EPA and Industry Pursue Regulatory Options

Innovations pushed by economists result in lower costs and cleaner air, with only a few problems

The air in Middletown, Ohio, is scarcely different from that of other industrial cities; periodically hazy or smelly, at times it lends a pinkish glow to the afternoon sunshine. A major contributor to the atmospheric sheen is the 2500-acre plant of the Armco steel company, whose blast furnaces alone belch forth over a ton of iron oxide particles each day. Because the Middletown air does not meet the standards of the national Clean Air Act, Armco was ordered to cut its emissions substantially by 1983, an order that could have required millions of dollars worth of antipollution equipment.

Company and federal officials agree that as of last August Armco had accomplished roughly six times the required reduction in pollution at only one-fourth the projected cost. It did so in distinctly untraditional ways: by planting trees and grass on the plant grounds, by paving or perpetually wetting down the 15 miles of company roads, by periodically spraying outdoor piles of iron ore, and by arranging shuttle buses so that employees drove their vehicles around the plant less. Corporate officials devised the unusual strategem under an Environmental Protection Agency (EPA) program known as the "bubble," one of several innovative regulatory approaches being pushed by that agency.

The bubble was designed to reduce corporate costs while preserving environmental standards. In the present generally antiregulatory mood, such concepts are being examined and put forward with increasing frequency. Under the bubble program, EPA gives up its much-cherished privilege of saying not only what a company must do but also how it must do it. In lieu of requiring pollution reduction at individual smokestacks, boilers, or other industrial processes, the agency treats an entire plant —and sometimes a series of plants—as single polluter and requires a cutback in the aggregate amount of fouled air (as if the plant were contained by a bubble with one outlet). The company's engineers may then decide whether it is cheaper and more efficient to control the pollution from one valve or smokestack instead of another. Armco decided it would cost less to control sources of open dust than it would to install traditional antipollution equipment. Within certain limitations, EPA is obligated to approve such plans as long as a company can establish that the number of particles in the plant's air decline.

The bubble program is now a year old, and most of its notices have been congratulatory. "We are delighted with how it has worked," says Michael Levin, an attorney who heads EPA's burgeoning regulatory reform staff. Alvin Fry, a consultant to the Business Roundtable (of the top 100 corporations), says, "The general attitude of the business community is positive." Officers of companies such as Armco have—after initial skepticism—become committed supporters. Although only one company's bubble plan has been officially approved by EPA, several dozen others are near approval, and as many as a hundred more are expected this year under liberalized qualifications for participation.

The program's modest success has prompted EPA to develop additional regulatory innovations, including such ideas as a futures market in pollution rights and salable permits to pollute with asbestos or chlorofluorocarbons. Many of the ideas have been circulating in academic circles for years, languishing on the federal agenda because of official pessimism and bureaucratic inertia. An influx of economists and policy analysts at the EPA in the mid-to-late 1970's, combined with strong industrial reaction to the increasingly tough provisions of the Clean Air Act, set the stage for the programs now coming to fruition.

EPA ideas include a futures market in pollution rights.

Gerry Guth, an assistant to the chairman of Armco, says that his company and others in the steel business had long ago urged the EPA to consider alternative regulations. "We took an inventory and found that more than 50 percent of the particulates in the air around our plant were from windblown sources," such as roads and ore piles. After surmounting disbelief in the company's boardroom, the firm's officials decided to purchase automatic sprayers and spray trucks that periodically splash Coherex, a biodegradable sticking agent, onto selected areas. "Dust turns to mud and stays put—it sounds so simple it's unbelievable, which was of course the original problem at EPA," Guth says. An elaborate air monitoring system has verified projections of a substantial pollution reduction.

Michael Levin

Delighted with bubble program

Other firms are achieving similar success. A utility in Providence, Rhode Island, saves $2.7 million by burning high-sulfur oil at one plant and natural gas at another, replacing expensive low-sulfur oil at both and resulting in a net reduction of sulfur dioxide emissions. The U.S. Steel Corporation also plans a fuel switch. The Minnesota Mining and Manufacturing Co. had proposed to use fewer solvents on three production lines at a plant in Pennsylvania in exchange for relaxed pollution controls in other areas, resulting in a $3-million-savings and fewer emissions of hydrocarbons. Similar trade-offs are planned by DuPont and by Coors brewing company.

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The program is vulnerable to a number of criticisms despite the smooth operation. Initially, EPA barred the most unusual trade-off—between smokestack or plant emissions and windblown dust. The argument was that industrial processes emit smaller, more concentrated particles that stay in the air longer and lodge more deeply in the lungs. The agency reversed its position under pressure from the steel industry, largely because the existing particulate standard permits insufficient legal distinction between particulates of different size. Because there seems to be a consensus among scientists that small particulates are indeed more harmful, this amounts to a bad policy chasing an inappropriate standard. Environmentalists have expressed concern that under such trade-offs, toxic pollutants might be permitted while benign ones are controlled. Michael Levin, of EPA, notes that pollutants designated as hazardous by the agency cannot be offset by reductions in nonhazardous pollutants, while many others remain unlabeled, and thus are available for potentially unequal trading. These would include substances such as formaldehyde, ethylene dibromide, and various polycyclic aromatic hydrocarbons.

Industry initially had several complaints of its own about the program, although much of its discontent has now evaporated. Companies had complained that the bubble program requires excessive computer modeling of industrial air quality, that it requires too much time for official approval, and that it grants too little discretion to the state agencies that administer the Clean Air Act. In January, EPA streamlined its review process and created the first of a series of generic rules for implementing the bubble program at the state level. The rule will permit about 100 chemical companies in New Jersey to more easily obtain permission for bubbles that limit hydrocarbon emissions.

Many of the firms that use the program find that resultant pollution is less than what the law allows, a circumstance that grants them a credit toward added pollution in future. As credits proliferate, EPA plans to establish a brokerage network for selling the credits from one firm to another. Such transfers would facilitate new growth in an area under stringent pollution limits and would permit compensation—at whatever the market will pay—for voluntary efforts to lower pollution.

Brokerage systems have been established through local governments in three cities—Louisville, San Francisco,

Prior Restraints Recommended

On 7 February, the Public Cryptography Study Group, whose nine members come primarily from the academic community, voted to recommend a purely voluntary system of prior restraints on the publication of research in cryptography. Although it considered a statutory system of prior restraints, possibly to go into effect if a voluntary system failed, the group rejected this approach.

Under the voluntary system, researchers will be asked to submit papers related to cryptography to the National Security Agency (NSA) prior to publication. The NSA will then determine whether any portions of the papers might, if published, threaten national security. If so, the agency will ask the researchers to withhold those portions of their papers. Researchers will be able to appeal to a five-member review board, two of whose members will be appointed by the director of the NSA and three by the president of the National Academy of Sciences. The researchers will be free, however, to reject the advice of the NSA and of the review board.

The Public Cryptography Study Group was established a year ago by the American Council on Education in response to a request by Vice Admiral Bobby Inman, the former director of the NSA, for a dialogue between academic researchers and the NSA. The NSA claims that open publication of research in cryptography might threaten the national interest by interfering with its intelligence-gathering and intelligence-protecting missions. But it is also in the national interest for academic scientists to pursue research in cryptography, which often bears on fundamental problems in mathematics, computer science, and engineering. In addition, there is a growing need for secure codes to protect private and commercial information that is stored in computers or electronically transmitted.

Advocates of a purely voluntary system of prior restraints repeatedly stressed that it is to the NSA's advantage to behave reasonably if it expects researchers to cooperate. In addition, said study group member Martin Hellman of Stanford University, who represented the Institute of Electrical and Electronics Engineers (IEEE), "The NSA has recently been more open than in the past. I would like to encourage this openness and I think we have to meet the agency halfway."

Some who have had dealings with the NSA expressed doubts that the agency would be easy to deal with. Cipher Deavours of Kean College of New Jersey, an editor of *Cryptologia*, says his journal routinely submits articles to the NSA prior to publication, but when the NSA asks that an article not be published it never explains why. Yet, he remarks, even when he is given a "no comment" answer to his questions, he cannot bring himself to publish articles that the NSA intimates may harm national security.

Other study group members and observers had some reservations about the very idea of prior restraints—even voluntary ones. George Davida of the Georgia Institute of Technology, who represented the Computer Society of the IEEE and who was the only study group member to vote against the voluntary system of prior restraints, argued that the national interests of privacy protection and secure telecommunications that would be served by open cryptography research outweigh the risks, if any, to national security.

David Kahn of Great Neck, Long Island, who has written extensively on cryptography, urged the study group to vote against the voluntary restraints because, he said, "This proposal suits Soviet Russia better than it does the United States. This is not an American idea. The whole purpose of this country is freedom and this idea chips away at that freedom."

Nevertheless, most of the critics of prior restraints felt they could go along with the voluntary system on a trial basis. For example, Jonathan Knight, associate secretary of the American Association of University Professors, who says he is philosophically against any sort of prior restraints, stated, "I think that what is being proposed is a modest, useful step forward. For the first time, an intelligence agency has entered into an open dialogue with the academic community. We're truly in virgin territory."—GINA BARI KOLATA

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and Seattle—and are apparently being planned in 20 more. Companies that pollute less than officially permitted may register the resultant credits for future use or sale to another firm. Although 100 such credits have been registered, some worth millions of dollars, many of the firms are reluctant to sell to others. "The fear is that once the credits are posted, EPA will reduce their value by tightening the emission standards, or that the firm will need the credit itself for expansion at some point in the future," says Fry. John Palmisano, an EPA economist, says, "There is no question that companies are risking a lot by selling their credits, when they may later need the credits themselves. Every large corporation, however, routinely takes such risks, which are no different from those in the futures market. They can always maintain a diversified portfolio, selling part of the credit for cash, and keeping the rest."

William Lewis

No economic incentive is a panacea

Palmisano says that it is unlikely that EPA will require tighter controls in the future, and points out that the historical trend had been to weaken, not toughen, the original Clean Air Act requirements. He also notes that the agency has constrained its own ability to cut into the credits once they have been registered. William Lewis, director of the National Commission on Air Quality, a study group of public officials and private experts, says he doubts whether such assurances will help. "Trading in credits will work only in areas that are already considerably cleaner than current standards," Lewis says, "and there aren't many of those." Nevertheless, interest in credit trading is high, as evidenced by a turnout of several hundred attorneys, engineers, and state officials at an EPA conference in Washington on 26 January.

A third regulatory innovation being considered by EPA is the idea of issuing auctionable pollution permits. The agency has tentatively proposed to set a ceiling on U.S. production of asbestos and chlorofluorocarbons, at or below current levels; rights to manufacture within the total would be auctioned off to the highest bidders. The resultant high prices would force many out of the market and ensure that manufacturing rights would go to those firms to whom they are economically most important. Studies for EPA by the RAND Corporation conclude that such a system would cost the chlorofluorocarbon industry considerably less than simply barring production above current levels at each plant.

One option proposed by private economists that EPA is not considering is imposing emission fees or taxes on air pollution, an idea that academic economists have pushed for a long time. Theoretically, fees would be tied to the amount of pollutant emitted, and high enough to exceed the cost of pollution controls, leaving the firm with an economic incentive not to pollute. Levin, of EPA, says the idea is unrealistic because the equipment to continuously and precisely monitor pollutants at their source is in many instances not available. Lewis adds that the process of setting the fees would be highly contentious and beset by political wrangling.

"In reality, no economic incentive is a panacea," Lewis adds. "There is not one that is a logical substitute for the existing clean air program in its entirety." Other experts, including many in the Reagan camp, are not so sure. David Stockman, director of the Office of Management and Budget (OMB), and Murray Weidenbaum, director of the Council on Economic Advisors, are both on record in opposition to the current system of specific regulatory orders. To the extent that any of these programs grant more discretion to industry itself, they will be popular with the new Administration. To the extent that any of them enable industry to live more easily with the present standards, and thereby press less vigorously for changes to the current law, they will be popular with the environmentalists, too.—R. JEFFREY SMITH

Science Subcommittees Get New Chairmen

A shuffling of subcommittee chairmanships has resulted in some new faces at the House Committee on Science and Technology, which retains its chairman of 2 years, Don Fuqua (D–Fla.).

The subcommittee on space science and applications, which has been chaired by Fuqua for the past 8 years, will be taken up by Ronnie G. Flippo (D–Ala.), a member of the subcommittee since he won his seat in 1976 and only the third chairman in the subcommittee's 19-year history. Flippo's congressional district includes Huntsville, Alabama, home of the Marshall Space Flight Center and the old stomping grounds of Wernher von Braun, the father of U.S. rocketry. In the last congress, Flippo was the principal sponsor of the Solar Power Satellite bill.

The subcommittee on energy research and production, which oversees nuclear energy issues, will be chaired by Marilyn Lloyd Bouquard (D–Tenn.), whose district includes Oak Ridge, Tennessee, site of the Department of Energy's nuclear complex and prospective site of the Clinch River Breeder Reactor. Lloyd fought the Carter Administration's drive to scrap the Clinch River project, and is expected to use her new chairmanship to give the breeder a push. Former chairman Mike McCormack (D–Wash.), who in 1980 successfully sponsored a bill calling for stepped-up development of magnetic fusion, was defeated in his reelection bid.

The subcommittee on science, research, and technology, which has jurisdiction over the National Science Foundation (NSF) and was formerly chaired by George E. Brown, Jr. (D–Calif.), will be presided over by third-term congressman Douglas Walgren (D–Pa.). A Stanford Law School graduate, Walgren vows to focus subcommittee attention on improving U.S. productivity and innovation. "Better technology in the workplace," he says, "is one of the keys to solving our inflation problem." Walgren's suburban Pittsburgh district includes some of the area's smaller steel mills.

Former chairman Brown reportedly left the subcommittee in a huff, having

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