
Currents

Environmental Policy: A Time for Reflection

Many federal environmental laws are now subject to reauthorization, but Congress appears to be in no hurry. This is probably for the best, because there is little apparent consensus on the appropriate next steps. Shortly after the Clean Air Act Amendments of 1990 were signed, for example, all but a few of the nearly 200 environmental measures on state and local ballots that fall were defeated. The environmental movement had several symbolic victories in 1992, such as the Rio Earth Summit and the election of Al Gore as vice president, but the popular support for further measures has largely evaporated. Now is the time for reflection on the successes, problems, and failures of federal environmental legislation, with the hope that decisions on the next steps will be based on an informed and honest reflection on those issues.

First, those who are prone to criticize most recent environmental regulation should acknowledge that the first major federal environmental laws, however crude, were very effective. Most dimensions of air and water in most regions have improved substantially since 1970, despite a 27 percent increase in population and a 82 percent increase in total economic output. The benefits of the first Clean Air Act and Clean Water Act, for example, were almost surely higher than the cost, and those measures were broadly supported.

That may be the end of the success stories. Most environmental programs approved since 1972 have led to little measurable benefits but rapidly increasing costs in the form of private and public expenditures, regulatory uncertainty and delay, and litigation. Implementation of several of these programs has been scandalous:

- The Endangered Species Act of 1973 authorized uncompensated restrictions on the use of land that may be habitat for listed species, and

that authority has been broadened by interpretation to include subspecies (such as the northern spotted owl) and regional populations (such as the grey wolf). Not one species has been delisted as a clear consequence of the use of that authority. And those restrictions have cost billions of dollars, including a large degree of responsibility for the losses from the October 1993 California fires, and the prospect of tens of billions more.

- In 1980, Congress approved the Superfund to clean up hazardous waste sites. For several reasons, this program has made no significant reductions in risk. The waste on many of those sites poses no risk to those offsite; for those sites, land-use restrictions are likely to be much more efficient than cleanup. Only a small share of the costs to date have been used for cleanup; the rest went to litigation and other transaction costs. The cleanup standards (e.g. soil safe enough for children to eat, water safe enough to drink) are unduly high; this has made the costs of the cleanup per site very high and severely limited the number of sites at which cleanup has been completed. This program has costs tens of billions of dollars to date and may cost hundreds of billions in prospect.

- In the late 1980s, the Corps of Engineers began to require a permit for any action that reduces the amount of wetlands. The presumed authority for this regulation is the Clean Water Act, but this act limits the permit authority to actions that affect navigable waters and it does not mention the word or concept of wetlands. Moreover, the Corps has defined wetlands very broadly, including depressions that may be temporarily saturated but have no surface water. Despite their questionable statutory and scientific basis, those regulations have been rigorously enforced. The average time for approving individual permits is over a year, and more than half of the permits requested are withdrawn. Several people have been jailed for actions that most of us would regard as innocent or beneficial. The

costs of those regulations to date have been the denial or delay of thousands of permits, the costs of mitigating actions required on approved permits, and the arbitrary penalties for violating those regulations.

The several programs described above are ineffective, inefficient, and unjust, and they have provoked a growing protest by local governments and small property holders. The 1990 amendments to the Clean Air Act, however, are likely to result in even higher net costs. The smog provisions, for the first time, will require millions of commuters to leave their car at home, even though almost all urban areas outside of California now have satisfactory air quality; the cost of the several new smog regulations is expected to be about four times the value of the health benefits. (See the article by Lis and Chilton in this issue). The toxic provisions will require several hundred thousand small businesses—such as bakeries, dry cleaners, and paint shops—to have EPA permits, even though there is no significant epidemiological evidence that current levels of air toxics have adverse health effects. The acid rain provisions established an expensive program to reduce sulphur dioxide, even though a major 10-year study completed in 1990 concluded that acid rain has only small adverse effects and that the normal replacement of utility boilers would eliminate most of these effects. The 1990 amendments to the Clean Air Act, if fully implemented, will probably have the largest continuing net cost of any environmental law—unless we overreact to the threat of global warming.

Why did the environmental groups overreach? Why has Congress overreacted, slowing economic growth and eroding the political base for sustainable environmental policies? The major reasons why most environmental regulations now yield net costs, I suggest, are the following:

Environmentalism as a Moral Crusade. For many, environmentalism has become a form of nature religion in which any amount of pollution from human activity is a moral offense. For those who share this perspective a lower level of pollution is regarded as inherently good, whatever reduction of other values (economic output, time, liberty, etc.) is the price.

The Rejection of Economics. One of the casual-

ties of doctrinaire environmentalism has been the loss of a limiting principle based on incremental benefits and costs. The economic perspective is based on a balance of those values. For a given technology, the cost of each successive increment in environmental quality generally increases. For a given income, the benefit of each successive increment of environmental quality declines. That leads to a reasonable conclusion that there is some optimal nonzero level of pollution that declines with improved technology and higher income. Congress and the courts, however, have progressively rejected the application of a benefit-cost criterion in setting health, safety, and environmental standards. The Clinton administration seems to be of two minds on this issue. In September 1993, for example, the new executive order on regulatory review strongly endorsed the maximum net benefit criterion, but the proposed new pesticide legislation would ban consideration of the benefits of pesticide use and would set safety standards based on “reasonable certainty of no harm.” The problem of setting standards based only on their safety effects, of course, is that there is no limiting principle. If “reasonable certainty” is interpreted as limiting harm to one person in a million, why isn’t a one-in-a-billion standard even better?

The Distortion of Science. Economists have become accustomed to being ignored, but scientists are not. One other casualty of doctrinaire environmentalism is the distortion of science to justify progressively broader or tighter standards. The examples are legion. Most standards on carcinogens are based on extrapolating from the effects of high doses on rodents, by a compounding of conservative assumptions, to estimate the effects of low doses on humans; this process probably overestimates the risks to humans by several orders of magnitude. In numerous cases, a standard is based on a scientific possibility without any significant evidence of actual harm—a pattern common to the standards for CFCs, air toxins, and sulphur dioxide emissions; the proposed ban on smoking in the workplace; and the many proposed measures to reduce the threat of global warming. One consequence of the distortion of science is that substantial resources are spent to reduce minimal risk at the expense of other activities that would reduce risk at a much lower cost.

Politics. All of those issues, of course, are distorted by the lens of politics. Congressional second guessing has made regulators strongly biased toward minimizing the probability of approving an unsafe product with little concern for the costs and risks of not approving a safe product. The most pervasive bias of congressional politics is to specify types of regulation that serve the interest of some firm, industry, or region. The use of ethanol, for example, is strongly favored by both regulatory and tax preferences. The mandate to use coal scrubbers favored the use of high-sulphur coal. The pattern of setting higher standards on new products favors old technology and the slowest growing firms, industries, and regions.

The most serious bias in congressional politics, however, is to overreact to perceived environmental crises—Love Canal, Times Beach, Three Mile Island, Exxon *Valdez*, Alar, etc.—by hasty, ill-conceived new legislation. Appropriate reflection on environmental policy should begin by recognizing that not one person died or was convicted of a criminal act as a consequence of any of those perceived crises.

Where would thoughtful reflection lead us? I don't know. My inclination would be to repeal all federal environmental legislation enacted since 1972, but that won't happen and does not provide guidance about what, if anything, should be put in its place. Maybe we should start by seeking agreement on the principles that should guide federal environmental policy. Here is my suggested list:

- Federal regulation should be limited to those environmental problems with significant interstate or international effects. Given the diversity of preferences and conditions, we should not set national standards to address local environmental problems.
- Environmental quality is highly valued in the United States, but it is not our only value. For this reason, we are best served by further limiting federal environmental programs and regulations to those for which the incremental costs are no higher than the incremental benefits.
- One way or the other, we need to establish common professional unbiased procedures and standards for risk assessment. This may require setting up an independent risk assessment group, either to conduct the basic risk assessments or to review the agency assessments.
- For both efficiency and other values, some

instruments of environmental policy are preferred to others. The following list of instruments, I suggest, best reflects those values—ranked from most preferred to most offensive: property rights and tort law (preferably accompanied by tort reform), marketable emission rights or permits, taxes or fees on emissions, output standards, general input standards, input standards only on new products, land-use restrictions not based on nuisance law. Many of the problems of current environmental policy are due to undue reliance on the least preferred instruments. The least efficient of current instruments, for example, are the widespread technical standards on new products. The most offensive current instrument is the growing use of land-use restrictions to preserve endangered species, wetlands, and historic properties—an instrument that may be unconstitutional and should be replaced by the purchase of easements.

- Maybe above all, don't panic. The apocalyptic are wrong. We do not face a silent spring. Earth is not in the balance. Most health and environmental indicators continue to improve. We face several continuing environmental problems, but no apparent crises. These problems should be addressed calmly, professionally, and in ways that reflect our several shared values.

Reflection may be good for the soul, but it may contribute to better policy only if it provokes and shapes a dialogue. Comments are welcome.

William A. Niskanen

Adventures of Smogocop III

The next battlefield in the escalating conflict between the states and the national government is likely to be a little noticed but steadily ticking time bomb—enforcement of the Clean Air Act Amendments (CAAA) of 1990. A revolt by states and localities against the Environmental Protection Agency's (EPA's) enforcement of the CAAA is gaining momentum and new followers almost daily. In more than a dozen states as different as California, Indiana, Nevada, and New York, elected and appointed state officials who have been left responsible for trying to meet the unreasonable requirements of the CAAA have

refused to play along in this game of pin the costs on the taxpayer. Not surprisingly, the EPA has not taken kindly to this nascent uprising and is trying to strangle it in its crib.

How did we get to the point where state officials and the EPA eagerly volley threats at one another? Congress, along with its willing accomplices in the Bush administration, through the CAAA, required the EPA to set acceptable limits for various airborne emissions, including volatile organic compounds and nitrogen oxide, which are both precursors to smog. To diffuse political responsibility for the damaging effects to the economy, Congress made the states responsible for "attaining" these requirements. Unfortunately for the EPA, the principal enforcement mechanism at its disposal under the CAAA is the ability, at the discretion of the EPA administrator and without the need for further congressional or presidential action, to cut off federal highway construction funding to a state.

Why is possession of that powerful tool unfortunate for the EPA? After all, the EPA itself asked for that authority during the deliberations over the CAAA in 1990. Now, however, the Clinton appointees in the EPA are discovering that this weapon is far too blunt and obvious for the task at hand—bringing unruly states and localities to heel. Invocation, or even the threat of invocation, of this sanction guarantees that state congressional delegations, as well as ordinary taxpayers, will pay close attention to the proceedings. When Congressman Jones and Farmer Smith from Kokomo are told that they aren't going to get that new highway bypass because the EPA found Indiana insufficiently compliant, it's better than even money that the brass knuckles will be taken down from the shelf.

One of the CAAA's requirements is that states who do not meet certain standards must initiate new, stricter automobile emission testing regimes. The Clinton EPA believes that the statute compels states to operate, or contract to operate, centralized testing (not testing and repair, just testing) stations. Inconveniently for the Clinton administration, the CAAA doesn't require such a regime—it allows private test and repair stations if a state can show such stations to be as effective as centralized, test-only stations in improving air quality. But centralized, state-run testing has nevertheless been ordered

for all states by the whim of EPA Administrator Carol Browner, despite the fact that there is no legislative or regulatory basis for this dictate. Such an approach would require new state bureaucracies and force people to go to the state-run testing station for tests, private stations for repairs, and then back to the state testing station for a retest. A comparable system is used for safety inspections in Washington, D.C., where it is not uncommon for people to wait as long as two hours for both the initial and follow-up inspections.

This fight is getting meaner. EPA has threatened to withhold federal highway construction funds from several states (California, Virginia, Illinois, Indiana, Louisiana, Nevada, New York, and Delaware, among others) if they do not move quickly to institute a centralized testing regime. California, which sensibly wants to try to rely on private stations first, and then move to state-run testing as a last resort, was already in the process of being sanctioned when the San Fernando Valley earthquake struck. Prior to the quake, Browner had said regally that the approaches California was considering were "simply not good enough". Mary Nichols, Browner's assistant administrator for air and radiation, and a former staff attorney for the Natural Resources Defense Council, was more pointed and, perhaps unwittingly, more obvious about the EPA's real bone of contention: "Unfortunately, there seem to be some players, some members of the leadership in California, who believe that because of the state's political importance, its size, and its economic location, sanctions will never be imposed. As a result, they believe they don't have to move expeditiously or that EPA will somehow be forced to accept a program that doesn't meet *its* requirements. That's just not so." (italics added). Note that the real cause of EPA's pique seems to be that California, while willing to meet the CAAA's requirements, had no plans to meet *EPA's* requirements.

Happily for California, that was recognized by the leader of the insurgency, California Assemblyman Richard Katz (D-Sylmar), Chairman of the Assembly's Transportation Committee. In response to Nichols he noted that California was viewed as the big boy on the block and offered that, "[The EPA is] thinking, 'If California gets away with it, then what will the other kids do?' So it's important that they beat down California. If they're dying

for a fight, then so be it. I refuse to be intimidated . . . just to make a bureaucrat in Washington, D.C., happy."

Interestingly, after the quake, all talk of sanctions was quietly dropped. Browner, who right up until the quake had been threatening a cutoff of federal highway dollars, wrote somewhat sheepishly to Governor Pete Wilson that the earthquake highlighted the "importance of all levels of government working together to meet the health and safety needs of our constituents." By rescinding the sanctions, Browner ruined the EPA's neatly constructed, if obviously incorrect and capricious, argument that centralized, state-run emissions testing was required by the CAAA.

Even after this admission of defeat, the EPA went back to California, and, in mid-March, came to a "compromise" in which only about 15 percent of the vehicles (mostly fleet vehicles plus the occasional randomly selected private auto) will be subjected to centralized testing. But although it was forced to back away from the threat of sanction, and was compelled to invent a legal explanation to justify why the CAAA provisions apparently applied to only 15 percent of the automobiles in the state, the EPA lost none of its sanctimony. Explaining that California really hadn't beaten down the EPA, spokesperson Denise Graveline said that "We've (EPA) always been willing to listen. The bottom line is that each state will have to meet performance standards and deadlines."

In addition to attacking states who don't have or want centralized emission testing, the EPA has also tried its hand at attacking states who *do* have centralized testing. In Arizona, which has had centralized, state-run emission testing for quite some time, the EPA's Region 9 decided that the program wasn't really satisfactory. In Arizona's case, the EPA mentioned the other mechanism at its disposal via the CAAA—requiring all new major sources of emissions within a region to find and deliver unto the EPA twice as many emissions reductions as the major new source planned to emit. In the normal course of business, each new major source is only required to "offset" emissions on a one-for-one basis. This "2-for-1 offset" requirement predictably disturbed the business community in Arizona because it would make the siting of any sort of industrial (even light industrial) business virtually impossible. Unfortunately, the Arizona



legislature was sufficiently cowed by the threat that it folded and, more or less, gave the EPA what it wanted. Now that the threat has worked in one place, expect it to crop up elsewhere.

The EPA is also using the CAAA to hammer states and localities on ozone non-attainment. According to the CAAA, about 100 regions will need to create plans to reduce volatile organic compounds and nitrogen oxide by anywhere from 15 percent to 45 percent within the next few years. That, in theory, will lessen the supposed smog problem in these regions.

A good example of the EPA's rigid and counterproductive enforcement of those plans can be found in Washington, D.C. In response to a sensible gambit by the Metropolitan Washington Air Quality Committee to include provisions in the plan addressing air quality only on certain, very bad days (usually in the summer), the EPA's chief for air programs—Mary Nichols again—scolded the Committee that actions to control ozone just during the worst days would not be credited toward the 15 percent reduction mandated by the CAAA. This despite the fact that there is no statutory prohibition whatsoever against these "episodic strategies," despite the

fact the CAAA clearly states that localities should be free to formulate whatever plans they think are most reasonable, and despite the fact that by foreclosing episodic strategies, the EPA is requiring ridiculous strictures to be in place year-round and thereby sentencing dozens of businesses to death. The localities involved haven't been able to be quite so fey about jobs and the economy. Prevented from relying on episodic strategies, most of the counties represented on the regional committee vetoed the original plan, reworked the emissions projections, and, for the time being, avoided the more economically unfriendly actions which will eventually be needed to meet the emission targets.

One method that the EPA has been encouraging the states to use to achieve attainment is employee commute options, or ECO, plans. These programs are designed to reduce trips to and from the workplace, putatively helping reduce emissions. The "options" proposed to date include compressed workweeks, severe taxes on public and private parking, freezes on the construction of new parking spaces within a region, and dramatically increased gas taxes (\$2 a gallon is being batted about in Boston and San Francisco). Of course, one method of trip reduction—firing employees—will inevitably follow from those measures, but that is not discussed in polite company.

In about a dozen metropolitan areas, the CAAA requires employers to reduce trips by employees to and from work by 25 percent by 1998. Even given this alarmingly excessive statutory stricture, EPA can't resist creating more mayhem. In Chicago, for instance, EPA has insisted that current riders of mass transit be included when calculating current average ridership. What problems does this cause? The initial goal of the Illinois ECO plan was to achieve an average vehicle ridership of 1.36 people by 1998. This is a 25 percent improvement over the current regionwide average of 1.09 people per vehicle. But the EPA decided that wasn't good enough because the plan didn't count transit riders. When they're counted, Chicago's target jumps from 1.36 to about 1.70 people per vehicle by 1998, since it now requires an increase from a larger base. Because Chicago has a large, extensively used mass transit system which already helps the region avoid large amounts of emissions, its businesses will be punished and

made to work twice as hard to meet what are completely arbitrary standards.

Besides the skirmishes in California, Illinois, Virginia, and the D.C. area, fights have been joined in Indiana, Louisiana, Pennsylvania, Delaware, and other state and localities. In Colorado, the Regional Air Quality Council in Denver has decided to challenge the EPA to sanction the state by offering a plan to cut emissions by 25 percent—far less than the 45 percent mandated by the EPA. The plan intentionally calls for less than the EPA wanted because, according to Council members, it appears politically impossible to adopt a plan tough enough to meet the EPA's standards. In Georgia, the state legislature recently reversed itself on emissions testing and delayed the switch to centralized testing stations for several months while they hunt for alternatives.

The EPA's attitude might be excused, if the Republic were being made safe from the trauma of severe and sustained air pollution. But the facts tell a radically different story. From 1982-92, ground level ozone incidence dropped 8 percent, despite the greater number of automobiles and a virtual doubling in the amount of total miles driven. For the same years, emissions of carbon monoxide dropped 30 percent, sulfur dioxide dropped 20 percent, and lead dropped 89 percent. Despite the heat and dryness last summer, the Washington, D.C., area was under an ozone advisory for just one day, compared to the 12 days during the summer of 1988. Finally, and most painful for the environmental chauvinists, 1993 car models emit, on average, about 1 percent of the emissions of the 1973 model year. The bottom line: our air quality is getting better, not worse, in tandem with substantial economic growth.

Faced with all this, one is left to conclude that the Clinton EPA is careening out of control. And, apparently, many state legislators have come to that conclusion. What makes these fights interesting is that, for the first time, states and localities are aggressively confronting the EPA. Not coincidentally, this is also the first time that environmental strictures will be transparent to the average citizen. The steps outlined in most regional attainment plans, as well as the measures to limit automobile emissions, will require significant sacrifice on the part of individuals, and, unlike previous environmental legislation, there will be no mediating institutions,

like businesses or other governmental units, to cushion the impact and hide the costs.

Those who fear that this is just a bump on the road to an EPA-sponsored Brave New World should take heart. The clash between the feds and the states is likely to get louder and messier, rather than quieter and cleaner. The CAAA was cleverly drawn—all the truly draconian measures kick in around 1995 and 1996. The states and regions are going to have to go back and find 15 percent to 45 percent more nitrogen oxide and volatile organic compound reductions for 1995 and 1996. If they don't attain, they are going to have to devise ways to punish the newest class of criminals—those who drive to work. And they will have to round up the posse to hunt down small businesses, like bakeries, dry cleaners, and graphic shops. In 1995, the CAAA imposes restrictions on the movement or expansion of industrial facilities in non-attaining states and regions. The cutoff in highway construction funding, which is now discretionary, becomes automatic in 1996. Having balked at what the CAAA's drafters considered the "easy" steps, it seems likely that states and localities will be in full battle armor for the next round.

The anticipation of this explains why the states are finally fighting back. For the first time, state legislators have been placed in a position where they have to explain to constituents why they allow or refuse to allow the EPA to damage livelihoods and lifestyles. When the EPA's extremism and inflexibility become apparent to most citizens, they might very well insist that sensible, rational actions be pursued instead. We are witnessing a pivotal moment—either the environmental ratchet is about to be broken, or the EPA will successfully crush this formidable challenge and virtually guarantee its hegemony over states and localities, along with the hegemony it already exercises over businesses.

The results so far are suggestive. Browner rattled her saber loudly at California, but flinched at the crucial moment. Having now rescinded the threat of cutting off federal highway dollars, she is in a box. If she tries to sanction another state, or impose anything less than the deal California got, she will need to explain how that state's recalcitrance differs from California's. As you might imagine, she can't argue that the Clinton administration fears for Dianne

Feinstein's seat, or for the '96 race, and therefore decided not to follow what previously had been the EPA's own interpretation of the law. To see her and her cronies writhe out of this will be amusing and instructive. This is not an academic exercise—in Virginia, State Senator Warren Barry has thrown down the gauntlet, daring EPA to explain why Virginia will be sanctioned while California will not. His counterpart David Albo in the Virginia House of Delegates has written provocatively that "the line is drawn in the sand on this issue, and Virginia will need to see whether the states or EPA crosses the line first." One suspects that, contrary to what some think, the Clinton people will decide to help out Chuck Robb, who is up for reelection this year, and forget the sanctions. Or maybe not. Strange things happen during revolutions.

These conflicts over enforcement are important and the stakes are high—compliance costs associated with the CAAA could total as much as \$25 billion annually. How the provisions of the Act are enforced—punitively or sensibly—will dramatically affect that estimate. In a December letter to Browner, Pennsylvania's acting Governor Mark Singel gave the watchword for the battle. He warned that if the EPA caved in to California, "not only will Pennsylvania's legislature rescind our [program], but . . . they will not take any federal Clean Air Act requirements seriously." Citizens who favor clean air and solid economic growth can hope his prediction proves valid throughout the nation and that, having bloodied the EPA in the first sting of battle, sensible officials in the states and localities will continue to press their advantage.

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Leave that Car in San Francisco

If the Ozone Transport Commission (OTC) has its way, the next car you purchase might be electric. On February 1, the OTC recommended that the Environmental Protection Agency (EPA) require the sale of electric cars—known as "Zero Emission Vehicles" (ZEVs)—and Low Emission Vehicles (LEVs) throughout the region under the OTC's jurisdiction: northern Virginia, Maine and every state in between. This requirement is

modeled after standards established in California. The OTC's official statement claimed that "introduction of Low Emission and Zero Emission Vehicles are [sic] essential" due to the air quality standards imposed by the 1990 Clean Air Act Amendments (CAAA).

Unfortunately, rather than address the root causes of air pollution, or even allow states to innovate in setting standards and drafting control strategies, environmental bureaucracies have preferred to force technologies and play the role of car designer. As a result, auto makers will be forced to market more expensive, less practical vehicles that will do little to improve air quality.

Air pollution does not respect political boundaries. Excessive levels of air pollution in Philadelphia can significantly affect air quality in Wilmington, Delaware, and Camden, New Jersey. Thus the OTC was established under the CAAA to help coordinate the air pollution control strategies of the mid-Atlantic and northeastern United States. If all of the OTC member states act together, none will suffer a loss in competitive advantage vis-a-vis its neighbors by enacting stringent control measures, such as California's vehicle standards. If such standards are regionalized, companies and consumers are less likely to flee a state due to the cost of the regulations.

This logic was convenient for the OTC delegates, who voted 9 to 4 in favor of the new standards, which require the sale of LEVs and ZEVs. Whereas California requires auto makers to sell a particular percentage of ZEVs—2 percent of sales in 1998, 10 percent in 2003—the OTC has asked for the imposition of "a prescribed fleet emission average standard" for all cars sold and leased in the OTC region. As in California, this standard is phased in from 1999 to 2003. Auto makers will not have to sell electric cars if they can find a way to meet the standards without them, but that is a very iffy proposition.

The OTC could have done a lot better than to model its recommendations on California. The California LEV standards alone will increase the cost of a new car by an estimated \$1,000, and will have little to show for it. For one, the new standards will not take effect until 1999, after which it will take several years for LEVs to comprise a majority of the fleet. Additionally, insofar as increased auto prices reduce demand, the effectiveness of this approach will be compro-

mised. Fleet turnover naturally results in emissions reductions because older cars are, on average, more polluting than newer cars. This is due to both existing regulatory standards and the natural deterioration of emissions control equipment in automobiles. If the rate at which newer cars replace older cars is slowed, emissions reductions will be lost.

And then, of course, there are the electric cars. Electric cars are one of the favorite weapons in the regulatory war against urban air pollution. Electric cars are the sort of "environment friendly" technology that Vice President Al Gore hopes will provide the key to future U.S. job creation and international competitiveness. Right now they are still tremendously expensive: current price premiums are around \$35,000 for compacts, and significantly more for comfortable wagons or utility vehicles. By forcing auto companies to manufacture battery-powered vehicles, government officials and environmental technocrats hope to jump-start the market for electric vehicles and bring down the price, making battery-powered buggies more palatable to consumers. Gore has even suggested that the ultimate aim should be the complete replacement of gasoline-powered vehicles.

Right now, however, electric cars sound much better on paper than they perform in practice. For decades, engineers have promised an imminent breakthrough in battery technology that would turn electric cars from interesting auto show displays to practical everyday cars. That breakthrough has not yet arrived. Electric cars made today have an extremely limited range between charges, typically under 100 miles. Without installing expensive equipment, recharging requires several hours. Thus electric cars might make sense for commuting, but not for a weekend getaway or business trips, let alone a cross-country vacation. Need the car for a late-night hospital emergency? Forget it, the car's still charging. With the possible exception of two-car families with flexible schedules, using an electric car requires giving up much of the convenience and versatility that gasoline cars provide. Mandate or no, it is unlikely that, barring technical advances, electric cars will ever expand beyond a niche market.

Furthermore, what many have overlooked is that most electric car prototypes have been designed for use in California's temperate climate. Designing electric cars fit for the

Northeast is another matter entirely. For one, heating the vehicle in winter draws a tremendous amount of energy which will in turn reduce the vehicle's driving range. The same holds true for defrosters, windshield wipers, radios, and so on. Some auto makers hope to compensate by installing mini fuel-powered heaters. These heaters will produce some emissions, as will most power plants upon which the energy for recharging is drawn, but they have been approved by California's Air Resources Board nonetheless.

Then there are concerns about batteries freezing. Cold weather can greatly reduce the energy-storage capacity of lead-acid batteries—sometimes to zero. If electric car owners cannot be disciplined to take cautionary actions, cold weather will result in many unhappy drivers.

Because analysts don't think that the current generation of electric vehicles will catch on with consumers, government officials have taken to inducing vehicle sales with mandates and regulations. If the technology is not forced on consumers, it will not reach the mainstream for quite some time. Where this fact might discourage some from attempting to refashion consumer preferences, it only reinforces the resolve of environmental planners. Regrettably, this obsession with rechargeable chariots comes at the expense of more cost-effective emissions control options.

Requiring new cars to meet more stringent emission standards will do little to improve urban air quality, even if the push for ZEVs is successful. In 1990, new vehicles rolling off the assembly line emitted 96 percent less hydrocarbons and carbon monoxide, and 76 percent less nitrogen oxide than those cars made just two decades previously. Beginning this year, federal law mandates further vehicle emission reductions of 35 percent and 60 percent for hydrocarbons and nitrogen oxide respectively. There simply is not much left to be gained from squeezing out a few more points of reductions as required under California's vehicle standards. Even electric vehicles will fail to make an appreciable dent.

Supporters of requiring the manufacture of cleaner vehicles point out that motor vehicles are the prime culprits in urban air pollution. That is true. Yet what they fail to acknowledge is that all cars do not pollute equally—far from it. Ten percent of the cars on the road are responsi-

ble for around half of the auto-related carbon monoxide and smog-forming emissions. In other words, out of every 10 cars, one car pollutes as much as the remaining nine. Many of those "gross polluters" are older cars, but many are not. A new car with a malfunctioning emissions-control system can pollute like the worst 1960s clunker. A simple tune-up is often all that is required to turn a heavy polluter into a relatively clean car. The key to cost-effective and equitable air pollution control is targeting the dirtiest vehicles for repairs or replacement rather than imposing restrictions and requirements on all car owners to prevent the polluting activity of only a few.

Technologies exist to focus emission reduction efforts on the heaviest polluters, but environmental agencies have been reluctant to change their approach. The EPA and state environmental agencies have remained wedded to the clumsy and blunt pollution control strategies developed in the 1970s—technology standards, fuel composition requirements, mandatory emissions testing—even though better alternatives exist.

One such alternative, the on-road testing of vehicle emissions through a remote sensing device, has been opposed by the EPA at nearly every turn, despite mounting evidence that that approach could achieve significant emissions reductions in a more cost-effective and efficient manner. Moreover, such an approach would have the virtue of not imposing upon the majority of car owners that are not contributing to urban air quality problems. The owners of gross polluting vehicles can be fined or sanctioned until their cars are repaired; the owners of clean cars can go on about their way without any interruption, inconvenience, or added financial burdens.

However to some politicians, such an explicit adoption of the "polluter pays" principle makes who is paying for pollution reductions a little *too* explicit. Why outrage a constituency when you can hide the costs of pollution control in the price of a new automobile? Why develop a new, targeted approach to pollution control when one can profess dedication to reducing air pollution merely by tightening preexisting standards? This attitude can explain, at least in part, the political and bureaucratic appeal of new vehicle standards. It also suggests why examples of innovative and cost-effective approaches to pollution

control are so few and far between.

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Advancing Science vs. Stagnant Policy: The Case of Assessing Ozone Depletion Risk

Much like the weather, everyone talks about risk assessment but nobody does anything about it. Usually, when the scientific evidence is uncertain, risk-averse bureaucratic organizations prepare for the worst case, however improbable it may be. Urged on by environmental activists and encouraged by media support, they fall back on this precautionary principle: "Even if the risk of damage is minute, adopt the most drastic measures available!" The Delaney Amendment, the Superfund legislation, and the air toxics provision of the Clean Air Act are all examples of the mentality that one molecule can kill.

In their futile and ultimately counterproductive search for zero risk, those zealots abhor cost-benefit analyses and thereby waste precious resources on phantom risks while real risks go unaddressed. They ignore *comparative* analysis of the many risks to health, safety, and general well-being. Senator Bennett Johnston (D-La.) and Rep. John L. Mica (R-Fla.) have sponsored amendments that would require the Environmental Protection Agency (EPA) to conduct such quantitative assessments for all proposed regulations—much to the chagrin of the bureaucrats who hate to have to justify their actions. Aside from that, such a comparison process would be understandably difficult for governmental agencies and subagencies that are organized one-dimensionally along specialized mission lines. As a result, resources, always limited, are wasted and pressing needs are not met.

What has happened in the last decade illustrates perfectly Senator Daniel Patrick Moynihan's (D-NY) pronouncement that "environmental decisions have been based more on feelings than on facts. . . . Environmental legislation created over the last 20 years has typically forbidden any analysis of cost or has demonstrated no concern for it."

The failure of the current system of environmental risk management is exposed most clearly

if the underlying science changes—as it often does when new data come forward from the laboratory or from observations in nature. Can the policy change and does the policy change to accommodate the new facts? Not surprisingly, the general answer is "no." Once established—and particularly if enshrined by international agreements—policies are set in concrete. The science may even reverse, and still nothing about the policy will change.

In a sense, this is not surprising. Legislators and bureaucrats, mostly lawyers, don't like the fact that science can change; in any case, they don't like to admit to having made a mistake. In addition, each piece of legislation and regulation creates powerful constituencies through expanded bureaucracies in federal and state governments and within the business community.

Every major company now has a department of environmental affairs, headed by a vice president hoping to become a senior vice president as his empire grows in size. Large companies benefit from excessive regulation—provided they can pass on the additional costs in the price of the product—because it keeps out competition from smaller firms. The consumer, unfortunately, loses out through higher prices due to increased costs and reduced competition.

A current example of the interaction between science and environmental policy is the relation between chemicals that allegedly deplete the ozone layer, and skin cancer. It has been suspected since 1974 that CFCs could diminish the thickness of the stratospheric ozone layer. As the theory was refined, the calculated effect grew smaller and smaller. In spite of great pressure from environmental groups, there was little or no action by government, since there were no observations to confirm the theory.

All this changed around 1985 with the discovery of the Antarctic ozone "hole"—a temporary thinning of the stratospheric ozone layer that takes place each October. The hole began to develop in the late 1970s and was not predicted by the theory. Even though many feared that the hole might grow, it was soon realized that it would stabilize and be controlled by climatic factors rather than by the amount of chlorine in the stratosphere.

By 1987, momentum had built up for controlling CFC emissions on a worldwide basis, leading to the Montreal Protocol to freeze production. It is noteworthy that in 1987 the scientific

evidence presented in published, peer-reviewed research showed that *natural* sources, and not CFCs, dominated the amount of stratospheric chlorine. Nevertheless, the proponents of CFC control grasped at other published research, less well-founded, that showed the contrary. With the help of a good deal of hype about the ozone hole, and with an EPA "estimate" of 200,000 additional skin-cancer deaths by the year 2050, the Montreal Protocol was adopted.

The Protocol provided for periodic scientific reviews to allow for tightening CFC production limits. That gave rise to periodic pronouncements, made in press conferences, that ozone was depleting globally, and that the depletion was "worse than expected." The media were generally too uncritical to follow the obvious logic in interpreting this statement. "Expectations" can only be based on theory; therefore either the theory is wrong, or the observations are wrong, or they are both wrong.

Escalating the drum beat for CFC phaseout were stories about blind sheep and blind rabbits in Chile, plankton disappearance in the Antarctic, increases in cataracts, and damage to the immune system with the unspoken suggestion of an AIDS epidemic. All of those stories proved to be baseless. The most recent example of this genre is the claimed worldwide disappearance of some species of frogs and toads, which was blamed on an increase in ultraviolet radiation due to depletion of the ozone layer.

In February 1992, again at a press conference and *before* the completion of their experimental program, NASA scientists announced findings which they said could lead to an Arctic ozone hole. At that time they knew—or should have known—that such a hole would not develop in 1992. Nevertheless, the media, with some help from then-Senator Albert Gore (D-Tenn.), trumpeted the "ozone hole over Kennebunkport;" within a few days President George Bush advanced the phaseout date of CFCs from the year 2000 to the end of 1995.

The problem, again, was that the science did not support any of those fears. Two further examples should suffice:

- In November 1993, *Science* magazine carried an account of UV increases over Toronto, quoting rates of rise as high as 35 percent per year since 1989! Those results have proven to be entirely spurious, as the authors admitted in an interview reported in the March 7 *Washington*

Post. Science will soon publish a technical comment that points to errors in the statistical analysis of the Toronto data. In spite of obvious shortcomings, the Toronto results were endorsed by Professor Sherwood Rowland, the coauthor of the CFC-ozone theory, and were also used to support the hypothesis that ozone depletion was the cause of an observed decline in the world's frog population.

- In the July 1993 issue of the *Proceedings of the National Academy of Sciences*, Dr. Richard Setlow and colleagues at Brookhaven National Laboratory published studies on the induction of melanoma skin cancer, demonstrating that the wavelength region responsible is UV-A (320 nanometers and greater), rather than UV-B (280-320 nm), the region subject to absorption by ozone. If Setlow's results are confirmed, then changes in the ozone layer are not a factor in the occurrence of melanoma, and the EPA estimates of skin cancer deaths become invalid. That would undercut the major human health argument for the phaseout of CFCs.

What can we learn from the CFC experience? First of all, that science is easily distorted, even subverted, and often just ignored by those advancing a political agenda. Next, policies once established tend to become inflexible and immune to change—even if the underlying science changes and the rationale for the policy disappears. There is little chance, for example, that the present CFC phaseout policy will be modified or even delayed on the basis of the new results mentioned above. To the contrary, the EPA has just added methyl bromide and other useful chemicals to the proscribed list.

And finally, even high-cost policies survive, especially when they benefit a few, because the public does not associate the increased cost of living, of food and other necessities, with a particular policy or regulation.

In this respect, however, the CFC phaseout policy may prove an exception. As early as the summer of 1994, and certainly further down the road, motorists will be shelling out \$500 to \$1,000 to repair or replace their car air conditioners. The cost of this particular policy then will become quite apparent and may well lead to a popular revolt that could do much more than change the CFC policy. As Dr. Michael Oppenheimer of the Environmental Defense Fund put it in a recent ABC News *Nightline* program: "If [skeptical scientists] can get the public

to believe that ozone wasn't worth acting on, that they were led in the wrong direction . . . , then there is no reason for the public to believe anything about any environmental issue." Quite true.

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Malignant Cancer Scares

"So, I guess this doesn't make much difference," sighed an acquaintance at the pool club the other day.

"What do you mean?" I wondered as we began our daily exercise routine.

"We baby boomers—no matter how healthy we try to be—are doomed. We're going to get cancer anyway—I heard it on the news this week."

My colleague in the pursuit of good health was referring to recent press accounts claiming that new data now indicate an increased cancer rate among those of us born during the 1940s—even if we do not smoke cigarettes. The various media reports refer to a recent article published by the prestigious *Journal of the American Medical Association (JAMA)* and written by a team of government scientists headed by Dr. Devra Lee Davis, long an advocate of the view that the United States is suffering a "cancer epidemic."

The media coverage generated by this report was indeed alarming, especially looking at the headlines: "Cancer Risk Up Sharply In This Era" proclaimed the *Washington Post*; "Study Finds Increase In Cancer Risk For White Baby Boomers" concurred the *Seattle Times*. All reports stated that environmental, non-tobacco-related factors are the underlying cause for this apparent "dramatic increase." Many experts are concerned that the Clinton administration will use those new data to bolster its regulatory assault on "carcinogens," particularly the much-maligned agricultural chemicals—e.g., pesticides.

When I read the actual article by Dr. Davis, and the rest of that issue of *JAMA*, I found that a) the media had limited itself to reporting only on the article itself, not on the accompanying editorial written by Dr. Anthony B. Miller,

which largely dismissed the findings, and b) did not share with consumers some of the obvious shortcomings of the Davis article—limitations which are critical in interpreting its conclusions. We need perspective on the limitations of the Davis article, as well as the political movement behind the search for hypothetical environmental causes of cancer.

Underestimating Tobacco

The most significant problem with the Davis article is that the authors understate the effects of tobacco in cancer causation. The authors estimate that 30 percent of cancers are tobacco-related—yet the prevailing view is that more than 40 percent of all cancer cases (excluding superficial skin cancers) are caused by tobacco. This is particularly true among baby boomers, the group of concern to Dr. Davis and her colleagues, because of the dramatic increase in female smoking after 1945. This underestimation of tobacco-caused cancers leads to speculation that cancer must be caused by unseen "environmental causes."

The authors attempted to separate cigarette-caused cancers from those not linked with smoking. This is critically important because of the enormous contribution of tobacco use to cancer in the decades after 1940. But they limited the definition of "cigarette-related cancers" to the traditional sites (mouth, larynx, lung, pharynx, esophagus) despite the fact that epidemiologists now attribute a significant portion of pancreatic, kidney, bladder, and cervical cancer, among others, to cigarette smoking. Most recently, a study published in the *Journal of the National Cancer Institute* linked smoking to colon cancer—a previously unrecognized connection. The evidence seems to indicate that the artificial separation of smoking-related and other cancers created by the authors are indeed meaningless.

Incidence vs. Mortality

Davis and her co-authors make clear that their analysis of cancer data relates primarily to incidence. The distinction between incidence and mortality may, however, be lost on lay readers. Mortality refers to deaths from cancer. Incidence, on the other hand, refers merely to the number of new cases diagnosed. Thus, any

increased use of modern medical technology—such as the prostate specific antigen test for prostate cancer and mammograms for breast cancer—could dramatically increase incidence without any corresponding increase in mortality. Cancer of the breast and prostate both illustrate that point. Both have increased in incidence without any correspondingly large change in mortality.

The authors acknowledge that coronary heart disease has been declining significantly in recent decades. However, they do not adequately consider the effects of competing causes of death. Specifically, one cannot evaluate the frequency of one major disease, like cancer, without considering trends in competing causes of illness and death. In fact, recent studies indicate that 30 percent of the increase in cancer mortality between 1973 and 1987 was due to declines in other major diseases, mainly heart disease. Taking this concept to the extreme, it is obvious that a cure for heart disease would make the cancer incidence and mortality rate soar. Humans are still mortal. *Something* has to be the leading cause of death!

Blaming Agricultural Chemicals

Scientists count among their recreational activities sessions where they pick apart the published work of colleagues, pointing to specific omissions or shortcomings. This is fair sport at academic seminars, and scientists understand that one study does not a conclusion make. Journals such as JAMA have no qualms about publishing studies with which many editors might disagree because they know there will be in-context dialogue after publication to resolve differences. (In this instance, JAMA began this discussion by publishing its critical dialogue by Dr. Anthony B. Miller in the same issue.) The problem here then was not the Davis article itself, but the fact that it was plucked out of context and reported uncritically by the media.

What was highly unusual about the article, however, was that the authors ventured beyond their tenuous conclusions that there was a cancer “epidemic” to offer a possible cause: environmental chemicals, particularly pesticides. Why did they point to agricultural chemicals? Because, they said, there were epidemiological data that farmers had an increased risk of cancer and they thought that occupational risk

might carry over to consumers who eat the food farmers produce. Here, then, is the major flaw in the Davis article: if indeed farmers do have an increased risk (yet unproven) related to their use of chemicals on the farm, what possible relevance would that have to us and our occasional parts per billion (or less) exposure to pesticide residues in conventional food? Extrapolating from high-dose occupational exposure to minuscule intermittent exposure would be like concluding that those of us who have an annual X-ray are at risk just because radiologists, who years ago practiced their specialty daily without protection, had a higher cancer risk.

Out of all the possible reasons to speculate on why non-smoking baby boomers might have an allegedly higher cancer risk, why zoom in on pesticides? Why not speculate on other possible causes such as marijuana use or the increased consumption of vegetables and fruits (with their naturally occurring carcinogens)?

A Political Uproar

The answers to the above questions become clear when one investigates the political movement behind this search for hypothetical “environmental risks.” Dr. Davis is considered by many to be a maverick in this political movement. She is among a group of scientists proposing that “synthetic chemicals are permeating the environment,” mimicking hormones such as estrogen and possibly causing cancer. Studies about the risks posed by such “carcinogens” generate financial funding, as well as media coverage.

In fact, the extensive media coverage generated by Dr. Davis’ JAMA article is strangely reminiscent of a similar *Journal of the National Cancer Institute* study published in 1993 titled “Blood Levels of Organochlorine Residues and Risk of Breast Cancer.” The study, written by Dr. Mary Wolff and her colleagues at the Mount Sinai School of Medicine, focused on New York City—an area where breast cancer rates are higher than the national average. The researchers concluded there was a “fourfold increase in the relative risk of breast cancer for an elevation of serum DDE [a by-product of DDT found in the body].” No similar association could be made for PCBs. (A recent analysis conducted by the Centers for Disease Control and Prevention revealed that the high cancer rate in New York can actually be explained by

the demographics of the women living there. Those women more frequently exhibit many of the known risk factors for breast cancer, which include a history of benign breast disease, childlessness or delayed childbearing, and ethnic origin.)

Yet the findings of that study, like the recent Davis article, generated sensational headlines: "First DDT Link to Breast Cancer Reported." The generous, uncritical media coverage had far-reaching effects. For example, citing this evidence as a "link between increased organochlorine exposure and increased incidence of breast cancer," Greenpeace went so far as to call for a phase-out of chlorine and organochlorine compounds.

Had reporters consulted with any of the nation's leading cancer epidemiologists, they would have found that the DDT study, like the Davis article, raises more questions than it answers:

- DDT was banned in the United States in 1972, but its use worldwide is greater today than it was then. Does Wolff's paper imply that DDT should be banned worldwide, when doing so could lead to a dramatic increase in insect-borne disease?
- Why investigate DDT exposure in New York? If DDT was overused, this occurred primarily in the southern United States. When was this cohort of New York women exposed? Did the exposure occur in New York? (No data are provided in the Wolff article to suggest when and where the exposure to DDT occurred.)
- Many critics question the validity of the Wolff data because the study did not control for dietary fat intake, which may have an association with breast cancer. Would controlling for such variables greatly alter the results of the Wolff study?

The studies conducted by Drs. Wolff and Davis add fuel to the fire of environmental activists whose agenda is rooted on the premise that cancer is a by-product of the industrial age—causally linked to man-made chemicals. What worried baby boomers—and the environmental activists now pressuring the Clinton administration to "do something" to reduce our cancer risk—need to keep in mind is that the science of cancer epidemiology still points to lifestyle factors (cigarette smoking, excessive sun exposure), not environmental chemicals, as the primary, controllable causes of cancer. As Dr. Clark Heath, vice president for epidemiology and statistics at the American Cancer Society stated in recent media reports: "I don't think the study changes our perspective on . . . what causes can-

cer."

Before we begin redirecting funds from such valuable pursuits as searches for effective treatments, policymakers need to decide if searching for toxic phantoms will be a fruitful endeavor or yet another unnecessary burden on our very limited public health research budget. We need to prevent a disproportionate amount of research dollars from going into relatively low-priority fields at the expense of programs that directly benefit the cancer patient. We cannot guide public policy by the uncritical, out-of-context reporting of scientific data by the media. Such action would be truly hazardous to the health of all of us.

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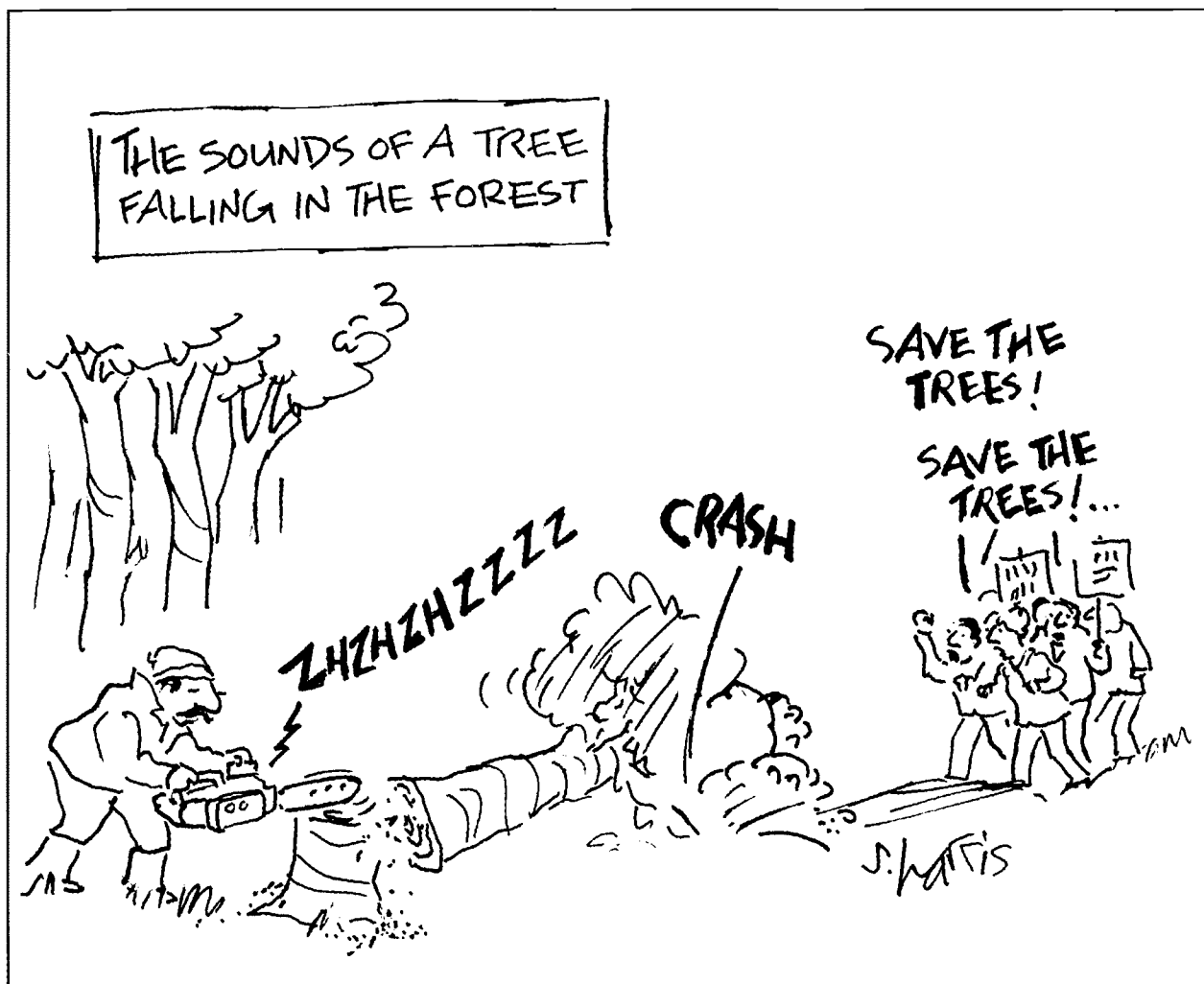
An Economic End to Below-Cost Timber Sales

For over a decade, the issue of below-cost timber sales has been the center of efforts to reform management of the Forest Service's timber program. From 1990-92 alone, the Forest Service reported that the program lost nearly \$440 million.

Some environmentalists suggest that the solution is either to stop selling federally owned timber altogether, or to raise the price of Forest Service timber so that it meets the costs incurred in producing it. Neither expedient is necessary. The key to rationalizing the Forest Service timber program is to cut costs, not raise prices. A comparison of timber sales between state and national forests in Montana clearly shows that the Forest Service is losing money on timber sales because its methods are extremely wasteful.

I have examined three distinct growing regions in western Montana over the period 1988-92. In all three, the state of Montana was able to profit selling its timber, while the Forest Service continued to lose money.

In northwest Montana, the state grossed \$2.39 for every dollar spent selling and growing timber, while the nearby Flathead National Forest failed to break even, grossing only 75 cents for every dollar spent. Similarly in southwest Montana, the state grossed \$1.98 for every dollar spent, while the Bitterroot National



Forest, grossed only 44 cents for every dollar spent.

Even in the dryer, less productive region of central Montana, the state grossed \$1.07 for every dollar spent, while Gallatin National Forest grossed a paltry 23 cents.

Overall, the state's timber sales earned nearly \$14 million in income from 1988-92, while the 10 national forests in Montana showed a cumulative loss of \$42 million. This is startling, especially when we consider that the state harvested one-twelfth the volume of timber harvested by the Forest Service during this period.

The explanation for this variance cannot lie in natural differences. State forest lands are often located right next to national forests in western Montana. In addition, timber surveys by the Forest Service conclude that state and national forest have similar growing potentials. Nor is the difference in the demands of management.

Both state foresters and the Forest Service must carry out similar duties. Both prepare and administer sales and environmental assessments, build roads, prepare sites for reforestation, and supervise stand improvements. Both are required to integrate timber sales with other uses such as public recreation, livestock grazing, and wildlife habitat.

But the state manages to carry out its forest responsibilities at substantially lower cost. For example, in the northwest region Montana spent an average of \$66 per thousand board feet of harvest to manage its timber program from 1988-92, while Flathead National Forest, located right next to some of Montana's forests, spent 60 percent more—\$106 per thousand board feet. Elsewhere, the cost picture is similar: in Montana's central region, the state's costs averaged \$80 per thousand board feet of harvest versus \$133 on nearby Gallatin National Forest.

The state also manages its labor far more efficiently than the Forest Service. To harvest a given volume of timber, the state used 4.5 hours of labor in central Montana, while the Forest Service used 11.6 hours on Gallatin National Forest.

But it isn't only costs that are out of line. State forests also manage to pull in much higher revenues than their national counterparts. Over the past five years, Montana reaped an average of \$134 per thousand board feet of harvest, compared with \$75 for the national forests in the state. In the central region, the state received an average of \$85 per thousand board feet of harvest, while nearby Gallatin National Forest managed only \$31.

There are many reasons for the differences in revenue. Among them are the quality of the timber sold, the yield per acre, the severity of the restrictions on timber companies, and the amount of mitigation and enhancement activities required. In the Gallatin forest, it seems there was an unusually high volume of salvage timber sales from 1988-92. Salvage sales typically involve selling dead, diseased or burned timber, and naturally they fetch lower than normal prices.

Some might attribute the Forest Service's higher costs and lower revenues to a greater emphasis on maintaining environmental quality. But a 1992 statewide audit of recent harvests ranked the state highest in protecting watersheds among all landowners, including the Forest Service. The audit, requested by the Montana legislature, was conducted by an interdisciplinary team of experts in hydrology, forestry, soil, and biology, and several representatives of environmental groups.

Montana also does a substantially better job of sustaining its quality timber, that is, its trees that are alive and free of disease. Timber surveys by the Forest Service indicate that Montana's state timberlands are closer to their timber-growing potential than nearby national forests. In the national forests, more trees have aged and succumbed to disease.

How is it that two different agencies with such similar lands, similar duties, and with the same market have achieved such drastically different results? The answer to this question will reveal the most sensible policy for managing the

sale of federal timber.

I believe the answer lies in the fact that Montana's State Forestry Division has a constitutional mandate to make money for public schools. The Forest Service has no similar mandate, and no real incentive to control costs because if it loses money selling timber, the difference is merely offset with congressional appropriations.

An ideal solution for introducing efficiency to timber sales would be to shift ownership of the forests to private hands. Barring that, the solution to below-cost timber sales doesn't lie in weaker environmental standards. Nor is it, as some have recommended, to stop selling timber in money-losing forests such as those in Montana. The solution is to introduce the Forest Service, if it is to continue to control those forests, to the profit motive and the discipline of efficiency. Toward this end I recommend the following options:

- Allow each national forest to keep a share (preferably a large share) of the profits from timber management.
- Determine budget appropriations for each forest unit on the basis of net revenues from logging operations instead of harvest targets.
- Earmark net revenues from timber management for a purpose with an identifiable constituency, e.g., endangered species preservation, wilderness preservation, or education.
- Allow other users and outside sources to bid on timber sales and have the option not to harvest.
- Allow outside sources to bid competitively for support functions such as environmental assessments and reforestation.
- Award bonuses to personnel who carry out innovative and cost-effective approaches to timber management and environmental protection.

While those are only initial steps, I believe they provide a basis for restoring fiscal accountability to the Forest Service's timber program. While there is no economic excuse for below-cost timber sales, there is also no economic justification for not selling timber that can make money.

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After Environmentalism

Three Approaches to Managing Environmental Regulation

Michael Kellogg

Environmentalism is dead. We are all environmentalists now. From Rachel Carson's *Silent Spring*, through the first Earth Day in 1970, to the international Eco-Summit in Brazil, the basic job of consciousness raising has been done. Even the recent recession did not stem the growing recognition that the quality of our lives depends to a great extent on the quality of the air we breathe and the water we drink, and on the wild and open spaces that define us as a country and renew us as individuals.

That was the easy part, akin to the early days of the civil rights movement, when the moral imperatives were clear and those involved in the struggle needed only a strong sense of purpose and the courage to persevere. As a movement matures, however, and its initial goals are accomplished, a whole new set of responsibilities and moral subtleties arises.

Americans currently spend over \$124 billion per year (2.5 percent of Gross National Product) complying with a raft of environmental statutes and regulations. The Environmental Protection Agency (EPA) has a staff of 18,000 and an operating budget of \$6.7 billion. It accounts for one

third of the federal regulatory budget, and is growing at an increasingly rapid pace.

Those huge expenses entitle us to ask if we are getting our money's worth from our current laws and regulations. Is the environment getting cleaner, better protected? Are there cheaper ways to achieve the same or a higher level of protection? Should we be doing more?

There are shelves full of books attempting to answer those questions. I will focus my discussion here on three, chosen because they are representative of the three most prevalent approaches in environmental policy today: (1) the command-and-control approach, which advocates direct government regulation of all activities affecting the environment; (2) the market-based incentive approach, which relies on government guidance to shape environmental policy but market-based incentives to implement it; and (3) the free-market approach, which holds that with a properly constructed scheme of property rights, supplemented by contract and tort law, market forces could take care of the environment without the need for government intervention.

Each of those approaches has both advocates and critics. None is free of flaws; but, flaws and all, we must choose our path and march into the

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