

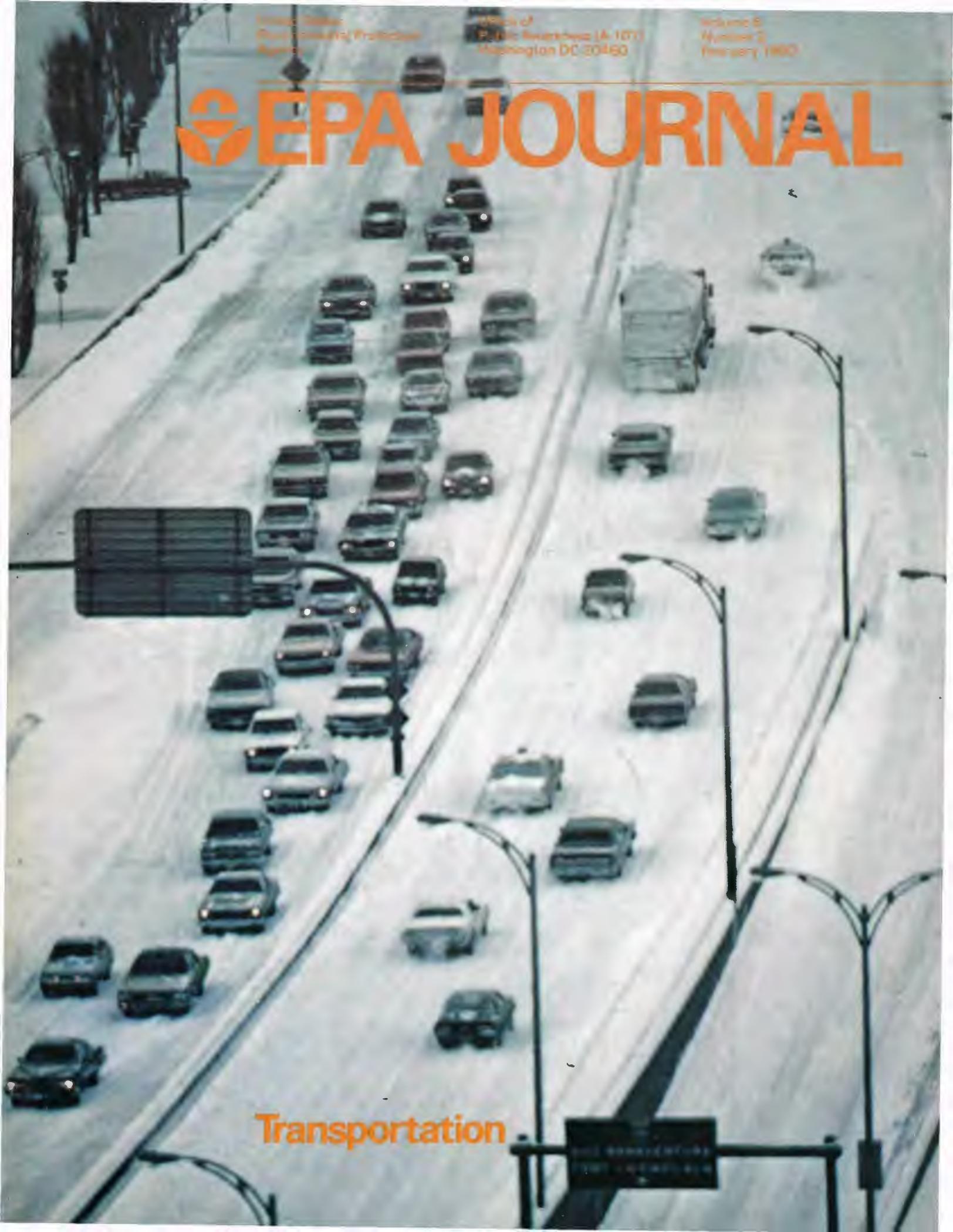
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EPA JOURNAL

Transportation



Transportation and The Environment



In this issue EPA Journal reviews the impact of various forms of transportation on the environment.

While the automobile will continue to play a major role in American life for years to come, Administrator Costle predicts that in the future people will

begin to live closer to their place of employment and will turn to walking, bicycling, and mass transportation. Increased use of mass transit lines will help revive the Nation's major cities, he forecasts.

Meanwhile, the Administrator notes that substantial progress is being made toward starting auto inspection and

Maintenance programs in the urban areas of 29 States where air quality conditions require a reduction in auto fumes. He adds that in general transportation policies are changing so that they will help in the achievement of environmental goals.

Secretary of Transportation Neil Goldschmidt agrees in another article, emphasizing that he has directed that urban transportation planning include analysis of urban, energy, and environmental concerns.

Goldschmidt notes that his department and EPA are working together on such programs as controlling bus emissions and testing fuel economy.

Other articles on air quality and transportation include:

A review by Deputy Administrator Barbara Blum on what EPA is doing to help American cities reach their air quality goals without sacrificing urban growth or adequate transportation.

An interview with David G. Hawkins, EPA Assistant Administrator for Air, Noise, and Radiation, in which he explains the Agency's program to curb pollution from automobiles.

A report on the growing number of companies that are paying all or part of the mass transit fares for employees who commute.

An explanation of how EPA checks on the claims by inventors that their cars can get 80 or more miles per gallon of gasoline.

An examination by analysts from Worldwatch on alternatives to the automobile, an explanation of new carpets designed to hold down road dust, a report on two West Coast companies which are advertising the need for better air, and a piece on cars of the future.

Other articles in this issue are:

An explanation by William Drayton, EPA Assistant Administrator for Planning and Management, of major new innovations in approaches to pollution control.

The first in a series of articles examining the status of water quality in some of the Nation's major rivers. This article by John Heritage is on the Delaware River.

An appraisal by Administrator Costle of contributions to the national welfare made by Federal employees.

EPA JOURNAL

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Joan Martin Nicholson, Director, Office of Public Awareness
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Articles

EPA is charged by Congress to protect the Nation's land, air and water systems. Under a mandate of national environmental laws focused on air and water quality, solid waste management and the control of toxic substances, pesticides, noise and radiation, the Agency strives to formulate and implement actions which lead to a compatible balance between human activities and the ability of natural systems to support and nurture life.

Transportation: On the Road to Environmental Responsibility 2

Administrator Costle writes on how transportation policies can help achieve environmental goals.

Miracle Autos 4

What happens when EPA tests cars whose inventors claim huge gains in miles per gallon of gasoline.

Smarter Regulation 6

Assistant Administrator William Drayton outlines promising alternatives in pollution control.

The Delaware 9

John Heritage takes an in-depth look at water quality in this scenic and industrial river.

Traveling into the Future 12

An interview with Secretary of Transportation Neil Goldschmidt on the present and future impact of Federal transportation policy on the environment.

Transit Fare Subsidies 15

A growing number of employers are helping their staff to use mass transit.

Cars of the Future 16

Transportation expert C. Kenneth Orski on the changing role of automobiles in our society.

Biking Saves 17

EPA supports the energy and environmental benefits of two-wheeled transport.

Moving Toward Clean Air 18

Assistant Administrator David Hawkins discusses changes that can help reduce the impact of auto travel on air quality.

EPA, The Auto, and Air Pollution 20

Excerpts from a discussion of Agency policy on the automobile.

Clean Air and the Cities 22

Deputy Administrator Blum explains what EPA is doing to aid urban areas.

Running on Empty 24

Excerpts from a new book that lists some of many ways that people can get around without depending solely on cars.

Clean Air Message 29

Two West Coast companies agree to advertise the need for purer air.

Road Dust Control 30

A recent development in carpets can help keep dirt in its place.

Quiet Service in a Noisy Time 34

A reminder of the contributions made by government workers.

Departments

Almanac 31
Around the Nation 32

Update 36
People 38

News Briefs 39

Front Cover: Snow contributes to traffic snarls in many cities. EPA is working with local, State and Federal officials from other agencies in a joint attempt to ease traffic congestion, improve air quality and save energy. (See Article on P. 2).

Opposite: The highly successful Amtrak train, the San Diegan, traveling southbound from Los

Angeles to San Diego along the Pacific coast. (See story on P. 12).

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TRANSPORTATION

On The Road to Environmental Responsibility

By Douglas M. Costle
EPA Administrator



Last summer, motorists across the United States waited in long lines to obtain gasoline. These gas lines were particularly long in Los Angeles and the national TV news reported that driving in L.A. was down 20 percent. Air pollution levels were back to healthful levels, better than the national standard, and the sky looked clear.

Barely three months later gas was available, driving had returned to normal and the mid-September news dispatches from Los Angeles declared:

"Scores of people checked into hospitals with respiratory problems as Southern California choked and wept for the seventh straight day under a dirty yellow blanket of the worst smog in 25 years."

The Los Angeles example tells me that it's time for encouraging Americans to rethink their use of the private automobile, and to move ahead with Transportation Control Plans. Energy conservation and automobile air pollution controls are two important national goals that are jointly addressed by getting lone drivers out of their cars and into a bus, a carpool, or a vanpool.

EPA took a lot of lumps for advocating a break-up of the American love affair with the car back in the early 1970's. But now more and more people believe that transportation policies must be geared to help our mobile society turn away from practices that consume tremendous quantities of energy and create severe air pollution problems. We must turn instead to those practices that will give us all the advantages of easy mobility but in a responsible fashion.

The future mobile society that I can foresee will first of all have people living closer to their workplace and turning to walking and bicycling as their principal travel modes. Energy-conscious new home seekers will establish communities along mass transit lines. Taking a bus to work or shop will be almost as fast as driving your car—and less expensive. Vanpools and carpools will be given priority treatment in our parking lots. Central city shopping will be regenerated by improved mass transit and many cities will turn large sections of their downtowns over to pedestrians.

We at EPA know, from sometimes bitter experience, that when you have to deal with the driving habits of millions of motorists you must tread very carefully. Following the 1977 Amendments to the Clean Air Act, there now is a keen public awareness of the need to change commuting habits, and we are getting a lot of help in promoting transportation control plans.

We're getting help from the Department of Transportation. Sometime ago, I signed a Memorandum of Understanding

with DOT, which should ensure that local transportation plans and programs are compatible with the State Implementation Plans that the Clean Air Act requires. DOT has taken an active role in the State Implementation Planning process and stands beside EPA in our resolve to make Transportation Control Plans work this time around.

There is increasing support from the local elected officials. The 1977 Clean Air Act recognizes the key role that they play in transportation decisions. Under the Act, lead agencies composed of local elected officials have been designated by Governors and funded by EPA. These agencies work with their States to determine a division of responsibility for preparing the State Implementation Plan. For the most part, the transportation control planning is conducted by the local lead agencies since these are the same agencies designated by DOT to prepare transportation plans and programs.

In other words, now the transportation control planning responsibility is resting on the appropriate shoulders of the local elected officials. And they are responding. The 1979 State Implementation Plans that have been submitted to EPA contain commitments to implement transportation/air quality projects that have been studied and additional commitments to analyze a full range of transport control measures including bus lanes, vanpools, parking management, and auto-free zones.

For example, we see progress towards starting Inspection and Maintenance (I/M) programs in the urban areas of 29 States where air quality conditions dictate that a program to identify and correct high-polluting automobiles will be necessary. Maladjustment and incorrect maintenance can cause significant increases in hydrocarbon and carbon monoxide emissions of vehicles. Auto Inspection and Maintenance has been shown to be effective in reducing both pollutants, and ongoing programs in Arizona, New Jersey, and Oregon have demonstrated that the program is practical.

The first step in setting up an I/M program is to pass enabling legislation at the State or local level. To date 22 States have existing legal authority to establish programs, and we expect that there will be legislative consideration in the remaining States in the upcoming 1980 sessions. This is important, because unless legal authority exists for an I/M program for those areas which need it, EPA cannot fully approve a State's Implementation Plan.

I recognize that this Inspection and Maintenance program touches every auto owner in large, heavily polluted cities. But I've examined the need for this program time and time again, and I'm convinced that it's necessary. EPA studies have shown that I/M is effective. Congress has examined it and passed the Clean Air

Act, which required I/M for areas severely polluted with ozone or carbon monoxide. The General Accounting Office has also examined I/M and recommended implementation. Twenty-two out of 29 States have completed the first key step towards implementation. This is an impressive record and one that should encourage the last few States to move forward. With successful implementation of I/M programs, Transportation Control Plans, and new car emission standards, pollution from automobiles can be decreased significantly. However, emissions from trucks, buses, and motorcycles will become a larger proportion of the total pollution burden in the future.

To combat this trend, EPA has established emission standards for light duty trucks and the heavy duty engines used in both trucks and buses. Additional regulations are in the pipeline to establish schedules for further emission reductions from trucks. In addition, 1978 model motorcycles had to meet new emission standards and the 1980 models have even lower emissions levels.

We know that noisy trucks can also be environmentally intrusive in quiet residential neighborhoods. EPA has issued regulations to cut down on the noise from new trucks and is working with communities to apply local noise control techniques to reduce traffic noise. EPA scientists have concluded that enforcement of local noise ordinances together with careful planning of truck routes, stop sign locations, and speed zones can help protect residential neighborhoods from excessive traffic noise and we are trying to share this information with as many communities as possible.

Transportation facilities do have the potential to be obnoxious neighbors. Have you ever tried to carry on a normal conversation when you're in a direct flight path to a major airport? Even the trains, that (for some of us) evoke nostalgia for a carefree youth, can jangle your nerves when they congregate in railroad yards. Our Noise Program is working with the various components of DOT to develop regulations and planning approaches that will make these useful modes of transportation quieter neighbors.

In summary, I think our total transportation system—that is, all the components of surface and air travel, both urban and rural—is on the road to environmental responsibility. I can sense a quickening in the pace of this progress with the appointment of Neil Goldschmidt, the former Mayor of Portland, Ore., as the new Secretary of Transportation. Neil is noted for his commitment to revitalizing the city, improving mass transit, and protecting the environment. I think the time has finally come when our transportation policies can help us to achieve our environmental goals. □



MIRACLE By Truman Temple AUTOS

Last May a former racing mechanic, Ralph Moody, and his associate, a promoter named Mike Shetley, drove into Washington amidst much fanfare in a vehicle called the Moody-mobile.

They claimed the diesel-powered car got 84 miles per gallon. At a time when gas lines were becoming a politically explosive issue, Moody and Shetley found no trouble gaining an audience. Senator Howard M. Metzenbaum of Ohio, a member of the Senate Energy and Natural Resources Committee, held hearings on their invention. Representatives from EPA, the Department of Transportation, and the Department of Energy testified. Shetley told Senators the car would be delivered to EPA's Motor Vehicle Emission Laboratory within two weeks for certification testing.

It all looked very promising. At last, it seemed, the United States had produced a vehicle that could compete in mileage claims with those German and Japanese imports.

But then things began to go awry. EPA officials had offered to test the car at no cost to the developers, but by June, Moody and Shetley split up their partnership. Their car never reached the laboratory. EPA was unable to reach Moody by phone or letter. In the meantime, Shetley had not been idle. In July he approached EPA to certify a new and completely different car, claiming it got 110 miles on a gallon of diesel fuel.

Although EPA waived a number of certification requirements for Shetley to speed the process, the tests did not bear out his claims. The new "Shetleymobile," actually a modified 1979 Mercury Capri powered by a turbocharged four-cylinder Perkins diesel engine, was a system almost identical to the earlier Mqodymobile and came nowhere near the mileage claimed by its promoter. It also failed the 1980 Federal emissions standards for hydrocarbons and nitrogen oxide emissions.

Shetley's reaction was statements to the effect that EPA had rigged the tests on his car and had entered into a "conspiracy" against him. EPA spokesmen replied that the tests were accurate and denied any conspiracy. Shetley declined the opportunity for a retest, although EPA procedure allows this option. He left the Michigan scene for Florida, vowing to be back with new models. In late 1979 he succeeded in having a car with an Avco four-cylinder engine certified for 1979 emissions standards and said he planned to seek certification for 1980 standards later.

Although the publicity surrounding these cars was unusual and heightened by public frustration over fuel shortages, the case was by no means unusual. EPA performs fuel economy and emission tests on many engines whose inventors claim all sorts of "breakthroughs" in fuel consumption. And contrary to some public statements by promoters, EPA officials welcome innovation in engine designs.

Dick Harrington, Director of EPA's certification division, said after the Shetleymobile episode last July, "We are indeed disappointed that the high-mileage claims that had been anticipated by the developer were not achieved and that it wasn't better than it was."

What the public sometimes fails to understand is that for environmental along with energy reasons, EPA is highly interested in seeing autos get better mileage, since gas guzzlers produce more pollution than efficient, fuel-stingy engines do. Indeed, EPA for years offered technical assistance to developers of advanced automobile systems until this program was transferred to the Department of Energy.

"We have everything to gain if someone comes in with a new vehicle getting good emissions and good fuel economy," explains George D. Kittredge, Senior Technical Adviser in EPA's Mobile Source Air Pollution Control Division.

"We tend to be skeptics about new inventions to boost auto mileage," he adds, "because we've tested so many of these gadgets and found them not up to the claims being made for them."

Nevertheless, the Nation's private inventors keep on trying in the hopes of hitting a bonanza. One of the best-publicized

efforts last year was by an inventor named Pat Goodman of Winchester, Va., whose ideas interested CBS so much that they provided him with money to modify a Ford Fiesta in any way he chose to improve fuel economy. Last June Harry Reasoner interviewed Goodman and his wife, Suzie, on "60 Minutes" and left the impression that the Goodman engine might offer big fuel savings.

One of the features of the engine is a water injection system. EPA subsequently arranged for Goodman to come to the Ann Arbor laboratory and install this system on a suitable EPA test car. The results at press time were still being evaluated. Since the information under the law is confidential, test results cannot be disclosed, but EPA engineers have seen water injection systems before, and they were not overly optimistic that a major breakthrough had occurred. (Water injection can help an engine by cooling the combustion chamber, thereby reducing nitrogen oxide emissions and cutting back octane requirements.)

During the CBS interview, Goodman said he had contacted major manufacturers about his device and a number of their representatives had visited his shop. But he complained that "the NIH factor" had impeded negotiations.

The initials in this case stand for "Not Invented Here." With large corporations, he explained, if an outside inventor sells his device to them, the stockholders question why they should approve millions of dollars for company research when management turns around and buys an idea elsewhere. So there is a tendency to discredit or avoid any invention not produced in-house.

However, there is another reason that individual inventors outside the auto industry are finding it harder to develop devices that will effectively cut fuel consumption. EPA engineers note that the major companies have evolved today's new cars into tightly coordinated systems involving fuel octane, air-fuel mixtures, combustion temperatures, compression ratios, and other factors. To substitute one new part on such systems and make the whole thing function smoothly is very difficult.

"What's happened," said Kittredge, "is that the combined pressures of the fuel economy and emission standards have caused the auto manufacturers to overtake the ability of most private inventors to come up with new concepts that can succeed."

EPA will of course continue to welcome new ideas and test them at its Ann Arbor laboratory. Since the Agency was founded in 1970, approximately 200 separate studies involving countless tests have been performed there, including emissions from steam cars, vehicles burning natural gas, and even a privately-owned car that gave off a mysterious odor of rotten eggs (later found to be hydrogen sulfide).

Over the years, two of the best-known applicants at government laboratories have been the LaForce brothers, Robert and Edward. As early as 1965, engineers from the U.S. Public Health Service Division of Air Pollution were meeting with LaForce, Inc. personnel to examine an experimental carburetor and variable compression engine. Based on their investigation, they recommended no further consideration of the inventions, citing their impractical and crude design and the lack of support data.

In 1971 EPA engineers found themselves evaluating another LaForce vehicle, this time a Ford Falcon with various modifications. The car met 1973 emission standards, but many features were considered ineffective. Then in 1974, at the request of the Senate Public Works Committee, EPA engineers carried out extensive tests of widely publicized claims made for an American Motors Hornet with an engine modified by the LaForce brothers, who claimed better fuel economy, lower emissions of pollutants, and increased power.

In brief, the final report said the cars showed about 30 percent better fuel economy than an unmodified one, but substantially reduced power and increased air pollutants. In fact, the report said the engine failed to meet 1975 emission standards on all three pollutants, and with respect to 1977 standards its emissions were "approximately 600 percent too high in unburned hydrocarbons, 565 percent too high in carbon monoxide, and 65 percent too high in oxides of nitrogen."

On an equal performance basis, the report added, the fuel economy of the car "would not be significantly different from the economy available with conventional engines."

Will private inventors ever come up with a "super-car" that gets fantastic mileage with clean emissions? EPA engineers would like to think that might happen some day. The Agency does provide free evaluation of engines and related devices in order to keep government, industry, and the general public abreast of developments in auto fuel economy and pollution control. However, preliminary testing is performed at private laboratories at the expense of the applicant, and there are other detailed requirements before the Agency will launch a study of any new product. □

(Anyone wanting further information on an EPA evaluation of a fuel economy retrofit device, exhaust emission controls, fuel additive, or new engine may request an application form from: Director, Emission Control Technology Division, EPA, 2565 Plymouth Road, Ann Arbor, Michigan 48105.)

Truman Temple is Associate Editor of EPA Journal.

Smarter Regulation

By William Drayton, Jr.
Assistant Administrator for
Planning and Management

Every year our environmental problems get worse. Our population continues to grow, and so does the size of the economy supporting each person. On the other hand, the quantity of air, water, and land is fixed. Thus, even before we consider the impact of our mushrooming chemical and technological creativity, environmental quality must deteriorate if we stand still.

Throughout the 1970's we have been doing anything but standing still. Birds that have not been seen for decades have begun to reappear. Salmon have begun to swim up the Connecticut River again, and Washington, D.C. officials are debating whether people can safely swim in the Potomac River again next year.

But the 1970's were relatively easy years for environmental cleanup. We were able to regain a lot of lost ground because we had relatively easy targets—a limited number of sources that could remove a great deal of pollution for relatively modest per-pound costs. Moreover, the problem we set out to address was simpler than the one we now face. For example, we set out to control a few gross pollutants such as basic oxygen demand and particulates, not hundreds of toxics—let alone the cumulative impact of various mixes of pollutants.

In order not to lose ground, we will be steadily pushed to do two increasingly difficult things: First, we must ask those we have already regulated to tighten their controls further—forcing them in many cases up the steep outer extremities of their cost curves. The incremental pounds of pollution removed when a company moves from 90 to 97 percent control will almost always cost very much more than the average cost of the pounds already being removed. As we push further up these cost curves, resistance will understandably increase.

Second, we must reach out and regulate ever larger numbers of smaller and smaller

sources. This effort entails much greater administrative effort for every pound of pollution removed because the payoff from each interaction is small. And it involves an ever increasing number of voters in what they commonly perceive as regulatory hassles. This second path, consequently, also increases public resistance to environmental regulation.

We are going to have to be innovative to escape this trap.

First, we must stimulate a sharp increase in the rate of control technology innovation. That is the chief, in the long term the only, way we can protect environmental quality. If we cannot find a steady and rapid stream of new ways of controlling more pollution at lower costs, our society will be forced to choose between environmental deterioration and ever rising control costs.

If we allow this to be the choice, everyone will lose. That is why I believe that finding new ways of stimulating new control technologies is essential for the environmental movement and very important for our economy.

Second, we should look for other ways of getting more for less. Whenever we can get a pound of pollution removed for fifty cents rather than a dollar (or two pounds removed instead of one for that dollar), we are moving in the right direction. Because we have been operating with relatively crude "command and control" regulatory tools, enormous opportunities seem available.

In pursuing both these objectives, we need to be rigorously realistic. A good theory is not enough. We must have practical, implementable programs. Most especially, they must be as administrable and as enforceable as what we have now. A "reform" that becomes a loophole (1) is no help and (2) will undercut the whole effort to innovate.

Over the last two years EPA has been developing a closely interrelated set of reforms that will, I believe, allow us to escape the trap, to get more for less. These reforms represent the first realistic complement, or perhaps alternatives to "command and control" regulation. They can be adapted to many non-environmental fields of regulation as well.

"Command and Control" Crude

Traditional environmental regulation sets very specific emissions or discharge limits for each class of process it regulates. Thus, for example, we will tell asphalt producers that they cannot emit more than 5.7 pounds of particulate per million cubic feet of air from their drying process. And then that same standard applies to their loading and transfer operations, 5.7 pounds of particulate per million cubic feet. This sort of regulation does not leave those it regulates much room to find more efficient ways, or

combinations of ways, of meeting society's objectives.

Central commands are likely to be poorly and belatedly informed; they are certain to be ignorant of the specifics of each case. A general standard for drying asphalt products—or any other process—can never take into account the age, condition, degree of use, etc. of any particular equipment or process. Only those who operate the plant have this information.

Further, those who write central commands can only make relatively crude tradeoffs regarding how much control to ask of sources of the same pollutant. They commonly seek to apply a rough measure of comparable technological effort, sometimes reinforced by a local ambient or water quality modeling effort. Both approaches use economics in only the crudest way, if at all. Such attempts at central planning simply cannot deal with the enormous variation and flux of case specifics, let alone the infinite possible combinations of actions that could be used to meet any particular environmental objective.

We can improve the quality and sensitivity of central commands—but only within a very fundamental set of limits. The more we try to adapt them to real world variations, the more detailed, cumbersome, and restrictive they become. On the other hand, the more general we make them, the more wasteful their inattention to specifics becomes.*

Winning Allies: The Strategic Alternative

The key to doing a better job—and to escaping the trap we are now entering—is to form an alliance. We need those we regulate to put their case-specific knowledge, their technical and managerial expertise, and their energy and imagination to work to solve the environmental and economic dilemma we share.

If plant engineers felt it were in their and their firm's interest to find more efficient ways of abating pollution, we would have more control technology innovation than we have ever imagined. (Further, by thus involving these engineers we would overcome one of the chief reasons we have such trouble getting plants that have installed control equipment to operate and maintain it properly—the fact that, uniquely, the

* This paper really only considers the "command" side of our two-part "command and control" regulatory system. Once we have adopted sensible requirements, we must move on to the second half of the regulator's job: making sure that everyone does his or her part to comply. This part of our traditional system has also worked very poorly. The economic approach to enforcement embodied in the "Connecticut Enforcement Plan" that I discuss in my forthcoming Harvard Journal of Legislation article "Economic Law Enforcement" is, I believe, how we can best fix this second half of our dilemma.

plant engineers do not feel that this equipment is theirs.)

If an engineer finds a way of getting more particulates out of a plant kiln's emissions at a low cost, we can let him (or her) increase his (or her) particulate emissions from another part of the plant where it costs more to remove a pound of particulate. Or we can let the management sell that reduction above and beyond what is required by law to another firm in the same area that otherwise could only meet part of its particulate control requirements at much higher costs, if at all. Before either trade could be effected, we would have to be convinced that we could administer and enforce the new arrangements easily.

These arrangements, and a host of variants, give managers and engineers a powerful incentive to find more efficient forms of control and more cost-effective mixes of control. They create a market in which business can make a profit by producing clean air and water.

As with most other markets, trading must take place within a set of agreed and policed rules. I have consequently dubbed the set of interdependent reforms we are now reviewing "controlled trading." The following several sections briefly discuss some of the specific reforms that EPA plans to develop together into this overall complement to traditional "command and control" regulation.

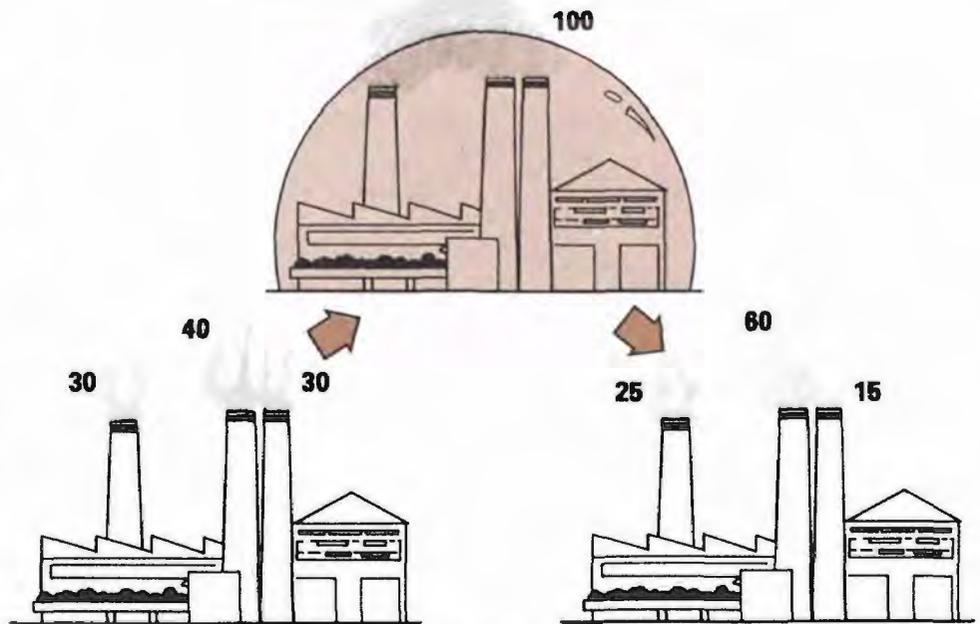
Offsets

Offsets are EPA's first application of the idea that one source can meet its environmental protection obligations by getting another source to take additional control actions. In "non-attainment" areas pollution from a proposed new source—even one which controls its emissions to the lowest level possible—would aggravate existing violations of ambient air quality health standards and trigger the statutory prohibition. Our offset policy lets new sources build under such circumstances if they

- control emissions to the lowest achievable level; and
- persuade an existing source(s) to reduce emissions by an amount at least equal to the pollution the new source will add.

The existing source's reduction is supposed to offset the impact of the new source's emissions on air quality. EPA must approve each proposed offset to ensure that the total amount of pollutants emitted is actually less than before the offset transaction opportunity. In seeking an existing source of emissions that could be reduced to offset new emissions, the owner of the new source will probably look for the most cost-effective pollution reduction available.

For example, in Oklahoma City, General Motors worked out an offset agreement with local oil companies so that it could



EPA's alternative approach to emission reduction, called the bubble concept, places an imaginary dome over air pollution sources at a plant. Managers can control pollutants of a like kind from each source within the plant at their discretion so long as the total emissions are within set limits.

build a new auto assembly plant. The oil companies agreed to install either floating roofs (a very economical type of control) or vapor recovery systems on their storage tanks and GM agreed to use a new painting process. The expected reduction of hydrocarbon emissions (a major ingredient in smog) was enough so that GM could build a \$400 million plant that eventually will employ several thousand people.

A similar offset transaction made it possible for Volkswagen to open its first U.S. assembly plant at New Stanton, Pa. The offset came when the State highway department substituted water-based for hydrocarbon-based asphalt in its road construction program for western Pennsylvania.

The offset policy lets a new source meet ambient health standards by turning to another source to find needed extra emission controls. There is no reason to confine this flexible arrangement to new sources in areas violating air quality standards.

The Bubble

The bubble policy explicitly encourages the owners of plants facing high marginal costs of pollution control to meet their emission reduction requirements by putting extra controls on discharge points within the plant with lower control costs in exchange for easing the pollution control requirements for discharge points in the plant with

high control costs. The bubble policy is so named because it gives business managers the flexibility to think of reducing total emissions from an imaginary canopy, or bubble, placed over all the emission sources of a plant. If they find it is cheaper to tighten the control of a pollutant at one point and relax controls at another, they can do so as long as the total pollution from the plant does not exceed the sum of the current limits on individual sources of pollution in the plant.

There are some restrictions, of course. Trades must be made between discharges of the same pollutant. We would not, for instance, allow a firm to emit more of a carcinogenic pollutant in return for an equal volume reduction in a more innocuous one.

Plants with several industrial processes and many emissions sources are the best candidates for "bubbling." Chemical companies, steel mills, and petroleum refineries are among those now studying ways to implement the bubble.

Union Carbide may realize a savings of more than \$5 million by using the bubble at a West Virginia metal fabricating plant. To meet current State regulations for particulate control, the company would have to replace its high-energy scrubber with a new control device, called a bag collector. This could cost between \$5 and \$6 million. Because they now have alternative ways of reducing particulates within the plant, Union Carbide is proposing to reduce emis-

Continued on page 40



THE DELAWARE

By John Heritage

Fred Lewis and his friends pulled in the net full of jumping, wiggling, glistening shad from the Delaware River 11 miles above Trenton, N.J.

Lewis had a big year in 1979. He caught 2,000 of the fish, the best haul since 1963. "There's been more shad in the 1970's," said Lewis. "I think it's because of cleaner water. As long as pollution can be curbed the shad will multiply and the runs will increase."

It was once much different. In the 1940's and 1950's the pollution in the Delaware soared, with wastes pouring in from a massive industrial-urban complex that helped sustain a Nation at war and then supported a booming post-war economy. The pollution consumed the oxygen in the river, making it difficult for fish to survive.

The recent shad upturn helps foster Lewis's affection for the river, an affection developed over 48 years of fishing the Delaware. "There's more joy than sorrow in it. It can be beautiful and serene at times. However, it can also be restless and wild, doing more damage than you ever thought possible," he says.

The shad plays a special role in the Delaware. It is an indicator of the river's health. It helps measure from year to year the well-being of a waterway that flows from the Catskill Mountains of southeastern New York, then shapes the border of eastern Pennsylvania and western New Jersey before dropping out of the uplands

to pass by cities such as Trenton, N.J., Philadelphia, Pa. and Wilmington, Del. It empties into the Atlantic between Cape May, N.J., and Cape Henlopen, Del., after crossing the coastal plain.

Even in colonial days the Delaware basin was a major center of American commerce and industry. Flour, leather, textiles, and paper were produced above Wilmington. The river was also the Nation's ship-building center, as well as a busy shipping area with an extensive network of ports along the upper estuary. Started in 1802, the gunpowder mills of E.I. duPont grew into the massive chemical empire that is still one of the key industries in the estuary.

The Delaware Basin had all the natural assets needed to spur industrial growth. It was rich in the essential resources—water, coal, wood, and iron—and occupied a prime location that westward expansion did little to undermine. "What makes a Nation is a good piece of geography," poet Robert Frost once said.

Today, an 85-mile stretch of the estuary serves a population of about 3.5 million people, part of the East Coast megalopolis. The estuary also is the site of one of the largest concentrations of oil refineries in the world and major steel, energy, food, processing, paper, and chemical industries.

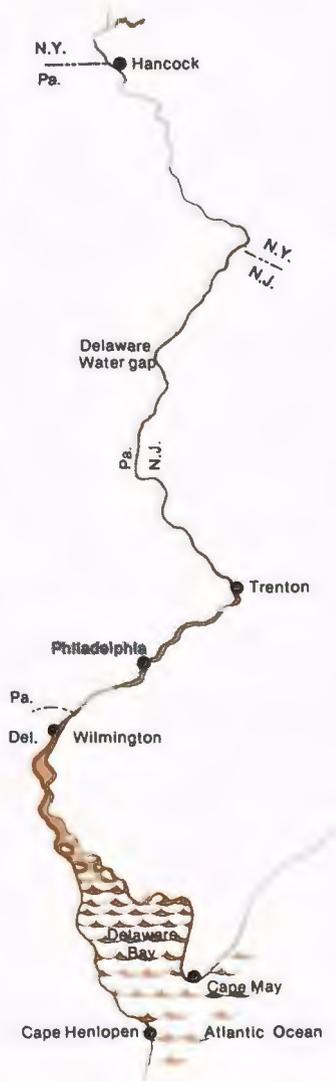
Although it has a heavy workload, the Delaware is relatively small among the Nation's major rivers. It ranks 17th in length nationally, stretching 330 miles. In contrast to the Mississippi, which drains 40 percent of the U.S., the Delaware Basin drains only

1 percent of the land, 13,000 square miles.

The industrial growth over three centuries has left the Delaware a special legacy—the reputation as a smaller river that does a big job. But the legacy also has its darker side—a river polluted in much of the estuary by municipal wastes, oil, toxic substances, and other leftovers, a waterway historically treated as a sewer on the mistaken assumption that the river had the limitless capacity to absorb waste.

Writing in the log of the Half Moon—a Dutch ship sailing up the Delaware in August 1609—explorer Henry Hudson described the waterway as "one of the finest, best, and pleasant rivers in the world." But as recently as 1975, wastes with an oxygen demand of about 800,000 pounds per day were being discarded into the estuary from the cities and industries that line its shores. During the summer months when flow is low and temperatures high, oxygen in a 20-mile reach has often been reduced by sewage and other waste below the level that fish need. During rainstorms the sewers of Philadelphia and other cities often overflow and bypass treatment plants. Millions of gallons of raw sewage and the runoff of city streets pour directly into the Delaware.

Toxic wastes enter the river from industry, inadequate sewage treatment plants, urban storm water runoff, and even from air pollution fallout. From



The headwaters of the Delaware River are in New York State. The river flows between New Jersey and Pennsylvania south into Delaware Bay.

Opposite: Shad fishermen with their catch.

Trenton to Wilmington, about 90 industries and municipalities discharge into the river.

Instead of immediately washing these wastes away, the estuary acts like a giant bathtub, the waters sloshing back and forth with the ebb and flow of the tide, concentrating the pollution from hundreds of industries and millions of people. It takes three months or more for water to move the 130 miles from the head of tide at Trenton to the Atlantic. By contrast it only takes about a week for water to flow the 200 miles from the Delaware's headwaters to Trenton.

When conditions were worst, as much as 85 percent of the waste in Philadelphia's sewage was entering the river even after treatment. "You can stand on Broad and Chestnut Streets and smell the river," complained a local editor during the 1940's. The shad runs were poor during those years.

Even now, the river near Philadelphia bears the scars of past neglect. EPA Regional Administrator Jack J. Schramm sees this as he passes over the Delaware every day on the way to his office next to Independence Hall. "Unfortunately, I see the worst of the river here," he says. "Light oil sheens are often seen on the surface. Flotsam and jetsam wash in and out of derelict piers. Mudflats and oil-soaked earth line some of the shore and heavy loads of sediment turn the color of the water into a grayish green."

But the outlook is getting better. In a major improvement, Philadelphia is putting a 200 million gallon-a-day, upgraded waste treatment plant on line. A river quality difference is expected by the summer of 1980. Under a recent agreement with the EPA, Philadelphia—by far the river's biggest discharger—will also upgrade its two other plants by 1983.

Overall, Philadelphia has agreed to spend \$692 million to improve its waste treatment plants, with EPA providing \$519 million of the costs. EPA's Schramm says of the agreement, "This is a milestone event in the cleanup of the Delaware, and one of our most

important accomplishments since I've been Regional Administrator. It binds the city to a major pollution control effort which is essential if we are to see future improvement of the river."

In another major improvement, Trenton in the next two years will install a system to eliminate most overflows from combined sewers. Also, Trenton and Camden, N.J., have recently begun upgrading their waste treatment plants.

On the industry side, most plants in the estuary area have met the waste clean-up standards for daily oxygen demand. In the past ten years industry has cut by 91 percent its discharge of oxygen-consuming wastes into the river, according to the Delaware River Basin Commission. Industry costs for construction of cleanup facilities total \$100 million, the Commission estimates.

There has been some real progress as a result of municipal and industrial cleanup efforts. Schramm says, "The river is no longer black from coal wastes, odors have been eliminated, and fish have returned."

Ironically, the quality of the water is already good for 90 percent of the length of the Delaware and its tributaries. The clean stretches are largely in the upper and lower parts of the basin that are mostly rural. In these sections the challenge is protection rather than the cleanup job in the soiled estuary.

The upper Delaware River passes through a pleasant land of tiny villages, lowland and upland farms, and forests recovering from previous cutovers. With the exception of several pools, the river from Hancock 75 miles downstream to Port Jervis, N.Y., can be waded or breasted at many points during low flow periods in summer and fall.

The upper reach includes the Sullivan County, New York, site of the largest single bald eagle winter gathering in the Northeastern U.S., with a population of over 30 birds from November through March. The upper Delaware includes the legendary Junction Pool near Roscoe, N.Y., where trout rise in clear

cold waters—a haven for trout fishermen.

With its natural and historic treasures, the upper Delaware has become a popular recreation area. The valley is a favorite playground for metropolitan New York and Philadelphia. An indication of the river's drawing power is the fact that about 30,000 boating and recreation maps of the 200-mile upper river have been sold by the River Basin Commission since 1966.

Congress included a 110-mile stretch of the upper river in the National Wild and Scenic River System in 1978, recognizing and protecting it as a valuable resource for canoeing, fishing, camping, and picnicking. The section reaches from Delaware Water Gap, a break in part of the Appalachian Mountain chain, north to Hancock. Parts of the waterway have become such an attraction that potential conflicts have arisen with other uses, say National Park Service officials who administer the Wild and Scenic River section. Dangers include litter, sewage from intensive second home development, clashes between uses such as boating and fishing, and degradation of some natural areas.

Pollution is generally not a serious problem in the Delaware above Trenton except for discharges from steel mills and other heavy industries flowing from Easton, Bethlehem, and Allentown, on the Lehigh River, a major tributary in Pennsylvania. Acid mine drainage has seeped into and polluted the Lehigh in coal mining areas of eastern Pennsylvania, although State programs are reducing the flow, according to River Basin Commission officials.

"The river's pretty good from Trenton up," says Gerald Hansler, executive director of the Delaware River Basin Commission. "The problem is to keep it that way." The Commission is the chief governmental instrument for cleaning up and protecting the river. The group is one of two Federal-State river basin commissions in the country. Its members are the U.S. Secretary of the Interior and the

Governors of Delaware, New Jersey, New York, and Pennsylvania. The efforts of the Basin Commission and the States to clean up the Delaware are supported by Region 3 of the EPA.

Confirming Hansler's assessment of conditions on the upper river, an EPA study in the summer of 1978 found good water quality in the popular recreation area including tiny Tocks Island located above the Delaware Water Gap. (Tocks Island became the center of a national controversy in the 1970's. The issue was whether to build a large dam and reservoir there mainly for water supply and flood control. Environmentalists favored preserving the river in its free flowing state. Congress tentatively dropped the dam proposal in 1978 and made that stretch part of the Wild and Scenic System.)

In the lower portion of the Delaware, below Wilmington, the river's water quality is also good though tainted with the treated wastes of the megalopolis. Here the river widens into the broad reaches of Delaware Bay. The countryside is a serene expanse of salt marshes, farmlands, villages, and waters. In places, the marshes reach inland for many miles, providing shelter and food for a wide variety of waterfowl, fish, and other wildlife. Waterfowl and shore birds by the hundreds of thousands winter in the bay and continue north and south from the numerous wildlife refuges along its shores. By late spring the birds are gone and the bay begins the warming process that makes it a spawning and nursery ground for fish and shellfish, including oysters.

But environmental decay is hurting oystering, long a way of life of the bay. Decades of pollution, super-efficient harvesting techniques, and shellfish disease have depleted the beds. Only about 40 oyster boats now sail out of the town of Bivalve, N.J. In 1920 there were more than 350.

The oyster downturn is a warning of the kind of changes and conflicts threatening Delaware Bay. After years as a backwater largely ignored by international shipping and by thousands of city dwellers flocking to Atlantic Ocean beaches, the

Bay is suddenly attractive to nearly everyone. The deep natural channels of the bay and its closeness to existing refining capacity make it attractive to industry. At the same time, the people of New Jersey and Delaware are recognizing the great recreation potential in a clean and swimmable Delaware Bay.

These two new circumstances—the immediate pressure for refineries and other industries and the long-term potential for recreation—require a major planning and regulatory effort, concluded a report by the President's Council on Environmental Quality called "The Delaware River Basin." The permanent changes that these new pressures may bring to the bay country could seriously degrade the natural and manmade environment that has grown up there, the report warned.

The Delaware's pollution problem has been analyzed by a special approach since 1967, using a computerized model of the river. The model is so refined that the latest version will be able to predict water quality in the river hour by hour, as well as the effects of various waste quantities from each source on the river.

Based on a 1960's version of the model, cleanup standards were set in 1967. Maximum allowable waste volumes were set for each of more than 90 major dischargers in the stretch from Trenton to below Wilmington, with a 10 percent reserve to accommodate new facilities. The wastes were measured in terms of oxygen-consuming materials that could choke off the river's capacity for balanced life. Compliance schedules were established, and monitoring was provided.

The Delaware River Basin Commission set the standards and is carrying them out. The Commission was created in 1961, six years after the worst flood in the Delaware River's history. The flood led to a comprehensive study of the basin, including flooding, water supply, recreation, and salt levels in the river from sea water.

In a separate study, pollution of the estuary was analyzed. This was conducted by the U.S. Public Health Service and the Department of the Interior, EPA's predecessors in water quality control. The study cost more than \$1 million over three years to develop what was the first cleanup model for a tidal body of water. The Commission used this model in its program for the Delaware.

In a key difference from a previous Delaware River advi-

sory group, the Commission was given powers to enforce the standards it set, including the waste discharge limits. Where both EPA and Commission requirements were involved, the more rigid standards have been applied.



sory problem in continuing the clean up job. From 1967 until now, the goal has been treating the organic waste loads being discharged by point sources—industry pipes and municipal waste treatment plants. This task is well under way. The next hurdle—and it is a big one—is to treat the organic wastes from nonpoint sources such as agricultural and municipal drainage.

The price tag for treating pollution from nonpoint sources could be hundreds of millions

of dollars. It often would involve massive construction to separate the storm and sanitary sewers built underground decades ago. Storm overflow from combined sewers dumps a lot of waste into the river. Most of the sources are nonpoint—run-off from streets and gas stations, and eroding soil.

As an example of this pollution problem, organic wastes from nonpoint sources in the upper 25 miles of the Delaware estuary total 170,000 pounds a day, compared to 34,000 pounds daily from point sources, Hansler estimates.

Other tasks are rising higher on the Delaware water clean-up list as the organic wastes from point sources are controlled. They include handling 1,000 tons a day of sludge left over from waste treatment, a tougher job with an approaching Federal ban on sewage sludge dumping at sea. Treating hazardous and toxic wastes from the industrialized Delaware is another

clean-up item being pressed by EPA. An increasing concern is preventing the exhaustion of groundwater under the Delaware River Basin. A persistent problem is keeping the Delaware's flow high enough during droughts to hold back salt water in the estuary, preventing sodium contamination of drinking supplies for Philadelphia as well as Camden, N.J., and towns in Burlington, Camden, *continued to inside back cover*

Hauling in the nets along the Delaware River during the shad run.

Traveling into the Future

Interview With
Neil Goldschmidt,
Secretary,
Department of
Transportation



Q Transportation policies can play a key role in affecting our environment. How will policies under your Administration respond to our social and environmental goals?

A I think a study of the record will show that DOT has been increasingly conscious of national social and environmental goals in recent years. Several statutes passed in the early 1970's—especially the National Environmental Policy Act—sensitized us to the need to consider environmental impacts along with general transportation objectives. Most recently, in the President's 1979 Environmental Message, we were given additional direction to respond to urban and social objectives and I am making every effort to do so.

In particular, I have directed that urban transportation planning—which is the basis for many of the transportation programs likely to have significant social and environmental impacts—specifically include analysis of urban, energy, and environmental concerns. Energy conservation, preservation of our center cities, and consistency with national air quality standards—to name just a few—are now explicit goals of our planning processes.

Individual projects will also have to be evaluated on the basis of their contributions to overall social, economic and environmental objectives. In keeping with our traditions, I will place heavy emphasis in our decisions on any consensus which has been reached at State and local levels. But I will also assure that national standards and priorities will be met.

Q DOT and EPA are working together to develop policy and programs under the 1977 Clean Air Act Amendments in many different transportation areas such as planning and programming transportation networks, controlling bus emissions, testing fuel economy, and instituting inspection and maintenance programs. How well are coordination efforts working?

A We have negotiated, jointly signed, and issued several documents to carry out transportation requirements under the Clean Air Act. The 1977 Amendments have three sections that directly affect transportation planning.

When the Clean Air Act Amendments were passed in 1977, DOT was advised through the Office of Management and Budget that the President wanted the new requirements of the Clean Air Act integrated into transportation planning. As a result five documents were jointly signed by EPA and DOT.

This has meant a significant step forward. It assures that transportation objectives and clean air objectives do not pull in opposite directions. The responsibilities of the two agencies are implemented under single, rather than separate, guidelines. The most significant result may be the designation of institutions headed by elected officials to carry out integrated planning (Clean Air Act Section 174).

For State and local governments that must ultimately carry out these programs, joint rather than separate DOT/EPA actions are welcomed because they greatly reduce redundancy, inconsistency, and red tape. While it does take longer to get the approvals necessary to issue joint rather than unilateral documents, we are pleased with the results.

“Energy conservation, preservation of our center cities, and consistency with national air quality standards are now goals in our planning processes.”

Q Do you foresee any areas where conflicts between the two agencies will emerge?

Some conflicts, I suppose, are inevitable. These conflicts reflect the differing missions of our agencies, the diverse and complex society in which we live and which we reflect, and different expectations that the people and their elected representatives impose upon us.

For example, there are likely to be conflicts between our statutory obligation to provide fast, safe, and efficient transportation for the American people and air quality, noise, and water quality standards which may point toward slower, less direct, and possibly less efficient transportation. The shortest highway route between two points may be through a water supply reservoir, to cite one recent example of an unfortunate conflict. As in all such conflicts, we must rely upon good judgment, compromise, and fair and open public processes to arrive at decisions which best reflect the overall public interest.

In short, conflicts may be inevitable but not insoluble.

Q Some major urban areas with severe air quality problems need to improve their transit systems dramatically to help reduce pollution levels. Do you believe that the current Urban Mass Transportation programs and funds will be adequate to improve transit services significantly?

A We have made substantial progress in urban mass transportation in the last 10 years. The decline in transit ridership has been reversed. Transit ridership is actually increasing in many cities for the first time in the post-World War II era. The Federal investment in public transit in the past 10 years has exceeded \$15 billion and helped more than 250 communities. And I think we have made significant strides in integrating urban mass transportation needs into the overall planning processes of our local

communities. This is a far cry from where we were 10 years ago, but in many ways the biggest challenge is still ahead.

Despite our growing awareness and concern for energy conservation, we have managed to take very few cars off our highways during commuter rush hours—and millions of those cars still carry a single occupant. Nationwide, only nine percent of the American people use mass transit to get to and from work. To improve this situation is going to take a major commitment of time, talent, and cold, hard cash. That is why President Carter's proposal for a windfall profits tax is so important. This tax would make additional billions available over the next decade to enable cities to buy buses, improve or extend existing transit lines, and improve facilities and equipment. The transportation energy initiatives which are part of the President's overall program for the windfall profits tax would also make funds available for carpool, vanpool, and separate transit lane programs to save energy. These programs will also produce a net gain in air quality, by thinning out the traffic stream and reducing congestion. The beauty of the windfall profits tax is that it will enable us to do more fully the job that must be done, without adding to the public's tax burden.

Q Do you think that the provisions that allow Interstate highway funds and urban highway system funds to be spent for transit will be used to make a significant contribution to transit improvements?

A The Interstate Transfer provision allows States and communities to substitute public transit projects for any planned highway projects that are no longer wanted or may no

longer be necessary. That provision is one of the brightest lights in our national transportation policy. It gets to the root of the issue—local discretion. A community should be free to determine its own transportation future—free, for example, to say "no" to more highways and "yes" to a transit alternative without losing Federal dollars as a result of that choice. The Interstate Transfer provision already has benefited a number of cities, including my own city of Portland. The Portland Transit mall project, an important stimulus of the revitalization of the downtown area, would not have been possible without the transfer of unused Interstate allocations to the project. Washington, D.C. also has profited from the transfer provision. Much of the Metro rapid transit system is being built with unneeded Interstate money, and economic development projects are following the subway's path.

Q Would you encourage local governments to make these transfers?

A I encourage local governments, along with State governments, to explore fully every available transportation option, and to develop a plan that is best for that particular individual community. Certainly, Interstate Transfer is one option that I encourage States and local governments to investigate. In fact, we are publishing new guidelines that make the various alternatives clear to any community that may not want to build a freeway but nevertheless wants to invest in improved transportation. I have also put a team of top staff people "on the road" visiting city officials to help them understand their choices.

Q EPA has had some success persuading major employers to develop programs that encourage the use of carpools, vanpools, mass transit fare reductions, and bicycle facilities, in order to cut pollu-

tion. Will DOT join in this effort in the pursuit of energy conservation?

A The Department of Transportation already has an active program aimed at encouraging carpooling, vanpooling, and other energy-efficient transportation alternatives. The Federal-aid Highway Program provides funds which can be used for carpooling and vanpooling projects. Ride-sharing activities don't have to be restricted to the Federal-aid highway system, and Federal-aid funds can be applied to 75 percent of the project cost, for everything from the computers required to set up the program, to the traffic control equipment to channel the movement of traffic, to the acquisition of the vehicles needed for a vanpool program. State division offices of the Federal Highway Administration have a wealth of specific and helpful information available for persons, organizations, businesses, or local communities interested in ride-sharing programs. These division offices

“The Federal Government has an obligation for the safety of its citizens and the public welfare.”

will help set-up ride-sharing programs in local communities. We also provide Federal funds to help pay transit operating costs, so that cities are better able to offer reduced fare incentives. Finally, the Department has a number of bicycle assistance programs in effect, to encourage biking where it is safe.

Q Both EPA and DOT have been criticized by auto manufacturers for imposing regulations which they feel have had an adverse effect on the industry. How do you respond to that?

A The Federal government has an obligation, I believe, for the safety of its citizens and the public welfare. Auto safety regulations were established in the light of alarming increases in highway fatalities, and a seeming reluctance on the part of the industry to promote auto safety voluntarily. As a result a lot of lives have been spared, and no apology is needed for that. Congress, with the support of successive administrations, has imposed mileage as well as safety standards on the auto manufacturers, to save fuel as well as lives. I don't believe that the standards have been excessive or unrealistic. In fact, the government, as it turns out, has done better at foreseeing the market than Detroit. Without the progressively stiffer mileage standards, the automakers might be at an even greater competitive disadvantage than they are today, when domestic sales—overall—are dropping while import sales are climbing. If there has been an adverse effect on the Nation's auto industry—which is debatable—it has been the result of a complacent industry unwilling to take the lead in encouraging the American public to accept smaller, more energy-efficient cars. Let me add that I believe that situation is now behind us. Based on my conversations with industry leaders, I anticipate a new, more co-

operative and more productive relationship between the government and the auto industry.

Q It seems now when we need a rail system more than ever for both passengers and freight, our railroads are disappearing. What role do you see for rail systems in the future?

A Well, for one thing, I don't see rail service disappearing. We're working hard to prevent that. What is disappearing is rail service that is inefficient, unneeded, or redundant—so that the resources available can be invested in a rail system streamlined considerably from what we have been accustomed to in the past—a system geared to operate on the basis of competitive market forces rather than artificially imposed government regulations. I support the recent cutbacks on the Amtrak system, which trimmed something like 30 percent from the route structure by dropping little-used or redundant trains. It was a necessary move, and one which, in time, will lead to a national rail passenger system that serves the needs of the American public without overburdening the taxpayers.

On the freight side, we have heard for years about the crisis in the railroad industry. This crisis isn't over. The encouraging financial reports for a few railroads this year can't offset the worsening plight of some of the Northeast and Midwest carriers.

Three years ago with the "4R" Act Congress took a tentative step toward reform in the major areas of regulation affecting the railroads. But we have not achieved the freedoms that law was designed to give to the railroads. We hope the rail deregulation legislation now before Congress will correct that situation, encouraging competition and greater investor confidence. For too long the railroads have depended on signals from the ICC in setting rates and managing their opera-

tions. It is time the Federal Government stopped dictating answers to questions which should be answered by the marketplace.

Without a doubt, there is a role for both passenger and freight trains in our future, and there is good reason to support them even if, in some cases and in some amount, a subsidy is required. But the line must be drawn somewhere on subsidization. The crucial test rests on our ability, and the ability of the industry, to improve the management operations of the railroads.

Q How do you see transportation needs being met for people who live in rural areas?

A I'm not sure there is an easy answer for that. My experience in the suburban and rural parts of Oregon is that the non-profit organizations that have some stability generally have been quite successful at operating equipment and providing a real service that cannot realistically be met by a mass transit system operating within traditional patterns and restraints. In fact, in Portland the transit agency exercised its authority to apply for Federal capital grants to get the necessary equipment and then, in turn, farmed it out to be operated by church groups or other responsible organizations. It's an approach that has worked well. But what

“...we are certainly far less likely to find the right solutions in Washington than...in individual communities.”

works well in Portland may not work as well some place else. That is why I believe that whenever possible we must provide the opportunity for local communities to experiment in line with the special needs and resources of the particular community involved. There are no set answers, no iron-clad formulas—and we are certainly far less likely to find the right solutions in Washington than we are to find them in individual communities.

Q Steam, methane, gasohol, and electricity are occasionally mentioned as alternative fuel sources for transportation. Do you think these fuels offer substantial benefits for energy conservation?

A Well, yes, some—of course—more than others. The United States today gets approximately 96 percent of its energy from only four sources, all of which, eventually, will be exhausted: oil, natural gas, coal, and uranium. Each suffers from one or more environmental, safety, cost, or supply problems which, combined with the political and economic uncertainties of the international marketplace, make it imperative that we reduce our dependence on energy sources that are beyond our immediate control. President Carter strongly supports alternative energy research and development, and a substantial portion of the revenues from the windfall profits tax are earmarked for that purpose. Gasohol already is being produced and marketed to a limited extent in the Midwest, and has a tremendous potential for reducing transportation's consumption of petroleum, which currently accounts for more than half of our petroleum use. In Brazil, gasohol in a blend of 80 percent gasoline and 20 percent agriculturally-derived alcohol has been the standard transportation fuel for years. It is environmentally sound, with fewer pollutants than straight gasoline, and appears to give better engine performance.

I believe potential alternatives should be explored, with appropriate Federal support. It is not unrealistic to project that in the year 2000 alternative energy sources—those known today and maybe some yet to be discovered—could collectively contribute more than 25 percent of this Nation's energy needs.

Q Air transportation has been growing, with the resulting increased problems of noise around airports. Since the Federal Aviation Administration is under your jurisdiction, what steps can be taken to reduce this problem?

A The Department of Transportation has been pursuing a number of ways to reduce the problem of airport noise. As you know, we have been moving toward more stringent noise abatement standards for the past decade, raising these standards as technology increases our ability to produce aircraft engines that are quieter and less harmful environmentally. The FAA is working under regulations which will bring all airlines and aircraft operators into full compliance with strict noise abatement standards by Jan. 1, 1985. The FAA also is enforcing new operating procedures and routing patterns. In addition we are working with local communities to assist in the development of local airport noise abatement planning. This program goes beyond providing technical assistance to the actual funding of land acquisition around airports to provide noise buffer zones. Airport noise is a serious problem, and we're never going to solve it completely. But new jetliners are coming along, planes that will be noticeably quieter, and I think airport noise is an environmental problem that is going to get better, not worse, in the 1980's. □

Transit Fare Subsidies

A growing number of companies around the country are subsidizing mass transit fares for their employees to help conserve gasoline and reduce urban air pollution.

Congressional Quarterly, the news research organization in Washington, D.C., that reports on Congress, recently joined more than 100 major companies in dozens of cities—including Los Angeles, Dallas, Chicago, Seattle, Hartford, Kansas City, and Minneapolis—that already are paying part or all of their employees' bus and rapid transit fares.

Those providing transit rider subsidies include 11 major employers in Hartford, Conn.; 51 companies in Seattle, including the First National Bank; 168 downtown Dallas employers, such as Fidelity Union Life Insurance; 15 Chicago companies, including Combined Insurance Company of America; the city of Kansas City and the Commerce Bank in Kansas City, Mo., and the Los Angeles Times, Arco, the California Bank, and two other firms in Los Angeles.

The transit rider subsidies drew support from David Hawkins, Assistant Administrator at EPA for Air, Noise, and Radiation. "It's very encouraging to see employers demonstrate a concern for improving air quality and saving energy by giving incentives to their employees to cut down on single person auto commuting," Hawkins said. "EPA has been advocating programs for employers to subsidize transit riding rather than parking, sponsor van pool and car pool programs, give priority parking to

carpools and van pools, and provide bicycle storage facilities."

"If the commendable actions of Congressional Quarterly and the other business firms across the country represent a significant trend, cities will find it much easier to solve their auto pollution and energy problems," he added.

Meanwhile, the idea of Federal agencies also providing transit rider subsidies for their employees received support from Ron Sarros, Assistant Director of Transportation Planning for the Metropolitan Washington Council of Governments. Pointing out that many Federal agencies in the Washington, D.C. area are now charging parking fees for use of their lots, Sarros said, "We would hope they would use some of that revenue for transit subsidies."

The Congressional Quarterly action drew favorable comment from several sources in the Washington area. Spokesmen

for several large Washington, D.C. companies said that they would consider offering mass transit subsidies to their employees.

Richard Brown, a vice president of Riggs National Bank, Washington's largest bank with more than two dozen branches and 1,800 employees, said, "We used to give street car passes and still give bus tokens for employees on downtown business trips and I think we would definitely consider this." Spokesmen for Garfinckel's and Perpetual Federal Savings and Loan, two prominent Washington establishments, also said their firms would consider such subsidies.

"This (Congressional Quarterly) is the first Washington company I've heard of" that will subsidize the use of Metro public transit, said Metro spokesman Cody Pfanstiehl. "And I say hooray for them."

Congressional Quarterly will pay 25 percent of public transportation costs for the 60 to 70

percent of its employees who commute on Metro, according to John Angier, the company's comptroller.

"Here at CQ we feel we have a national obligation to conserve gasoline and a community obligation to support Metro public transportation," Angier said.

CQ's Metro subsidy plan includes buying bus tickets, farecards, and special passes, and then reselling them to employees at a discount, Angier said. The passes, good for two weeks of unlimited Metro bus use and up to \$6 in subway travel, can save commuters "at least \$8.25 over regular fares, and more for long-distance commuters," a Metro spokesman said.

For years, car travel and especially parking for commuters has been subsidized by both private firms and the Federal Government.

Until last November 1 an estimated 27,000 places were reserved for free or cut-rate price parking for Federal employees in downtown Washington, nearby Rosslyn, Va., and at the Pentagon.

On that date, an order signed by President Carter required the Federal employees to pay a fee determined by the General Services Administration, initially about half the going rate at nearby commercial lots. The policy also applies to Federal agencies nationwide.

The support of public transit by private business began during the Arab oil embargo in 1973-74 and surged last year when gasoline shortages developed again around the country, according to the American Public Transit Association, trade organization for the Nation's bus and subway operations.

"Seattle is considered the leader in this," said Ron Hartman, the Association's director of planning. "They've now got more than 50 firms giving bus discounts or even free bus tickets to over 10,000 employees." □



President Carter recently signed a bill authorizing \$1.7 billion in Federal funds to help complete construction of the Metrorail mass transit system in the Washington, D.C. area. The President noted that the money going into the subway system would help stem urban decay, improve air quality, reduce traffic, and save energy.

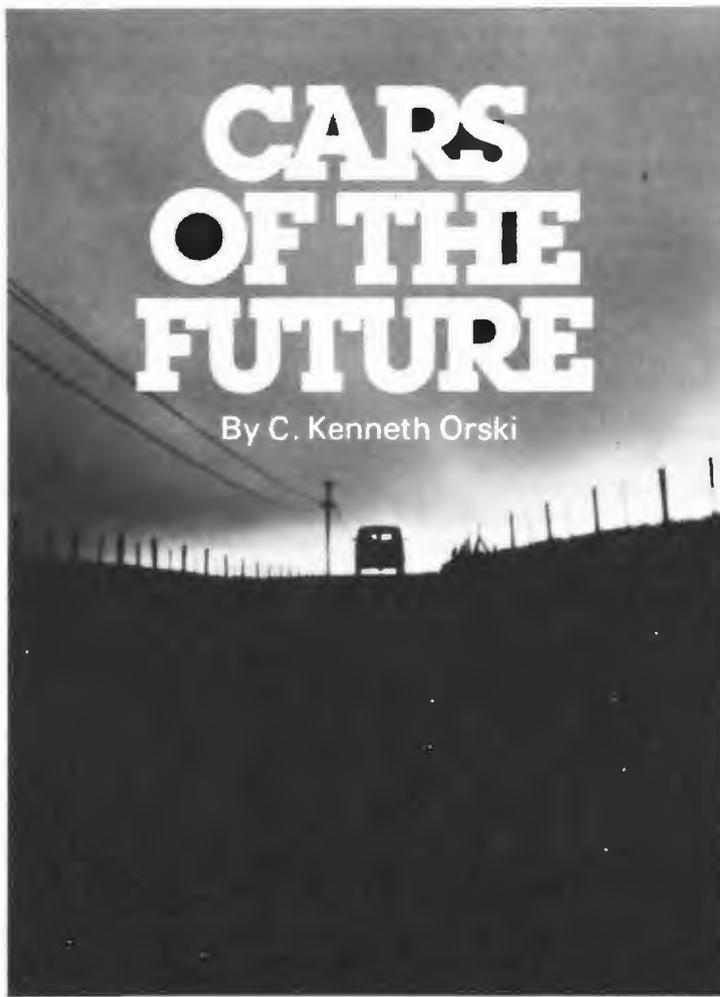
Former Secretary of Transportation Brock Adams warned us that the existing fuel economy standards for new cars will not suffice in the long run. By the late 1980's the effect of raising the average fuel economy of new cars from the current 19 miles per gallon to 27.5 will have been largely realized, and petroleum demand will spurt once again. Beyond 1985, even a one-mile-per-gallon improvement in fuel economy per year for new cars may not be sufficient to offset the projected increases in automobile travel.

To confront the basic problem, Mr. Adams told us, we must be prepared to do more: We must "reinvent," as it were, the car. The industry has to take a giant technological leap forward so that, by the end of the century, the fuel economy of all new cars produced in any one year would average 50 miles per gallon. To help us reach the 50-mpg goal by the year 2000, the Secretary proposed to launch a massive government-funded program of basic automotive research. The price tag may eventually reach the level of \$100 million per year.

Is an Apollo-like crash program for the automobile really necessary?

According to many automobile experts, small, lightweight, highly efficient cars that would average 50 miles per gallon will soon be within our technological capability. The Volkswagen Rabbit diesel model already gets 42 miles to the gallon, while both the Ford Fiesta and the Japanese Honda are in the 35- to 40-mpg range. Improved automatic transmissions, lighter weight materials such as fiber-reinforced plastics, sophisticated small engines and better matching of the engine's power to the car's weight could place the goal of 50-mpg fuel economy within our grasp.

But such an achievement would come only at a price. A 50-mpg car would be significantly smaller and lighter than today's subcompacts—perhaps even smaller than the Honda



"We may be past the point where we can afford the all-purpose automobile. We may be on the threshold of an era that will require sharper specialization of automobiles."

Civic. The car might carry only two passengers in comfort and have little space left for luggage. It would have modest acceleration compared to today's automobiles. It might even have limited cruising range to save on the weight of its fuel payload. In short, the 50-mpg car of the future would be essentially a "city car"—a low-performance vehicle intended for commuting and for local, intrametropolitan travel, which nevertheless typically accounts for up to 80 percent of auto travel in metropolitan areas.

But what of the other 20 percent? Men and women do not live by commuting alone. Of what use is a car that could not take a family on a 3,000-mile vacation trip to the Rockies; or pull a boat or trailer; or carry an

extra load of camping gear? The beauty of the automobile is that it can serve a multiplicity of functions.

We may be past the point where we can afford the all-purpose automobile. We may be on the threshold of an era that will require sharper specialization of automobiles. Already now there is a family of differentiated vehicles: station wagons and limousines; vans and sports cars; recreational vehicles and pick-up trucks. We have devised personal vehicles to accommodate virtually every need, except our single largest need—an efficient and economical means of commuting to work.

A "city" car would not displace conventional automo-

biles. We would still need high-performance cars for driving on the open highway. But they would come to be viewed as "special-purpose" vehicles, as, say, vans are viewed today. Those who could afford them would own them in addition to their everyday "city" car. For those without, there would be an alternative: a vastly improved system of renting and leasing automobiles.

Urban areas would fill up with small, super-efficient "city cars." The goal of 50-mpg average fuel economy would become a reality without the help of a billion-dollar Apollo program to "reinvent" the automobile.

From the very beginning of the automobile age, we have regarded the car as an article of personal possession to be used exclusively for the satisfaction of the owner's private mobility needs. While farmers have long ago learned to cooperatively own and use expensive farm machinery, the notion of sharing possession of automobiles somehow goes against the American grain. We tend to have too much emotional investment in our cars to treat them in a matter-of-fact way, like an ordinary chattel.

And yet there are tentative signs that our attitudes are changing. The practice of "time-sharing" vacation homes, boats, and resort condominiums is spreading. Neighbors band together into informal cooperatives to acquire and own a whole range of equipment and facilities, from lawn mowers and power tools to swimming pools. Car rental agencies no longer cater exclusively to out-of-town visitors, but to local residents as well. All this suggests a growing public inclination to divorce the issue of automobile usage from automobile ownership. Only after we have fully conditioned ourselves to this dichotomy and institutionalized it throughout the economy will we have truly reinvented the automobile.

The writer is vice president of the German Marshall Fund of the United States.

BIKING SAVES

By Nina Dougherty Rowe

Last summer's short energy crisis produced another bike boom. Many shops sold out of bicycles in early summer. Scores of people bicycled to work while motorists waited in long gas lines.

The new bicycle commuters may find incentives other than long gas lines for using their energy efficient and non-polluting vehicle. Congress, State agencies and EPA now give bicycle programs more recognition and higher priority. In the Clean Air Act, as amended in 1977, Congress says bicycle parking facilities, bikeways, and employer incentives to encourage bicycling are valid measures for States to encourage reducing transportation-related pollution.

A total of 29 States and 91 urban areas included bicycle measures to reduce auto travel in the transportation portion of their 1979 State Implementation Plan. New Jersey's State Plan proposes to implement 80 bikeways in 17 urban areas as well as bicycle parking facilities in some areas and 46 bicycle lockers in Union, N.J.

Now EPA has a part-time bicycle co-ordinator to promote bicycle measures in the State Implementation Plans and to see that they are implemented. EPA's bicycle program partly came into being because of efforts by the Agency's bicyclists. The initial issue of EPA Journal in January, 1975, carried an article about EPA bicycle commuters and their problems. Later that year a headquarters group called Bike Commuters of EPA was formed.

The bike commuters documented theft problems to underscore the need for better bicycle parking facilities at EPA. As a result 60 bicycle storage lockers were installed at EPA headquarters in Washington, D.C. The group developed by-laws and procedures for assigning lockers. (An application and \$5 deposit is required, but there's a waiting list.) At the request of the bike commuters showers were provided in the West and East Towers of EPA headquarters a year later. The next year David Hawkins, Assistant Administrator for Air, Noise, and Radiation, also a bike commuter, saw the need for someone to promote biking on a

national level and created the position of bicycle coordinator in the Air program.

The bicycle coordinator found bicycle contacts or coordinators in each Regional Office. The Agency then encouraged each Regional Administrator to install secure bicycle parking facilities for EPA employees and to provide shower facilities if needed. Nine of the Regions now have bicycle parking facilities. Region 3 has 12 bicycle lockers which are used 100 percent of the time. Region 8 purchased 30 bolt-cutter resistant locks, which employees may check out. Region 1 and Region 2 formed task forces to institute better bicycle parking and shower facilities.

EPA's bicycle program promotes bicycle measures in the State Implementation Plans at bicycle conventions, conferences, rallies and through publications such as: *Bicycle Strategies to Reduce Air Pollution*, *Bicycle Programs and Urban Air Quality Grants*, and *Bicycle for a Better Environment*.

The *Bicycling and Air Quality Information Document*, the most recent publication, is directed to State and local officials, planners, and bicycle activists, as required by the Clean Air Act as amended in 1977. It discusses all the components of a successful comprehensive bicycle program and the air quality, energy, and economic impacts of a comprehensive bicycle program. The document tells how to implement a bicycle program through the existing transportation planning and other procedures and details funding sources and current legislation related to bicycling. Five case studies show how successful bicycle programs are implemented. A model bicycle ordinance or legislative measure for setting up a successful program is also included.

The bicycle information document will help States to prepare their bicycle portions of the 1982 State Implementation Plans, to develop their analysis of bicycle measures, and to implement the bicycle plans. Although many States included bicycle measures in their State Plans, few have a full or part-time bicycle coordinator. The information document stresses the need to have one person responsible for bicycle programming and implementation.

The bicycle coordinators in the EPA Regions will track the State Implementation Plans' bicycle measures and the bicycle projects funded by EPA's 175 urban air quality grants. For example, EPA Region 3 will ensure Baltimore develops a handbook for bike commuting, provides basic bicycle-related roadway improvements (i.e. bike-safe storm grates, wide urban lanes, paved shoulders), installs bicycle parking at selected sites, institutes cyclist and motorist education programs, and builds

selected priority bikeways in the Regional bikeways plan. (All these projects are cited in the Baltimore plan.)

The role of bicycling in transportation will be affected by two recent pieces of bicycle legislation, which EPA helped shape. Section 141 of the Surface Transportation Assistance Act of 1978, the Bikeway Program, authorizes \$20 million a year for bicycle projects to States and localities for each of four years. Although only \$4 million has been appropriated by Congress to date, the Act has several other important provisions. It requires the Department of Transportation to develop bikeway design standards. Many bike paths today are inadequate in width, location, design, and maintenance. Section 141 also requires that no bikeway be destroyed due to new road construction unless an equally good bike route is constructed.

The bicycle section in the National Energy Conservation Policy Act, another significant piece of bike legislation, requires the Department of Transportation to develop a report about the energy conservation potential of bicycling and to prepare a comprehensive program to promote its use. EPA commented on the report, which should be released soon. If the program is implemented, bicycling projects and programs could significantly increase.

EPA is working with the Department of Transportation to promote bicycling and to follow-up on the implementation of bicycle measures in the State Implementation Plans. In addition EPA plans several projects to promote bicycling. A video-tape to encourage bicycle commuting will be sponsored, complementing a handbook on employer incentives for bicycle commuting, to be developed by Region 8. The Agency will sponsor commuting seminars around the country covering riding techniques, parking, routes, ways to carry clothes, lunches, and paperwork, as well as changing, clean up and all the variables related to bicycle commuting.

EPA plans to co-sponsor a National Bicycle Conference followed by Regional workshops on Energy/Environment and Transportation/Recreation.

For more information about EPA's bicycle program contact Nina Dougherty Rowe at headquarters: 202-755-0570 (Tuesdays and Thursdays) Office of Transportation and Land Use Policy, Air, Noise and Radiation (ANR-445) 401 M Street S.W., Washington, D.C. 20460.

Nina Rowe is EPA's bicycle coordinator.

Moving Toward Clean Air

Interview with
David G. Hawkins,
Assistant Administrator
Office of Air, Noise,
and Radiation



Q How much air pollution is transportation-related?

A That depends on which pollutant you're talking about. The one contributed most by transportation sources is carbon monoxide; in some cities you have 80 percent or more of the carbon monoxide pollutant associated with the automobile. Hydrocarbons, which are the principal elements in smog or ozone, are also predominantly from automobiles, but in some areas the stationary sources of hydrocarbons approach that of the automobile. So in places like Houston you may have a 50-50 split or close to it. In other places you may have slightly more from the transportation sector. I think the split nationally is something like 45 percent of the overall emissions are hydrocarbons from mobile sources. But those national figures really don't tell the picture. You have to look at it city by city.

Q Does it hold true in the major urban areas that one pollutant in particular is the problem, or does it vary depending on whether you are in Los Angeles or New York?

A There is some variation; some of the colder weather cities have more severe carbon monoxide problems than ozone problems. The warmer weather cities will often have an ozone problem but not a carbon monoxide problem. And then there are places like Los Angeles that have both.

Q Is there any relationship between air pollution levels and the number of cars on the road with pollution control devices?

A Yes, in terms of emissions there is most definitely a connection. We have seen a decrease in emission levels as the new car program has resulted in more cars coming on the road equipped with pollution control devices. In terms of ambient air quality, we believe that in the few areas where scientists have

done long-term studies relating emissions to air quality trends that you can also see a downward trend air pollution. In Los Angeles and San Francisco, they've done studies spanning a decade that show this relationship. New Jersey has seen a drop in ambient air quality levels as well, although for ozone it's hard to prove that it is statistically significant at this point.

Q How would you summarize EPA's attack on the transportation air quality problem?

A It's multi-faceted. The earliest part of our attack was on new cars, making the manufacturers build cars which when new would be a lot cleaner than the cars they used to build were when new. The second line of attack is to ensure that late-model cars continue to be clean in use. A major element of the program is the automobile emissions inspection program; that will go a long way to improve in-use performance. And the third line of attack is to deal with the amount that the public depends on automobiles. This requires transportation planning to use environmental programs to help people recognize that an excessive dependence on the automobile in major metropolitan areas is not a good idea and to push the process to look for alternatives. We have a program where we work with the Department of Transportation to help urban areas evaluate alternatives that will result in greater dependence on transportation forms other than the automobile and evaluate land use patterns that are amenable to these transportation systems. When I say other than the automobile I don't mean there won't be automobiles and that people won't be depending on them, but rather than near total dependence on the automobile we want a more balanced kind of relationship.

Q Do EPA studies show major air quality gains as a result of some of this planning?

A No, because not many plans have actually been implemented in the U.S. We do have some studies from Europe which show on a localized basis that setting up things like car-free zones, as you might expect, does result in a very noticeable drop in air pollution and noise levels. On an area-wide basis it isn't likely that we'll have proof of the environmental improvements that are associated with a new way of designing transportation systems for another 10 or 20 years because it takes that long to get the process moving. And we have just started thinking about it in the last five or six years.

Q How many transportation alternatives to the automobile do we have?

A There are a wide range of alternatives; public transportation, car pooling, arranging living patterns so people are close enough to shopping areas and jobs that walking and bicycling are possible. Transportation in and of itself is not a thing that is desired in the American standard of living. People don't feel that they have a better quality of life if they go farther every day. What they feel is that they have a better quality of life if they are able to get from where they live, to where they work, shop, and play—and spend a minimal amount of time and money doing it. One of the patterns that we have seen with people trying to improve their quality of life is that in the past 20 years they tend to move farther and farther away from the cities and they have been willing to spend more time and more money in order to do that. They have tried to keep the time that they spent relatively constant by engaging in a massive highway building program so they could drive farther faster. With the oil price increases I think it isn't going to be possible

for the government to come up with that kind of answer, so keeping the amount of dollars one spends on transportation constant is just not going to be possible. Even with the improvement in fuel economy, people are paying more. They're paying fifty percent more this year for gasoline than they were a year ago.

Q In the future would you say that the benefits of the automobile will continue to outweigh the drawbacks for most people?

A I would say that most people in the U.S. believe that an automobile is an essential part of their life or at least some part of their life. The question is whether it will be something they want and need to use in all of their activities or something which is available for some occasions but not needed for others.

Q Do you feel that the catalytic converter is still the best pollution control alternative for gasoline engines?

A Yes, the catalytic converter is something which Detroit chose as the technique to meet the standards within the deadlines imposed by Congress. It was preferable to the alternative of changing the operation of the engine to try to reduce emissions, because that approach would reduce fuel economy and performance. As long as one is not going to change the basic engineering of the engine the catalyst is a good approach for reducing emissions.

Q Are we going to stay with the catalyst?

A The one possible major engine change that is on the horizon domestically is Ford Motor Company's programmed combustion engine, which

they may or may not develop on a large scale in early 1980. If they do, it will be a major new engine approach domestically. That general kind of approach, stratified charge, is already found in some of the foreign cars such as the Honda.

Q What makes programmed combustion different?

A It is what's known as a stratified charge engine. Basically it is a modification of the gasoline engine where you change the way that the gasoline is exploded in the cylinders. It is still an internal combustion engine, but it has a different way of injecting the gasoline and the air. The geometry of the cylinders is different and divided into a couple of different chambers, usually. So it's a major change to the gasoline internal combustion engine, one that results in better gas mileage and less pollution. The diesel engine is another route that some of the manufacturers are taking. There are other things that are farther along and it's possible that there might be some breakthroughs, things like the Sterling engine, an external combustion engine, but I don't think they're in the manufacturers' plans for the next ten years. Beyond the catalyst, the technology being considered by the manufacturers tends to be approaches that will both get good fuel economy and good pollution control performance.

Q Will the turn to diesel engines add considerably to the air pollution load?

A Unless diesel engines are well-controlled their emissions will result in increased particulate concentrations in the major urban areas and that is something that does concern us. We have proposed regulations for passenger car diesels, which would tighten down substantially on the emissions of particulates. I should say something additionally about the diesels. The

other area of concern is the question of whether there is a cancer risk associated with a large number of diesel automobiles being operated and if so, how great a risk. We are evaluating that, we have a major research program underway and we're also trying to do some analysis even before all the research results are in to try to get a feeling for what could happen.

Q If fuel becomes scarce later in the year, what can be done to discourage drivers from fouling their catalytic converters by using leaded rather than unleaded gas?

A A variety of things; first we can try to get the message across to drivers of what they risk when they use leaded gas in a catalyst-equipped car. They need to understand that using leaded gas just a few times can have a serious effect. It's as though they were taking a ten-year step backwards in the amount of emissions their cars put out. If enough individuals do that, then the whole area or country will be taking a ten-year step backwards. We must make clear to people the magnitude of the damage that they're doing. It isn't that air pollution would just get a little bit worse, it would get much worse. We're not going to have policemen at every gas station so we're going to be asking people to accept the responsibility for their health, to take time to find a place that has unleaded gasoline rather than to jeopardize their health and that of their neighbors and children.

We're doing our best to minimize the shortages. We allowed the additive MMT, which can be used in gasoline instead of lead, to be used over last summer during the peak driving season. We extended

to October, 1980, the schedule on phase-out of lead from gasoline so that more unleaded gasoline supplies could be produced.

Q The Clean Air Act Amendments have set specific deadlines for State plans regulating pollution. Do the State Implementation Plans have provisions that will affect auto use?

A Yes. Most of the major metropolitan areas are submitting plans that call for automobile inspection programs and most States now have adequate legal authority from their State legislatures to proceed to adopt those programs. Those programs will be in operation in most jurisdictions between now and 1982. So that will be a major change. The other activity that most major metropolitan areas have underway is the program to emphasize the air quality issue in transportation planning. One of the things that we do in the transportation planning process is to carry out a large number of special studies on air quality impacts of transportation planning choices. We try to identify candidates, transportation planning measures, such as car pools or bus lanes or restricted parking or charging more for parking, things like that. We try to identify alternatives that may have a beneficial air quality impact and then we try to study that impact so that local decision-makers are armed with information on the costs and benefits of these different techniques.

Q Since the Federal Government has raised parking rates and required carpooling as a prerequisite for parking, is there any plan to study how that's going to affect air quality in D.C.?

A Yes. There have been some theoretical studies that were done already in D.C. on

Continued on page 28

EPA, The Auto, and Air Pollution

Joan Nicholson, director of EPA's Office of Public Awareness: "The automobile is a major source of pollution in the air we breathe and we breathe over 10,000 quarts of air every 24 hours. Therefore, we must do as much as we can to reduce auto pollution to protect our health and welfare, and that of future generations.

"There are many things we can do. We can improve public transportation. We can reduce vehicle use in our big cities. We can continue the development of cleaner, more efficient cars. And we can ensure that these cleaner cars stay clean. EPA is charged with responsibilities in all of these areas. To provide you with information about some of the things we're doing, my office has put together a televised discussion with some of the EPA officials most involved in these Agency programs."

Williams: Good morning, I am Tom Williams, Deputy Director of the Office of Public Awareness of EPA, and with me today are Mike Walsh, Deputy Assistant Administrator for Mobile Source Air Pollution Control; Ben Jackson, Deputy Assistant Administrator for Mobile Source and Noise Enforcement, and Barbara Bankoff, Special Assistant to the Administrator.

We would like to start with a statement by Mr. Walsh, to give us an overview of what this issue is really all about.

Walsh: We have had a Federal motor vehicle control program for about 12 years now, with the primary focus on develop-

ing a set of standards for carbon monoxide, hydrocarbons, and nitrogen oxides, first for cars and then for trucks.

We are coming to the conclusion of that process for cars very shortly, are well along for trucks, and are now grappling with the difficult issue of how to have those vehicles meet the standards that they are designed to meet in use as you and I drive them.

Also we're beginning to wrestle with the very difficult issue of unregulated pollutants, which is foremost in our minds with diesel vehicles, as we look to diesel cars becoming a much-expanded portion of the car population over the next 10 or 15 years, primarily because of the energy crisis.

Williams: How does Enforcement see that?

Jackson: We think that as far as the cars meeting the standards, auto companies have done a fairly good job. We have several programs that we believe are doing the job of getting the auto companies to meet the standards when the cars are new.

But we have found over the last several years that as cars get in use such things as tampering and fuel misuse have caused us to lose some of the gains we thought we had achieved by getting the auto companies to meet the standards.

Our focus now is to deal with those problems which are really the most significant as they relate to the automobile right now.

Williams: How much tampering is there? Who does it?

Jackson: Our surveys have indicated that approximately 19 percent of the fleet since 1972 has been tampered with. We think that the preponderance of that tampering is done by commercial repair facilities, not individuals, because generally, individuals don't have the technical knowledge to tamper with an automobile.

Bankoff: Does tampering cover a whole range of activities? It doesn't necessarily mean destroying the effectiveness of the catalyst, *per se*, does it?

Jackson: We generally categorize improper maintenance as a term that includes tampering, misadjustment, misuse of fuel. In other words, the car is not being used or maintained like it was intended to be, whether it be purposeful or accidental.

Bankoff: Tampering is the whole umbrella. . . .

Walsh: It covers the entire emission control system, which really encompasses almost everything that's under the hood of a vehicle. The condition of the engine and the things that impact on the way the vehicle performs also affect the emission levels of that vehicle.

So it can cover carburetors and pieces of equipment on the vehicle that are fundamental to the way the vehicle runs, as well as strictly emission control devices.

Jackson: I think you can put the problem in perspective if you consider that in 1981 we will probably spend, as a Nation, approximately \$5

billion for auto emission controls, and another \$3 billion to provide cars with unleaded gas, over and above the cost of leaded gas.

So we're talking about, in that year alone, an investment of something like \$8 billion that could be risked by fuel switching and misuse of fuel and tampering.

Williams: Recently I read in Fortune magazine a letter to the Editors by a Vice President of General Motors, taking the magazine to task for having written an article that was critical of catalysts. What's happened that the Vice President of General Motors would come to the rescue of a regulation that EPA has to implement?

Walsh: Well, I think that over the last year or year and a half, as the concern with fuel availability has become heightened there has been some inappropriate emphasis by some manufacturers on the advantages of leaded gasoline. The argument is made that leaded gasoline is more available and is somewhat cheaper than unleaded gasoline, and, therefore, you should buy cars that can use leaded gasoline. It also implies that cars that require unleaded gasoline, which primarily means cars with catalytic converters, are at a disadvantage.

Williams: And that's not true?

Walsh: It's not true, for several reasons. I think the first point to make is that lead is a public health hazard. Lead emissions are a serious problem in this country. EPA recently set

an ambient lead standard, with a primary objective of protecting children in urban areas who are largely exposed to lead emissions.

The second factor is that when you compare vehicles that operate with leaded gasoline and vehicles that operate with unleaded gasoline, you find that the fuel economy (the actual miles per gallon of the same vehicles, tuned differently for the use of these different fuels) is substantially better, 10 and 12 percent better than the fuel economy of the leaded cars. And on top of that, the maintenance requirements are substantially different.

So I think that General Motors is responding to that kind of concern, and I think that the concern that they're raising is one that we endorse very strongly.

It is refreshing to see the people in industry, in large corporations in this country, supporting and seeing that they have something at stake themselves in emission control devices.

Bankoff: Is there any movement by the auto companies to get some kind of cooperation from the oil industry in terms of supply of unleaded gas?

Jackson: I do think they are concerned about it, but I think they say that they made a contract with government, so to speak, to provide a car that will meet emissions standards under certain conditions, those conditions being the use of unleaded gasoline. The refiners have had the responsibility to provide the unleaded fuel and that's where this system becomes very frail, in that it does require two industries working together.

The refining industry has responded; it has made unleaded gasoline. But it's got to make enough so that the system will continue to work. And it's a real dilemma about having enough and not having enough, because if we don't, people will use leaded gasoline.

People have to get around. We in EPA are very concerned about gasoline policy for this country. We affect gasoline policy, because of our responsi-

bilities that relate to lead additives and other additives in gasoline.

We are concerned about its availability, and we work very closely with the Department of Energy on the quality of the gasoline, its octane rating, because if the octane rating is too low, then cars ping. If cars ping, people are prone to tamper with them, because they think they can get them to stop pinging if they use leaded gas.

I'd like to follow up on a point that Mike made, though, about the maintenance requirements of a car requiring unleaded. Many people think that if they use leaded gasoline they can continue to maintain the car as intended by the manufacturer.

Manufacturers claim that maintenance on late model cars is substantially reduced. It's not through their own efforts, however, it's because the cars use unleaded gas.

Unleaded gas is better in a car because it doesn't leave deposits in the engine and doesn't cause the oil to gunk up as quickly. So they've extended the oil replacement intervals, they've extended the sparkplug life, and they've extended the muffler life; not by any design changes, but by the fact that they are using unleaded gasoline. If someone starts using leaded gasoline in a car that requires unleaded, they're going to have to compress their maintenance intervals, or they're going to put that car in jeopardy.

The oil will have to be replaced more frequently, back in the 4-5,000 mile range, instead of the 22 and 25,000 mile range that manufacturers are recommending. The oil just won't last that long, because it will have leaded deposits in it, which takes away from its lubrication ability. So using leaded gas in a car that requires unleaded is really false economy. We are concerned, as is the Department of Energy and the Administration as a whole, about the availability of gasoline. And we are watching very closely the crude oil stocks, gasoline stocks, gasoline sales,

and other products to be in a position to make policy decisions about gasoline as we approach the spring and summer of this year. But we're not in a position now to say what is going to happen.

Walsh: I think an interesting perspective on that is, are the auto manufacturers talking to the petroleum industry, and the petroleum refiners?

If you look at the last 50 years, the auto industry either directly or indirectly largely dictated to the energy industry what kind of energy and what quality of energy they wanted.

When they decided that they wanted higher octane fuel to drive large compression cars in the late 1950's, the petroleum industry responded. In the early 1970's, I vividly remember Ed Cole, the President of General Motors, standing up and saying, "We are moving to unleaded cars and we want unleaded gasoline."

The oil industry responded, just as they had in the 1920's when the auto industry said, "We want lead and we will design around the use of lead in our engine."

The situation is changing, though. As we get into a shortage energy situation, as opposed to an excess energy situation, I think that we are now going to see cars designed around the kind of fuels that are going to be available and the kind of additives, as Ben was referring to, that are going to be needed more and more in the future to prevent the shortage.

Bankoff: What happens to the fleet if there is a shortage? We haven't even begun to talk about Inspection and Maintenance programs yet. What if in the next year or so there is enough a shortage of unleaded gasoline so that cars which are being inspected in the next few years can't pass a test?

It isn't the owner's fault, necessarily, but that's simply the way it is. What happens then?

Walsh: I think in the first instance, it would be good if we had as many Inspection and Maintenance programs

as we could have in areas that particularly need the air quality benefit of the emission controls because one of the things that we have found is that where you have an Inspection and Maintenance program, there does seem to be less fuel switching and less tampering.

Less inclination for those kinds of things occurs I think, for two reasons. One is obvious risk to the individual of possibly having to face major repair costs if they do take a chance on some of those inappropriate activities.

Part of it is the concern on the part of the vehicle owners that they may have to face extra repair costs to undo what they've done. So in areas that we have Inspection and Maintenance programs compared to other areas of the country that don't, there is a dramatic difference.

In part, though, it's a better overall state of vehicle maintenance when you have Inspection and Maintenance.

And that has a whole broad spectrum of implications, not the least of which is in the tampering area. I think a third aspect of it is that the public becomes much more aware of the fragile nature of the emission controls and of the investment they've made in those emission controls.

And they become more conscious that if they go in and pump leaded fuel into that car or fool with some of the emission control devices, they are undoing something that they have a commitment to, a financial commitment, among other things.

They realize it may require greater efforts in the future on their part if they are going to clean up their air. . . .

It's a serious public health problem that we are attempting to address. This is why each of these steps is so critical. We all have families, we all have children and parents and grandparents and when we look at it on that personal level,

Continued on page 28

CLEAN AIR AND THE CITIES

By Barbara Blum
EPA Deputy Administrator

The EPA is part of the solution to what's ailing the cities, not the problem. Perhaps nowhere is the spirit of our approach more evident than with the issue of clean air.

Some people seem to be trying to convince the Ameri-



can public that the Clean Air Act will bring economic growth in the Nation's cities to a screeching halt.

Let me respond by saying: Not if we at EPA can help it and not if companies, community groups, and local, State and Federal officials will work together.

The issues the Clean Air Act addresses are complex, and significant costs for both the public sector and the private sector are involved.

But the real problem is not the Clean Air Act. The real problem is that more than 100 million Americans are living in metropolitan areas where health related air quality standards are not being met.

The Act, put into place because Congress determined that dirty air threatens the health of the American people, requires that the Nation's air must be cleaned up by 1982, with extensions possible for carbon monoxide and ozone until 1987. EPA is charged with making certain that the goal is achieved. We are serious about getting the job done. But we also are serious about doing it in a way that government can live with, business can live with, and most of all, the American people can live with.

For example, EPA recognized a long time ago that we couldn't simply tell the cities, "Sorry. No clean air, no more growth." As a result, we developed an emissions offset policy, subsequently endorsed by Congress and now a major feature of most of the State Implementation Plans for air quality that EPA has received.

The offset concept is an important one for communities. It allows new construction if the air pollution a newcomer will introduce can be compensated for by cleaning up pollution at an existing facility. Local governments and Chambers of Commerce have helped companies locate offsets—with the result that General Motors can build two plants, in Louisiana and in Oklahoma; Volkswagen can build one in Pennsylvania, and Phillips Petroleum can expand a refinery in Texas. In each case, air quality should be as good

or better after construction of the new facility. To carry the idea a step further, EPA also allows, as a matter of policy, localities to "bank" extra reductions in air pollution, which later can be transferred to other new firms moving in.

Controversial? Yes. But concepts like these also can loosen any straightjacket on industry. They can help urban areas attract new businesses and hold on to older ones. Most of all, concepts like these give everybody added incentive to meet air quality standards—a national promise we all have a stake in keeping.

Another major feature of many of the State plans is an Inspection and Maintenance program for automobiles. As a matter of sound environmental policy and as a matter of equity to States that have made the effort to improve air quality in this way, EPA has no choice but to disapprove plans submitted by those States where auto emissions are a significant source of air pollution and whose legislatures have had the opportunity but failed to enact authorizing legislation.

Many local Chambers of Commerce and local officials view auto inspection and maintenance as another way to protect public health and to permit industrial growth.

EPA—working with the Department of Transportation—is helping Dallas/Ft. Worth, Nashville, and other cities plan how to reconcile the air quality goal with the full range of local transportation needs.

There are other ways EPA is moving to achieve air quality without sacrificing urban growth.

We've made a special effort, for example, to stop any unnecessary delay companies may encounter in obtaining pollution control permits. In fact, EPA is moving to speed up and simplify the process under the Clean Air Act and other laws as well. Already, we have named a single point of contact in each of our 10 Regional Offices to coordinate the work, according to strict, new self-imposed deadlines.

Eight cities are exploring other ways to assure that clean air and economic development go hand in hand, as a result of a \$3.5 million program sponsored by EPA, Commerce, HUD, and DOT. The program is significant—for the cities involved and as much or more so for other communities that pick up on the new approaches, adapting them to fit their own needs.

Finally, the new economic assistance program announced by President Carter last August. EPA is taking the lead, but the resources of many Federal agencies are involved. The point is this: to minimize the economic impact of environmental regulations on communities and plants by advising them that assistance is available and by assuring a coordinated Federal response to specific problems that may arise. As the President said, "The fact that there have not been a large number of economic dislocations does not suggest that those that do occur are unimportant."

Where do we go from here?

Let me put it this way. The answer lies more with the public than EPA.

Years ago, Congress passed the Clean Air Act. Why? Because, after countless studies and public hearings, Congress determined that the Nation's air had become unfit to breathe and that something must be done to protect public health.

In 1977, again after careful deliberation, Congress made mid-course corrections, corrections which strike a balance between environmental and economic goals.

But in striking the balance, Congress insisted that the drive to clean up the air must move forward and that any retreat from the commitment would be dead wrong—dead wrong for government, for industry, and most of all for the health of the American people.

The challenge—and I believe, the opportunity—is to move forward.

What all of us want is a situation where the environment and the economy are not locked in mortal combat.

EPA and a host of other

Federal agencies are working to avoid that mortal combat. The alliance is a potent one. But neither President Carter nor any of us in this Administration believe that the Federal Government alone can do the job. Clearly, everyone who cares about the future of the cities must be involved.

This is the cornerstone of our work at EPA. Our efforts took a mighty leap forward with announcement of the President's national urban policy. I have been appointed to the White House Council to coordinate it.

To be sure, this Administration's policy does not ignore the need for Federal aid to the States and cities, or for new programs and new legislative initiatives aimed, as the President said, at "making cities healthier and at improving the lives of the people who live in them."

But above all, President Carter zeroed in on what many people have been saying all along. Tear down the Federal roadblocks to sound local planning and management, he urged. Use limited government resources as a lever to strengthen city life and to attract private investment. Involve people from all walks of life, voluntary and neighborhood associations, Governors, Mayors, county officials, and the business community. It is vital, the President said, for the Federal Government "to provide the leadership, the commitment and the incentives which will encourage all sectors of our country to build and maintain the quality of America's communities."

Thus, the responsibility shifts to the local and regional level so that meaningful solutions can be found, solutions that fit the full range of each community's needs.

There are no quick fixes, no easy solutions. But I believe there are solutions that will not foreclose the future—environmentally or economically. □

Excerpted from a speech given before the U.S. Conference of Mayors in New Orleans, La.

RUNNING ON EMPTY

One of the principal selling points of the automobile is the mobility it provides. Unfortunately, as the number of cars on the road increases, particularly in urban areas, this advantage begins to disappear. Excessive reliance on automobiles can lead to extreme congestion, cause dangerous levels of air pollution, and act as a serious drain on public coffers—all substantial reasons for considering alternatives. But the one reason that is beginning to dwarf all others is the prospect of scarce and costly automotive fuels.

Public transportation is naturally the centerpiece of most alternative schemes. But public transport is not an automatic cure for the fuel-efficiency ills of automobiles. Though well-designed bus and rail networks can achieve levels of efficiency far above those of today's cars, the reality sometimes falls short. Mass transit systems that are improperly designed can waste prodigious amounts of energy.

Buses have several inherent efficiency advantages over automobiles, including the use of diesel engines, a lower weight and less wind resistance per seat, and a moderately sized engine that is designed to give adequate performance but not to accelerate rapidly at the whim of the driver. Trains are also blessed with efficient diesel or sometimes electric engines and have even better weight and wind resistance advantages than buses have. These characteristics give urban buses and trains a potential fuel efficiency when fully loaded of over 150 passenger miles per gallon. Outside cities, buses can get well over 200 and trains close to 400 passenger miles per gallon.

Under some circumstances, the automobile can match or exceed these efficient uses of fuel. Some of today's small cars, when carrying four people, can manage 100 passenger miles per gallon in the city, and close to 180 between cities. But American commuters on the average carry only 1.4 passengers per car, and so achieve a meager 16 passenger miles per gallon. The important point is that efficiencies of both public and private vehicles depend on how they are used. Trains and buses can

exceed the efficiency of even the most economical automobile—but only if the fares are cheap, and service is convenient enough to attract passengers.

Trains and buses do not, however, have a monopoly on fuel economy. Vans or minibuses when fully loaded can get nearly as much fuel efficiency as buses—over 100 passenger miles per gallon by most calculations. Such vehicles obviously have great potential for offering some of the conveniences of the automobile along with the fuel economy of the bus. Whether used in private car pools or operated by local transit authorities, the minibus may be an attractive alternative for many commuters. In many developing countries, it is already an important means of transport.

Japan is the world leader in public transit, and unlike Europe and North America, its public transport ridership increased throughout the 1960's and 1970's. Subway use in Tokyo has increased tenfold since 1955, while commuter railroads have tripled their ridership. Twenty-one million riders per day now travel on Tokyo's public trains, subways, and buses, straining even this very good system close to the breaking point. Public trains there are so fully loaded with commuters that trained "packers" are necessary to achieve sardine-like concentrations of passengers before the doors are fully closed. Only 7 percent of the city's workers commute by private automobile, and though car ownership is growing, few Japanese would consider driving their cars into the central city. Even without heavy use of automobiles, congestion is severe and parking limited, so mass transit is much more convenient.

Public transportation between cities and within rural areas has never been as widespread nor as efficient as that in urban areas. And it too has been on the wane. Automobile use between American cities has doubled since 1960, and now constitutes 85 percent of intercity travel. Air travel has grown even more rapidly, and commands 12 percent of between-city traffic, leaving trains and buses with a meager 3 percent of the total—most of it by bus.

In Europe, intercity travel by train is much more prevalent. European trains are generously subsidized by taxpayers, and account for close to one-quarter of traffic between cities. In contrast to the United States, trains are fast and convenient and carry far more passengers than planes do. But Europe, like the United States, has been on a highway-building spree, and today more people are using automobiles for business and recreational trips than ever before. In recent years, two-thirds of European travel between cities has been by car.

Public transportation is improving its image and is likely to be a major area of public innovation during the 1980's. Public officials must realize, however, that massive funding alone will not suffice. There are abundant examples of expensive public transport systems that fail to provide convenient service for a sizable segment of the population, or even to alleviate congestion on city streets. Given many of the economic constraints that lie ahead, a change of emphasis is in order. Those systems that provide a flexible service and require relatively little capital expenditure will probably be the most successful in serving local needs.

As governments begin to focus on energy-conserving yet convenient alternatives to the automobile, the bicycle must be placed near the head of the list. Requiring no petroleum-based fuel, and nearly as fast as a car for short urban trips, the bicycle's attraction is obvious. Furthermore, bikes can travel on existing roads and do not need the major capital expenditure of new mass transit systems. However, the bicycle is unlikely to fare well without government encouragement, as the experience in many countries since World War II has shown. Increasing levels of automobile traffic have encouraged suburban development in areas that are too distant from downtowns to be reached by bike.

Since 1973, however, people's seemingly rational decisions to give up their bicycles in the 1950's and 1960's have been appearing less than visionary. In the last five years, consumers throughout the world



have been buying bikes in unprecedented numbers. In both North America and Europe, bicycle use is on the rise for the first time since World War II; use has also increased rapidly in the Third World, where the bicycle has been important for decades.

In recent years, sales of bicycles have exceeded those of automobiles in many countries. In the United States, 103 million bicycles were sold between 1969 and 1979, compared with 102 million cars. In West Germany, bikes have outsold cars by an even wider margin. The British Transport and Road Research Laboratory reports that 20 years of decline in the use of the bicycle was arrested in 1974 and that its use increased some 25 percent over the next three years. The Netherlands, a country favored by a relatively mild climate and flat terrain, now has nearly as many bicycles as it does people. Each morning some five million men, women, and children depart for work, school, or shopping on bicycles. In some Dutch cities, nearly half of all commuting is by bike.

Paralleling the recent popularity of the bicycle has been that of the closely related moped. As its hybrid name implies, the moped is a cross between a motorcycle and a bicycle—retaining some of the features of each. A typical moped weighs less than 100 pounds and can be powered with a one- or two-horsepower engine as well as by foot. Capable of perhaps 30 miles per hour, the moped is used by many people who seek the fuel economy and convenience of the bicycle, but who lack the physical stamina to pedal long distances at a rapid pace.

Mopeds have been widely used in Europe since the 1950's, but only recently have they become popular in other parts of the world. Today there are between 22 million and 25 million mopeds worldwide—half of them in Europe and four million in Japan. Growth since 1974 has been rapid in these areas, but has also spread to North America and to some Third World countries. There were only 50,000 mopeds in the United States before 1975; current projections are that one million will be in use by early 1980, between three and five million by the mid-1980's.



Bicycles and mopeds clearly have an important role to play, particularly in urban and suburban areas where short commuting and shopping trips represent the main transport needs. In the U.S. as a whole, 80 percent of automobile trips are less than ten miles, a quite reasonable distance by bicycle or moped. In modern suburbs, a dearth of public transport and a high proportion of local shopping trips have encouraged particularly rapid bike and moped growth. As one moped enthusiast says, "Why use a gallon of gas to buy a gallon of milk?"

Among the many laudable attributes of the bicycle and moped, fuel efficiency has caught the eye of most recent converts. Mopeds average 135 miles per gallon—three times as much as the most efficient cars. One recent study estimated that the bicycle could travel 1,000 miles per gallon of gasoline equivalent but its real attraction is that gas is not required at all. An often

neglected renewable energy resource—the calories contained in food—supplies all the needed power. The bicycle is in fact the most energy-efficient means of transport ever known, more than tripling the efficiency of walking. In addition, bikes and mopeds address many of the other problems associated with the automobile—air pollution, congestion, and urban space constraints.

In the Third World, the large urban populations expected in the future make the space and congestion arguments for bicycles and mopeds overwhelming. Road systems will simply never be able to handle the quantities of automobiles that would be needed to transport so many people. In addition, capital expenditure, always a problem in the Third World, would be greatly reduced with two-wheeled trans-

portation as opposed to either the automobile or mass transit. Finally, very few developing countries have domestic petroleum reserves and so will be hard put to afford the fuel inefficiency of automobiles as industrial nations bid up the price of oil.

As public transport and cycle travel become the focus of public policy, planners must take care to integrate them with the daily life of cities. Unless transit lines and bicycle routes conveniently serve community needs, they will not be fully used. Laissez faire traffic policies have not served transportation alternatives well. In many counties, a lack of restrictions on inner-city automobile travel has so clogged streets with cars that bus and bicycle traffic are severely impaired. Bus travel has become inconvenient, and cycle traffic has become dangerous in many cities—a strong disincentive to bus and cycle use. Only a comprehensive approach to transport planning will be able to lure people back out of their

Far left: A passenger train pulling in to the station in Tacoma, Wash

Left: This street in Vienna, Austria is closed to auto traffic much of the day but horse carriages make a picturesque replacement

cars. Fortunately, many city governments are beginning to restrict downtown areas to pedestrian travel, to reserve street lanes for buses and bicycles, and to charge fees for cars to enter the city.

In general, European cities have done the most to limit automobile traffic to reasonable levels—largely out of necessity. In Europe, twentieth century growth has often been superimposed on medieval street design. And even the more recently designed cities are relatively densely settled because of space limitations. Many have found it desirable to restrict the movement of automobiles severely, but to allow easy access for buses, bicycles, and pedestrians, a policy that has met with popular approval.

An approach pioneered in Europe is the separation of buses and bicycles from automobile traffic. In most cases bus and bicycle traffic have become speedier and more convenient, and automobile traffic less so. In England, the university towns of Oxford and Cambridge have excluded automobile traffic from certain streets. This does not entirely prevent cars from entering central areas, but it does serve to discourage them. Other cities have proceeded more tentatively in reserving particular lanes for buses, streetcars, and bicycles, in some cases only during peak traffic hours. London, Paris, and even Washington, D.C., have variations on this scheme. In these cases, the efficiency of public transit has been improved, but automobile traffic has not been substantially reduced.

From the cyclist's point of view, there is something to be said for constructing special bike paths from which buses are excluded as well. The recent surge in bicycle use has spawned strong lobby groups in many countries, and these have pushed through numerous bikeway construction programs. In some cities, urban parks as well as unused highway shoulders are being used for bike paths. And many city planners have taken the comprehensive

approach that is crucial to the success of these schemes by ensuring that bicycle path networks provide access to the central city for most residential neighborhoods. In Davis, California, some 28 miles of bike paths have been built in the past few years and it is estimated that cycling accounts for one-quarter of all travel there. In Vasteras, Sweden, 70 bicycle tunnels were recently constructed at intersections and have vastly improved the convenience and safety of cycling. And West Germany is considering the construction of bike paths along 30 percent of all city streets.

Some of the most restrictive automobile traffic-control programs have recently come from the Third World. Planners in industrial countries have long contemplated the establishment of areas in cities where special licenses would be required for entry. But few have been able to muster the political will to enact such a plan, as it would entail considerable restrictions on the freedom of drivers. However, Singapore, Kuala Lumpur, and Bangkok are now in various stages of implementing such a scheme.

Plagued with mounting levels of urban congestion, the Singapore government decided in 1975 to require a license to enter the inner city by car during the morning rush hours. Licenses cost \$1.50 per day—which somewhat reduces the appeal of urban driving. Automobile traffic has dropped by two-thirds during the morning rush hour, and the local bus service has enjoyed increased patronage. The Singapore program has received much attention from the World Bank, which previously had put most of its transportation efforts into road construction projects. Today, the Bank is helping to finance similar schemes in Bangkok and Kuala Lumpur, and the initial results appear equally successful.

Each country has its own transportation needs as well as political constraints. Clearly, the bike path that works well in Dodoma may be neither feasible nor workable in Singapore. Light rail, heavy rail, large bus, minibus, bicycle, and moped are all likely to play important roles in the years ahead. Fortunately, recent experi-

ence with these alternatives in many industrial as well as developing nations should help countries as they consider various options. In few countries, however, is single-minded encouragement of automobile travel likely to increase mobility in the future as it did in the past. In an oil-short world, failure to plan for alternative forms of transportation will lead to problems that are much worse than simple congestion.

This article is excerpted from Running on Empty: The Future of the Automobile in an Oil-Short World, by Lester Brown, Christopher Flavin, and Colin Norman, A Worldwatch Institute book, W. W. Norton & Co. Inc., 500 Fifth Avenue, N.Y., N.Y. 10036.



Moving Toward Clean Air

Continued from page 19

the effects of raising the parking rates and there are others that will probably be done after the parking rates have been in effect for a while.

Q Are Inspection and Maintenance programs expected in most of the problem urban areas?

A Yes. The response of the States has been very positive and virtually all of the States that we have identified as needing Inspection and Maintenance agree and are proceeding to develop programs. There are a few States that don't yet have the necessary legal authority and we are working very hard to get that legal authority adopted.

Q Does it appear EPA will have to use the sanctions that were included in the Act, such as cutoff of highway construction funds, if State Implementation Plans are not satisfactory?

A The sanctions probably are going to be used in a few instances but not on a widespread basis across the country.

Q Do you think that there will be a need for further diversion of highway trust fund money into urban transit in order to meet clean air standards?

A I think that urban transportation systems generally are in need of additional money and the President recognized that in his energy message. One of the uses to which windfall profits legislation would be put would be to help urban transportation systems. Public transportation systems and highway trust fund monies are there as a near-term available resource and we're

certainly encouraging State and local governments to look at them as a way of moving ahead more rapidly on improving public transportation and improving air quality as well as reducing energy consumption.

Q Do you have any other thoughts to share with Journal readers?

A Sometimes the question is asked "Should we really do all these transportation planning activities for air pollution alone?" Because it doesn't seem to make all that much difference in pollution levels, especially in the short run. The answer is no, you shouldn't do it for air pollution alone. There are many reasons to look at improving public transportation and overall metropolitan area transportation systems. Environmental quality happens to be one of them and in the short run the impact is not as large as it can be in the long run. The same thing goes for energy conservation. There was an article in a major newspaper recently asking: "Does public transportation save energy?" The point of the article was that public transportation doesn't necessarily save energy in the first few years of operation of the system. However, energy is saved in the long run by making possible land use patterns which are inherently more energy-efficient, because people will tend to develop land in ways that can be more easily served by mass transit and not require the kind of automobile-dependent system that a more sprawl-oriented land use pattern demands. The relationship between air pollution and public transportation is very similar. □

This interview was conducted by Chris Perham, Assistant Editor, EPA Journal.

EPA, The Auto, and Air Pollution

Continued from page 21

as a health problem, I find that's when that message gets across to people. They are much more concerned about things like tampering and fuel-switching and emission controls, and much less concerned with the other problems that people see when they refer to emission control devices.

Williams: Some State environmental people are concerned that you can actually run a vehicle through an Inspection and Maintenance program, and pass, but the car still might have been tampered with.

Jackson: Well, there are things that you can do to a car that would be classified as tampering, for example, removing the evaporative emission control, and still pass an idle test. But the margin is getting narrower, as the emission controls get more sophisticated, and the person is always taking a risk of failing that test if the car has been tampered with.

With I and M, where we may lack precision, *per se*, we will have a deterrent to that kind of activity on the part of individuals as well as the commercial repair facilities.

One other point I'd like to make before we leave this is that some of the doomsday folks would like to think if we do have a serious gasoline shortage then we ought to throw up our hands with regard to the Federal motor vehicle control program.

It could be a possibility if we had a very severe differential shortage; a shortage of unleaded gasoline compared to leaded. That should not happen.

It should not happen because the refiners have in place the capacity to make the appropriate amount of unleaded gasoline. We have their commitments.

Now we may have a shortage, but we should have a shortage that's spread among leaded and unleaded. If we have a dramatic differential shortage, it will be on purpose. It will be because the refiners have decided to do that, because the facilities are there. So my answer to the question about should we expect a dramatic problem is: we shouldn't.

Williams: There is an extraordinary protective and apparently very good warranty that consumers have when they buy an automobile, with regard to any of the air pollution control equipment.

I don't think that's very widely understood and I don't think those warranties are probably used as much as they ought to be; is that true?

Jackson: I agree with you. We have recently published a pamphlet that explains to an owner the nature of the warranty as it relates to defects in emission controls.

In other words, if you take your car into a garage and the dealer says that he has replaced your air pump and he charges you for it, nine times out of ten that's under warranty, and he shouldn't have charged for it.

We have a pamphlet which describes the statutory warranty that is available to all consumers. Beyond that, there is a warranty that will be associated with the I and M failure.

That is, if you should fail an I and M test, and you have properly maintained your car; not used leaded gas and not tampered with it, it's the responsibility of the manufacturer to make it meet the standards.

And you will not have to bear that responsibility. That's something that's coming. That's not in effect now, but it will be in the very near future. □

This article is excerpted from a videotape, EPA and the Automobile, produced by the Office of Public Awareness. More information on the videotape can be obtained from EPA's regional public information offices. See listing on Page 39

CLEAN AIR MESSAGE



More than 1,000 cars and trucks of two West Coast courier services will carry clean air slogans along with their packages in 1980 as part of an unusual settlement in an EPA enforcement action.

Gelco Courier Services, Inc. has promised to promote "Breathe Easier . . . Use Unleaded Gas" on its messenger vehicles. Loomis Courier Service, Inc. will display the message, "Unleaded Gas Keeps Air Clean" on armored cars belonging to the firm. EPA had accused the companies of illegally using leaded gas in vehicles designed for unleaded fuel from their pumps in Seattle, Wash., and Portland, Ore.

The companies must also pay fines of \$10,000 apiece and replace the "poisoned" catalytic converters in the 66 damaged cars and trucks. The public service aspect of the settlement, which was suggested by the companies themselves, requires both firms to emblazon all their service vehicles throughout the U.S. for one year with slogans designed to create public awareness of the importance of unleaded gasoline.

The settlement provides for further penalties of \$80,000 if the two firms fail to have the slogans on their cars and trucks by a set deadline or fail to re-

place promptly the fouled pollution control devices.

Terms of the settlement were announced in Seattle by EPA's Region 10 Administrator Donald P. Dubois. "Use of the slogans by Loomis and Gelco will be more of a deterrent for other vehicle owners who are tempted to illegally use leaded gasoline than a large monetary penalty," Dubois declared. "Between them, Loomis and Gelco operate more than 1,000 cars and trucks—many of them in crowded downtown areas where they are seen by literally thousands of people every day, and they will all be carrying a message that is vital to our national efforts to clean up air pollution from cars and trucks."

The best estimate of the advertising value of the messages on the sides of the vehicles, said Dubois, is about \$20 per month per vehicle. Since almost exactly 1,000 Loomis and Gelco cars and trucks will be required to have the slogans on their sides for a full year, Dubois

calculated, the messages are worth approximately \$240,000.

As for the 66 damaged pollution control devices, their replacement—at about \$225 a vehicle—is estimated to cost close to \$15,000.

All the vehicles on which restorative work must be done were equipped with catalytic converters, the devices that require the use of unleaded gasoline. Repeated use of other grades of gasoline in those "unleaded gasoline only" vehicles will destroy permanently the ability of the catalytic converter to reduce harmful emissions of air pollutants. Cars with catalytic converters are equipped with small filler inlets on their gas tanks so that wider nozzles on "regular" or "premium" pumps cannot fit.

Last August, when EPA issued the complaints against Loomis and Gelco, it charged that the two firms' vans, station wagons, trucks and passenger cars were supplied with leaded gasoline in

Seattle and Portland from two company-owned pumps with nozzles designed to fit only pumps that contained unleaded fuel. Additionally, one of the pumps was not posted with a required notice that would warn people not to use it for "unleaded gas only" cars.

The reason for complaints against both Loomis and Gelco is that the violations appear to have occurred both before and after last April 30, the date on which Loomis Courier's assets and operations were taken over by Gelco. The vehicles cited in the Loomis complaint were among the assets transferred to Gelco. Because its messenger service now belongs to Gelco, Loomis has agreed to display the slogans on its armored cars, which weren't included in the original allegations.

The two pumps with the improper nozzles and the missing label were also among the assets transferred by Loomis to Gelco. They are located in Seattle and in Portland.

According to information given to EPA, only leaded gasoline was dispensed at the Seattle and Portland fueling stations. Purchase records failed to show that unleaded gasoline was available to Loomis or Gelco vehicles at the two stations until after EPA inspectors visited the premises in May. □

ROAD DUST CONTROL

By Julianne Knight

Use of specially-constructed synthetic carpets may help provide better and cheaper stability control on unpaved roads than conventional methods now used.

Employed for the last 10 years in road stabilization, these carpets recently have been discovered as a tool for controlling pollution.

EPA's Industrial Environmental Research Laboratory at Research Triangle Park, N.C., has evaluated the use of road carpets for control of "fugitive emissions" (dust) from unpaved industrial hauling roads.

Paved roads also are great contributors of suspended particulates, especially in urban areas where heavy traffic stirs up the dust. Many metropolitan areas are not meeting National Ambient Air Quality Standards for particulate matter because of these fugitive emissions. Thus, EPA is encouraging the application of a number of new concepts for controlling inhalable urban dust.

Fugitive emissions from sources such as roads comprise an appreciable part of the pollution from suspended particles in this country.

The road carpet study, conducted for EPA by the Monsanto Research Corporation of Dayton, Ohio, concluded that stable, water-permeable, rot-resistant carpet of polyester fabric is an effective control technique for unpaved roads.

"Historically, emissions from unpaved roads have been controlled by watering, oiling, or chemical soil stabilization," said Dr. Dennis Drehmel, EPA project officer for the study. "Economic evaluations show that use of the fabric on roads is cheaper for emissions control than conventional control methods."

Dr. Drehmel said environmental and safety problems also could result from conventional control methods. Surface agents, such as oil, could leach into streams or make roads slippery and dangerous. High initial cost and subsequent maintenance and repair costs make other-

wise effective control measures, such as paving, impractical.

"The road carpet concept," Dr. Drehmel said, "has potential for preventing virtually all emissions from unpaved roads by eliminating the sources of fine dust. This tough fabric separates fine soil particles in the roadbed from the coarse gravel overlay. Any dust which falls to the road would be washed from the gravel during rainfall, passing through the fabric into the subsoil."

"This technique keeps dirt from reaching the tires, where it can be picked up and dispersed. It also prevents moisture from eroding the graded area," he said. "Use of road carpet results in no health or safety hazards, or in any other unfavorable environmental impact."

Research on the effectiveness of control is continuing. A short-term test of the dust-control capabilities is in progress on a haul road at a quarry near Dayton, Ohio. A one-year demonstration is planned (in cooperation with EPA's Region 8 office in Denver) on a light-duty vehicle road within Fort Carson near Colorado Springs, Colo.

A technique for measuring suspended particulate emissions from paved and unpaved roads is necessary to the development of effective strategies for control and thus for achievement of particulate standards.

"Suspended particulate emissions have been found to vary in direct proportion to traffic volume and the amount of fine material on the traveled portion of the street," Dr. Drehmel said.

The Midwest Research Institute of Kansas City, Mo., is developing and testing a sampling plan for expanded measurement of particulate emission factors for paved roads. Eight sampling sites have been selected in Kansas, Missouri, and Illinois. The areas represent a range of typical road traffic, geographical and environmental conditions, and cover residential, commercial, and industrial land uses.

An exposure measuring device, consisting of a portable tower supporting sampling heads at four different levels will be operated alongside a sampler at each of the selected sites. "We need the technology to measure air quality improvements resulting from control of fugitive emissions," Dr. Drehmel said, "so we can see what progress we are making."

Other methods being tested to control dust include an improved street sweeper. A pilot SCAT (Spray, Charge, and Trap) system will be added onto a commercial street sweeper in a study to be done for EPA by Air Pollution Technology, Inc., of San Diego, Calif.

The SCAT system uses fine water sprays to collect suspended dust particles, Dr. Drehmel said. "Data from field observations, dust sampling tests, and laboratory experiments will be used as the basis for a preliminary economic evaluation of the system. The second phase of the study will be the pilot demonstration. Results will be used to design an optimum system for commercial applications."

Another technique—attracting dust particles with positively-charged water droplets sprayed behind the wheels of trucks and other large vehicles—will be applied by AeroVironment, Inc., of Pasadena, California. "A key to this new application," Dr. Drehmel said, "is the 'Spinning Cup Fog Thrower', which dispenses the charged droplets in a volume and pattern that avoids clogging, and conserves water and electrical power.

"Because sources of urban dust have an important impact on ambient air quality, problems arise with selecting locations for new industry. We expect increasing pressure on EPA to provide guidance for bringing urban areas into compliance. Control of fugitive emissions will be the focus of that activity." □

Julianne Knight is an Information Specialist with EPA's Office of Public Awareness at Research Triangle Park, N.C.

Who Killed the Cardinal?

A raucous clamoring of crow calls arose from a pine woods in West Virginia's Jefferson County on a recent sunny winter morning.

The commotion attracted our attention and we took a jeep road through the woods to investigate the noise.

By the time we reached the site, the crows had gone and the only sound breaking the silence was a breeze murmuring through the pine boughs. On the ground, however, we spotted an irregular circle of immaculate red cardinal feathers—too many to be caused simply by a molt. Yet there were no bones, no blood, no other indications of violence.

So opened the case of a cardinal killing, one of many which occur in an average year but still worth examining for what it might tell us about the natural world.

Some of the possible suspects considered in this cardinal death included the following:

A weasel, a domestic or wild cat, a shrike, a snake, an owl or a hawk. With the aid of William Wylie, a crack field biologist from West Virginia University, we reached the following tentative conclusions:

Weasel or cat? Not likely. An attack by members of these families would almost invariably have left some blood.

Shrike? This lovely and masked bird, often called "the butcher," resembles a mockingbird in appearance but is a fierce attacker of small birds and mammals. However, a cardinal ordinarily would be a little too large for a shrike.

A snake? While most were hibernating this time of year, a sunny day such as this one could have induced two bird-eaters like the black racer or the black rat snake to venture forth for food. Both these snakes are tree climbers but more often feed on nestling birds than adults. When they do succeed in surprising a mature cardinal on its nest they consume the entire animal, feathers and all, a characteristic that would seem to rule out a snake in this killing.

An owl? A promising suspect, but the killing occurred during daylight hours and most owls are nocturnal hunters. The larger owls such as the Great Horned would probably eat a cardinal, feathers and all. These owls assimilate the flesh of a victim while their digestive system transforms bones, feathers and other indigestible parts

into compact pellets which they later regurgitate to make room for another meal. Also when owls remove feathers from a bird victim they cut the feathers with their beaks. No cuts were detected on the feathers in this killing.

A hawk? This is the most likely suspect. Professor Wylie suggests that a sharp-shinned hawk could well have been the killer, although the Cooper's hawk, a slightly larger model of the sharp-shinned, might also be a possibility. The sharp-shinned, unlike the larger soaring hawks which spot their targets from high in the sky and then dive to make the kill, is a highly maneuverable speedster that waits on a perch and darts out around or above trees and bushes to swiftly pounce on its prey.

After seizing its victim in the air, the sharp-shinned hawk kills the bird by piercing it with its talons and then carries its meal to the ground or to a

nearby tree where it plucks the feathers.

But back to the noisy crows. Crows frequently gang up on hawks or owls because they recognize them as possible threats to themselves or to their young. In this case, the crows may have started their clamor when they spotted a hawk devouring the cardinal.

While the hawk's actions may seem cruel, predators serve a useful purpose in the animal kingdom by dispatching the weak and unfit, thus helping to ensure the vigor of future prey animals and checking excessive population growth.

Although some people are tempted to shoot all hawks because they apparently serve no useful purpose for humans, Aldo Leopold in his classic work, "A Sand County Almanac," noted that "predators are members of the community, and that no special interest has the right to exterminate them for the sake of benefit, real or fancied, to itself."

The scientist, he pointed out, knows that "the biotic mechanism is so complex that its working may never be fully understood."

Leopold said that to demand that everything in nature have an economic value "assumes, falsely, I think, that the economic parts of the biotic clock will function without the uneconomic parts."

In any case, there is no doubt that hawks add drama to the living stage of nature, an arena that offers dazzling variety—sometimes bloody and violent, occasionally joyous and inspiring, often beautiful and moving, but always mysterious and wondrous.—C.D.P.



1

Highway Opposed

EPA Region 1 has asked the U.S. Department of Transportation to withdraw its approval of Interstate-84 in eastern Connecticut. EPA says that the highway project will have unacceptable environmental and public health impacts. This action follows DOT approval of environmental impact statements which would have allowed design to begin on two segments of I-84, from the Manchester/Bolton town line to Columbia, and from Windham to the Rhode Island border. These segments are scheduled to connect with a sixteen mile segment in Rhode Island which is currently planned to cross the Scituate Reservoir and fourteen miles of its watershed. EPA feels that it was unacceptable to approve the design prior to adequate impact evaluation and agreement on an environmentally sound corridor for I-84 in Rhode Island.

EPA sees DOT's approval as a commitment to construction, initiating an irreversible chain of events that would channel interstate traffic to the western boundary of the Scituate watershed. In addition, there would be bias against selecting alternative corridors in Rhode Island that would bypass the watershed. The proposed highway could degrade the sole source of drinking water for more than half the people in the State in four ways: (1) greater risk of spills of hazardous substances from truck traffic that would not otherwise travel through the watershed, (2) run-off of salt, de-icing chemi-

cals, and other pollutants from the road, (3) secondary development, and (4) siltation during construction.

EPA has asked the Council on Environmental Quality to resolve the disputed issues relating to the proposed highway. CEQ is an executive-level office charged with resolving differences between Federal agencies relating to environmental matters.

2

New Timetable Set

A consent agreement has been signed by New York City and Region 2 for a new timetable for completion of two major sewage treatment facilities to end the discharge of 195 million gallons of raw sewage into the East and Hudson Rivers around Manhattan. The new schedule was aided by the recent round of EPA grants to the City totalling more than \$171 million to speed completion of the treatment facilities. The funds will also help the City by generating nearly 8,000 construction-related jobs.

Clean Air Violation

EPA's Region 2 has filed an administrative complaint against the Town of Greece, N.Y. for violating Federal regulations under the Clean Air Act. The complaint alleges that the Town's Police Department used leaded gasoline in a number of its vehicles which are designed to use unleaded fuel only. A civil penalty of \$64,300 was assessed against the Town for the violations found by EPA inspectors. This amount

was based on a formula contained in the Act. After a settlement conference, the penalty was subsequently reduced, but additional requirements were placed on the Town. These included replacement of all catalytic converters made inoperative on police cars through the use of leaded fuel and an education program voluntarily suggested by the Town to inform other local municipalities of their responsibilities concerning unleaded gas regulations.

3

Pipeline Fined

Eureka Pipe Line company has been fined \$25,000 and placed on probation for four years for failure to notify Federal authorities about 15 oil spills in West Virginia. The 15 spills, which occurred in August and September, 1977, were located in Clay, Jackson, Kanawha, Lincoln, Roane, and Walton Counties. Region 3 referred the case to the Justice Department in January, 1979. It did so under the authority mandated by the Clean Water Act, which requires persons responsible for oil spills to contact both State and Federal governments. Responsible parties are subject to fines and assessment costs for the cleanup operation. All money raised from the fines and assessments is turned over to the Federal oil spill cleanup fund.

In addition to the fines, Eureka's probation requires it to reduce the amount of oil spilled from its pipelines during each of the next four years. In 1979, this amounted to approximately 3,200 barrels of oil. This figure

must now be reduced to 2,600, 2,000, 1,500, and finally 1,000 barrels respectively by 1983. Failure to do so will constitute breaking the parole and could result in additional penalties.

4

Noise Agreement

Kingsport, Tenn., has become the first city in Region 4 to obtain a cooperative agreement under the Quiet Communities Act of 1978, which provides for financial assistance to local communities. The City has appointed an advisory committee to develop the framework for a motor vehicle noise control program and also borrowed instruments from the Regional EPA office to evaluate various measuring procedures.

Local Help

Region 4 has actively supported the ECHO program (Each Community Helps Others), an EPA project that uses the expertise of local officials to help solve noise problems in other areas. There are three Community Noise Advisors to help in the five communities which are part of the ECHO program in the southeast. Cumberland, N.C., a recipient community in this program, has expressed a willingness to serve as a pilot by placing noise educational materials in primary and secondary school systems. Other cities in the ECHO program are: Charlotte, N.C., Chatham County/Savannah, Ga.; Macon, Ga., and Kingsport, Tenn.

5

Seek and Find

Region 5 has launched a new citizen participation program to locate dangerous, illegal hazardous wastes, and in conjunction with State agencies, eliminate any threat they present to human health and the environment. Called "Seek and Find," the new program uses a toll-free hotline to help concerned citizens reach EPA specialists trained in hazardous waste investigation. Since EPA gave hazardous waste control top priority in February, 1979, more than 200 hazardous waste dumps, spills, and storage areas have been investigated by EPA's hazardous waste task force in the six States of Region 5. The Agency has filed 32 cases in Federal and State courts against owners and operators of dangerous waste sites, and 25 additional cases are in preparation. EPA estimates that there are perhaps 1,800 hazardous waste sites in the Midwest alone. Regional Administrator John McGuire, in emphasizing the threat of these materials, said, "Without the concentrated help of citizens the problem can only get worse." Help can come from a variety of sources. Fire departments can report abandoned warehouses; road crews might spot oozing drums; hunters may find barren spots in the woods, and hikers may come upon foul-smelling chemicals dumped in swamps. People are urged to call the "Seek and Find" line if they suspect illegal dumping, but are cautioned not to attempt to investigate

a hazardous site themselves. Many such wastes are in the form of liquids or sludges that can be toxic or explosive and should be handled only by experts. EPA estimates that only 10 percent of the 30 or 40 million tons of hazardous waste produced annually in the U.S. is being adequately controlled. In Illinois the hot-line number is 800-620-3191. In Indiana, Ohio, Michigan, Wisconsin, and Minnesota the number is 800-972-3170.

6

REGION

Transit Aid

The Houston-Galveston Area Council of Governments' approval of six additional transportation control measures has cleared the way for final EPA approval of the Texas State Implementation Plan. The measures fulfill a Federal requirement for areas which cannot attain the ozone standard by 1982, and include five park-and-ride systems and CarShare, a program which provides a computerized matching service for persons seeking carpool information in the Harris County metropolitan area.

Hazardous Waste Sites

Region 6 is now evaluating 445 hazardous waste sites in Arkansas, Louisiana, New Mexico, Oklahoma, and Texas after combining its list of sites with those on Congressman Bob Eckhardt's subcommittee list. After the evaluation phase, EPA and the States will have a clear picture of those sites that need further investigation and

sampling—and those that need to be cleaned up or closed down. While awaiting final regulations and additional funding, the regional office is working closely with State agencies. The task force expects this program to be in full operation during the first quarter of 1980.

7

REGION

Federal Initiative Applauded

The first phase of the Federal Clean Air Initiative was termed "most successful" by Charles H. Yaws, Jr., Acting Regional Administrator of the General Services Administration (GSA), in a congratulatory letter to EPA Regional Administrator Dr. Kathleen Q. Camin. Several officials of the sponsoring Federal Executive Board (FEB) in Kansas City echoed this observation after the private cars of Federal employees from 15 agencies were checked as part of a voluntary inspection and maintenance (I&M) program. The Federal Clean Air Initiative was originally proposed to FEB by Dr. Camin who commented, "We need to practice what we preach." She said, "It is designed to inspect the private vehicles of Federal employees and the government-operated fleets in the hope that it will result in the reduction of air pollution, improve fuel economy, and extend auto life. It is hoped that this example will demonstrate that I&M results in benefits that outweigh any costs and inconvenience."

"At first participation by Federal employees was low, but the number of vehicles being inspected multiplied as the word

got out that the test took only a few minutes," according to Mickey Marshall, Region 7 I/M coordinator. Marshall added that "77 percent" of these autos passed the analysis.

Plans have been completed to test government fleets at GSA and the Corps of Engineers in the latter stage of the federal initiative. Dr. Camin remarked that "voluntary I/M for the public will go into full swing in Missouri, this year, and we are hoping to get enabling legislation passed soon in Kansas."

8

REGION

Energy Policy

EPA's Region 8 has just completed work on an energy policy draft that is committed to helping the Nation achieve energy self-sufficiency while protecting the quality of the environment enjoyed by residents and visitors to the region. The policy, first released in 1979, is aimed at the huge reserves of coal, oil, natural gas, uranium, and oil shale, which lie beneath the lands of Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

Under the policy the Region will assure that environmental standards and objectives are not violated by energy facilities; expedite regulatory decision-making on all energy projects including an objective to review all energy facility permit applications within six months; consolidate procedures, reviews, and issuance of energy-related permits and

requirements; expand communication and coordination with other levels of government, industry, and citizens; advocate phased, orderly synthetic fuels developments; advocate selection of energy development options which minimize consumptive use of water in the arid West; and actively promote energy conservation measures in issuance of permits and grants.

9

REGION

Air Agreement

Region 9 and General Motors have reached an agreement which brings the corporation's assembly plant in Fremont, Calif., into compliance with Federal air quality standards. A proposed order would require GM to reduce organic solvent usage at two paint spray booths by August 31, 1981. These booths currently emit five tons of hydrocarbons per day into the air.

EPA will require schedules, incremental reductions, and progress reports from GM until 1981. The first reduction, set in early 1980, should decrease hydrocarbons emissions by 5 tons per day. When final compliance is achieved, engineers expect a reduction of 11.6 tons per day. This action could serve as a model for other GM auto assembly plants across the Nation where health-based air standards are violated, and result in less energy consumption than conventional technology. Energy can be saved by allowing newly painted cars to bake or dry at lower temperatures. GM will also save money through the use of equip-

ment which applies paint more evenly and efficiently.

10

REGION

Minority Contracting

Public hearings were held last month in Anchorage, Boise, Portland, and Seattle to obtain fresh ideas on how to help minority businesses provide services and supplies on all grants and contracts paid for with EPA money. A major purpose of the hearings was to review the goals used by Region 10 for participation by minority firms in the sewage treatment construction program. In the past three years, using the goal system, nearly 15 per cent of the approximately \$200 million-a-year planning, design, and construction work in the Region has been awarded to minority architectural and engineering consultants and construction contractors.

Refinery Permit

Region 10 has begun evaluating public comments received on EPA's proposed water pollution control permit for a major refinery and petrochemical complex in Valdez, Alaska. The refinery, planned by the Alaska Petrochemical Company, has been designed to process 150,000 barrels a day of the State's oil from the North Slope. Its daily output would supply West Coast markets with 75,000 barrels of unleaded gasoline and another 70,000 barrels of other petroleum products. □

Back in 1936, the Fish and Wildlife Service in Washington hired a young graduate of Johns Hopkins University as a "junior aquatic biologist." Because the new recruit had once hoped to be a poet, and had done a lot of writing, she was assigned to prepare a series of weekly radio broadcasts. They were referred to by her colleagues as "seven-minute fish tales."

She did well at this for about a year . . . but then she ran into trouble. While attempting to write another broadcast about the sea, she found the material taking on a life of its own; it stubbornly resisted her efforts to cram it into the regular format. It became much more lyrical and even mystical a text than any Commissioner of Fisheries would be comfortable delivering.

Troubled, the young biologist took the manuscript in to her boss. He confirmed her doubts. "I don't think it will do," he said. "Better try again. But send this one to the *Atlantic*."

The *Atlantic Monthly* accepted the piece—and Rachel Carson was on her way.

I tell this story today for three reasons: first, because probably no single book did as much to supply an intellectual underpinning for the environmental movement as did Miss Carson's *Silent Spring*; second, because the seeds of that book were sown during Miss Carson's Federal service during World War II, when she had read early studies on the effects of DDT; and third, because Miss Carson worked for the Federal Government for 16 years. She was, by most standards, a bureaucrat.

QUIET SERVICE IN A NOISY TIME

"Bureaucrat" . . . the term has become one of disparagement. Never more is it so used than during political campaigns, when one candidate after another offers his diagnosis of what's wrong with the United States of America. A considerable number invariably decide that Federal employees are high up on the list of national problems.

And of all Federal employees, those who seem to come in for the most criticism today are those who work for *regulatory* agencies. Inasmuch as EPA does the most regulating in the Federal Government, I want to offer you my sympathy.

But I want to offer much more than sympathy. I want to offer you my appreciation; most important of all, I want to lodge a stiff protest against the routine American stereotype of government workers as stodgy, unimaginative time-servers. Apart from the fact that this characterization is wrong, I'm just plain fed up with it.

Recently the *Washington Post* had some nice things to say about EPA. The subject was two of our proposals: the "bubble" concept for giving industrial plants the greatest possible latitude in deciding how to control emissions, and the "offset" policy to permit industrial expansion in non-attainment areas. The *Post* concluded its editorial by saying, "EPA deserves congratulations for that governmental rarity—a creative and practical new idea."

Grateful as I am for such unaccustomed compliments, I take issue with the *Post's* belief that creative and practical new ideas are a "governmental rarity."

On the contrary, government employees come up with new ideas at an absolutely astonishing rate. The Office of Personnel

Management, which used to be the Civil Service Commission, keeps track of such things—and its figures are eye-opening. During fiscal 1978 alone, the government adopted 42,512 suggestions proposed by Federal employees—about one of every four ideas contributed. The tangible, first-year benefits to the government from those suggestions are calculated to exceed \$132 million. In addition, measurable benefits from outstanding service by Federal employees saved another \$185 million. The total savings to the government, in excess of \$318 million, represent an amount equal to the average income taxes of 128,500 citizens.

The Federal Incentive Program, under which both suggestions and special achievements are recognized, was created in 1954. I am happy to point out that, in the 25 years of that program, the highest amount of dollar benefits in a single year for special achievements—\$78 million—was contributed by EPA employees in 1978.

"Suggestions" is a rather humble term, connoting ideas for saving paper clips and cutting down on the telephone bill. And "special achievements" may imply coming to work on Saturday every now and then. In fact, suggestions and special services contributed by Federal employees over the years go far beyond such mundane matters and touch nearly every aspect of our com-



EPA employees at work.

mon life, in war and peace. You may be interested to know what some of those contributions were.

- A World War II weapon widely recognized as second in importance only to the atomic bomb was invented by two Federal employees. This was the radio proximity fuse—a device that senses a target and, if the projectile is slightly off the mark, triggers an explosion at the moment it will do the most damage. Another weapon invented by a Federal employee is the “Sidewinder” missile—a heat-seeking weapon so sensitive it can sniff out and home in on a smoldering cigarette from 100 yards away.

- In the early 1950’s, a government engineer warned the aircraft industry that its prototype supersonic fighter planes would not break the sound barrier; its designs, he said, inaccurately computed the effect of air drag. The industry ignored him—until it found that its own prototypes, despite millions of development dollars, would not even *approach* the speed of sound. In desperation, Convair adopted the Federal engineer’s design; on its first trial, the new prototype broke the sound barrier *while it was still climbing* and flew more than 100 miles per hour faster than expected.

- Similarly, both radar and modern sonar were pioneered by government scientists; though developed for wartime application, both have found peacetime uses for guiding air traffic and for underwater acoustic communications.

- While seeking a faster, more accurate method of testing vision than the traditional eye chart, two Navy scientists developed a process using an electrode coupled with a computer that translates brain responses. The process makes it possible for the first time to test the vision of small children, the linguistically handicapped, and the mentally retarded.

- All these achievements concern ideas that became realities. But one of the most memorable achievements of a Federal employee concerns something that did *not* happen: that was the registration in this country of the drug thalidomide, which had been approved in several other nations with equally advanced screening processes. Despite heavy pressure both from the pharmaceutical industry and from her own superior, Dr. Frances Kelsey stubbornly refused to approve this drug for sale in the United States—and, when the side-effects of thalidomide were demonstrated through the birth of deformed infants, Dr. Kelsey, who is still an employee of the Food and Drug Administration, received the President’s Award for Distinguished Federal Civilian Service. This is the highest honor that the Federal Government can grant a civilian.

The vast majority of civil service contributions do not, of course, involve such drama. Often they are not easily explained, and rarely are they publicized. They run the range of daily Federal concerns, most of them unknown by the general public—from the testing of gun barrels to the straightening of ship propellers, from bailing out a reforestation project bungled by a private

contractor, to the preparation of a water-sampling manual now in use throughout the United States. The government employees who have been recognized for noteworthy contributions include not only Ph.D.’s working at the farthest reaches of science, but also a contract administrator in Philadelphia who holds his agency’s record of 78 award-winning suggestions, and an Air Force master sergeant who has had 367 ideas adopted.

Award ceremonies are an imperfect, inadequate attempt to recognize Federal employees who go far beyond earning their salary. I wish those politicians and editorial-writers who yammer so easily and endlessly about “bureaucrats” had some idea of the dollars that have been saved and the lives protected by civil servants who rarely receive any public thanks for their work.

I do not want to make these remarks a paean to the value of Federal regulations or the glory of those who write, explain, and enforce them. Some laws and regulations, concocted in other times to suit other needs, are obsolete and need to be thrown out; our current criminal code, for example—now undergoing revision by Congress—makes it a penal offense to shoot Federal carrier pigeons; should the proposed revisions be voted into law, you can shoot all the Federal carrier pigeons you want.

Continued on page 40



A review of recent major EPA activities and developments in the pollution control program areas.

SOLID WASTE

Hazardous Waste Suits

In one of the largest environmental complaints ever lodged by the Federal government against a major corporation, EPA recently announced that the Department of Justice—acting on behalf of EPA—has filed four suits against Hooker Chemical Co., and its parent corporation, Occidental Petroleum Corporation, requesting that the company clean up four chemical waste dumpsites in Niagara Falls, N.Y., which are posing substantial danger to residents of the area.

The suits seek a total of \$117,580,000 in clean-up costs from Hooker as well as reimbursement for more than \$7 million spent by Federal agencies in emergency measures at Hooker's Love Canal waste disposal site, and unspecified civil penalties.

The sites involved, each the subject of separate actions, are Love Canal, Hyde Park, 102nd Street and the "S" Area landfill. All four were used by Hooker Chemical Company to dispose of its chemical wastes.

One of the suits also charged Olin Corporation, another chemical producer, with similar violations at a disposal site adjacent to Hooker's 102nd Street facility.

In announcing the suits, EPA's Deputy Administrator Barbara Blum said the actions "should serve notice to those who generate or handle hazardous wastes that these kinds of dangers no longer will be tolerated by the American public. The day of discarding hazardous materials indiscriminately and haphazardly is over.

The relief being requested by the government from these chemical companies represents one of the most significant and costly environmental remedies ever sought in a judicial action. It is well warranted in our estimation. None of the dumps is still used but they have left a frightening legacy."

EPA scientists found 82 toxic chemicals in air, water, and soil samples near the dumps, Blum said. The numerous toxic chemicals—a dozen of which are carcinogenic—discarded at Love Canal over the past 30 years have triggered several health problems, including miscarriages, among the area's residents and have transformed whole sections of this once pleasant community into a ghost town.

The suits brought are a result of a 10-month investigation by EPA scientists and EPA and Justice Department lawyers. This investigation is just one of many going on at dumpsites across the country as EPA and the Justice Department prepare to challenge the dangerous disposal practices which have directly affected millions of Americans by polluting their air, soil and water supplies," said Blum. "Many sites used in the past for waste disposal have been found to contain toxic chemicals and other hazardous substances. The full scope of the threat to human health and the environment is still being uncovered."

WATER

Clean Lakes

Millions of city residents will benefit from grants recently awarded by EPA. The grants of up to \$100,000 each will be used by States to help ten cities find ways to make their urban lakes more useable and healthful.

The first ten Urban Initiative Clean Lakes grants are being awarded to: the town of Arlington, Mass., near Boston; Newark, N.J.; Baltimore, Md.; St. Petersburg, Fla.; Milwaukee, Wis.; Pine Bluff, Ark.; St. Louis, Mo.; Denver, Colo.; Oakland/Alameda County, Calif.; and Seattle, Wash.

The grants are intended to pay 70 percent of costs for conducting studies and developing procedures to improve water quality in the lakes, thereby increasing their recreational and aesthetic potential. The grants will extend over a two-year period; the projects will then be eligible for 50 percent EPA cost-sharing grants to finance the actual clean-up and revitalization work.

"These ten pilot grants constitute the first phase of our urban clean lakes program and are a concrete expression of the Administration's policy to promote the revitalization of our inner city areas," said Deputy Administrator Barbara Blum.

Sewage Treatment

EPA has released a plan for bringing thousands of municipalities into compliance with Federal regulations on sewage treatment by July 1, 1983.

The Agency said that its new *National Municipal Policy and Strategy* was prompted by findings of a recent analysis of publicly-owned treatment works which showed that more than 10,000 municipalities are not complying with the July, 1977, Federal deadline on secondary sewage treatment or even State requirements.

EPA said that in drafting the plan it took into consideration the many jurisdictions that could not comply with the law because of their inability

to obtain Federal construction funds. These communities will be eligible for extensions of compliance deadlines under the Clean Water Act. However, other communities with access to Federal construction funds that have not complied in a timely manner to satisfy provisions of the Act will be subject to enforcement actions, including potential prosecution.

Rubber Industry

The rubber industry will be relieved of millions of dollars in additional water pollution clean-up costs under new rules proposed by the EPA.

The new rules are designed to protect public health and the environment at costs less than those anticipated when clean-up targets were originally set by the Agency five years ago. Savings to the industry would be about \$65 million in capital that would have been needed to buy and install new equipment, plus about \$14 million annually to operate and maintain the equipment.

The Agency's proposals, if adopted following public review, mean that many rubber plants across the country would not have to install additional clean-up equipment that was required by 1984. EPA says that new information on the industry shows that present clean-up levels that had to be met by mid-1977 are adequate; therefore, the additional equipment is not needed.

Computer Design

For less than \$20, communities can generate computer-designed plans for new wastewater treatment plants and estimate how much they will cost to build and maintain. The procedure, called CAPDET (Computer Assisted Procedure for

Design and Evaluation of Wastewater Treatment Systems), was created by the EPA and the U.S. Army Corps of Engineers.

The program can quickly produce alternative planning level designs that meet specified criteria and rank these alternatives according to their cost effectiveness. CAPDET can assist in the preparation of facilities plans for wastewater treatment projects built under EPA's section 201 and 208 programs as well as those planned by the Corps of Engineers in urban and recreation areas and military installations.

For information on CAPDET or the training course, contact Dr. Wen Huang, Priorities and Needs Assessment Branch (WH-595), U.S. EPA, 401 M Street, SW, Washington, D.C. 20460, telephone (202) 426-4443 or John Cullinane, USAE Waterways Experiment Station, P.O. Box 631, Vicksburg, Miss. 29180, telephone (601) 636-3111, ext. 3723.

Drinking Water

The EPA has issued a standard for chloroform and related chemicals in community drinking water supplies. It is the first enforceable regulation to control cancer-causing organic substances in drinking water.

The regulations set a limit for chloroform and related organic chemicals of the trihalomethane (THM) group of 0.10 milligrams per liter of water, or 100 parts per billion. EPA is concerned about those substances because chloroform has caused cancer in test animals and may pose a risk to humans.

A total of approximately 2,700 public water systems serving 167 million people are covered by the

regulations; this includes nearly 80 percent of people served by community water systems. EPA statistical estimates show that 515 of these systems are expected to exceed the THM standard and will therefore modify their treatment processes. Total national capital expenditures are estimated to be \$85 million with annual costs of \$19 million. The typical annual water bill for a family of three is expected to increase no more than an average of \$1.40 as a result of these regulations.

TOXICS

Chemicals Proposal

EPA has proposed requiring chemical companies to submit all unpublished studies known to them on health and environmental effects of 61 chemical substances and categories of chemical substances. EPA would then use the data, along with data obtained from other sources, to determine if there is a need to require testing of the chemicals for health and environment effects or to take other appropriate regulatory action.

Among the substances of interest to EPA are asbestos, chemicals used in dye-making, plastics, wood preservatives, pesticides, and paints. Testing of some of the chemicals based on the extent of exposure and potential adverse effects has been recommended by an interagency committee.

Examples of the information that would be requested include: (1) the existence of health or medical records maintained on workers exposed to these chemicals; (2) animal studies on biological effects of the chemicals; and (3) estimates of concentrations of a substance in the workplace or the environment.

AIR

Pollution Standard

Tailpipe standards set recently by EPA should reduce emissions by 90 percent from gasoline and diesel-powered trucks and buses, beginning with 1984 models. The 90 percent reduction is from 1969 emission levels.

The new standards will control hydrocarbon and carbon monoxide emissions for vehicles over 8,500 pounds gross weight.

Extensive air quality analysis conducted by EPA shows that the average urban level of ozone will be two percent lower with the new standards and carbon monoxide air quality will improve seven percent.

Diesel Strategy

The EPA has re-emphasized its concern that particulate emissions from diesel automobiles be reduced by waiving the nitrogen oxide emission standard for five models of diesel autos in 1981 and 1982. The Clean Air Act requires gasoline and diesel cars to meet a nitrogen oxide standard of 1.0 gram per mile beginning in 1981. The Act allows auto manufacturers to apply for a waiver of the standard up to 1.5 gpm for diesel vehicles built in 1981-84 if the waiver is needed to use diesel technology.

Administrator Douglas M. Costle said the decision to waive the standard for diesels in 1981-82 represented a balancing of risks between a more gradual decline in emission reductions if granted and the possible increase in particulate emissions if denied.

EPA plans to promulgate, in the near future, diesel particulate standards requiring application

of best available technology, and to continue an extensive research program on the health dangers from diesel exhaust.

Conversion to Coal

EPA has issued an order allowing New England's biggest power plant to convert from foreign oil to coal now, rather than several years in the future as originally planned. This conversion will reduce that region's dependence on oil used for electricity generation by over 400 thousand barrels a month, according to Deputy Administrator Barbara Blum.

Last May, EPA approved a change in the Massachusetts air pollution control plan which would allow New England Power Company's Brayton Point power plant in Somerset, Mass., after installation of appropriate air pollution control equipment, to phase in conversion from oil to coal from 1982-84. Since that approval, however, the company asked EPA for a temporary waiver of particulate emission standards, and submitted information showing that such a waiver would permit Brayton Point to immediately convert to coal burning without endangering public health. EPA has therefore issued an order temporarily suspending particulate standards for Units 1 and 2 of the Brayton Station through August, 1980, with a possible extension—for good cause—to this November.

Blum said, "I want to emphasize, however, that clean air will not be sacrificed. Based on extensive analysis, the Massachusetts Department of Environmental Quality Engineering and EPA are confident that coal burning at Brayton Point will not violate atmospheric air quality standards protecting public health."

PESTICIDES

Pesticide Hearing

Hearings to determine whether to ban all uses of the pesticides 2,4,5-T and Silvex on grounds that they are hazardous to unborn children and human health will be conducted by EPA.

The hearings will be held at EPA Headquarters in Washington, D.C., beginning February 13, by an EPA administrative law judge.

The hearings will consider two issues: whether to make permanent a temporary ban on the use of these pesticides in forests and on pastures and utility and highway rights of way and whether to halt remaining uses of the two herbicides on rangeland, rice, certain non-crop treatments and, in the case of Silvex only, on orchards and sugar cane.

Both of these pesticides contain the highly toxic contaminant tetrachlorodibenzo-p-dioxin (TCDD) and have caused birth defects, miscarriages, and cancer in laboratory animals.

Rat Poison

The EPA has approved a new poison that can kill rats immune to the lethal effects of the commonly used rodenticide, Warfarin. This immunity occurs in some rats in many cities.

The new toxin, made by ICI Americas of Wilmington, Del. and brand-named "Talon," is used in four different bait products for controlling rats and mice in homes, industrial buildings, ships, trains, aircraft, and port and terminal buildings.

Despite its effectiveness against rats, Talon is in the category of pesticides considered least toxic by EPA. Still, the label directions, like those for other pesticides, warn that it must be kept away from children.

Pesticide Proposal

Under an EPA proposal, farmers would be allowed to continue using the pesticide dimethoate, provided they adhere to a number of new restrictions to protect the health of the person mixing and applying it.

The Agency has determined that if farmers were to lose the use of dimethoate against insects their annual income would drop by millions of dollars.

Growers use dimethoate for such crops as corn, sorghum, wheat, safflower, soybeans, cotton, fruit, nuts, many vegetables, and tobacco. In 1978, it was one of the pesticides used against a major outbreak of grasshoppers in Central and Western States.

On the other hand, EPA said that a two-year investigation into the benefits and risks of the pesticide showed that it can cause birth defects to the fetus in animals. Also, evidence suggests—but is not conclusive—that it can cause cancer.

To protect the health of applicators, EPA will prohibit the use of air blast equipment for the treatment of citrus fruits, pecans, pears, and apples, and direct that all products containing dimethoate used with the equipment bear a special warning for women against exposure during pregnancy. Protective clothing will be required as well as respirators for pilots of spray airplanes and mixer-loaders of dimethoate. Automatic flaggers to guide planes spraying the pesticide will be used as an added precaution.

EPA also proposes to cancel the registration of dust formulations of the pesticide to reduce risk of inhalation exposure to anyone handling it. □



David R. Andrews

He is leaving EPA to accept the position of Deputy General Counsel at HEW. The legal staff at HEW is the third largest in the government with over 450 lawyers and a total staff of over 1,000. Since October, 1977, he has been the Legal Counsel and Special Assistant for Policy to the Deputy Administrator. In that capacity, he supervised and coordinated all Agency activities regarding urban matters, hazardous waste enforcement, and certain energy issues. He also chaired the Agency Indian Work Group which is responsible for developing an overall policy on Indians. He was an Agency representative at the Governing Council of the United Nations Environmental Program in Nairobi. He was also a member of the EPA delegation that visited the Federal Republic of Nigeria in 1978 and Counsel for the U.S. in negotiations with Nigeria on an environmental assistance program. In 1975 Andrews was appointed Regional Counsel for EPA's Region 9. In 1974, while on sabbatical leave from his law firm, he was a visiting Professor of Law at the University of Heidelberg and a visiting Fellow at the Max Planck Institute for Comparative Public Law and International Law. He also served as a special advisor to the Council of Europe in Strasbourg, France. He has published articles in the U.S. and Europe on environmental, antitrust, and international law. He is a graduate of the University of California at Berkeley and its law school.



Donald T. Oakley

He has been named Acting Director of the Office of International Activities. More recently Oakley was the Director of the Bilateral Division in the same office. Previously he held the position of Deputy Director of the

Field Operations Division in the Office of Radiation Programs, where he was responsible for the management of EPA's radiation monitoring and data analysis. Prior to coming to EPA in 1971, he served 11 years with the U.S. Public Health Service, five of which were spent in training activities and six in environmental protection management. He earned a bachelor's degree in electrical engineering from the University of Maryland in 1960, a master's in Environmental Health Sciences from the University of Michigan in 1967 and a doctorate in the same field from Harvard in 1972. He is a Registered Professional Sanitary Engineer (Mass.) and a Diplomate in the American Academy of Environmental Engineers.



Frances Phillips

She has been named Deputy Regional Administrator for EPA Region 6. She had been serving as Assistant Administrator for that region. Previously, she was the Associate General Counsel for Grants, Contracts and General Administration in Washington, D.C. She also had served EPA in Region 4 in the Regional Counsel Office. Before joining EPA she set up an environmental law department for the law firm of Bracewell and Patterson of Houston, Texas. She graduated cum laude from Baylor University in 1969 and received her law degree from the University of Texas in 1972.

Douglas MacMillan

He has been named as the Acting Director of the Hazardous Waste Enforcement Task Force. The newly-formed task force, which reports to the Assistant Administrator for Enforcement, is responsible for the technical and legal development of enforcement actions aimed at the improper disposal of hazardous chemical wastes. The task force functions include working with the Regions and Department of Justice personnel in the preparation of cases. Prior to this appointment MacMillan was a Congressional Fellow, working with Senator John Culver and Congressman James Florio on the Resource Conservation and Recovery Act reauthorization and "Superfund" legislation. He has also served as Director of the Management and Organization Division, OPM, at EPA headquarters and in Region 1. He earned a law degree from Georgetown University and a master's in public administration from Harvard.



Ambassador Peter Hermes of the Federal Republic of Germany bestowed the German Order of Merit on EPA Administrator Douglas M. Costle and Deputy Administrator Barbara Blum for their environmental work in a ceremony recently at the Ambassador's residence in Washington. The award was established nearly two decades ago by Chancellor Konrad Adenauer and President Theodor Heuss. In their acceptance remarks, Costle and Blum paid tribute to German State Secretary Guenter Hartkopf, who has worked closely with EPA in joint environmental projects between the two countries.

News Briefs

Earth Day Anniversary

April 22 will mark the 10th anniversary of Earth Day. Elaborate plans are being made by the Citizens Committee for the Second Environmental Decade to celebrate "Earth Day '80." Mike McCabe, the committee's executive director, says that the "focus of Earth Day '80 will be at the community level where the strength of the environmental ethic has its roots." In addition to celebrating achievements already made, the committee hopes to help forge a new commitment to environmental goals for the 1980's. The committee has offices at 1638 R Street, N.W., Washington, D.C. 20009.

Hazardous Spills Conference

The fifth National Conference on the Control of Hazardous Material Spills, sponsored jointly by the EPA, U.S. Coast Guard and Vanderbilt University, will be held May 13-15, at the Galt House Hotel, Louisville, Kentucky. Special features of the conference will include a panel discussion on hazardous chemical emergencies, a groundwater contamination symposium, training programs, film festival, and exhibits of the latest technological, service and equipment advances. For more information contact the Hazardous Materials Conference Coordinator, Center for Environmental Quality Management, Box 6067, Station B, Nashville, Tenn., 37235.

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Smarter Regulation

Continued from page 7

sions in another way. The company would shut down two furnaces elsewhere in the plant to reduce particulates by more than three times the level achieved by replacing the scrubber. Thus, the people of West Virginia and Union Carbide both get cleaner air at lower cost.

The DuPont Corporation tells us that applying the bubble to one of its largest plants will allow it to remove 89 percent of that plant's hydrocarbon emissions for \$5 million. Otherwise it estimates that it would have to pay \$20 million to remove 84 percent of these emissions.

The offset and bubble approaches allow increased pollution to be balanced by compensating decreases of the same pollutant from other sources. Because business firms have considerable freedom to choose the polluting operation from which to reduce emissions, these approaches can accomplish pollution reduction at the lowest possible cost.

Banking and Brokerage

Many new firms locating in urban areas will need to find offsets. We want to encourage established firms to anticipate the demand for offsets by controlling emissions more than the law requires and "banking" the extra for later sale to another firm, or for their own future use. Firms with lower control costs will be able to sell their offset for less and are more likely to attract customers. Such firms will have a considerable incentive to find the most effective, efficient control systems.

To help this still small-scale market become more fluid and efficient, we will also need brokers to arrange trades between new firms and firms with banked (or bankable) emissions reductions. We will need such brokers if we are to get smaller firms, which generally cannot afford the sort of in-house trading expertise that such specialized markets will require, to participate in any number.

In the Oklahoma offset case, for example, it was the Chamber of Commerce, anxious to attract new jobs for the city, that served as a middleman. The Chamber sought out oil companies in the area that were willing to create the offsets and brought them together with General Motors and the regulatory agencies. In some areas State or city governments are taking on this function; in a few others private for-profit firms have begun to function.

To encourage the activities of these brokers, EPA is working to set up information clearinghouses so that firms seeking offsets can easily locate firms wanting to

sell them. Part of their assistance includes improved computer models to assess how sources contribute to air pollution and to estimate the effects of new sources of pollution.

Some of the grants EPA has recently awarded to cities for air quality technical assistance will be used for developing emissions trading markets in urban areas that have not attained air clean enough to meet national standards.

Marketable Rights

Under contract to EPA, the RAND Corporation is studying the use of marketable permits as a way of first allocating and then letting permit holders transfer to others some or all of their rights to emit pollution. RAND's study focuses on permits to emit fluorocarbons, but the concept clearly has broader potential application. With modifications the idea might eventually strengthen the controlled trading market discussed above.

Further Steps

Now we need to work hard at implementing this new framework. We need State and local agencies and individual companies to work together and with us to refine this promise and turn it into the fundamental alternative I believe it can and should become.

There is a great deal of refining still to do. We need to find possible loopholes and close them. We need to see how far we can extend offset trading geographically and how big geographically we want to make bubbles grow. We need to see how far we can go in linking the several controlled trading pieces together into one "market." Can we, for example, allow trades between bubbles and offsets? And so on.

This testing will help make clear what legislative changes may make sense when our air and water acts next are reviewed by the Congress—as they are every four to five years. Already I believe it is clear that we should press to allow new sources to participate as fully as old sources in this controlled trading. (New sources cannot now participate in most of these activities.)

By giving those we regulate incentives to propose better ways of getting the job done, we can avoid leaving society with the disastrous choice of environmental deterioration or ever-rising costs. By releasing and directing their energy and skills to finding new control technologies and other ways of getting more done for less, we will accomplish many times more than we ever could by trying to do the job better ourselves. □

Quiet Service

Nor do I want to argue that all Federal employees are a superior breed of human being, laboring selflessly around the clock for the greater good of the Nation. We have our drones, our time-servers . . . our people who punch in as late as they can, punch out as early as they can, and exhibit zest and enthusiasm only on payday. But in this—as anyone who has worked in a large corporation can testify—the Federal service is not unique. A senior member of the DuPont family was once asked how many employees worked at the company's Wilmington headquarters. He paused a few moments to reflect, then answered, "About half."

Civil servants are not archangels . . . nor are they the faceless, mindless robots so easily conjured up by vote-seekers reaching for a cute phrase. On balance, I would say we represent a cross-section of all American workers: most of us competent, a few of us lazy or dull, and a few of us brilliant and devoted.

EPA was born out of a sense of national outrage; during the Agency's infancy we were often sheltered from political criticism by the intensity of citizen anger over the continuing degradation of our air, water, and soil. Today our infancy is over and, while environmental concern remains as lively as ever, our fellow-citizens have discovered that restoring and maintaining ecological integrity will require more than bumper-stickers and an enthusiasm for green plants.

The high passions of Earth Day have had to be translated into the sober professionalism of guidelines, scrubbers, and enforcement actions. Further, that professionalism must be able to withstand challenge by industries that have 20 lawyers to our one, and by politicians whose only science often comes from a close reading of the Gallup polls.

I want to thank each of you for your contribution to that often tedious, always difficult, rarely recognized task. EPA, like any other Federal agency, sometimes merits the criticism it receives; we make mistakes, too.

But in my explanation and defense of EPA actions I have found, time and time again, that our professionals were right, and our critics were wrong. You and your colleagues have created a new line of defense for which the Nation already has cause to be grateful. Since such gratitude is so rarely forthcoming, however, let me offer my own: your quiet service in a noisy time is our best protection against the apocalyptic day Rachel Carson imagined; it is our best protection against a silent spring. As one bureaucrat to another, I am proud to be associated with you. □



The Delaware

Continued from page 11

and Gloucester counties in New Jersey.

Another problem—pollution runoff in rural areas—is being attacked in a cattle and poultry farming area on the Delaware's West Branch in New York. EPA, the Basin Commission, and New York are involved in this cooperative pilot effort. Meanwhile, a titanium dioxide plant's dumping of highly acidic wastes from the New Jersey side into the river near Philadelphia has caused concern. The firm is formerly New Jersey Zinc, owned by the Gulf and Western Corporation. EPA, the Basin Commission, and New Jersey are developing an abatement schedule, Hansler says.

Control priorities are not only shifting as organic wastes from point sources are better treated, the techniques Delaware River managers use to

deal with water quality problems are also changing. Their new approach is emerging in the aftermath of the turndown of the proposed Tocks Island dam by Congress and the Basin Commission. It is reflected in the Commission's level B study, a comprehensive look at the river basin and options for managing it. Public hearings were held on the study last November and a final report with Commission recommendations is the next step. The Level B study considers alternatives in controlling floods, providing water, protecting water supply from high salinity, and insuring good water quality.

"We're trying to figure how to provide minimum flows for the Basin's needs without a dam and reservoir at Tocks Island," Hansler says. The new strategy could involve a greater emphasis on water conservation, flood plain zoning, and highly effi-

cient waste treatment, and less emphasis on water solutions by huge dams and reservoirs on the main stem of the Delaware, since it is now hard to win approval for big dams, which are opposed by many environmentalists.

With the Tocks Island controversy on the shelf, old problems—such as flood control—may find new answers. The river's quality is expected to improve. The Delaware, although not big in miles, will continue to do a major job in meeting the needs of industry, the canoeist, the trout fisherman, and the shipper. And if the massive cleanup now under way succeeds, more shad will return each year, showing by their numbers that a busy and useful waterway can also be clean enough for the fishing and recreation for which the river has long been noted. □

John Heritage is an Assistant Editor of EPA Journal.

Fisherman in his boat on the Delaware Bay under a wintry sky.

Back Cover: Special lanes for bus and car pool commuters ease rush hour traffic on Shirley Highway south of Washington, D.C. Some employers are encouraging bus and other mass transportation. (See article on P. 15).



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