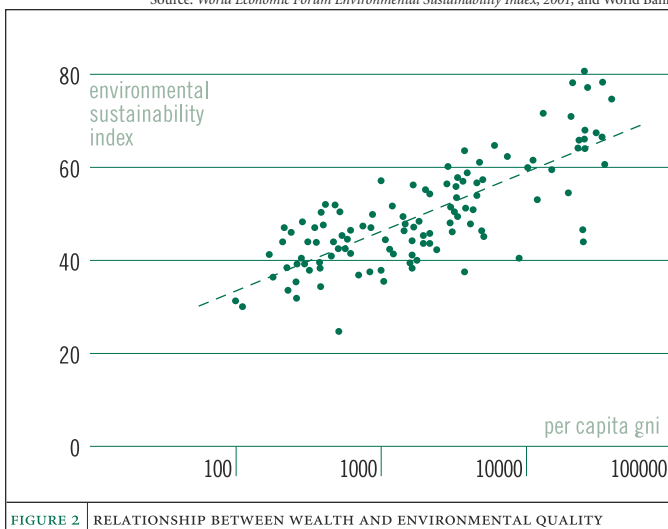
This aspect of the environmental controversy may seem stale or settled by now, as many leading environmentalists readily acknowledge the centrality of economic growth. “Notwithstanding their huge differences,” the World Wildlife Fund’s David Sandalow has noted, “there is one thing that both the current administration and the last administration, of which I was a part, agree on, and that is that environmental protection and economic growth go hand in hand.” But a corollary to Lomborg’s thesis about the relationship between economic growth and positive environmental outcomes is that misleading perceptions lead to misallocation of resources, especially in wealthy countries.<sup>22</sup>

An accurate understanding of environmental trends is necessary for choosing among competing public priorities. We would argue that it is not that too much money is spent on environmental protection, but that it is often spent badly, either on lower priority concerns, or, worse, on “million-dollar solutions to hundred-thousand-dollar problems.”

Environmentalists should welcome this kind of analytical scrutiny, because it will lead to more effective outcomes in the real world. Sincere environmentalists should no more accept or defend wasteful policies and regulations any more than supporters of a strong military should accept or defend \$600 toilet seats or \$800 hammers in the Pentagon budget. It is typical of single-minded interest groups, however, to resist this kind of common sense thinking, which is why many environmentalists have reacted so harshly to Lomborg’s perspective. In suggesting that environmental issues should be placed in perspective along with other competing goods, Lomborg implicitly demotes environmental claims to the same level as other public interests. But the environmental movement has always enjoyed an exalted status, an interest that transcended other interests, because of the general prospect that the very future of the planet was at stake. It is a cause for great anxiety and insecurity among environmental activists to be thought of as just another interest group among interest groups. Which brings us to the other media sensation of 2001.

**POSTSCRIPT:** In February Denmark’s Prime Minister Anders Fogh Rasmussen appointed Lomborg to head that nation’s new Institute for Environmental Assessment, where the main aspect of his portfolio will be to ensure that environmental budgets are directed toward issues and areas with the

Source: World Economic Forum Environmental Sustainability Index, 2001, and World Bank.



**FIGURE 2** | RELATIONSHIP BETWEEN WEALTH AND ENVIRONMENTAL QUALITY

greatest benefits. *The Economist* reports that Denmark's environmental community has erupted in new paroxysms of rage over Lomborg's appointment, calling for Lomborg to be investigated by Denmark's Committee of Scientific Dishonesty, whatever that is. Lomborg's appointment is especially significant because Denmark is soon to assume the rotating chair of the European Union, and as such will be chairing the U.N. World Summit on Sustainable Development in South Africa in September.

## STUNG BY THE BEE

Favorable media coverage is the lifeblood of the most politicized environmental activists, so it is a notable occasion when such groups receive skeptical or critical treatment from a major media source. Yet that is what happened in April when the *Sacramento Bee's* Pulitzer Prize-winning environmental reporter Tom Knudson devoted a five-part feature series to what the paper called "Environment, Inc.,"<sup>23</sup> which became the basis of an effort known as the "Sierra Summit" to begin long-range planning to address the environmental issues in California's grand mountains. But environmentalists are deeply unhappy with Knudson's "Environment, Inc." series.

Knudson's series depicts the environmental movement as a grasping special-interest group with dubious motives and doubtful command of the facts. In other words, they are just like any other special-interest group. In 1999, Knudson notes, donations to environmental organizations reached \$3.5 billion, and the average salary for CEOs of the 10 largest environmental organizations was \$235,000. By contrast, the salary of the CEO of Habitat for Humanity was \$62,843; of Mothers Against Drunk Driving, \$69,570. Moreover, Knudson points out that overhead and fundraising expenses for many environmental organizations have grown quite high — more than 40 percent in the case of the Sierra Club.

Knudson's analysis of and judgments about the environmental movement track closely with Lomborg's portrayal of "The Litany." For example: "Those who know the environment best — the scientists who devote their careers to it — say environmental groups often twist fact into fantasy to serve their agendas.... And sometimes when nature needs help the most, environmental groups are busy with other things." The headline of a jump-page of the article read: "Crisis mentality fuels fundraising." Knudson devoted an entire story of the series to the favored tactic of environmental lawsuits, suggesting that the

suits have passed the point of diminishing returns and may actually retard environmental protection in some cases. Another story in the series concluded that environmentalist opposition to basic forest management is placing endangered species and sensitive habitat at greater risk from catastrophic forest fires.

Knudson followed up this series, which was widely reprinted around the country, with an equally iconoclastic news story about how environmental groups were distorting the facts surrounding the proposal to open the Alaska Natural

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Wildlife Refuge (ANWR) to oil exploration. "But even those friendly to conservation are uneasy with environmental tactics, including the selective use of science to drive points home," Knudson wrote in the *Bee* on August 19.

Knudson quoted a federal wildlife biologist who specializes in Alaskan wildlife issues, Steven Amstrup: "I don't have a stake one way or the other. But I've been very angered by what I've seen. What should be a campaign of information and truth has become a campaign of misinformation and rhetoric." Environmental organizations were not happy with this kind of critical coverage, which they seldom receive.

"Knudson spent 16 months creating a one-sided hit piece leaving many friends feeling betrayed and your readership distracted by biased and distorted journalism," complained Thomas Kelsey of the Center for Sierra Nevada Conservation in a letter to the editor of the *Bee*. *The Sacramento News & Review*,

an alternative weekly, weighed in: “Ten years ago, Tom Knudson was the hero of environmentalism in California. Today, he is something closer to their sworn enemy. It is looking more and more like Knudson is setting aside journalistic objectivity and honesty in his quest to ‘get’ environmentalists. Knudson is doing whatever it takes to knock environmentalists off the pedestal on which he placed them.”<sup>24</sup>

Knudson’s searching criticism of environmental organizations may be a sign that major media scrutiny is finally

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starting to branch out beyond John Stossel TV documentaries and the *Wall Street Journal* editorial page. Indeed, *High Country News* editor Ed Marston noted in a *Denver Post* column: “If this were almost any other journalist, we could blow off the series. But this is Tom Knudson, and we should pay attention to what turned him from a journalist who has spent two decades muckraking environmentalism’s enemies to one who is muckraking environmentalism.”<sup>25</sup>

The hubbub over Knudson’s critical view of environmental organizations has caused the last piece in his series, which examined grassroots environmental activity, to be overlooked. Yet Knudson is right that this kind of environmental thinking, which takes seriously the famous axiom, “Think globally, act locally,” represents the next wave of progress in solving real environmental problems. As Knudson writes: “ranchers, corporate executives, small-town merchants,

educators, schoolkids and other ordinary people [are] embracing a home-grown style of environmentalism that is quietly saving species, restoring forests and grasslands, and preserving open space.”

Academics have started referring to this kind of environmental activity as “civic environmentalism,” and it is significant that civic environmentalism can find both liberal and conservative enthusiasts. See, for example, from the left, William Shutkin’s *The Land That Could Be: Environmentalism and Democracy in the Twenty-First Century*,<sup>26</sup> and, from the right, Charles Rubin and Marc Landy’s *Civic Environmentalism: A New Approach to Policy*.<sup>27</sup> Other sections of this report will highlight some specific examples of civic environmentalism in action, but Knudson may provide the best summary of the civic environmental outlook when he describes grassroots activity: “Its disciples do not view the world darkly. Their habitat is one of hope, not hype.”

### **NOTABLE SCHOLARSHIP IN 2001 THE PRECAUTIONARY PRINCIPLE RIGHTLY UNDERSTOOD**

A number of scholarly contributions to environmental discourse published in 2001 are worthy of note. One of the most intriguing is Indur Goklany’s monograph *The Precautionary Principle: A Critical Appraisal of Environmental Risk Assessment*.<sup>28</sup> The “precautionary principle” has become, like “sustainable development” which preceded it, a controversial idea in environmental thought. The most popular working definition of the precautionary principle is: “When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect are not established scientifically. In this context the proponent of the activity, rather than the public, should bear the burden of proof.”<sup>29</sup> In simpler terms, the precautionary principle might be thought of as a restatement of the time-honored axioms “look before you leap,” or “better safe than sorry.”

Like “sustainability,” the common sense idea of “precaution” becomes highly problematic in the context of environmental decision-making. In fact, the precautionary principle came to the fore precisely as a razor to help resolve the vagueness and uncertainty of “sustainable development.” Applied broadly and simple-mindedly, its default would be to prohibit



all action, since most actions pose risk at some threshold. To the old axiom “better safe than sorry” must also be balanced the equally ancient axiom “nothing ventured, nothing gained.” One to two Americans die each year from ingesting toothpicks; would the precautionary principle counsel banning them?

The precautionary principle does not, in its basic terms, suggest how risk tradeoffs are to be assessed; for example, does the small risk of cancer from chlorinated water outweigh the health benefits of cleaner drinking water that chlorination provides? (Some environmentalists say “yes”.) *Reason* magazine science writer Ron Bailey writes: “The Precautionary Principle incorporates the values of the most extreme versions of know-nothing environmentalism.”<sup>30</sup> Other critics have restated the precautionary principle in even starker terms: “Everything is connected to everything else, and since uncertainty is everywhere, anything we do might destroy the world; therefore, nothing should be permitted.”

This is hardly a strained reading of the precautionary principle in practice. The precautionary principle was first articulated in connection with climate change as a way of overcoming the scientific uncertainty about the extent and effect of global warming. But the principle has quickly come to have widespread application. A few environmentalists cite the principle as the basis for a categorical ban on all genetically modified (GM) crops, the use of DDT anywhere in the world for any reason, or the development and use of various pesticides. One can think of any number of existing technologies that might not have passed muster under the broadest application of the precautionary principle had it been in place in some meaningful way.

For example, there is still controversy, i.e., there is a lack of “full scientific certainty,” about whether microwave radiation from cell phones is a human health risk. A strict application of the precautionary principle might have prohibited the development of cell phones. So the idea is in need of refinement if it is to be serviceable for policymakers.

“Certainty in science is the exception rather than the rule,” Goklany notes, so it is necessary to think seriously about whether decision-making amidst uncertainty is compatible with any understanding of the precautionary principle. Rather than deprecate the precautionary principle for its obvious simplistic abuses, Goklany developed a five-part framework for applying the principle that is reminiscent of the multi-pronged “tests” that the U.S. Supreme Court uses to decide tough legal appeals. Goklany assumes that the pre-eminent value driving all evalua-

tion is the threat posed to public health by any proposed human action: “threats to human health should take precedence over threats to the environment, although there might be exceptions based on the nature, severity, and extent of the threat.”<sup>31</sup>

Most contemplated human actions present potential benefits as well as risks; as Goklany argues, “the precautionary principle generally provides no guidance to resolve such dilemmas.” Goklany’s five-part criteria for addressing the problem are:

- *Immediacy*: more immediate threats should be given priority over more remote long-term threats;
- *Uncertainty*: threats that are more certain should be given priority over less certain threats so long as their consequences are equivalent;
- *Expectation-value*: for threats of equal certainty, priority should be given to the threat with more severe expected harm to human health;
- *Adaptation*: threats can be discounted to the extent that mitigating technology is available or can be developed;
- *Irreversibility*: threats that pose irreversible consequences should be given higher priority.

Applying this framework rigorously to several high profile controversies produces some results that run contrary to the conventional wisdom. Goklany concludes that a global ban on the use of DDT is inadvisable because it would increase the risk of malaria deaths in countries where malaria is still endemic. He agrees that advanced industrial countries can do without DDT, that its use in developing countries should be limited generally to indoor spraying, and that it be phased out as effective substitutes are developed.

On the issue of genetically modified foods, Goklany concludes that applying his framework for assessing trade-offs makes it imperative that the development of GM foods continue. Not only do they hold potential benefits for human food needs, but they may also help the cause of conservation and biodiversity by economizing land and water resources.

The case of global climate change — the issue for which the precautionary principle became widely popular — is trickier because of the uncertainties on both sides of the ledger, but Goklany concludes that aggressive steps to curb greenhouse gas emissions in the near term “would in fact increase overall risks to public health and the environment.” Genuine precaution would suggest policies embracing the “no regrets” theme, i.e.,

policies that would make sense on their own terms (such as cost-effective technological innovations for energy efficiency, and reducing deforestation and habitat loss) or that increase our adaptive capacities (especially economic growth in the developing world).

These conclusions are highly controversial, needless to say, and underscore the point that our judgments about policy choices, even within a careful framework such as the one Goklany offers, depends on our assessments of relative risks and the tradeoffs between kinds of risk. Although these assessments are not purely subjective, much of the analysis will be driven by preferences and the weights attached to them. The value of Goklany's exercise is in making more explicit the kind of preferences that are brought to the debate about precaution.

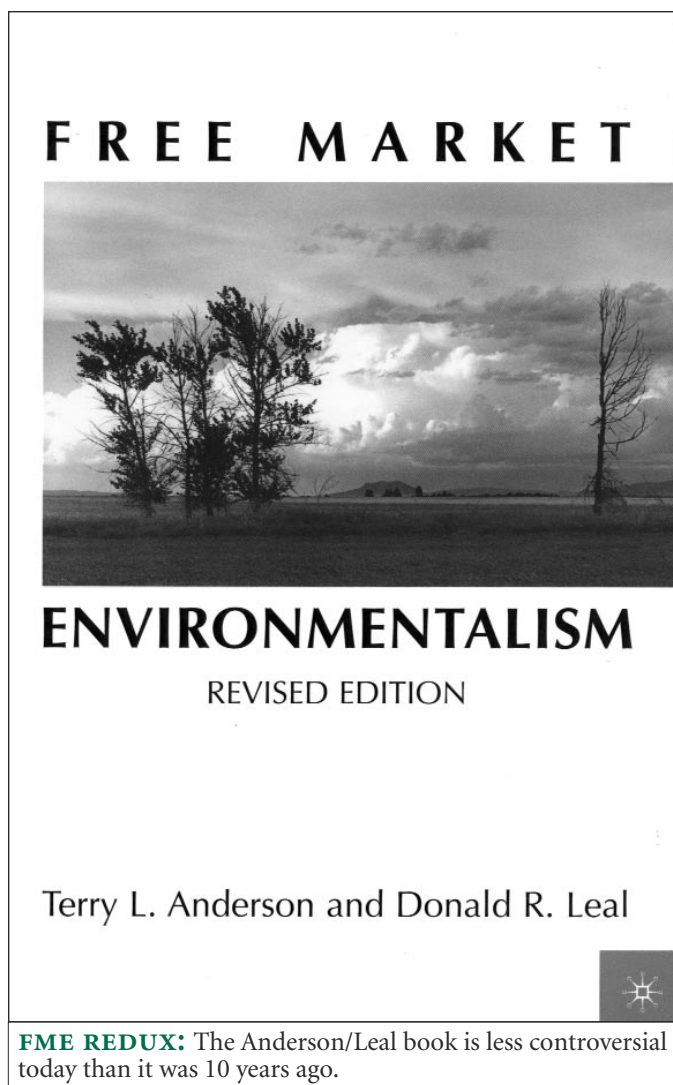
### FREE MARKET ENVIRONMENTALISM: THE NEXT GENERATION

In 1991 the Pacific Research Institute published *Free Market Environmentalism* by Terry L. Anderson and Donald R. Leal. This groundbreaking book applied markets and property rights to a wide range of environmental problems from land and forest management, water and air pollution, ocean fisheries, and endangered species. Although the idea of using market incentives to reduce pollution had been around for many years, the idea of "free market environmentalism" had hitherto been regarded as an oxymoron by conventional environmentalists and the news media.

With the publication of Anderson and Leal's book, FME, as it came to be called, was recognized as a serious "paradigm" for thinking about the environment. The basic arguments at the heart of the book are that "incentives matter," that bureaucratic management of natural resources is not merely inefficient, but is often actually harmful to the environment, and that property rights, far from being the enemy of the environment, provide a positive means for environmental protection.

Aspects of FME remain controversial or sometimes tricky to work out in practice, but the general viewpoint has gained wider acceptance even among old-line environmental groups. In 1998, for example, the Worldwatch Institute published *The Natural Wealth of Nations: Harnessing the Market for the Environment*, by David Malin Roodman. In language that could have come straight from *Free Market Environmentalism*, Roodman acknowledges that bureaucratic regulation is often ineffective "for precisely the same reason that central planning has run aground almost everywhere it has been tried." Continuing environmental improvement, Roodman suggests, will require "giving freer rein where possible to industry's own problem-solving ability."

In 2001 Anderson and Leal completed a new edition of *Free Market Environmentalism*,<sup>32</sup> bringing their ideas up to date with more examples of FME in practice and extending the principles to international environmental issues. Anderson and Leal unsurprisingly find that one of the largest obstacles to sound resource stewardship in the developing world is the lack of clear and enforceable property rights. The authors cite the work of economist Seth Norton, who found that security of property rights correlates closely with whether a nation's forests are growing or shrinking. The example of forests applies broadly across other environmen-



tal categories. Norton concludes: “Environmental quality and economic growth rates are greater in regimes where property rights are well defined than in regimes where property rights are poorly defined.”<sup>33</sup>

Establishing the institutional and legal systems for secure property rights is no simple matter, but would be a more effective agenda for enhancing international environmental quality than billions of World Bank loans or a regime of global regulation.

## LOOKING AHEAD IN 2002

Several major environmental initiatives were unfolding as this edition of the *Index* went to press, including President Bush’s new air quality initiative targeting the “three Ps” — sulfur dioxide, nitrogen oxides, and mercury — along with shifting the focus of carbon dioxide policy from emissions *per se* to the carbon *intensity* of the U.S. economy. This will be discussed in more detail in the next section of this report, though the dynamics of this issue are certain to change as the year progresses.

By far the most significant environmental story ahead is the U.N.’s World Summit on Sustainable Development scheduled for September in Johannesburg, South Africa. This conference is intended to be a follow-on to the 1992 “Earth Summit” in Rio de Janeiro, which generated several important international treaties and conventions. It is not clear at this point whether President Bush will attend, though it is certain that pressure for his attendance will rise to a crescendo over the summer. (President George H.W. Bush waited until the last minute before deciding to attend the 1992 Earth Summit.)

Much of this Summit will be devoted to climate change issues, especially to beating up the U.S. for dumping the Kyoto protocol, making this conference potentially the environmental equivalent of the U.N.’s Durban conference on racism last summer. However, the fundamental understanding of what constitutes sustainable development remains a murky and imprecise subject. Interested readers should see our discussion of sustainable development in the 5<sup>TH</sup> edition (2000) of the *Index of Leading Environmental Indicators*, still available on our website at: [www.pacificresearch.org](http://www.pacificresearch.org).

## NOTES

- 1 The Clinton administration’s Department of Energy estimated that the Kyoto protocol’s cost to the American economy by 2010 would be energy prices as much as 83 percent higher in real terms (including \$2 a gallon gasoline), and an annual cost to gdp of as much as \$338 billion a year. The DOE thought that as many as 40,000 coal mining jobs would be eliminated, mostly in the eastern coal states, which helps explain why Vice President Gore failed to carry the normally Democratic stronghold of West Virginia. See *What Does the Kyoto Protocol Mean to U.S. Energy Markets and the U.S. Economy?*, Energy Information Administration, U.S. Department of Energy, October 1998, available at [www.eia.doe.gov/oiarf/kyoto/kyotobrf.html](http://www.eia.doe.gov/oiarf/kyoto/kyotobrf.html).
- 2 See DOE bulletin “Why Are Gasoline Prices Falling So Rapidly?” available at [www.eia.doe.gov/pub/oil\\_gas/petroleum/feature\\_articles/2001/falling\\_mogas/falling\\_mogas.html](http://www.eia.doe.gov/pub/oil_gas/petroleum/feature_articles/2001/falling_mogas/falling_mogas.html) (accessed December 20, 2001).
- 3 [www.eia.doe.gov/pub/oil\\_gas/petroleum/analysis\\_publications/oil\\_market\\_basics/default.htm](http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/oil_market_basics/default.htm).
- 4 The International Energy Administration’s *World Energy Outlook 2001* (published October 2001) concludes: “The world has abundant reserves of energy. Proven energy reserves are adequate to meet demand until 2020 and well beyond.” Executive summary available at [www.iea.org/weo/insights.htm](http://www.iea.org/weo/insights.htm). (Accessed January 9, 2002.)
- 5 Gregg Easterbrook, “Political Mileage,” *The New Republic*, October 9, 2000, p. 25.
- 6 See *Effectiveness and Impact of Corporate Average Fuel Economy (cafe) Standards*, National Academy of Sciences, March 2000, p. ES-4, available at <http://books.nap.edu/books/0309076013/html/index.html> (accessed January 8, 2002).
- 7 The Sierra Club circulated a memo shortly after 9/11: “In response to the attacks on America, we are shifting our communications strategy for the immediate future. We have taken all our ads off of the air; halted our phone banks; removed any material from the web that people could perceive as anti-Bush, and we are taking steps to prevent the Sierra Club from being perceived as controversial during this crisis. For now we are going to stop aggressively pushing our agenda and will cease bashing President Bush.” Greenpeace did likewise.
- 8 Robert A. Nisbet, *Prejudices: A Philosophical Dictionary* (Harvard University Press, 1982), p. 101.
- 9 Many environmentalists remain pessimistic not just about prospects for planet earth, but about their own movement. See, for example, Mark Dowie, *Losing Ground: American Environmentalism at the Close of the 20th Century* (Cambridge: MIT Press, 1996), which makes the case that the environmental movement has largely failed in its aims and is adrift. Sample (p. X): Environmentalists “have been unable to produce a significant improvement in the country’s environmental health. American air, land, and water are certainly in better shape than they would have been had the movement not existed, but they would be in far better condition had environmental leaders been bolder; more diverse in class, race, and gender; less compromising in battle; and less gentlemanly in their day-to-day dealings with adversaries. Over the past 30 years environmentalism has certainly risen close to the top of the American political agenda, but it has not prevailed as a movement, or as a paradigm.” This is a good example of someone not being able to take “yes” for an answer.
- 10 *The Skeptical Environmentalist*, p. 3.
- 11 Consider, for example, the case of Allen Weinstein, who set out in the 1970s to prove the innocence of Alger Hiss, only to conclude that Hiss

- was guilty after all (see *Perjury: The Hiss-Chambers Case*), or Ronald Radosh, who set out to prove the innocence of the Rosenbergs, only to conclude that the Rosenbergs were in fact guilty as charged (see *The Rosenberg File*). Both books created a media sensation.
- 12 Denis Dutton, "Greener Than You Think," *Washington Post*, October 21, 2001, p. BW01.
- 13 Nicholas Wade, "From an Unlikely Quarter, Eco-Optimism," *New York Times*, August 7, 2001, p. F-1.
- 14 Eric Neumayer, "Picking Holes in Litany of Loss," *Times Higher Education Supplement*, November 16, 2001, p. 23.
- 15 Greeley's conclusion is instructive: "There is little difference between environmental prophets of doom and predictions of the fundamentalist's prophecy about the 'Late Great Planet Earth.' Both are Calvinist, both try to scare people into virtuous behavior. Both expect the end of the world for reasons of blind faith. Against such faith, Lomborg's careful, detailed, precise statistical analyses are, I fear, useless."
- 16 See [www.anti-lomborg.com](http://www.anti-lomborg.com), and [www.gristmagazine.com/grist/books/lomborg121201.asp](http://www.gristmagazine.com/grist/books/lomborg121201.asp). Lomborg's replies are found on his own website, [www.lomborg.com](http://www.lomborg.com).
- 17 [www.wri.org/press/mk\\_lomborg\\_lash\\_sej.html](http://www.wri.org/press/mk_lomborg_lash_sej.html) (accessed January 10, 2002).
- 18 "Defending Science," *The Economist*, February 2, 2002, p. 15.
- 19 There are a few notable exceptions. California Governor Gray Davis remarked last summer: "By almost every measure the environment today is better than it was ten years ago. The air is cleaner, the water is purer, and the land is better protected." See also David Whitman, "It's a Breath of Fresh Air: Thirty Years After Earth Day, America Is Getting Its Environmental Act Together," *U.S. News and World Report*, April 17, 2000, p. 16.
- 20 Michael Grubb, "Relying on Manna from Heaven?," *Science*, November 9, 2001, p. 1285.
- 21 FIGURE 2 correlates per capita Gross National Income as reported by the World Bank for 117 nations for the year 2000 with the World Economic Forum's *Environmental Sustainability Index*, which calculates a composite score of a nation's "sustainability" based on 22 indicators and 67 variables. *The Environmental Sustainability Index* is available online at [www.ciesin.columbia.edu/indicators/esi](http://www.ciesin.columbia.edu/indicators/esi).
- 22 As Lomborg puts it: "[The Litany] makes us scared and it makes us more likely to spend our resources and attention solving phantom problems while ignoring real and pressing (possibly non-environmental) issues. That is why it is important to know the real state of the world."
- 23 The series is available online at [www.sacbee.com/static/archive/news/projects/environment/index02.html](http://www.sacbee.com/static/archive/news/projects/environment/index02.html).
- 24 *Sacramento News & Review*, December 13, 2001, p. 10.
- 25 Ed Marston, "Expose Reveals Environmentalism's Success," *Denver Post*, June 4, 2001, p. B-7.
- 26 Cambridge: MIT Press, 2000.
- 27 Washington, D.C.: George Marshall Institute, 2002; available at [www.marshall.org](http://www.marshall.org).
- 28 Washington, D.C.: Cato Institute, 2001, 119 pps.
- 29 An alternative and "official" definition can be found in the 1992 U.N. Rio Declaration: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."
- 30 Bailey's full article on the precautionary principle can be found online at <http://reason.com/9904/fe.rb.precautionary.shtml>.
- 31 Goklany, p. 9.
- 32 New York: Palgrave, 2001.
- 33 Cited in *Free Market Environmentalism, Revised Edition*, p. 166.



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CHAPTER 1  
AIR QUALITY

**T**HE STEADY IMPROVEMENT IN AIR QUALITY in most American cities is one of the greatest environmental success stories of recent decades. Yet because this improvement has come in small increments — one to three percent a year — at any given moment the improvement tends to go unnoticed and unappreciated. Polls consistently find that Americans believe that air quality has gotten worse and will continue to get worse in the future.

The most recent such poll, conducted in January 2002 by Wirthlin Worldwide for the Foundation for Clean Air Progress, found that 66 percent of Americans believe air quality has gotten worse in the last 10 years, while only 28 percent believed that air quality has improved.<sup>1</sup> It is only when the entire record of the last three decades is surveyed that the dramatic progress becomes evident.

**TABLE 1** displays changes in average ambient levels of pollution for the U.S. for 1999 (the most recent year for which complete data are available from the EPA) and for the period from 1976 to 1999.<sup>2</sup> The EPA's annual report on air quality is seldom covered by the major media, chiefly because of its length and technical nature, and also because the report does not present any sensationalized news "hook" that would attract headline writers. It is doubtful the report is read at all in most workaday newsrooms.

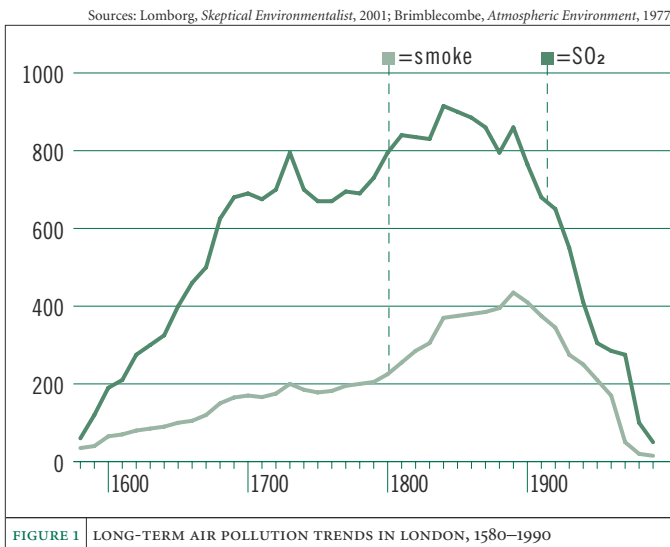
It is a notable occasion, therefore, to see the July 2001 edition of *Runner's World* magazine reporting the EPA data on improving air quality trends. "The good news," *RW* wrote, "is that air quality is improving, according to a 1999 air-quality report by the U.S. Environmental Protection Agency.... EPA statistics also show that during the 10 years ending in 1999, levels of air pollution have

been reduced by as much as 60 percent for lead, 36 percent for carbon monoxide, but only 18 percent for particles and a paltry 4 percent for ozone.”<sup>3</sup>

The EPA’s latest preliminary report on air quality for the year 2000 points to an even longer track record, noting that since 1970, aggregate emissions of the six “criteria” pollutants regulated under the Clean Air Acts have declined 29 percent, at the same time that the U.S. economy grew 150 percent, auto travel increased by 143 percent, and total U.S. energy consumption (the primary source of air pollution emissions) increased 45 percent. While aggregate *emissions* of the “precursors” of pollution have fallen by 29 percent, *ambient* levels of pollution — the actual concentration of pollution in the air that we breathe — have fallen even more, as we shall see. (*Ambient* levels of pollution do not match up one-to-one with *emissions* for a variety of meteorological factors.)

Clean-air legislation on the state and national level has obviously played a large role in achieving this rapid progress. The role of economic growth and technological progress, however, is perhaps more significant.

Working with the findings of British environmental scientist Peter Brimblecombe, who has developed a model to estimate air pollution levels in London as far back as the 16<sup>th</sup> century, Bjørn Lomborg concludes that “the London air has not been as clean as it is today since the Middle Ages,” a finding that will no doubt surprise many who believe that the 20<sup>th</sup> century surely experienced the worst air pollution. (See **FIGURE 1.**)



Lomborg’s critics have replied that the selection of London is misleading because it was one of the world’s dirtiest cities, which is precisely the point: if one of the *dirtiest* cities can show this dramatic improvement concurrent with rapid population and economic growth, it provides great encouragement for the air-choked cities of the developing world today. Given the spread of modern pollution control technology, perhaps many of these nations can shortcut London’s trajectory.

There is, of course, wide variation in air-pollution levels and trends in air quality between different regions and metropolitan areas in the United States. The EPA has been publishing state and metropolitan area data since 1985, most of which are now available online at [www.epa.gov/air/data/index.html](http://www.epa.gov/air/data/index.html). (Local area data on this site can even be sorted by zip code.) The EPA website can be unwieldy and complicated; a simple and concise state-by-state breakdown of emissions of air pollutants and energy use from 1985–1999 is available from the Foundation for Clean Air Progress at [www.cleanair-progress.org/your\\_state\\_air/index.asp](http://www.cleanair-progress.org/your_state_air/index.asp).

**GASPING FOR THE TRUTH:  
SCAREMONGERING ABOUT THE AIR**

One reason the public believes that air quality is getting worse is that a few lobby groups generate gloomy headlines by distorting and sensationalizing the data. Such was the case last May when

Source: EPA.

	1976–1999	1999
Ozone	-29.6%	-2.6%
Sulfur Dioxides	-65.3%	-1.9%
Nitrogen Dioxide	-37.9%	0.0%
Carbon Monoxide	-68.1%	-2.6%
Particulates (PM10)*	-25.8%	+0.8%
Lead	-97.3%	0.0%

**TABLE 1** AMBIENT AIR POLLUTION LEVELS IN THE U.S., 1988–1999

the American Lung Association (ALA) released a “State of the Air” report claiming that air pollution in the U.S. was up seven percent and is a “major health threat” to 141 million Americans. The report received extensive media coverage but none of the critical attention it deserved.

The ALA’s report defines “air pollution” only as ozone, ignoring the other five pollutants, all of which have health risks associated with them. And the ALA’s study period was limited to the years 1997–1999, during which time ozone levels in many areas rose because of hot weather conditions. Even with this upward blip, ozone levels in nearly every metropolitan area are *lower* than they were a decade ago — a fact studiously ignored in the ALA report. Second, the ALA represents ozone health risk according to the EPA’s proposed new standard of .08 parts per million, which is a value designed to protect the health of the most sensitive persons (people suffering from respiratory diseases, the elderly, and children with developing lungs), and which remains controversial among health professionals.

The findings of the EPA’s own Clean Air Science Advisory Committee suggest that the majority of the 141 million Americans the ALA deems at “serious risk” face little or no risk from the ozone levels the ALA decries. The most egregious distortion of the ALA report, however, was its methodology for calculating how many Americans are exposed to “unhealthful” air.

Most metropolitan airsheds have air quality monitors widely scattered throughout the region, and there is large variation in air quality between areas in a region. The ALA report counted an entire metropolitan area’s population as exposed to unhealthy air if only a *single* monitor anywhere in the region registered an exceedence. This is more than misleading; it is dishonest.

For example, in the Los Angeles basin during the years 1997–1999 (the period covered in the ALA report), the highest number of exceedences at any single monitor was 110, but several monitors (West Los Angeles, North Long Beach, and Lynwood) had *zero* exceedences during the same period, while others had only a few (downtown Los Angeles had 14; Pasadena had 33). Yet the ALA counted the *entire* population of the Los Angeles basin as breathing unhealthful air, when in fact only a fraction of the population can be said to be breathing dirty air if the ALA’s own standard were to be applied rigorously. Indeed, the EPA reports that the number of Americans living in areas with unhealthful air is 62 million — a far cry from the ALA’s claim of 141 million.

The Reason Public Policy Institute’s Joel Schwartz commented acerbically on the ALA report:

Ironically, ALA’s efforts could actually reduce Americans’ health and safety. The ALA report could cause the public to demand many billions of dollars in expenditures to clean up air that is already clean. These wasted billions would harm people in two ways. First, in a world of limited resources, society can only address some of the many risks people face. Wasting money on phantom risks means that real risks go unmitigated. Second, health and safety improve over time as talented people progressively find cheaper and more effective ways of solving problems. But when people waste effort on fruitless endeavors, fewer real problems get the attention they deserve, reducing health and safety not only in the present, but in the long run as well.

Everyone deserves to breathe clean air, and nobody wants to see people suffering from pollution. A few areas of the country have serious air pollution problems that do threaten the health of people who live there. But exaggerating the public’s risk from air pollution is no better than ignoring real air quality problems.<sup>4</sup>

The contretemps over the ALA report on air quality and health risk is especially germane in the context of the relationship between air pollution and the rising incidence of asthma.

## THE ASTHMA MYSTERY

The incidence of asthma has risen by a third over the last 20 years and nearly doubled among children under 18. (See **FIGURE 2.**) The causes of the rise in asthma, also on the increase in other industrialized nations, remain a mystery, though genetic factors loom large. Asthma is more prevalent in children with one or more asthmatic parents and links have been suggested between exposure to various indoor allergens — including cockroach feces, cat and dog dander, and dust mites — and to possible auto-immune deficiencies resulting, ironically, from the improving general health of children. The role of air pollution has long been of interest to asthma research, and the EPA cites asthma risk to children as a prominent justification for the new tighter standards for ozone and particulates. Yet the suspicions about air pollution and asthma remain far from proven.

One suspects something is amiss when one notes that peak ozone levels and the number of ozone exceedences have been falling in inverse relationship to the rise of asthma, as shown by the trendlines in **FIGURE 3**. And nations with the worst air quality have lower asthma rates than nations with low air pollution, such as New Zealand, which has a high asthma rate. A recent epidemiological study published in *The Lancet* has lent new momentum to this view.<sup>5</sup>

Researchers contracted by the California Air Resources Board (CARB) studied children living in “high ozone” communities who actively participated in three or more sports. The study found that the risk of developing asthma was 3.3 times higher for three-sport children than for children who played no sports. The nuances of the study qualified this finding in a number of important ways, all of which were lost on the news media reports which represented the study in alarming terms. (*San Francisco Chronicle*: “Smog May Cause Childhood Asthma”; *Washington Post*: “Study: Pollution May Cause Asthma: Illness Affects 9 Million in U.S.”) The study notes, for example, that cross-country skiers have a significantly higher rate of asthma than the general population, which cannot be ascribed to air pollution; the study speculates that perhaps cold air is an agent of causation. Indoor figure skaters also have a higher prevalence of

asthma that cannot be attributed to ozone, though high nitrogen dioxide generated by ice-grooming machines might be a factor.

The oddest finding of the study, however, is that there was a *lower* rate of asthma among non-sports playing children in *high ozone* communities. The study authors note that “the low rates in high pollution communities are puzzling, since it is not plausible that ozone and other combustion-related pollutants protect against asthma.” The contradictory finding of lower rates of asthma among sedentary children versus high-sports children suggests that the *CARB/Lancet* study is far from establishing a dose-response relationship between ozone and asthma.

The *CARB/Lancet* study tacitly admits this with the comment that “the effect of sports would not be likely to affect greatly the overall rates of asthma in high ozone communities.... Risk of developing asthma was not greater overall in children living in the six high pollution communities than children living in the six low pollution communities.” In other words, we shall have to keep looking for the major factors behind the rise in asthma rates among children.

Our colleague Joel Schwartz at the Reason Public Policy Institute helpfully points out that very few, if any, children are actually exposed to the “high ozone” conditions defined in the

### SULFUR DIOXIDE

SO<sub>2</sub> is a colorless gas that forms from the burning of fuel containing sulfur, mainly coal and oil, as well as from industrial and manufacturing processes, particularly electrical power. Environmental factors such as temperature inversion, wind speed, and wind concentration also affect levels.

### NITROGEN OXIDE

Nitrogen oxides form naturally when nitrogen and oxygen combine through bacterial action in soil, lightning, volcanic activity, and forest fires. NO<sub>x</sub> also result from human activities including high-temperature combustion of fossil fuels by automobiles, power plants, industry, and the use of home heaters and gas stoves. Environmental agencies particularly track the light brown gas nitrogen dioxide (NO<sub>2</sub>) because in combination with volatile organic compounds (VOCs) in the presence of sunlight it helps form ground-level ozone.

Source: Centers for Disease Control, National Center for Health Statistics, Estimates from the National Health Interview Survey, Vital Health Statistics, series 10.

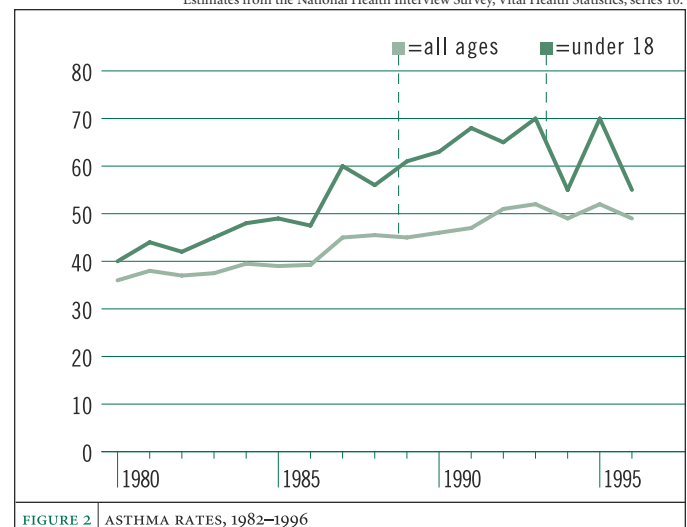


FIGURE 2 | ASTHMA RATES, 1982-1996

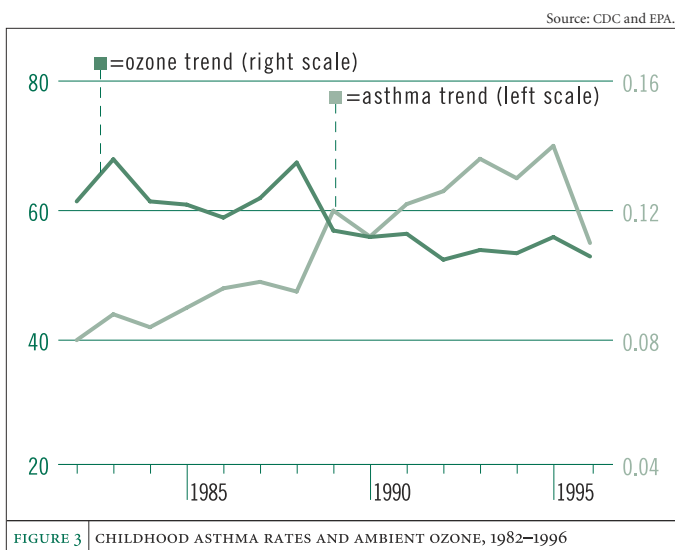


CARB/Lancet study’s parameters.<sup>6</sup> Nearly all California cities, for example, qualify as “low ozone” areas in the CARB/Lancet study; moreover, 96 percent of all air quality monitors nationwide fall short of the CARB/Lancet criteria for “high ozone” locales. Schwartz concludes: “[W]e can conclude that no Americans are now exposed to ozone at levels McConnell, *et al.* [authors of the CARB/Lancet study] found to be associated with increased asthma risk.”

While common sense suggests that air pollution surely aggravates asthma (along with other respiratory ailments), we are still at square one in finding the causes of increased asthma.

### OZONE

The national average ambient ozone level declined 2.6 percent in 1999, and has declined by nearly 30 percent since 1976. While the declining long-term trendline displayed in **FIGURE 4** looks encouraging, the trendline for the last decade (**FIGURE 5**) is nearly flat. Although progress in lowering ambient ozone levels is becoming more difficult (especially since the EPA has lowered the target from 0.12 parts per million to 0.08 parts per million), a closer look shows that significant gains are still being made in many local areas, and



### OZONE

Ground-level ozone is the primary contributor to urban smog, although sulfur, nitrogen, carbon, and fine particulate matter contribute to smog formation as well. Ozone is not emitted directly into the air but forms when volatile organic compounds (VOCs) combine in sunlight with various nitrogen oxides (NOx), dependent upon weather-related factors. This makes it difficult to predict changes in ozone levels accurately due to reductions in VOCs and NOx. VOCs evaporate into the atmosphere from motor vehicles, chemical plants, refineries, factories, consumer and commercial products such as lighter fluid, perfume, and other industrial sources. VOCs also occur naturally as a result of photosynthesis.

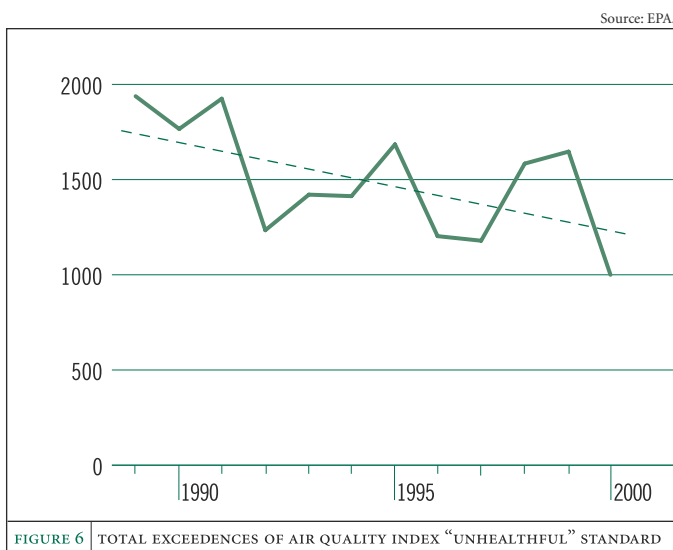
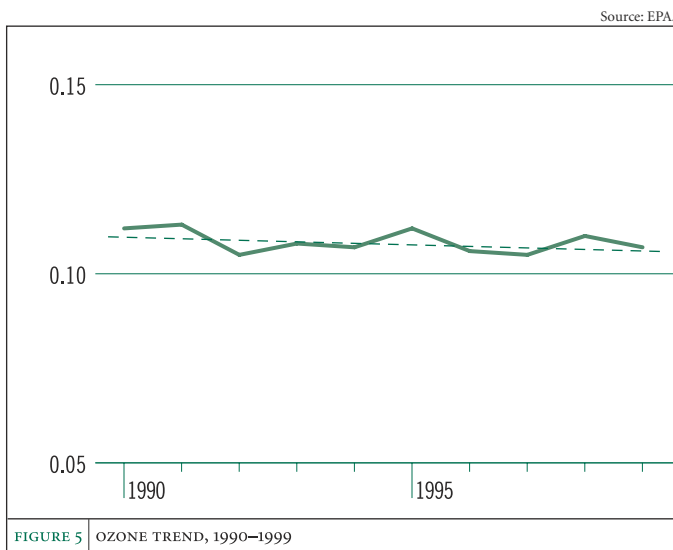
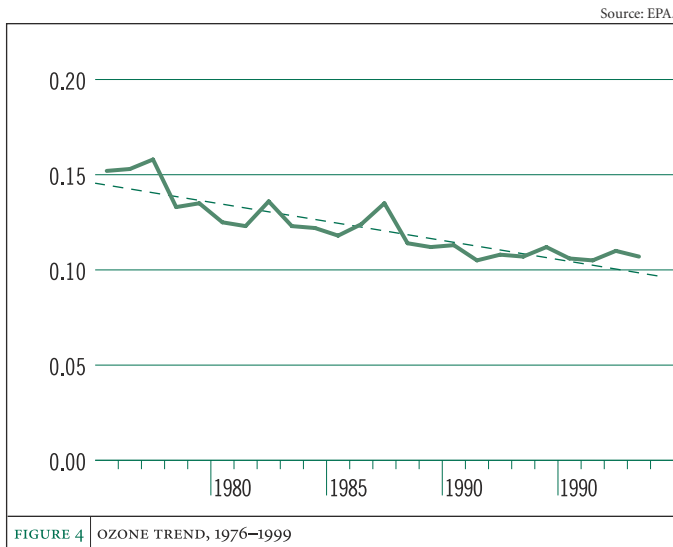
The December 1991 National Academy of Sciences report on ozone revealed that most of the variation in ozone comes from “natural fluctuations in the weather,” not from “year-to-year changes in emissions.” Therefore, it concluded that current ozone reduction strategies may be ineffective because they do not account for naturally occurring VOCs.

### PARTICULATES

Particulate matter is the general term for a mixture of solid particles and liquid droplets or vapor directly emitted into the air where they are suspended for long periods of time. Particulates can affect breathing, damage paints, and reduce visibility. These particles derive from stationary, mobile, and natural sources, including forest fires and volcanic ash; emissions from power plants, motor vehicles, wood stoves, and waste incineration; and dust from mining, paved and unpaved roads, and wind erosion. Indeed, the highest PM10 level in the nation, in Inyo County, California, is caused not by man-made sources, but from wind-blown dust from a dry lake bed.

### LEAD

Lead is a soft, dense, bluish-gray metal used in piping, batteries, weights, gunshot, and crystal. Of the six criteria pollutants, lead is the most toxic. When ingested through food, water, soil, dust, or inhaled through the air, lead can accumulate in the body’s tissues and is not readily excreted. Excessive exposure to lead can cause anemia, kidney disease, reproductive disorders, and neurological impairments such as seizures, mental retardation, and behavioral disorders.



in reducing *peak* levels of ozone. One way of viewing this progress is to note the decline in the total number of “exceedences” of the EPA’s Air Quality Index (AQI) threshold for “unhealthful” air, shown in **FIGURE 6**.

Ozone is heavily weighted in the AQI, and most of the exceedences of the AQI are driven by high ozone levels. As such, the AQI is a good proxy for seeing how the *peak* ozone levels have continued to decline even though average national ozone levels have remained largely flat over the last decade. As **FIGURE 6** shows, the total number of exceedences of the AQI unhealthful threshold declined nearly 50 percent over the last decade.

In California, the number of AQI exceedences fell by 60 percent. (See **FIGURE 7**.) Of the 20 cities with the largest gains in air quality over the last two decades, the top five are in southern California. Some regions and metropolitan areas, especially southern cities such as Atlanta and Houston, are noticeably lagging the general falling trend in ozone pollution levels, and will remain the toughest cases for many years to come.<sup>7</sup> And a few instances of rising trends have largely escaped notice.

Tennessee, for example, has been experiencing a rising trend in AQI exceedences over the last decade in its three major cities of Memphis, Nashville, and Knoxville. (See **FIGURE 8**.) These three cities, in fact, had more AQI exceedences in 1998 and 1999 than all of Texas. (See **FIGURE 9**.) Which, remember, the presidential candidate from Tennessee attacked during the 2000 election campaign for having “the worst air quality in America.”

### SULFUR DIOXIDE

The national ambient sulfur dioxide (SO<sub>2</sub>) level fell 1.9 percent in 1999, and has fallen 65.3 percent since 1976. (See **FIGURE 10**.) The case of SO<sub>2</sub> illustrates the variable relationship between *emissions*, the amount of a pollutant coming out of a smokestack or tailpipe, and *ambient* air quality, the concentration of a pollutant once fully dispersed into the air, and how emissions reductions are leveraged. Between 1980 and 1999, the EPA notes, SO<sub>2</sub> *emissions* fell 27 percent, but *ambient* levels of SO<sub>2</sub> fell by 50 percent.

A new phase of the Clean Air Act’s SO<sub>2</sub> emissions program began in 2000, which aims to reduce SO<sub>2</sub> emissions by another third, from the current level of 12.4 million tons to 8.95 million tons over the next decade. A large portion of the emissions

reductions at electric utility plants occurred through a market-oriented program of tradable emissions allowances, whose prices are thought to have been much less than forecast at the time of the Clean Air Act Amendments of 1990. Because of the unexpectedly low prices of tradable emissions allowances, there is great optimism that the Phase II reductions will be easy or inexpensive to achieve. This optimism may be misplaced.

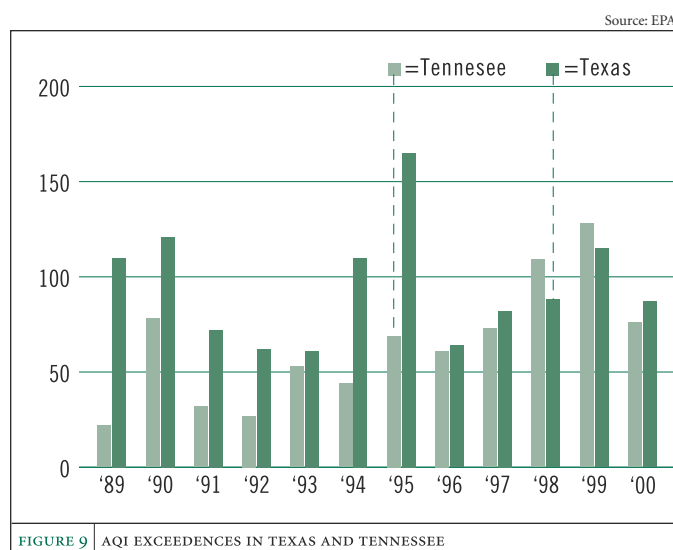
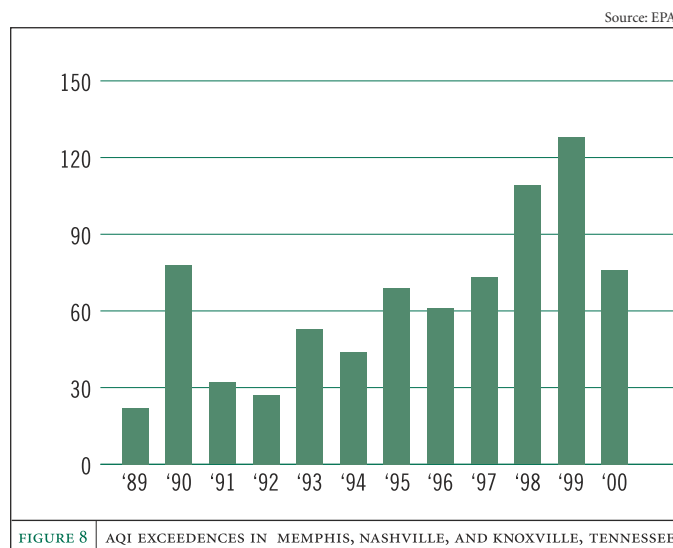
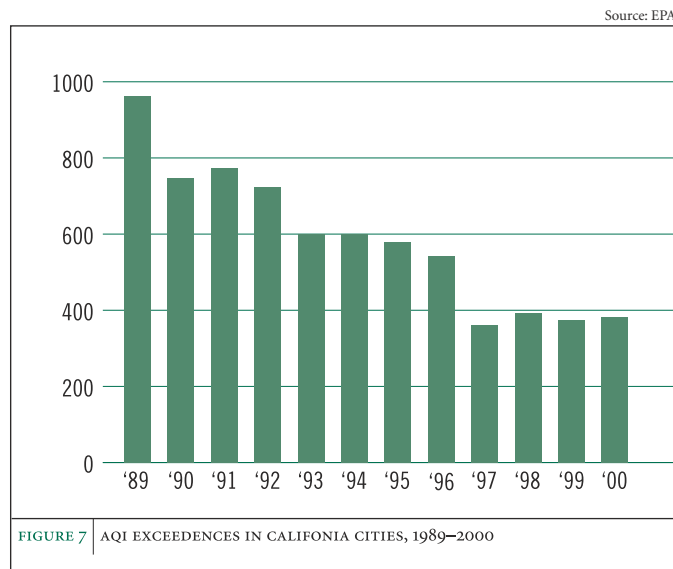
One of the myths that has crept into the record about SO<sub>2</sub> is that early estimates of emissions reductions were as high as \$1500 a ton, while tradable allowances sold for as little as \$100 a ton in the marketplace once they went into effect. This is a misconception and an exaggeration of the original estimates, which were that the highest *marginal* costs of emission reductions might be \$1500 a ton at utility plants that already had lower emissions profiles. Most estimates projected that the *average* cost of overall SO<sub>2</sub> reductions would be about \$200 a ton. Although emission allowance prices were about \$100 a ton throughout most of the 1990s, in 1998, as the beginning of Phase II approached (and which authorizes fewer emission allowances to buy or trade), the price of allowances rose to about \$200 a ton — in other words, near the original average cost estimates.

In addition, because Phase I emission allowances could be “banked” against Phase II targets, many utilities “over-complied” during Phase I, reducing emissions below the present targets. What does this mean? In all likelihood, the Phase II targets are going to be vastly more expensive to meet than Phase I. Estimates vary widely depending on assumptions (a key assumption being the extent to which coal-fired generators are replaced with natural gas generators), but range from \$225 to \$500 per ton.<sup>8</sup>

This becomes especially noteworthy in light of the fact that the Bush Administration’s Clean Skies Initiative proposes to lower the SO<sub>2</sub> target by another 50 percent — from 8.95 million tons under the Clean Air Act to 4.5 million tons, along with tighter emission limits on nitrogen oxides (NO<sub>x</sub>) and mercury.

### NITROGEN OXIDES

Along with ozone, nitrogen oxides (chiefly NO and NO<sub>2</sub>, which are grouped together as NO<sub>x</sub>), are proving to be the most vexing air-quality problem in the U.S. NO<sub>x</sub> compounds are the only pollutants whose emissions have increased over the last two decades (by about five percent), though the ambient level of nitrogen dioxide (the most prevalent form



Source: U.S. Department of Energy, Energy Information Administration.

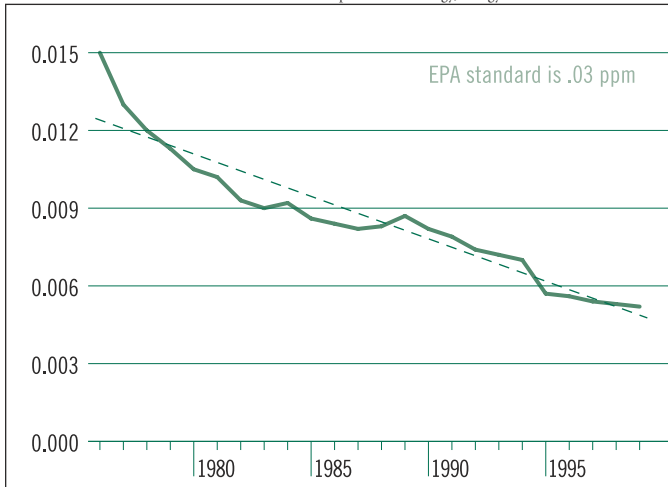


FIGURE 10 | SO<sub>2</sub> TREND, 1976-1999

Source: U.S. Department of Energy, Energy Information Administration.

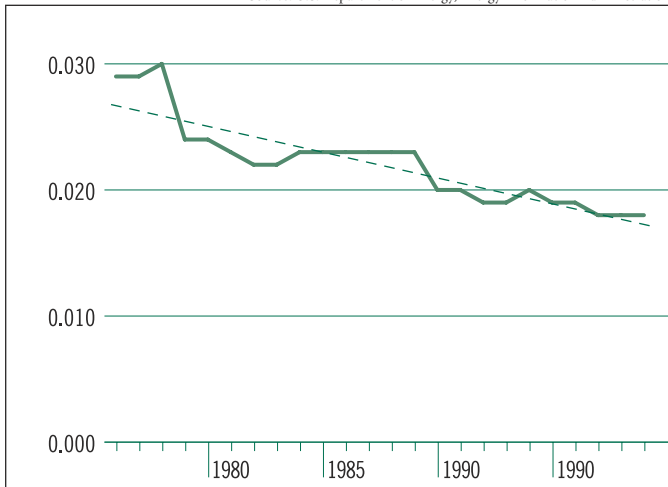


FIGURE 11 | AMBIENT NITROGEN DIOXIDE TREND, 1976-1999

Source: U.S. Department of Energy, Energy Information Administration.

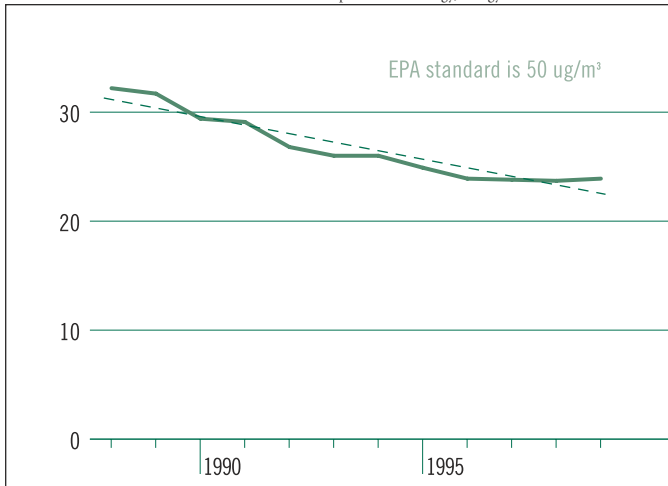


FIGURE 12 | PARTICULATE TREND, 1988-1999

of NO<sub>x</sub>) has declined 37.9 percent since 1976, as shown in **FIGURE 11**. In 1999, there was no change in ambient NO<sub>2</sub>.

The decline of ambient levels of NO<sub>2</sub> in the face of rising NO<sub>x</sub> emissions reflects the fact that, as the EPA explains, “nitrogen chemistry in the atmosphere is non-linear and, therefore, a change in NO<sub>x</sub> emissions may not have a proportional change in ambient concentrations of NO<sub>2</sub>.” The reasons for the disjunction between emissions and ambient levels are still somewhat mysterious, and the EPA thinks measurement error could be a factor, as well as rapid airborne chemical reactions. “For example,” the EPA speculates, “an area could experience improving NO<sub>2</sub> air quality in conjunction with increased NO<sub>x</sub> emissions, if the emissions are rapidly converted to nitrates, a form of atmospheric nitrogen not detected by the NO<sub>2</sub> monitors. Alternatively, if levels of the compounds which react with NO<sub>x</sub> emissions to form ambient NO<sub>2</sub> are declining, increased NO<sub>x</sub> emissions may not translate into elevated levels of converted NO<sub>2</sub>.”

As is the case with SO<sub>2</sub>, the Bush Clean Skies Initiative proposes to lower the goal for NO<sub>x</sub> emissions from electric power plants 50 percent more than is called for under the Clean Air Act by the year 2008, and still another 15 percent by 2018.

### PARTICULATES (PM<sub>10</sub>/PM<sub>2.5</sub>)

The national average ambient level of particulates 10 microns in size (PM<sub>10</sub>) has declined by 25.8 percent since 1988 (when a new measurement network went into effect), but increased by 0.8 percent in 1999. (See **FIGURE 12**.) The EPA notes that much of this small increase was caused by dry conditions and wildfires in California. In general, the largest decreases in PM<sub>10</sub> have been experienced in the western states.

EPA’s proposed new particulate standard of 2.5 microns remains under legal and political dispute, but the EPA began monitoring for this new standard in 1999. Starting with the EPA’s year 2000 report (which may be available by publication date of this report), it will be possible to begin tracking trends.

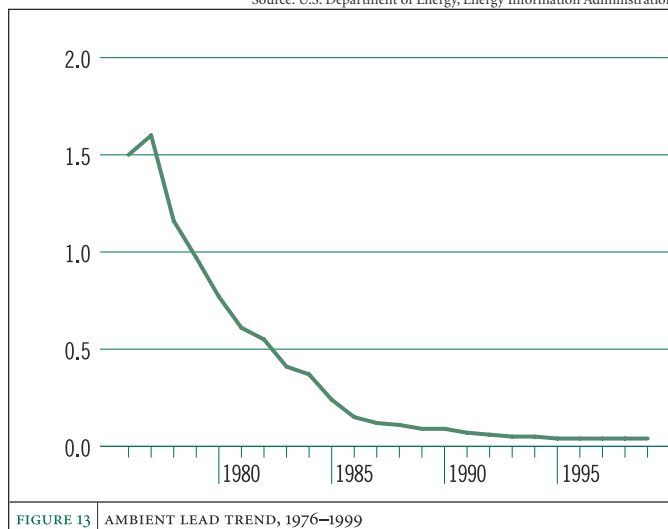
## LEAD

The decline in the ambient level of airborne lead is the single greatest success story of air quality in the United States. Ambient lead levels have fallen so steeply and so rapidly — 97.3 percent since 1976 (see **FIGURE 13**) — that it is difficult to fit a least-squares trendline on the chart. Although the average ambient level has not fallen over the last four years, the ambient level of the 95th percentile (i.e., the five percent of monitors on the statistical distribution with the highest lead readings) continues to show year-over-year declines, as shown in **FIGURE 14**. In 1999, ambient lead levels at the 95th percentile fell 23 percent.

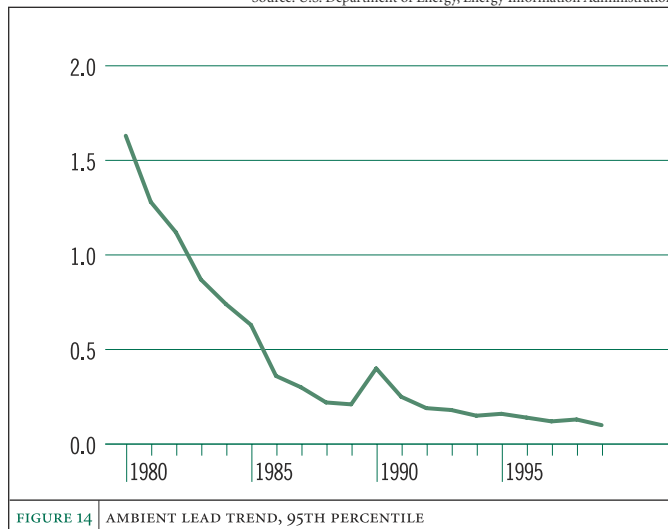
The principal measure generating this reduction was the phase-out of leaded gasoline, much of which occurred under rules and regulations promulgated by the Reagan administration, an administration that is seldom given any credit for environmental progress. Airborne lead emissions from a handful of stationary sources (chiefly metal smelters) remain a problem in a few isolated locations, and lead paint in older housing stock, especially in eastern cities, remains a health risk. As a general rule, however, American children no longer face any health risk from airborne lead, as shown in **FIGURE 15**.

Every few years the Centers for Disease Control conduct every few years a National Health and Nutritional Examination Survey (NHANES) that, among other things, tests blood-lead levels in children. Since 1976, the survey has found that blood-lead levels among children ages one to five have fallen 86 percent, to a level far below the threshold for health risk (which is usually estimated to be above 20 micrograms per deciliter of blood). (Additional results from the most recent NHANES survey are discussed later in the Toxics section of this report.)

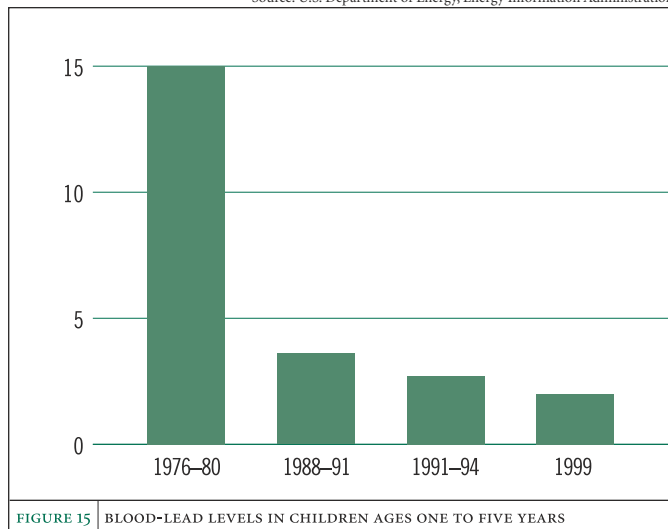
Source: U.S. Department of Energy, Energy Information Administration.



Source: U.S. Department of Energy, Energy Information Administration.



Source: U.S. Department of Energy, Energy Information Administration.



**NOTES**

- 1 See [www.cleanairprogress.org/news/quorum\\_res\\_01\\_14\\_02.asp](http://www.cleanairprogress.org/news/quorum_res_01_14_02.asp).
- 2 Early projections of year 2000 emissions and ambient pollution levels are available from the EPA at [www.epa.gov/oar/aqtrnd00/](http://www.epa.gov/oar/aqtrnd00/). The complete EPA report for 2000 may be available by the release date of this report.
- 3 *Runner's World*, July 2001, p. 54.
- 4 Joel Schwartz, *Breathe Easier: The American Lung Association's Misleading "State of the Air 2001" Report* (Los Angeles: Reason Public Policy Institute, May 2001), available at [www.rppi.org/rr102.html](http://www.rppi.org/rr102.html).
- 5 Rob McConnell, *et al.*, "Asthma in exercising children exposed to ozone: a cohort study," *The Lancet*, Vol. 359, February 2, 2002, pp. 386–91.
- 6 Joel Schwartz letter to the editor of *The Lancet* dated February 20, 2002, on file with author.
- 7 For a more detailed analysis of the high-ozone cities of Houston, Atlanta, and Los Angeles, see the 6<sup>TH</sup> edition (2001) of the *Index of Leading Environmental Indicators*, available at [www.pacificresearch.org](http://www.pacificresearch.org).
- 8 See Anne E. Smith, Jeremy Platt, and A. Denny Ellerman, *The Costs of Reducing Utility SO<sub>2</sub> Emissions — Not as Low as You Might Think* (Boston: Charles River Associates, 1998; appeared also in *Public Utilities Fortnightly*, May 15, 1998).



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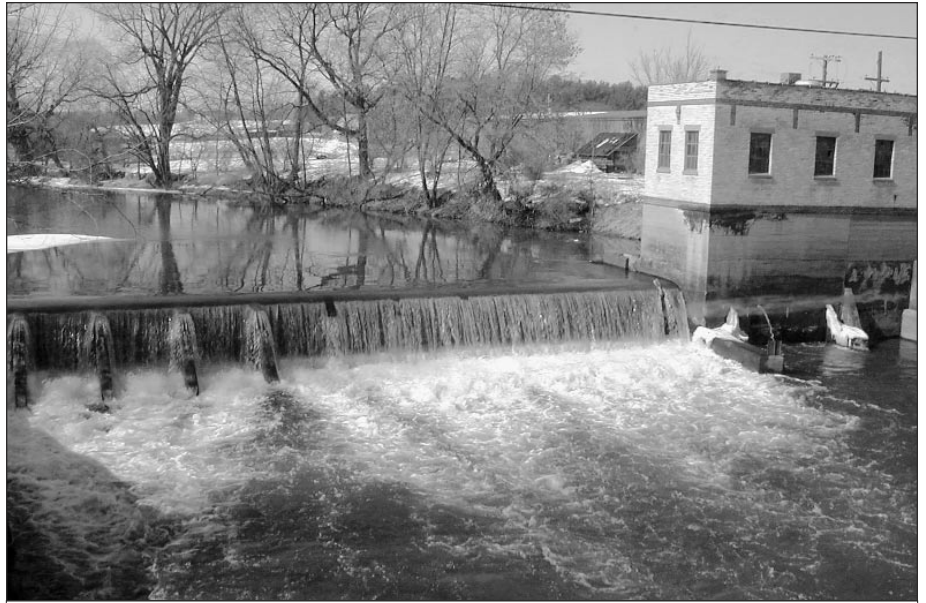
## CHAPTER 2 WATER QUALITY

**T**HE YEAR 2001 BROUGHT A NUMBER OF fierce controversies related to water. Prominent among these was the dust-up over the Bush administration's decision to review the Clinton administration's last-minute new standard for arsenic levels in drinking water to the cut-off of irrigation water in the Klamath River Basin in the northwest. It may be more helpful to begin, however, with the story of the Linen Mill Dam on the Baraboo River in central Wisconsin.

This dam no longer exists. It was one of several dams, many dating back as far as the Civil War, that interrupted the flow of more than 100 miles of the Baraboo River, which is a tributary of the Wisconsin River, which itself eventually flows into the upper Mississippi River. Taken down on October 11, 2001, this was the last dam to be removed in a program to restore the Baraboo to its free-flowing natural state. As a result, the Baraboo River is now officially the longest "main stem" of a river returned to free flow through dam removal in American history.

What is noteworthy about this case study is that the removal of the old dams on the Baraboo River came about not as the result of a government program or lawsuit brought under the Clean Water Act, but through the private initiative of the Sand County Foundation, the Rivers Alliance of Wisconsin, and several other private groups in Wisconsin. The Sand County Foundation went to the owners of the dams on the Baraboo and *bought* them, and then made plans for their removal. All of the dams were obsolete, badly in need of repair, and even presented safety hazards to the community. (Two fatal boating accidents on the Linen Mill Dam last summer sped up the timetable for its removal.) And they disrupted the habitat for native fish species, especially sturgeon, along the river's course.

But the purpose of removing dams along the Baraboo is not limited simply to restoring the river habitat; it has effects on the human habitat as well. The town of Baraboo, located not far from where Aldo Leopold wrote his famous *Sand County Almanac*, has a charming town square that could serve as the platonic model for Main Street, USA. But its waterfront along the Baraboo River near the LaValle Dam had been stagnating for a long time. Restoring the free-flowing character of the river will be a catalyst for revitalizing the waterfront in Baraboo. Already plans are underway for new shops, outdoor restaurants, and parks.



**NOT A FEDERAL CASE:** The Linen Mill Dam on the Baraboo River in Wisconsin, removed through private initiative.

### THE FUTURE OF WATER QUALITY MONITORING AND REGULATION

The point of this case study is to reflect on the famous environmental proposition, “Think Globally, Act Locally.” This slogan, which is attributed to the French thinker Rene Dubos, has been turned on its head over the years by orthodox environmentalism. In practice it has become subsumed in the apocalyptic style of environmental thinking that makes it difficult to think sensibly

about real problems in real places. “Act Locally” has come to stand for largely *symbolic* acts (“50 Ways to Save the Planet,” etc.) designed more to express our consciousness of the global crisis oppressing nature. It has come to mean, “local action is futile because of the global crisis,” just as factions of the civil rights movement deny that racial progress is possible because racism is supposedly pervasive in all aspects of American society.

The apocalyptic outlook of the environmental establishment makes it difficult for ordinary people to internalize environmental values as an aspect of *citizenship*. Yet with the spread of these values the time has come to think of environmental issues in precisely this way. More and more, conservationists and activists are recognizing that the United States is not one massive environmental construct but hundreds, even thousands, of local ecosystems, each with its own issues and challenges. These diffuse, varied, and highly local problems are simply beyond the scope of broad national policy. They are the work of communities and networks of communities.

**BUT WHAT HAPPENS WHEN IT RAINS?:** Runoff from impervious surfaces is the next frontier of water quality.





This outlook on environmental problems is going to prove especially crucial to solving water quality problems, because of their highly localized nature. Local private and citizen-initiated actions also hold the potential to help damp down the ideological fractiousness of environmental problems. For example, both the Competitive Enterprise Institute and the Sierra Club have held up as a positive example winemaker Sam Sebastiani's work to restore a 90-acre marshland as part of a vineyard and winery development in Sonoma County.<sup>1</sup> (Ironically, the sometimes bizarre application of state and federal clean water regulations was an obstacle to Sebastiani's efforts to restore the marsh, resulting in a multi-year delay and hundreds of thousands of dollars in unnecessary legal costs.) Sebastiani's restored marsh is now a way station for more than 150 species of migratory birds, some of them rare and endangered.

This kind of approach is going to be crucial especially for the next phase of water quality regulation, known as the Total Maximum Daily Load (TMDL) program. Existing Clean Water Act regulations on "point" sources (i.e., wastewater treatment facilities and other large industrial dischargers) have gone about as far as possible in most cases. The next generation of water quality improvement is focusing on "non-point" sources

of water pollution (i.e., runoff from farm fields, streets and roads, and parking lots). The TMDL program is intended to be the means for tackling this problem.

Over the next 15 years states are supposed to develop and implement detailed and localized plans for assuring that water quality is not compromised. The EPA estimates this will require the development of more than 36,000 individual plans throughout the 50 states — a massive undertaking. The cornerstone of any TMDL regime will be establishing a baseline assessment of how much "load" of pollution a local watershed can process naturally, along with plans to reduce pollution below that "load." Shifting the focus of water quality to outcomes instead of technology-based inputs is a sensible advance in policy, and in the fullness of time such a program will provide a long overdue comprehensive system of water-quality trend information.

While clearly desirable in the abstract, in practice such an ambitious plan is certain to run afoul of the ambiguities of science about what constitutes "clean water" and the tensions that have plagued state-federal relations over water quality since the Clean Water Act was first passed. While the current approach to TMDLs emphasizes — on paper at least

### THE DRUDGERY OF DREDGING: A WEBSITE GUIDE

Along with the Klamath River Basin controversy, the other leading water quality controversy of 2001 concerned the issue of whether to order the dredging of a 37-mile stretch of the Hudson River where the General Electric Corporation had legally dumped PCBs (polychlorinated biphenyls) between 1947 and 1977. In 1977 the EPA banned PCBs following animal studies suggesting PCBs pose a cancer risk, though the health risks of PCBs remain uncertain. EPA administrator Christie Whitman decided in January to require GE to pay nearly \$500 million in costs under the Superfund law to dredge sediment containing PCBs.

The decision to require dredging was among the most controversial in the EPA's history, and may be a prelude to similar dredging programs in other states. A future target could be the Kalamazoo River in Michigan, where an 80-mile stretch is thought to be contaminated with PCBs and could cost as much as \$2 billion to dredge. There is considerable evidence that the course of nature is reducing PCB levels in the Hudson,

and reasonable concern that dredging could make the situation worse by stirring up PCBs that are harmlessly entombed in river sediment.

Once again there are numerous websites where citizens can check out all sides of the argument for themselves.

- The EPA's site explaining its rationale for the Hudson River decision is [www.epa.gov/hudson](http://www.epa.gov/hudson).
- GE's side of the story can be found at <http://hudsonvoice.com>.
- An environmental group named Riverkeeper advocates the pro-dredging position at <http://riverkeeper.org/pcb>.
- A local citizens group opposed to dredging can be found at [www.nodredging.org](http://www.nodredging.org).
- A neutral site, sponsored by Marist College, offering both sides of the argument can be found at [www.marist.edu/summerscholars/01/index.html](http://www.marist.edu/summerscholars/01/index.html).
- Bonner Cohen offers a cogent critique of dredging at [www.lexingtoninstitute.org/environment/dredging.htm](http://www.lexingtoninstitute.org/environment/dredging.htm), and at [www.lexingtoninstitute.org/environment/hudsonriver.htm](http://www.lexingtoninstitute.org/environment/hudsonriver.htm).

— the “flexible” role of the states in developing water quality standards and cleanup plans, the EPA retains the authority to overrule the states and impose its own prescriptive plans and regulations. It will also likely thwart or make more difficult many genuine efforts at employing market-based means of reducing water pollution or decentralized citizen-based initiatives such as the Baraboo River dam removal program.<sup>2</sup>

This is certain to maximize the cost, litigation, and political friction of the TMDL program, which is why Congress has for

**NEW STORMWATER RUNOFF RULES  
FOR SOUTHERN CALIFORNIA, WHICH  
THE EPA HAS BEEN DEMANDING  
OF THE REGION, THREATEN TO  
IMPOSE LARGE COSTS ON LOCAL  
CASH-STRAPPED MUNICIPALITIES.**

the time being slowed up EPA’s timeline by limiting EPA’s budget appropriation. (The EPA estimates the cost of the program to be between \$986 million and \$4.4 billion a year; independent estimates are higher.<sup>3</sup>) Early efforts at remedying non-point runoff are already proving contentious and costly. New stormwater runoff rules for southern California, which the EPA has been demanding of the region, threaten to impose large costs on local cash-strapped municipalities. The small borough of Laguna Woods in Orange County, for example, is facing costs in excess of \$600,000 to comply with the new rules, an amount equal to its total budget for public safety. The city manager has said the money will have to come out of the city’s budget for elderly transportation, recreation, and other social services.<sup>4</sup> The total bill for all of Orange County is expected to top \$14 million.

An example of the kind of political friction that the federal government can generate has been on full display over the last

year in the Klamath River basin in southern Oregon and northern California, and is still playing out as this report goes to press.

The Klamath River and its tributaries are habitat for several endangered fish species, including the Coho salmon and the shortnose sucker. The Klamath River is also a key resource in the U.S. Bureau of Reclamation’s Klamath Basin Project that supplies water to more than 1,400 farms in the region. Water flows from dams on the river were altered in the interests of these species during the 1990s, but in 2001 a new wrinkle in the regime occurred. A severe drought in Oregon lowered the level of Upper Klamath Lake to the point where the Department of the Interior’s Fish and Wildlife Service determined that water from Upper Klamath Lake would have to be cut off from farmers in the interests of the endangered fish. The lake water was “turned off” on April 6, 2001, leading to an estimated \$400 million in losses to the agricultural sector in the region. Up to 40 percent of local farms and ranches are threatened with bankruptcy. A political firestorm erupted in the region.

On May 7, 2001, 20,000 protesters converged on Klamath Falls, Oregon, and as a symbolic act formed a “bucket brigade” stretching from Upper Klamath Lake passing buckets of water through the town to an irrigation channel on the other side of town. Another below-average rainfall year so far in 2002 threatens to impose water restrictions again, and area farmers are finding access to credit cut for this spring’s planting.

This episode lends fuel to the perceptions of bad faith in environmental policy, with rural residents fearing that the law is being used for the ultimate purpose of forcing them off their land. In early February of this year the situation was complicated further when the National Research Council (NRC) issued an evaluation of the Klamath River Basin that called into question the science behind the decision to restrict agricultural water.<sup>5</sup> “A substantial data-collection and analytical effort by multiple agencies, tribes, and other parties has not shown a clear connection between water levels in Upper Klamath Lake and conditions that are adverse to the welfare of the suckers,” the NRC report concluded. “Thus the committee concludes that there is presently no sound scientific basis for recommending an operating regime for the Klamath Project that seeks to ensure lake levels higher on average than those occurring between 1990 and 2000.” The report notes that tributary conditions are more important to the health of the fish in question, which restricting water from Upper Klamath Lake doesn’t affect at all.

## WATER QUALITY INFORMATION SOURCES

As this report has emphasized in previous editions, the quality of data about water for determining trends is very poor. The EPA's main water quality report, the bi-annual National Water Quality Inventory (NWQI), is neither comprehensive, systematic, nor consistent enough to use for establishing baseline trends.

Measuring water quality trends is not a simple matter. Unlike air quality, where six major pollutants can be measured in a consistent, standardized way with a network of electronic monitors, measuring water quality trends is complicated by the varying conditions and uses of water and by the dozens of different pollutants and pathogens that threaten water. Measuring water quality involves what we have previously called "the Heraclitus problem." The ancient Greek philosopher Heraclitus wrote that it is impossible to step into the same river twice; because water moves and flows, when you stick your toe back in the water, it is a different river. The wide variety of water conditions to be measured — rivers, streams, wetlands, lakes, groundwater, and so forth — along with seasonal variation in water flows makes assessment a difficult task.

Efforts to improve the amount and quality of our data about water are fortunately gaining speed. In fact, regional, state, and local efforts to acquire detailed information about water quality are accumulating so fast that it is difficult to keep up, though few of these efforts have sufficient coverage across the country to make conclusions about national trends.

The best source for water quality data is the U.S. Geological Survey (USGS), and most of its data can be found on its special website for water, [www.water.usgs.gov/owq/data.html](http://www.water.usgs.gov/owq/data.html). The website offers data derived from 1.5 million monitoring sites around the nation — some categories of data are available in real time. The National Water Quality Assessment (NWQA) Data Warehouse offers data on 500 chemicals in water, stream flow volumes for 2,800 streams, ground water

levels for 5,000 wells, and several other categories. The data are broken down by state and by watersheds. The USGS also operates the National Stream Quality Accounting Network (NASQAN), which monitors water quality in four large river basins (Colorado, Columbia, Mississippi, and Rio Grande, including the major tributaries of these rivers). This program offers some trend data for these river basins, and can be found at <http://water.usgs.gov/nasqan>.

The EPA has upgraded its online water quality data for watersheds, at [www.epa.gov/storet](http://www.epa.gov/storet). (This site is cumbersome and requires the user to download special free software to use the data files.) The watershed data on this EPA site concentrate especially on effluent discharge and biological conditions.

Other useful websites include:

- The National Hydrology Dataset (<http://nhd.usgs.gov>) offers spatial images of watersheds, integrating data from the Toxics Release Inventory and tracking water bodies where Total Maximum Daily Load (TMDL) programs are being implemented.
- The Watershed Information Network ([www.epa.gov/win](http://www.epa.gov/win)) also offers "geospatial" images of local watersheds, and links to dozens of state, local, and private water monitoring programs.
- A related EPA site is the Index of Watershed Indicators ([www.epa.gov/iwi](http://www.epa.gov/iwi)) which offers data on 18 different indicators of water quality in 2,111 watersheds throughout the U.S. The EPA's 1996 report launching this project acknowledges the gaps and limitations of the currently available data, and provides a roadmap for improvement. This is one of the easier sites for the non-expert citizen to use.
- The North American Lake Management Society operates a remote-sensing water quality program using satellite imagery for lakes in Michigan, Minnesota, and Wisconsin (including the Great Lakes contiguous to these states) at <http://resac.gis.umn.edu/lakeweb/index.htm>.

Other critics have suggested that the water restrictions may have done more harm than good for the fish, and have noted that an unintended effect of the loss of crop planting last spring was a reduction in the food supply of migratory birds. As we go to press, a final report from the NRC is expected (though with little or no change in its conclusion), while the Fish and Wildlife Service will be coming out with a revised biological opinion of its own that may contradict the NRC. Meanwhile, President Bush has convened a cabinet-level working group to study the issue. Stay tuned, as they say on TV.

The Klamath Basin controversy may well turn out to be a prototype, however, for the kind of disputes that could arise under the TDML program, especially if Washington insists on superseding local knowledge and governance with its own understanding of the problem.

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## NOTES

- 1 See R.J. Smith, "Viansa Winery Wetlands," Competitive Enterprise Institute, July 1997 (available at [www.cei.org/gencon/025,01363.cfm](http://www.cei.org/gencon/025,01363.cfm)); Kenneth Brower, *The Winemaker's Marsh* (Sierra Club Books, 2001).
- 2 For more information, see Roger E. Meiners and Bruce Yandle, *Public Interest Comment on the Environmental Protection Agency's Proposed Changes to the Total Maximum Daily Load (TMDL) Program and to the National Pollution Discharge Elimination System (NPDES) and Water Quality Standards (WQS) Regulations*, Mercatus Center, George Mason University, March 2002 (available online at [www.mercatus.org](http://www.mercatus.org)).
- 3 See Joseph Johnson, et al., *Public Interest Comment on EPA's "The National Costs of the Total Maximum Daily Load Program: Draft Report,"* Mercatus Center, George Mason University, December 2001 (available online at [www.mercatus.org](http://www.mercatus.org)).
- 4 Seema Metha, "State Water Board Okays Tough Runoff Rules for South O.C.," *Los Angeles Times*, February 14, 2002.
- 5 *Scientific Evaluation of Biological Opinions on Endangered and Threatened Fishes in the Klamath River Basin, Interim Report from the Committee on Endangered and Threatened Fishes in the Klamath River Basin* (Washington, D.C.: National Research Council, 2002), available online at [www.nap.edu/books/0309083249/html/](http://www.nap.edu/books/0309083249/html/).



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CHAPTER 3  
TOXIC CHEMICALS

**T**HE PRINCIPAL SOURCE OF TREND DATA for toxic chemicals is the Toxics Release Inventory (TRI), the EPA's reporting system for 650 chemicals (up from 300 when the TRI began in 1988) used in most major industries, mining operations, and, more recently, federal facilities.<sup>1</sup> More than 20,000 individual facilities must provide information for the TRI, requiring some 80,000 reporting forms.

The EPA emphasizes several important caveats about interpreting TRI data, including gaps in the data and the lack of straight-line applicability of human health risk. The latest TRI, for the year 1999, notes that "The Toxics Release Inventory data do not include data on toxic emissions from cars and trucks, nor from the majority of sources of releases of pesticides, volatile organic compounds, fertilizers or from many other non-industrial sources."<sup>2</sup> In many cases these sources of toxic chemicals may pose more health or environmental risk than industrial facilities.

The EPA further warns:

Users of TRI information should be aware that TRI data reflect releases and other waste management of chemicals, *not whether (or how much) the public has been exposed to those chemicals*. TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities which involve toxic chemicals.<sup>3</sup> [Emphasis added.]

In addition, “toxic” chemicals are not all created equal, which is why a crude measure of mere “pounds” of toxics “released” is not an especially helpful measure of health of environmental risk. As the EPA notes:

Some high-volume releases of less toxic chemicals may appear to be a more serious problem than lower-volume releases of more toxic chemicals, when just the opposite may be true. For example, phosgene is toxic in smaller quantities than methanol. A comparison between these two chemicals for setting hazard priorities or estimating potential health concerns, solely on the basis of volumes released, may be misleading.<sup>4</sup>

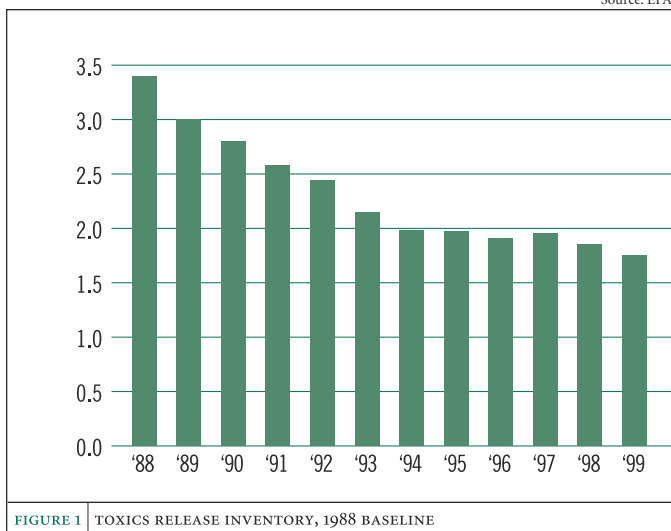
In an effort to facilitate better judgments about the relative risks of different kinds of toxics chemicals, the EPA is developing the Integrated Risk Information System (IRIS) on its website (see [www.epa.gov/ncea/iris.htm](http://www.epa.gov/ncea/iris.htm)). IRIS contains the results of ongoing toxicological screens of many of the chemicals on the TRI, along with links to other studies and EPA standards for exposure to the chemical. IRIS is not easy for the non-specialist to use, but represents a major effort to adapt the massive reporting of the TRI into a useable product for local risk assessment. Another resource is EPA’s chemical fact sheets, which are available at [www.epa.gov/chemfact](http://www.epa.gov/chemfact).

With all of these caveats and limitations, what does the TRI tell us? While the TRI is limited as a tool for judging environmental or health risk, it is indicative of another trend: the reductions in the use of chemicals, even as total industrial output and economic activity grow, is a sign of the increasing efficiency of our industrial plants, and a measure of what has been called the “de-materialization” of the economy. As such, the TRI can be viewed as a proxy for measuring “sustainable development” or industrial ecology.

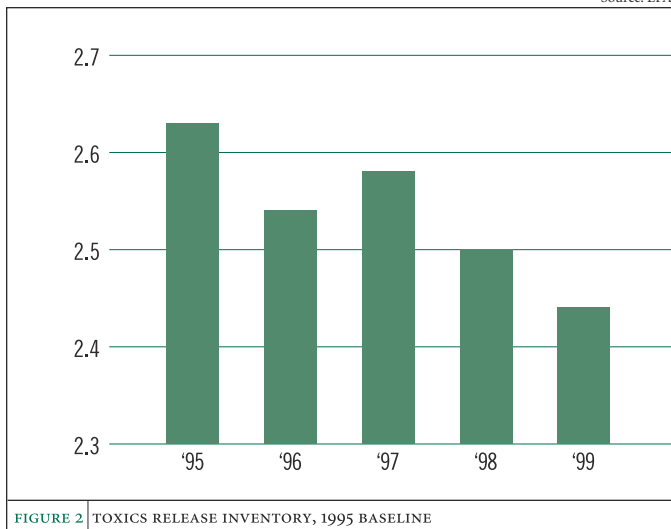
The constant expansion of the number of chemicals and number of facilities included in the TRI data net makes tracking trends difficult. Fortunately, the EPA helpfully breaks out the data against a 1988 baseline that includes only the chemicals included in the original inventory (shown in **FIGURE 1**). This measure shows a 48.5 percent decline in toxic releases since 1988 (and a reduction of 5.4 percent in 1999), a reduction of more than 1.65 billion pounds a year. The chemical industry, not surprisingly, has shown the largest decrease of all industries included in the TRI, with a 60-percent reduction in releases since 1988. These industry reductions reflect mostly productivity gains and technological improvements; total output of the industries covered under the TRI has increased 40 percent since 1991, even as toxic releases have declined.

The EPA added chemicals to the TRI list throughout the 1990s, and began a new baseline for the TRI starting with 1995. **FIGURE 2** shows a steadily declining trend with the exception of an uptick in 1997.

Source: EPA.



Source: EPA.



## HUMAN EXPOSURE TO ENVIRONMENTAL CHEMICALS

The Centers for Disease Control (CDC) have begun tracking levels of several heavy metals and other synthetic chemicals that will yield important trend information in future years as the data series is extended. The CDC released the first report of this tracking effort in March 2001.<sup>7</sup> Expanding the scope of its periodic National Health and Nutritional Examination Survey (NHANES), the CDC in 1999 added to their screening 12 heavy metals, six organophosphate pesticides, and seven phthalates.<sup>8</sup> (Phthalates are a compound common in soft plastic products including baby pacifiers, as well as in consumer products such as shampoo and nail polish, and they have been attacked by some environmental groups as a possible carcinogen.) Eventually CDC intends to expand the list of chemicals tracked to more than 100 and to update the data annually. These data will enable health officials to determine whether human exposure to chemicals is increasing or decreasing over time.

What the trend data alone cannot do is judge health risk. The CDC study determines chemical levels in human blood and/or urine samples. The CDC is quick to point out that “Just because people have an environmental chemical in their blood or urine does not mean that the chemical causes disease.” One reason that we have begun tracking these compounds in human tissue and fluids is that our analytical methods are now advanced enough to allow us to detect extremely small traces of these chemicals.

For many of the chemicals tracked in the CDC study, there is not yet sufficient medical knowledge to set an unsafe level of human exposure. There are no health standards yet for many organophosphate pesticides or for phthalates, though testing is underway to determine if a health threshold is warranted. There are, however, health-based exposure standards from the Occupational Safety and Health Administration (OSHA) and the EPA for a few of the heavy metals tracked in the CDC study. The CDC findings show that levels of four heavy

## TOXIC TERROR RISK?

The Toxics Release Inventory (TRI) was established by the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), which Congress passed in the aftermath of the accident (which later turned out to have been sabotage) of a Union Carbide chemical plant in Bhopal, India. The Bhopal catastrophe released poison gas into the densely populated city and killed more than 3,000 Indian citizens. How ironic, given that the Bhopal catastrophe was apparently an act of terrorism, that our efforts to prevent a similar catastrophe here through the TRI might make such a catastrophe more feasible.

Citizens have a right to know, environmentalists argued, what potentially hazardous chemicals are in use in their local community, and how those chemicals are being stored or disposed. Follow-up legislation to EPCRA requires that local facilities develop Risk Management Plans (RMPs) for numerous toxic chemicals, including a worse-case analysis of risks in case of an accident or explosion at a facility. When the EPA proposed to post these RMPs on its website in the mid-1990s, the FBI objected, pointing out that such easily available information would provide a roadmap for terrorists to find out exactly where to strike a plant to cause maximum harm.

The EPA decided against posting the information on their website, but has made the RMPs available to the public at EPA reading rooms across the country; all that is needed is a valid I.D. to see the reports. A *Washington Post* reporter did just this in December and generated a front-page headline: “Chemical Plants Are Feared as Targets.”<sup>5</sup>

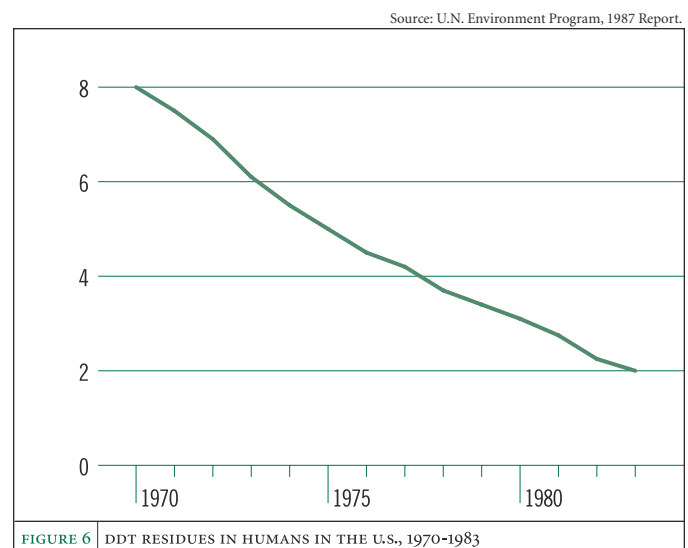
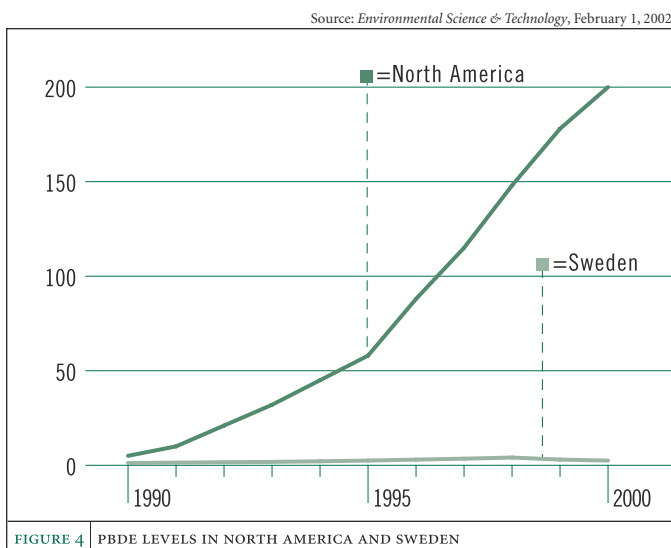
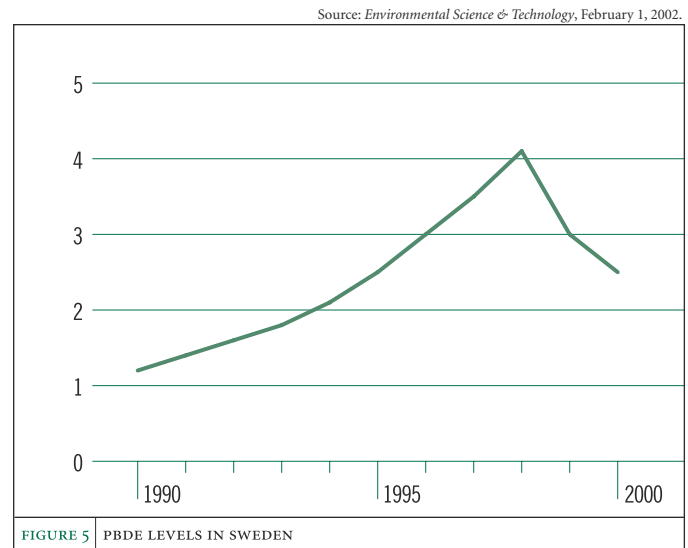
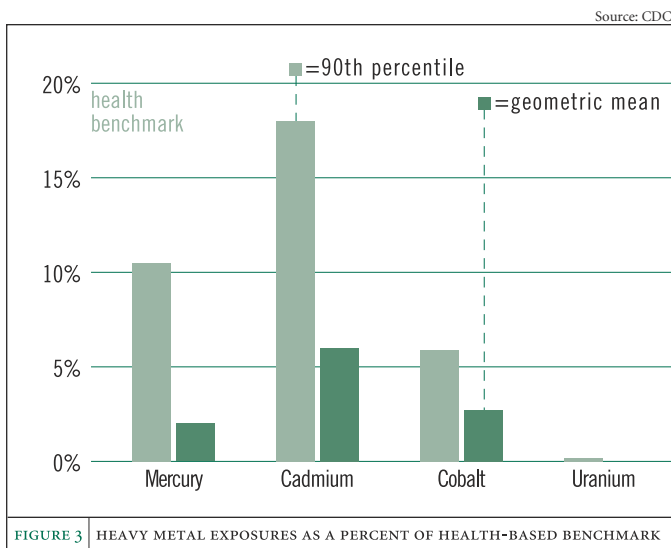
It may not be necessary for terrorists to go to the trouble of visiting EPA reading rooms. Some environmental groups, such as Greenpeace, have posted RMP reports for 50 chemical plants on their website.

The Hudson Institute’s Michael Fumento commented in *The New Republic*: “It’s understandable that an accidental release seemed the greater threat in 1990, when the amendments to the Clean Air Act mandated public disclosure.... Back then, the 1993 World Trade Center bombing, the Oklahoma City attack, and September 11 had not yet occurred; the tragedy on people’s minds was still the chemical release at a Union Carbide plant in Bhopal, India. But the intervening eleven years have surely shown that it is now terrorism that represents the greater concern. And yet the requirement for public access to vast amounts of detailed information about lethal chemicals remains law.”<sup>6</sup>

metals (lead, cadmium, cobalt, and uranium) are far below the threshold of health risk. **FIGURE 3** below displays the average exposure level and exposure level at the 90th percentile (i.e., for the 10 percent of people with the highest exposure level in the sample) expressed as a fraction of the health risk threshold. (For example, if the 100 percent health threshold for mercury is “10,” then the 90th percentile reading on the figure is about “1,” or only 10 percent of the level judged to be a health risk.)

The low finding for mercury levels in human blood and urine is especially significant in light of the Bush administration’s proposal to lower mercury emissions, which are

already so low that they are difficult to measure. While emissions of most pollutants are measured on a national basis in the millions of tons, mercury emissions are estimated to be less than 100 tons for the entire nation. Mercury levels in coal are on the order of 50 pounds per *billion* tons of coal burned. Until we have several more years of data we will not know whether any of these heavy metals or other synthetic chemicals are accumulating in human tissues or if they pose a long-term health risk. Our guess is that the long-term data will find declining trends for most of these chemicals. In fact, the CDC 1999 study found that the level of cotinine in children’s blood has fallen 75 percent over the last decade.





## QUESTIONS ABOUT PBDES

While we await data from successive years of the CDC's chemical screening effort, it is worth taking a look at a potentially troubling trend that illustrates the problem with "bioaccumulative" compounds. Environment Canada research scientist Mehran Alaei recently published some limited, preliminary data on the rising concentration of PBDEs (polybrominated diphenyl ethers) in the breast milk of mothers in North America.<sup>9</sup> Dr. Alaei found that PBDE levels in north American mothers are now more than 40 times higher than in Swedish women. PBDEs have been banned in Sweden and the rest of the European Union. The trend for North America and Sweden can be seen in **FIGURE 4**.

The case of PBDEs is an excellent example of the trade-offs between different kinds of health risk. PBDEs are used as a flame retardant in consumer goods in the U.S. and Canada, and thus yield health and mortality benefits. Flame retardants of some kind are required in some U.S. safety codes. PBDEs are used because earlier flame retardants were banned due to toxicity concerns. If there are no effective substitutes for PBDEs, there will be an increased risk of injury and death from fire.

A threshold of health risk from PBDEs has yet to be determined and this data is preliminary, based on a small sample, and needs to be replicated (California's EPA is currently collecting data on PBDE levels, among others). However, it is known that PBDEs may pose developmental risks for unborn and young children. While research continues as to whether PBDEs should be banned or restricted, it should be noted that levels of bioaccumulative chemicals in human tissue drop quickly once they start to decline in the food chain.

**FIGURE 5** shows the quick reversal of PBDE levels in mother's breast milk in Sweden following the beginning of phasing out PBDEs. Older UN data on the decline of DDT levels in human tissues following the reduction of DDT use in the 1970s, shown in **FIGURE 6**, provides reassurance about the resiliency of human health.

3 EPA, 1999 TRI, pp. 1–10.

4 EPA, 1999 TRI, pp. 1–12.

5 Guy Gugliotta, *Washington Post*, December 16, 2001, p. A-1.

6 Michael Fumento, "Easy Reading," *The New Republic*, January 21, 2002.

7 *National Report on Human Exposure to Environmental Chemicals* (Atlanta: Centers for Disease Control, 2001); available online at: [www.cdc.gov/nceh/dls/report/contact.htm](http://www.cdc.gov/nceh/dls/report/contact.htm).

8 NHANES has tracked lead levels for more than 20 years, and cotinine (a byproduct of tobacco smoke) for more than a decade. In addition to lead, the heavy metal list now includes: mercury, cadmium, cobalt, uranium, antimony, barium, beryllium, cesium, molybdenum, platinum, thallium, and tungsten. The six organophosphate pesticides now being tracked are: dimethylphosphate, dimethylthiophosphate, dimethyldithiophosphate, diethylphosphate, diethylthiophosphate, and diethyldithiophosphate. The seven phthalates are: mono-ethyl phthalate, mono-butyl phthalate, mono-benzyl phthalate, mono-cyclohexyl phthalate, mono-2-ethylhexyl phthalate, mono-n-octyl phthalate, and monoisononyl phthalate.

9 Dr. Alaei's findings are discussed in *Environmental Science and Technology*, February 2, 2002, pp. 50–2.

## NOTES

1 The TRI can be downloaded from the EPA website at [www.epa.gov/tri](http://www.epa.gov/tri). Individual state fact sheets are also available on this site.

2 EPA, 1999 TRI, pp. 1–7.



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CHAPTER 4  
BIODIVERSITY

**B**IODIVERSITY AND THE LOSS OF WILDLIFE habitat are the most serious environmental problems facing modern civilization. Polluted air and water can be cleaned up, contaminated land can be remediated, and forests can re-grow, but an extinct species cannot be brought back to life. In the hothouse of environmental politics, the problem of species extinction on a global scale is an obvious focal point for gloom and pessimism.

A common refrain of environmental alarmism holds that if a mass extinction of species is taking place, can the extinction of the human species be far behind? This is too overwrought. While biodiversity is the most serious environmental problem and the one that may prove the most difficult to solve, there are reasons to be optimistic about future prospects, as we shall see. Problems of biodiversity, however, do not lend themselves to the ordinary legislative or regulatory approaches.

Current policy toward species preservation in the U.S., especially the Endangered Species Act, tends to be marginally effective, if at all, while maximizing political conflict and economic cost. This is why the current approach could well be considered — to adapt a familiar environmental term — “unsustainable.” Setting aside large swaths of habitat would seem to be the common sense remedy, and is happening on an increasing scale throughout the world, yet even this step does not automatically ensure that a biological equilibrium will be preserved. Even seemingly pristine areas such as Yellowstone National Park can be badly out of ecological balance when managed politically, as

numerous scholars have documented.<sup>1</sup> Political solutions to the problems of biodiversity do not appear promising.

The problem is additionally shrouded by large uncertainties in the state of our knowledge about biodiversity. Writing in a 1997 National Academy of Sciences report on biodiversity, Australian scientist Nigel Stork noted: “attempts to determine how many species there are in total have been surprisingly fruitless... We cannot say how widespread species are, we do not know the size of the species pool, and we do not know

**MOST INTRIGUING IS WILSON'S  
SUGGESTION THAT PRESERVING BIO-  
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THAT TYPIFIES MANY ENVIRON-  
MENTAL INITIATIVES.**

how specific species are to a particular habitat, type of soil, type of forest, or, in some cases, a species of tree.”<sup>2</sup> Estimates of the total number of species worldwide range by more than an order of magnitude, from as few as two million to as many as 100 million; even the estimates of discrete families of species, such as insects, range from 1.5 million to as many as 30 million. There might be as many as 12 million species of beetle, and as many as 100 million beetles for every human being on the Earth! (The prevalence of beetles prompted biologist J.B.S. Haldane’s famous remark that “God seems to have an inordinate fondness for beetles.”) Stork selects a median figure of 12.5 million total species, with a reasonable range of 5 to 15 million. Scientists have identified and named about 1.5 million species, including about 200,000 in the United States. More is known of species in the developed world for the obvious reasons; Thomas Lovejoy quips that “there are so

many naturalists in Britain that it is impossible for a bird to lay an egg without three people, including a cleric, recording it.”<sup>3</sup>

The good news is that our knowledge about the number of species and the intricacies of biodiversity is advancing at a rapid pace. Perhaps the most ambitious effort is the project of the All Species Foundation ([www.all-species.org](http://www.all-species.org)) to catalogue every living species on the planet over the next 25 years in an effort that is being compared in scope to the human genome project. (This effort was reported by — of all unlikely sources — the *Wall Street Journal*.<sup>4</sup>) Meanwhile, efforts at private habitat conservation are gaining speed. The Nature Conservancy is expanding its acquisition of habitat outside of the United States, and Conservation International ([www.conservation.org](http://www.conservation.org)), with a \$261 million grant (over 10 years) from the Gordon and Betty Moore Foundation, is expanding research into identifying areas of habitat that should receive priority for conservation status. The World Wildlife Fund operates similar projects. Other groups of varying size conducting similar work are too numerous to mention.

In the meantime, though, the lack of comprehensive knowledge about the number of species gives rise to wide variance of, and fierce controversy over, estimates of species extinction rates, and by how much the current extinction rate is above a natural “background” rate of extinction because of man’s manipulation of natural habitat. Species have always come and gone as a part of the evolutionary process of the planet. From time to time extinction “spasms” have occurred, such as when nearly 90 percent of existing species, including the dinosaurs, became extinct in a very short period of time 65 million years ago, probably because of an asteroid strike. Gregg Easterbrook reminds us of the “sobering fact” that “since nature began, 99 percent of all species called forth into being have eventually been rendered extinct.”<sup>5</sup> Darwin noted in his *Origin of Species* that “Of the species living now, very few will transmit progeny to a far distant future.”

The question at the moment is whether we are in the midst of a man-made extinction spasm, generated by the rapidly rising population of the 20<sup>th</sup> century, and the transformation of the land that population growth has entailed. Bjørn Lomborg comes in at the low end of the range with an estimate that only 0.7 percent of species will go extinct over the next 50 years.<sup>6</sup> This has provoked a furious reaction from biologists such as Thomas Lovejoy, Edward O. Wilson, and others who have toiled on this subject for years and argued for a much higher extinction rate.

Lovejoy, Wilson, and many other scientists conclude that between 10 and 40 percent of existing species are at risk of extinction over the next generation — a rate 100 to 1000 times higher than the pre-human “natural” rate of species extinction. These estimates are based on models.

The most popular models of species extinction are based on the idea of a “species-area curve,” in which declines in habitat area translate into sharp declines in the number of species that can thrive in the shrunken space.<sup>7</sup> In the most basic calculation, deforestation statistics are multiplied by a factor derived from a species-area curve to generate an extinction estimate. While these models are likely to be generally right, they may often prove to be specifically wrong, and may not account for the resiliency of nature, or the robustness of some species as compared to others. The man on the street wants to know why we can’t get rid of some species — such as cockroaches — despite our best efforts to destroy them, while others perish despite our best efforts to save them. Others point to the ironic problem of too much biodiversity in the form of non-native or invasive species that crowd out native species.

According to one government report, there are more than 4,500 non-native species of plants and animals in the United States, a number that may be a large underestimate. In addition, the models may not have sufficient elasticity in the direction of species proliferation to allow for biodiversity gains from *re*-forestation or other habitat recovery, which is taking place on an increasing scale. Above all, there are currently no reliable empirical data by which to confirm estimates, or to determine a trend or changes in trends.

Some of the most extreme forecasts of species extinction made 20 years ago, such as Norman Myers’s prediction that 40,000 species a year are going extinct, have been discredited, but linger on in the hyperbole of environmental discourse. It is not unusual to hear some environmentalists claiming that the extinction of *half* of the world’s species is imminent in the next generation.

## THE FUTURE OF LIFE

This subject is going to continue to be the major focus of environmental study and action for decades to come. All deliberations about the issue will have to reckon with the work of Edward O. Wilson, who has studied the issue of biodiversity

for more than 40 years, before the term even came into common use. In 2002 he published his latest thoughts on the subject in *The Future of Life*, which made the best-seller list at a time when most of the reading public is preoccupied with books about terrorism or Islam.<sup>8</sup> Wilson’s treatment of the subject offers a window onto how practical problems of biodiversity can be solved, along with some of the ambiguous problems with environmentalism as a political philosophy.

As one of the developers of the species-area curve methodology for estimating species extinction rates, Wilson has contributed toward the fund of pessimism that pervades this topic. Wilson regrets this state of affairs, noting that productive discussion is “paralyzed” by the “suspicion and anger” built up between environmentalists and their skeptics. Yet in *The Future of Life* Wilson makes the case for “guarded optimism” about the prospects for biodiversity. If population growth is the fundamental cause of declining wildlife habitat, Wilson takes encouragement from the fact that the peak of population growth is now in sight; a century from now world population is likely to start *falling*, meaning that we should be able to make room for both humans and wildlife.<sup>9</sup> Wilson used the image of “the bottleneck” as a metaphor of our moment in history. If we can get through the population “bottleneck” of the next century, the future of life on Earth looks more promising. Wilson also notes that “eleventh-hour rescues from obliteration have confirmed the genetically innate resilience of endangered species.”

Most intriguing is Wilson’s suggestion that preserving biodiversity need not be the expensive and contentious affair that typifies many environmental initiatives. In the near term, an effort should be made to preserve “hotspots” in tropical forests that are especially rich in biodiversity. The top 25 such areas compose just 1.4 percent of the Earth’s land area, but contain perhaps as much as 70 percent of the Earth’s plants and animal species. This area, Wilson estimates, could be preserved by a single investment of \$30 billion.<sup>10</sup> (At the present time, Wilson says, only about \$6 billion is being spent on such conservation efforts worldwide.) Even if Wilson’s estimate is 100 percent too low, it is still cheap by contrast with other environmental initiatives.

The private sector in the United States spends more than \$100 billion a year to comply with environmental regulation.<sup>11</sup> But this also suggests the difficulty with the idea: \$30 billion is not much in the abstract (it represents, Wilson points out, one-thousandth of the combined GDP of the world’s

economy), but because environmental policy in the United States and other industrialized nations embraces regulation that imposes large diffused costs on the private sector, there is no mechanism in place for even contemplating a large appropriation for the kind of conservation Wilson recommends. (Beyond funding for federal agencies, Congress appropriates very little money directly on behalf of the environment — the federal government spends less than \$100 million on behalf of endangered species.) The cost of preserving hotspots is not merely \$30 billion, but \$30 billion *in addition to* hundreds of billions in costs for other environmental measures. The penchant of environmental policy to impose “million-dollar solutions to hundred-thousand-dollar problems” is now becoming an impediment to taking cost-effective steps for causes that may be more important. Or, stated in economic terms, the lack of meaningful consideration of the problem of marginal cost in environmental regulation is emerging as a significant limitation to effective environmental measures.

Wilson has numerous other conservation recommendations, but subsumes the entire project within a call for a “universal environmental ethic,” or “general worldview.” This is not a new thought, of course. Ten years ago in *Earth in the Balance*, Vice President Gore called for making environmentalism the “central organizing principle” of modern civilization. This brings us around to where we began in the “Year in Review” section of this report, reminiscent of T.S. Eliot’s opening verse in “East Coker”: “In my beginning is my end.”

As we noted near the beginning of this report, in political and social terms environmentalism is coming to be a large-scale historical phenomenon similar to liberal individualism and modern democracy. One of the things that becomes immediately clear from any rigorous discussion of what is involved with making environmentalism the pre-eminent “universal ethic” or “central organizing principle” of civilization is that the serious theoretical inquiry into how such an ethic should work in practice has not been done with the

### FOR FURTHER INFORMATION ON BIODIVERSITY

The International Union for Conservation of Nature and Natural Resources maintains the “Red List” of endangered species around the world. See their website at: [www.iucn.org](http://www.iucn.org). The U.S. Fish and Wildlife Service roster of endangered species in the U.S. can be found at [www.fws.org](http://www.fws.org). At press time for this report, however, much of the website was shut down because of ongoing legal difficulties of the Department of the Interior. When it is up and operating, it is possible to search the FWS database by state or by species. Another caveat: the endangered species list is more a fever chart for bureaucratic and legal action than a meaningful measure of species biodiversity problems.

- The Biodiversity Conservation Information System (BCIS) can be viewed at: [www.biodiversity.org](http://www.biodiversity.org). This site offers a portal to dozens of other sites around the world. Especially recommended is BCIS Volume 7, *Framework for Information Sharing: Core Data Sets*, downloadable in PDF format.
- The U.S. Geological Survey operates the National Biological Information Infrastructure at: [www.nbii.gov](http://www.nbii.gov). Of special

note here is a subsidiary site called [www.frogweb.gov/index.html](http://www.frogweb.gov/index.html), which examines the specific problems of declining frog populations. Finally, the USGS report on *The Status and Trends of the Nation’s Biological Resources* is available at: <http://biology.usgs.gov/s+t/SNT>.

- The Center for Applied Biodiversity Science, a project of Conservation International, offers a variety of research (including a recent identification of the top 10 coral reef “hotspots” in the world) at: [www.biodiversityscience.org](http://www.biodiversityscience.org).
- An effort is underway to make May 2002 the first annual American Biodiversity Month. For more information on activities, see: [www.nrel.colostate.edu/iboy/biomonth](http://www.nrel.colostate.edu/iboy/biomonth).
- The Rare Species Conservatory Foundation has ongoing activities to preserve habitat at: [www.rarespecies.org](http://www.rarespecies.org).
- The World Wildlife Fund links to dozens of international sites through its main address at: [www.wwf.org](http://www.wwf.org).
- The World Resources Institute (general site: [www.wri.org](http://www.wri.org)) offers a wealth of data on nearly all environmental issues; its site for biodiversity information can be accessed at: [www.earthtrends.wri.org](http://www.earthtrends.wri.org).

depth comparable to the work done by Grotius, Locke, Hume, Kant, Blackstone, and the dozens of other political thinkers who worked out the main issues and problems of democracy. In the hands of frothy environmental activists a theoretical environmental constitution often comes to sight as a second-rate or slapdash socialism.<sup>12</sup>

Are environmental concerns to be given priority over human liberty, which is the chief goal of liberal democracy? In practice much environmental policy implicitly says “Yes.” It is not clear whether certain aspects of democracy are compatible with the “rights” of nature, just as certain forms of property (i.e., human slavery) were not compatible with liberal democracy. This question needs to be thought through much more seriously than it has hitherto before environmentalism can hope to succeed as a “universal ethic” or worldview commensurate with liberal democracy.

Wilson is a biologist and not a political theorist, so it is not reasonable to expect him to provide us with a thoroughgoing Kantian treatment of this issue. Yet a union of science and political philosophy is required for any kind of environmental ethic to advance. Wilson describes himself as having never got over his boyhood phase of fascination with bugs, and when he speaks of nature he evokes not the dry technical jargon of the scientist, but the romance of the poet. And so the closing lines of Eliot’s “East Coker” are perhaps a fitting way to close this meditation:

We must be still and moving  
 Into another intensity  
 For a further union, a deeper communion  
 Through the dark cold and empty desolation,  
 The wave cry, the wind cry, the vast waters  
 Of the petrel and the porpoise.  
 In my end is my beginning.<sup>13</sup>

- 3 Thomas E. Lovejoy, “Biodiversity: What Is It?”, in *Biodiversity II*, p. 7.
- 4 See David Bank, “All Species Great and Small: Taxonomists Unite to Catalog The Planet’s Biodiversity; Possible Cost? \$3 Billion,” *Wall Street Journal*, January 22, 2002, p. B-1.
- 5 Gregg Easterbrook, *A Moment on the Earth: The Coming Age of Environmental Optimism* (New York: Viking, 1995), p. 552.
- 6 *The Skeptical Environmentalist*, p. 255.
- 7 The basic equation for the species-area curve is  $S=cAz$ . For a layman’s explanation of the species-area curve and its weaknesses, see Charles C. Mann and Mark L. Plummer, *Noah’s Choice: The Future of Endangered Species* (New York: Alfred A. Knopf, 1995), pp. 53–81.
- 8 *The Future of Life* (New York: Alfred A. Knopf, 2002).
- 9 A few demographers have even speculated that falling population might become a serious social problem two centuries from now.
- 10 *The Future of Life*, p. 183.
- 11 The U.S. Department of Commerce Bureau of Economic Analysis used to report an annual series on the cost of environmental regulation for just the major clean air, clean water, and waste disposal regulations. The Clinton Administration discontinued the series in 1994, at which time the annual cost of these regulations was estimated at more than \$90 billion.
- 12 Many of these sentiments are reported in the 2000 (5<sup>TH</sup>) edition of this report, available on our website, [www.pacificresearch.org](http://www.pacificresearch.org).
- 13 T.S. Eliot, “East Coker,” in *The Complete Poems and Plays of T.S. Eliot* (London: Faber & Faber, 1969), p. 183.

## NOTES

- 1 The classic treatment of this issue is Alston Chase, *Playing God in Yellowstone: The Destruction of America’s First National Park* (Orlando: Harcourt, Brace, 1987). The unpublished research of Utah State University wildlife biologist Charles Kay is more thorough and damning; Kay describes Yellowstone as “an ecological disaster area.”
- 2 Nigel E. Stork, “Measuring Global Biodiversity and Its Decline,” in Marjorie L. Reaka-Kulda, Don E. Wilson, and Edward O. Wilson, eds., *Biodiversity II: Understanding and Protecting Our Biological Resources* (Washington, D.C.: Joseph Henry Press, 1997), pp. 41, 61.



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CHAPTER 5  
STATE-LEVEL DATA

**P**REVIOUS EDITIONS OF THIS REPORT have noted the growing emphasis on moving environmental decision making and implementation from Washington to the state level. In 1995, and again in 1997, the National Academy of Public Administration concluded that “EPA and Congress need to hand more responsibility and decision-making authority over to the states.” And shortly before the 2000 election, Clinton’s EPA administrator Carol Browner wrote that “We believe that people know what’s best for their own communities and, given the facts, they themselves will determine what is best to protect public health and the environment.” However, this sentiment is still more lip service than reality.

The EPA and other federal agencies typically impose uniform standards and regulations on the states. In the most important recent treatment of the issue of state-federal relations on environmental policy, Case Western Reserve University law professor Jonathan Adler comments: “Though generally described as ‘cooperative federalism,’ the relationship between the states and federal government in environmental policy often resembles that between a feudal lord and his serf.”<sup>1</sup> Many efforts to shift more emphasis for policy innovation to state and local governments or to the private sector, such as the Clinton administration’s Project XL, have foundered on a variety of political or regulatory constraints.

Genuine devolution of environmental policy is going to require significant statutory changes or a revolution in administrative outlook in Washington, D.C.,

neither of which appears to be an imminent prospect. Adler suggests that policymakers in Washington are missing an opportunity to emulate in the area of environmental policy the kind of innovation and success that has been experienced with welfare programs since welfare was devolved to the states.

### ENVIRONMENTAL FEDERALISM — A PRIMER ON ACTIVITIES IN THE STATES

State-level welfare reform began with a series of administrative waivers from federal law so that states could experiment with different regimes and incentives. The result has been a historic drop in the welfare caseload over the last 10 years. “An ecological waiver regime,” Adler writes, “could unleash a similar dynamic in the context of environmental policy. Successful state experiments could become models for reform in other areas, and demonstrate that environmental reform does not mean environmental rollback. Where experiments fail, other states could learn how to avoid such mistakes in their own reform efforts.”

In the environmental policy area, Adler suggests adopting a regime of “ecological forbearance” similar to that which

exists currently in telecommunications regulatory law. The intention of “forbearance” in telecommunications regulation is to keep regulations from rigidly stifling innovation and competition in this rapidly changing industry. Telecommunications firms can petition the FCC for forbearance from regulation if they can make a compelling argument that such forbearance is in the public interest. “Under an ecological forbearance statute,” Adler suggests, “states could petition the EPA Administrator seeking the forbearance of any standard or requirement imposed under federal environmental law. One state might seek permission to adopt a different approach to facility permitting, another might wish to cease testing for a contaminant never found in its water supply.”

Critics fear that such an approach might lead to a “race to the bottom,” as competitive economic pressures will lead states to relax their environmental standards in order to attract new business. Although this argument is “intuitively appealing” (as Adler puts it), the evidence and experience of the last generation suggests this fear is unfounded.

Many states actually *preceded* the federal government in enacting environmental legislation in the 1960s and 1970s, and often perform better than the federal government today in the

### SOURCES FOR STATES’ ENVIRONMENTAL INFORMATION

While this and other reports on environmental trends cite “EPA data,” in fact most of the data the EPA reports are generated by the states and merely compiled by the EPA.<sup>5</sup> State level environmental monitoring and reporting is growing rapidly, and is offering more detailed tools for environmental assessment, mostly available online. Nearly every state now has an online site for environmental statistics, and some states are producing environmental indicator or trend reports, many of which can be downloaded in PDF format. Some states, such as Connecticut, even offer daily environmental updates.

Our search for state-level environmental websites generated nearly 300 addresses offering environmental quality data. All of these sites are linked through PRI’s website, [www.pacificresearch.org](http://www.pacificresearch.org).

There are several other gateways to state-level environmental data, including:

- The EPA’s links to state environmental quality departments is at [www.epa.gov/epapages/statelocal/envrolst.htm](http://www.epa.gov/epapages/statelocal/envrolst.htm).
- [www.pepps.fsu.edu/segip/statesum.html](http://www.pepps.fsu.edu/segip/statesum.html) offers a summary of state indicator reports.
- The Environmental Council of the States (ECOS) is an invaluable resource for all kinds of state environmental activity. A state-by-state breakdown of monitoring, spending, and enforcement activities: [www.sso.org/ecos/states/states\\_map.htm](http://www.sso.org/ecos/states/states_map.htm). Another important ECOS address is [www.sso.org/ecos/states/state\\_delegationchart.htm](http://www.sso.org/ecos/states/state_delegationchart.htm), which offers a schematic outline of how various federal environmental programs are delegated to the states.
- Environmental Defense ranks states according to various data sets and indicators, at [www.scorecard.org](http://www.scorecard.org). In our judgment, this site has some methodological weaknesses, but is worth noting to illustrate the difficulty of developing any kind of ranking system.



areas where the states still have latitude to make their own policy. A 1999 study by the Council of State Governments, for example, found that 79 percent of the states have air quality programs that exceed the federal minimum in at least one aspect.<sup>2</sup> Adler observes, “It typically costs \$25–30 million to clean up a single site in the federal Superfund program, and the average cleanup time is about 10 years. By comparison, Minnesota is cleaning up sites for less than \$5 million each and completing cleanups in only a few years.” Moreover, Adler makes the common sense observation that environmental protection is now a settled preference of Americans everywhere: “In practice, states that under-protect the environment are as likely to lose out from interstate competition as those that over-protect the environment.”

The further irony of the whole scene is that, contrary to popular perception, the states *already* bear the major burden for implementation and enforcement of environmental statutes, and have been expanding their staffing and spending for environmental policy much faster than the federal government for most of the last decade, which is why devolution of environmental policy is more likely to result in *a race to the top*. Most federal environmental statutes, such as the Clean Water Act or the Clean Air Act, delegate the administration of the acts to the states.

According to a study by the Environmental Council of the States (ECOS), fully 75 percent of all federal environmental programs are delegated to the states as of 1998, up from 45 percent in 1993.<sup>3</sup> (Though “delegated,” most federal environmental programs come with a proviso that the EPA can overrule state plans and prescriptions and impose its own substitutes.) Moreover, between 1986 and 1996, state spending on behalf of the environment grew 140 percent, while EPA funding to the states (mostly for wastewater treatment projects) declined by 17 percent. During this same time period, the number of state personnel in environmental agencies grew 60 percent.<sup>4</sup>

California Governor Gray Davis made a point of noting the role of the state-level initiative in our improving environmental trends when he spoke last year at the 10th anniversary of the California EPA: “This is a wonderful birthday of ten years of progress... By almost every measure the environment today is better than it was ten years ago. The air is cleaner, the water is purer, and the land is better protected. So let us just take a moment on the 10th anniversary of some wonderful

accomplishments to look back with pride on all that collectively we’ve done together. Not just this administration, but the administrations that have preceded us.”

The point is this: the commitment of state governments to environmental protection is undeniable, and policymakers in Washington should look for opportunities for state-level policy innovation on the environment, as they have in the areas of welfare and education.

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## NOTES

- 1 Jonathan Adler, *Let Fifty Flowers Bloom: Transforming the States into Laboratories of Environmental Policy* (Washington, D.C.: American Enterprise Institute, January 2002), p. 7.
- 2 State Air Pollution Control Survey (Washington, D.C.: Council of State Governments, 1999).
- 3 R. Steven Brown, “States Protect the Environment,” *ECOS* States, Summer 1999, available online at [www.ecos.org](http://www.ecos.org).
- 4 See R. Steven Brown, “States Put Their Money Where Their Mouth Is,” available online at: [www.sso.org/ecos/ECOSStatesArticles/rsbrown.pdf](http://www.sso.org/ecos/ECOSStatesArticles/rsbrown.pdf).
- 5 The EPA in collaboration with ECOS has produced a report detailing state collection of environmental data: *Environmental Pollutant Reporting Data in EPA’s National Systems: Data Collection by State Agencies* (Washington, D.C.: EPA & ECOS, 1999); available online at: [www.sso.org/ecos/publications/State%20Data%20Report.pdf](http://www.sso.org/ecos/publications/State%20Data%20Report.pdf).



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CONCLUSION:  
PRACTICAL PROTECTION

**A** COMMON THEME SHOULD HAVE EMERGED from this edition of the *Index of Leading Environmental Indicators*. Put bluntly, the theme is: Don't take *our* word for it. Don't take *anyone's* word for it. *Check it out for yourself*. The proliferation of data and the organized efforts at environmental assessment available on the Internet have taken the entire subject out of the exclusive realm of specialists and made it available to all interested citizens.

To be sure, the amount of data is overwhelming, and much of it requires some technical expertise. The problem of “rational ignorance” — the common-sense resistance to devoting scarce time to matters that an individual does not readily see how he can affect — will deter even concerned citizens from taking advantage of this wealth of information. Yet this is precisely where the popular environmental maxim — “think globally, act locally” — provides a helpful filter. The increasingly available data on local environmental conditions means that motivated citizens now have more tools to work on practical environmental protection in their own neighborhood.

As we have pointed out in our references to “civic environmentalism,” the sum of increasing local activity may provide the practical answer to the issue of what a “universal environmental ethic” will look like. Above all, the proliferation of detailed information means there is no longer any excuse for ignorance about the environment.

## ABOUT THE AUTHORS

**Steven F. Hayward** is the author of PRI's annual *Index of Leading Environmental Indicators*, a major study on the state of the environment released each year on Earth Day. He is also nationally recognized for his recently released book, *The Age of Reagan: The Fall of the Old Liberal Order 1964–1980* (Prima Publishing, 2001), and *Churchill on Leadership: Executive Success in the Face of Adversity* (Prima Publishing, 1997).

Dr. Hayward writes frequently on a wide range of issues, including environmentalism, law, economics, and public policy, and has published dozens of articles in scholarly and popular journals. His work has appeared in *National Review*, *New York Times*, *Wall Street Journal*, *Reason*, *The Weekly Standard*, *Policy Review*, and *Chicago Tribune*. He is a Weyerhaeuser Scholar at the American Enterprise Institute and an adjunct fellow of the John Ashbrook Center, and a former Bradley Fellow at the Heritage Foundation, Weaver Fellow of the Intercollegiate Studies Institute, Earhart Fellow, and Olive Garvey Fellow of the Mont Pelerin Society.

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Ms. Majeres graduated *cum laude* from Claremont McKenna College with a B.A. in economics and a computer science sequence.

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