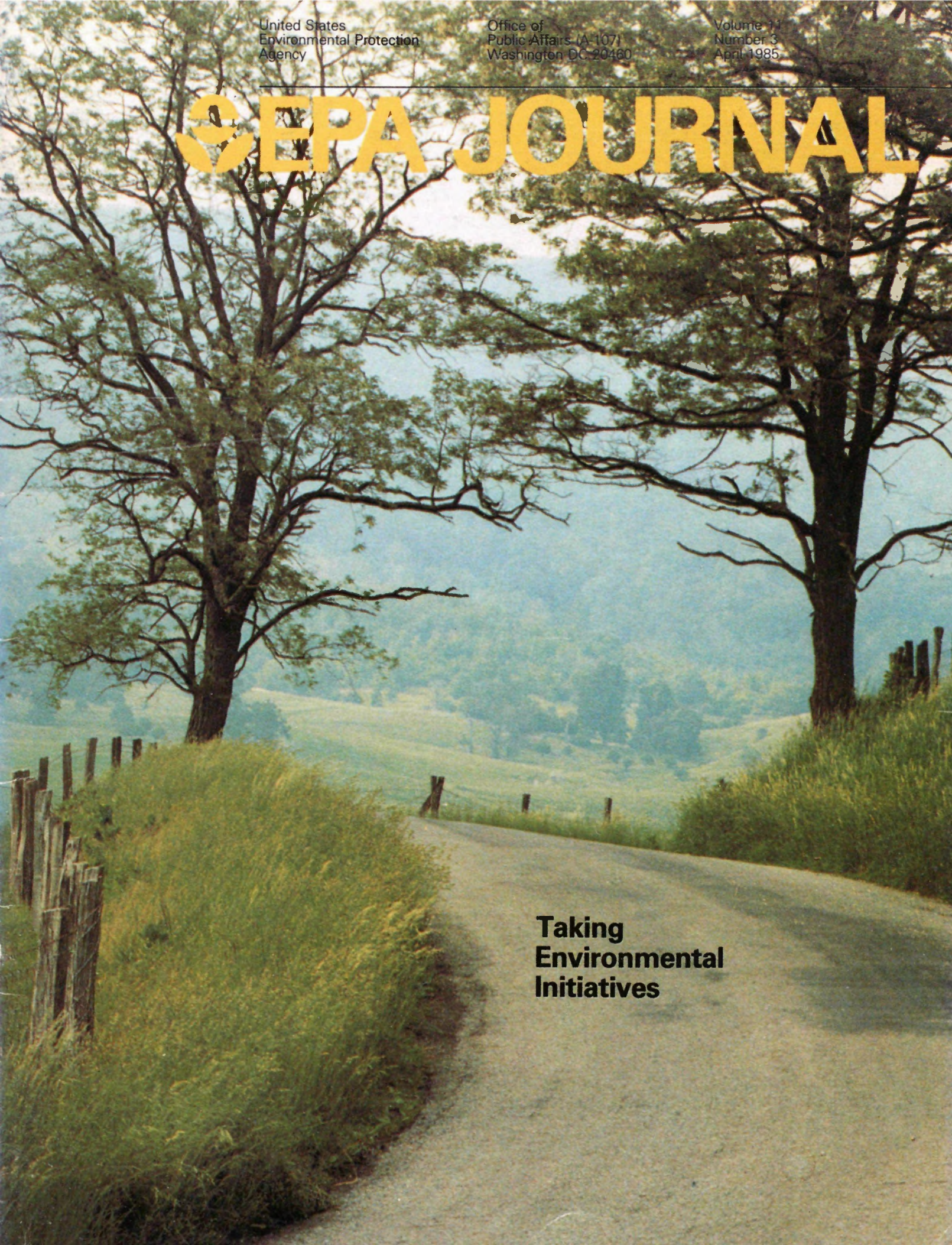


United States
Environmental Protection
Agency

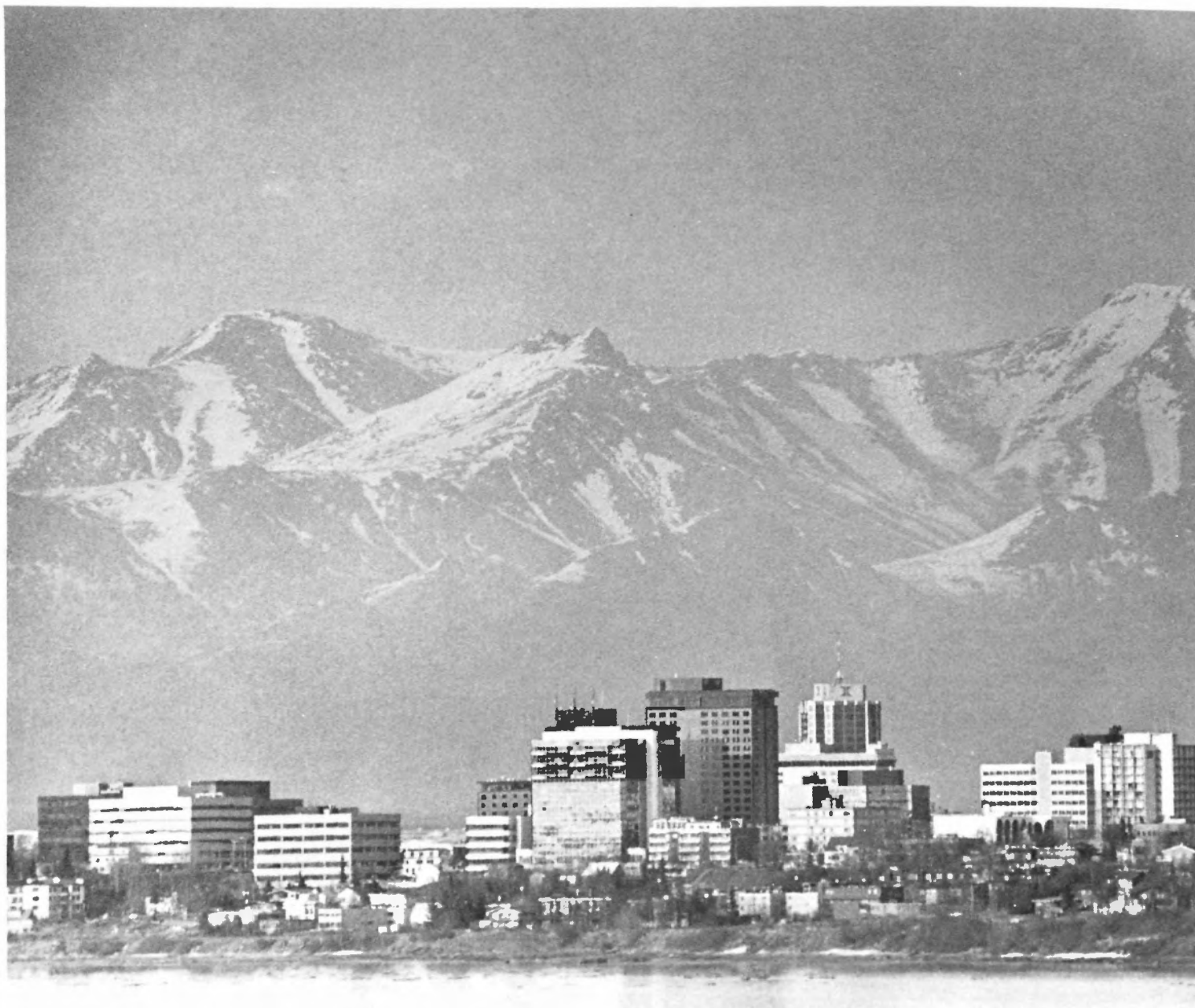
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EPA JOURNAL



**Taking
Environmental
Initiatives**



Snow-capped mountains dwarf the Anchorage, Alaska skyline. Low level thermal inversions worsen air pollution in the city. See story on page 9.

Taking Environmental Initiatives

A big part of the environmental protection job is being done by state and local governments. This issue of *EPA Journal* highlights some of their significant and innovative actions, which are often being taken in cooperation with EPA.

Setting a perspective, EPA Administrator Lee M. Thomas describes the challenge that environmental protection presents to all levels of government.

A series of stories follows with each article reporting on an

environmental effort in a particular area: controlling insect pests in California, recycling wastewater in El Paso, cleaning up Love Canal in New York, and reducing automobile pollution in Anchorage, Alaska.

Minnesota's roundup of old arsenic is described. Nebraska's steps to protect ground water are explained. Wisconsin's effort to protect its waters with a special sewage treatment fund is spelled out. And New Jersey's adoption of a new approach to control hazardous waste is described.

The *Journal* also asked five leaders from different vantage points to consider the question: how can state/federal relationships in environmental protection be improved? Their answers are featured.

In addition, this issue of the magazine includes an article on EPA responsibilities in the growing field of biotechnology, a report on the agency's test of a new way to make rules, and a review of the situation regarding pollution from wood-burning stoves.

Part seven in a *Journal* series on major environmental problems being addressed by the agency's regional offices is included. In this article, Region 6 describes how it has worked with the Osage Indians in Oklahoma to protect their underground sources of drinking water.

Concluding the issue are two regular features—Update and Appointments. □

EPA JOURNAL

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EPA is charged by Congress to protect the nation's land, air, and water systems. Under a mandate of national environmental laws, 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.

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Front Cover: A valley in
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Tackling the Job Together

by Lee M. Thomas



Steve Delaney

The environmental movement has made a number of interesting twists and turns over the past 15 years, but any objective observer will recognize at least one constant—strong, continuing public support for a federal presence in protecting public health and air, water, and land resources.

It was an open question at the outset what the nature of that presence might be. But it is generally accepted today that the federal government should limit itself to setting and enforcing environmental standards.

Concomitantly, the role of the states should be to administer programs on a day-to-day basis. In a complex, continental society like ours there is, in fact, no workable alternative to such a division of labor.

And yet this bi-level effort cannot proceed in a vacuum—it depends upon honest communication, creativity, good will, and a lot of give-and-take. We at EPA are totally committed to build upon the federal-state relationship in all its diverse aspects—helping states to implement pesticide regulations, forestall the pollution of vital aquifers, clean up Superfund sites, protect recreational watersheds, and phase out leaded gasoline, to cite only a few cooperative activities.

We place our emphasis upon encouraging a climate of opinion favorable to environmental law enforcement. We have found that we gain a great deal by listening to evidence and objections raised in public hearings. We try to adapt our requirements to state and local conditions insofar as the laws permit. We welcome experiment.

For example, we helped organize the campaign to restore the cleanliness and biological productivity of Chesapeake Bay. We provided limited funding for an analysis of the problem—just enough to help the neighboring states launch their own cooperative \$50 million program to control runoff, manage land use more wisely, and protect tourism, fishing, wildlife, and recreation. They have made a superb beginning.

Occasionally, of course, seed money and exhortation will not suffice. In many communities, regular inspection and maintenance of vehicles is the only feasible way to reduce pollutants generated by the internal combustion engine, especially where there is rampant fuel-switching and tampering with control systems. Yet the public often refuses to countenance even the best-designed I&M programs. We have not hesitated to confront this challenge head-on, playing the role of the “heavy” so that states and cities can take the necessary steps in the face of entrenched opposition.

Most of the time, however, EPA prefers a more diplomatic role. We take special pride in our joint efforts to improve state and federal coordination, which help straighten out the kinks that develop in any large-scale government program.

We support, for example, the National Governors' Association Committee of Ten, a delegation and oversight coordinating committee, a performance-based grants task force, a working group on managing for environmental results (what you might call our “bottom line”), state/federal enforcement agreements, various cost analyses and pilot projects, and continuing evaluation of state information needs.

The panoply of laws we have created since 1970 addresses most environmental problems of national significance. Indeed, we can no longer imagine our society without these basic protections. For that reason, they will doubtless be reauthorized in one form or another this year.

The basic task now is to fine-tune the operation of environmental laws in such a way as to make them fulfill their purpose and work effectively in the real world. The problems we confront are not easily remedied. Solving them demands prompt communication, candor, and continuous feedback as we pursue the ultimate desideratum—a smoothly integrated, on-line response to pollution that is fast, efficient, and appropriate. There is no greater administrative challenge in the federal system today.

Our respective roles and responsibilities will probably continue to evolve to meet unanticipated conditions. But a solid foundation has been laid for further progress, and we at EPA look forward eagerly to our cooperative labors with the 50 states. We have begun a long process of environmental restoration that will require not months or years, but decades. □

(Thomas is Administrator of EPA.)

Battling Invasions of Insect Pests

by Isi A. Siddiqui and Gera Curry

Californians are noted for their friendliness, but their geniality does not extend to a certain class of guest. In this heavily agricultural state, exotic insect pests are most unwelcome visitors.

Some of the insects damage crops, which drives up consumer food prices. Others ruin residential lawns and shrubs.

Application of pesticides may get rid of the insects after they have moved in. But pesticides can also spawn a vicious circle of additional problems—continuing environmental contamination and high costs for taxpayers.

The California Department of Food and Agriculture believes that prevention, not pesticides, is the answer to many pest problems. Putting this belief into practice in its war against invading insect pests, the Department uses a three part defense strategy: exclusion, detection, and, as a last resort, eradication.

Exclusion

With 16 agricultural inspection stations located along California's borders, the Department tries to stop insect pests before they enter the state. The job requires constant vigilance.

The stations operate around the clock, 365 days a year. They employ nearly 150 full-time inspectors, plus about 30 assistants during summer months. Last year the inspectors examined more than 20 million vehicles coming into California, searching for animals, insects, and diseased plants and weeds which are not native to the state and which pose a threat to the environment. More than 130,000 of the vehicles inspected carried materials that were rejected!

(The authors are with the California Department of Food and Agriculture's Division of Plant Industry, where Siddiqui is Assistant Director and Curry is Information Officer.)



U.S. Department of Agriculture

On a California highway, inspectors at a roadblock search vehicles for fruit that may be carrying Mediterranean fruit flies.

Department inspectors also work at airports and harbors, checking incoming planes and ships for unwanted insect pests. They examine catering and meal services, passenger cabins and cargo holds, and even garbage. They review cargo bills for ship freight to see if there are problems regarding nursery stock. They monitor cargo warehouses and docks, looking for pests in wood and grass products and in burlap bags.

To keep out destructive pests, California has the most stringent laws in the nation. A person who intentionally, or negligently, brings an infested article into the state that creates or expands an infestation may be fined \$25,000 for the violation.

The Department is currently trying to put its exclusion strategy to work against one of the more notorious insect villains, the gypsy moth.

This pest originated in the United States in 1869. Confederate cotton was unavailable during and shortly after the Civil War. A naturalist seeking a new source of textile fiber deliberately brought the gypsy moth to Massachusetts from Europe, intending to cross it with the silkworm. When a windstorm blew open the cage, the caterpillars escaped, and have since turned the naturalist's dream into a nightmare.

The gypsy moth is the most destructive insect attacking forest and

shade trees in the United States. In 1981, a particularly bad year, 13 million acres of forest in 10 states were stripped bare by gypsy moths. The same year, two freight trains on the Boston and Maine rail line faltered on a steep grade made slick by the crushed bodies of gypsy moth caterpillars. People allergic to the caterpillar hairs filled emergency rooms in Massachusetts, Connecticut, and Rhode Island.

The female gypsy moth indiscriminately lays her eggs just about anywhere. When the eggs are deposited on items that can be transported, the gypsy moth can, and does, travel.

Today, for the first time, California is faced with a huge gypsy moth infestation near its border. Last year in Lane County, Ore., only 180 miles north of the California border, over 19,000 gypsy moths were captured in insect traps. In California, some 60,000 square miles of forest and chaparral—more than one-third of the state—could be threatened by the gypsy moth.

Our policy of vigilant exclusion will be our first line of defense: our inspectors will try to "throw the bums out" before they cross our borders. It's cheaper and easier to keep unwanted pests out of California than to eradicate them once they've become established here.

Detection

Unfortunately, however, no amount of inspectors or inspections can catch every unwanted insect pest. Inevitably, some will find their way into the state. That is when the Department's detection strategy goes into effect.

The goal of detection is to spot insect invasions early and stamp them out fast. The means to this end is the trap.

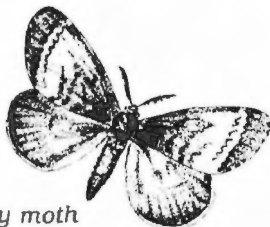
In California, we use about a dozen different types of traps, with sex attractant, food lure, or a combination of both. The traps are usually three-sided cardboard boxes, smeared inside with a sticky substance to attract and hold the bugs.

The traps hang in trees and bushes all over the state. With the permission of home owners, some are hung in residential front yards (never backyards, since family dogs do not always take kindly to inspectors). Others are hung in orchards, forests, and parks. Although numbers of traps vary according to the season, type of trap, and geographical location, the highest weekly number of insect pest traps used in California is somewhere over 143,000.

The Department employs its own inspectors or contracts with county agricultural commissioners to check these traps every week or two. If the trappers find a new insect pest, they send it immediately, via the next plane, to Sacramento, where Department entomologists provide positive identification.

The detection program then springs into action, with hundreds of additional traps placed at the site where the insect was found. Because these extra traps help pinpoint the location and extent of an infestation, they are monitored much more frequently than usual, sometimes even daily.

Last year in California, 25 gypsy moths were caught in such traps. They had been carried here on vehicles coming from infested areas. As a result, two localized infestations are scheduled for spray treatment this spring, to coincide with the caterpillar hatch.



Gypsy moth



USDA/Animal & Plant Health Inspection Service

In a residential area near Los Angeles, a state agricultural inspector places a glass insect trap with food lure in a citrus tree. Another kind of trap with an insect sex lure hangs in the same tree.

Eradication

Eradication, the third element of California's pest prevention strategy, is the most visible.

In order to use the least amount of insecticides necessary, the Department tries to start pesticide applications early, while infestations are still small. Delay of treatment would only require heavier use of insecticides later, while the insects continued to multiply. Such delays would put tons of extra pesticides into the environment, on lawns, nurseries, parks, golf courses, commercial campgrounds, farms, and forests.

A good example of California's fast-strike eradication technique is the Mexican Fruit Fly Eradication Project.

The Mexican fruit fly, slightly larger than a housefly, is a strong flier, capable of a series of long distance flights of up to 75 miles. Adult flies can live up to 16 months under favorable conditions. California's climate and vegetation provide such conditions.

In California's citrus and avocado industries alone, it has been estimated that the Mexican fruit fly could cause economic loss of some \$50 million annually. Total costs of a statewide infestation could run over \$200 million

the first year, with recurring annual costs near \$175 million.

In October 1983, a Mexican fruit fly was found in Los Angeles. Within 24 hours, ground applications of pesticides had begun. Aerial applications began 10 days later. Within five months, in a maximum treatment area of only 62 square miles, this "superpest" had been beaten.

The project dramatized the advantages of moving swiftly and decisively against serious insect pests. If infestations are stopped quickly, while they are still small, pesticide use and expenses are kept to a minimum. Taxpayers, consumers, growers, and all inhabitants of the environment benefit.

California had to learn this lesson the hard way. When eradication efforts against the Mediterranean fruit fly, or Medfly, were delayed in 1980, the insect got out of control. As a result, it took more than two years to wipe out the Medfly. The treatment area extended to almost 1400 square miles. And the cost of eradication came to \$100 million. By contrast, early and effective eradication of the Mexican fruit fly kept project costs down to approximately \$2.7 million.

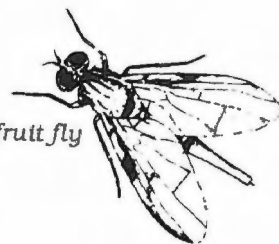
Putting the Medfly lesson into practice, last year the Department moved swiftly to eradicate the Caribbean fruit fly in San Diego, the peach fruit fly in Los Angeles, and the oriental fruit fly in southern California. The Department also declared war against the Japanese beetle in Sacramento County and the boll weevil in southern California.

If they were ever to become established, these insect pests could cause severe economic hardship for farmers, consumers, and home owners. Prolonged eradication efforts could also cause serious environmental damage.

The Department works to avoid these consequences with an increase in public awareness and cooperation, and with its policy of "Prevention, Not Pesticides." □



Mediterranean fruit fly



Mexican fruit fly

Putting Wastewater to Work

by Jonathan W. Rogers

El Paso Water Utilities



A night view of El Paso's new water recycling plant. In the tower at the far left, operators staff the computer control system and laboratory around the clock.

El Paso will celebrate the 100th anniversary of its water system this May by dedicating a new 10 million gallon a day water recycling plant. In so doing, the city will become what is believed to be the first large community in our nation to stretch its dwindling water resources by pumping reprocessed sewage into its major underground aquifer.

The possibility of drinking water that was once called "sewage" might frighten most urban communities. In fact, when Coalinga, Calif., began using reprocessed sewer effluent in its water supply system more than two decades ago, residents initially refused to drink it and the city wound up using what was actually super-pure water for fighting fires, washing cars, and watering lawns and golf course fairways. But among the 480,000 El Paso residents, little dissent was raised in response to several days of front-page publicity about the proposal for a new water treatment plant.

The proposal climaxed a 12-month study by a committee of 17 people

(Rogers is Mayor of El Paso, Tex.)

representing all interests in our community. At the study's conclusion, the committee voted unanimously to recommend that El Paso begin reclaiming its sewer effluent to recharge the major, but depleting aquifer from which over 65 percent of El Paso's water is taken. Ironically, the only controversy arose over the concerns of the Rod and Gun Clubs and the Audubon Society that construction of the plant would eliminate manmade sewage lakes that had become habitats for water fowl. When the issue arose in the committee, a majority voted for people rather than birds.

In a desert area like El Paso, where rainfall is usually less than eight inches a year, an adequate water supply has always been a problem.

A century ago this city's first water system delivered water filtered through the natural sands of the Rio Grande riverbed. Even at a time when there were no nationwide water quality standards, most residents found that water less than desirable. They preferred to haul well water in from a New Mexico community almost a hundred miles away.

Before the turn of the century, however, experimental wells were drilled

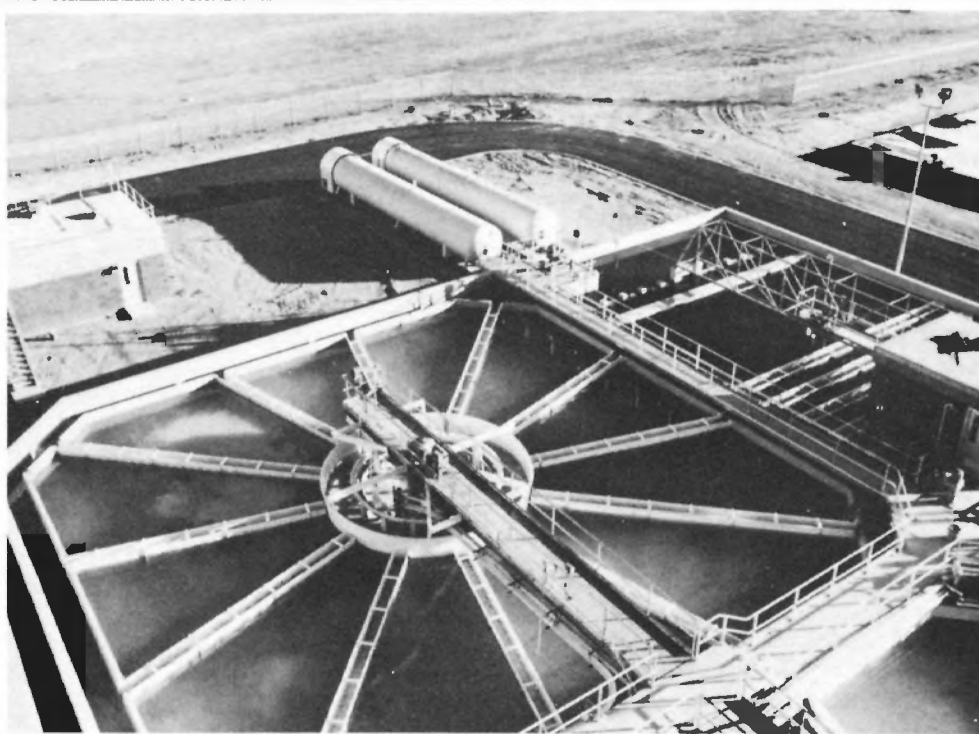
to the north of the Rio Grande. These produced relatively good quality water. Gradually, more wells were drilled further away from the river to supply the city's expanding needs.

By the 1940s, indications that the water level in these wells was declining rapidly caused the city to take water once again from the Rio Grande. A conventional water treatment plant was built for this purpose in 1943.

But the amount of water El Paso could take from the river was relatively small. Farms and the federal government had already appropriated all of the water for agricultural use and were not inclined to give up a significant part of the water rights to the City of El Paso.

Continued decline of the water level in the well fields as more and more wells were drilled caused a constant struggle between the urban and agricultural communities over the waters of the Rio Grande, the only replenishable surface water supply in the El Paso area.

Finally, in the mid-1950s the question went to the U.S. Supreme Court. The Court determined that El Paso had no rights to the waters of the Rio Grande except those the farmers were willing to



In these tanks at the El Paso plant, lime treatment and recarbonation remove heavy metals and phosphorus from water, kill viruses, and neutralize acids.

grant, but that the city did have the right to use its sewage effluent until it was discharged into the river.

However, negotiations to exchange sewage effluent for Rio Grande water failed. This failure led to the ultimate decision to construct the Northeast Water Reclamation Plant and to use its output to recharge the dwindling aquifer resources. It is anticipated that additional plants of this type will be constructed if the experience in operating the Northeast Plant is favorable.

EPA supported El Paso's proposal to build this plant from the beginning. The agency, through the Texas Department of Water Resources, approved a grant of \$20.5 million to pay part of the \$32 million total cost of plant construction. The plant is owned by the City of El Paso Public Service Board.

The treatment system uses biological and activated carbon processes to remove all organic and nitrogen compounds. Operating costs are projected at 85 cents per thousand gallons which is well within the range of water charges under El Paso's graduated water rate system. Although water usage

in the El Paso area varies considerably at different times of the year, the 10 million gallon per day output would provide enough water to meet the needs of about 10 percent of the area's population based on average year-round individual usage.

In addition to El Paso's water resource management program, the city also has an effective program to reduce individual water consumption. The water rate structure includes a five-step increasing rate for residential customers and a three-step increasing rate for all other customers. One hundred percent of the customers are metered; even the city pays at the increasing rates for all of the water used for parks and golf courses.

Concrete ground storage reservoirs are lined with plastic to reduce the water loss and eight to 10 miles of deteriorated water lines are replaced each year. About 18 percent of the single family residences are landscaped with native vegetation that uses less water than other plants and ground covers; the city has been encouraging such landscaping since 1970.

These and other conservation actions have reduced water use from 216 gallons per person per day in 1977 to 185 gallons in 1984.

Even with the water reclamation program and the efforts to reduce per capita use, El Paso is still actively seeking additional water resources.

The city currently has access to only five percent of the water resources that are within a 50 mile radius on the U.S. side of the border with Mexico. But 75

percent of the people in the region live or work in the city.

Within 50 miles of El Paso's city limits, but in the State of New Mexico, the U.S. Geological Survey estimates there is over five times as much good quality ground water as there is within 100 miles in Texas. Most of this water is under federally owned lands, and there are no significant present or proposed plans for its use. The federal courts, at El Paso's request, have overturned New Mexico's ground-water embargo statute, giving El Paso the right to pursue its request to drill wells on federally owned land to provide a significant part of the city's future water requirements.

This source, plus our new system of using treated sewer effluent to recharge closer-in ground-water resources, may well guarantee an adequate water supply for the El Paso metropolitan area even as other parts of the Southwest face growing water shortage problems. □

The Cleanup of Love Canal

by Norman Nosenchuck

In 1978, Love Canal, a community in the southeast end of Niagara Falls, N.Y., exploded into the news and entered the nation's daily vocabulary as a grim symbol of improper hazardous waste disposal practices. Reports of chemicals entering the basements of homes nearest to the original Love Canal channel, along with reports of high numbers of illnesses in those homes, led to an investigation by New York State and set off a chain of actions and reactions that frightened the residents, forced many of them to move, and involved a number of state and federal agencies and even the President of the United States.

Today, as government scientists still seek more answers, the central area of the community stands deserted. Many homes and a school that once stood there are gone. The 140 families who chose to stay in the horseshoe-shaped secondary but potentially dangerous area wait nervously to see if the area can ever be freed of the danger of toxic wastes still in nearby soil and streams.

(Nosenchuck is the Director of the Division of Solid and Hazardous Waste in the New York Department of Environmental Conservation.)

N.Y. State Dept. of Environmental Conservation



In the summer of 1982, a bulldozer demolishes one of the abandoned, boarded up homes adjacent to the Love Canal site in New York.

The Love Canal story began in the late 1800s when entrepreneur William T. Love began digging a channel from the Upper Niagara River escarpment. He was trying to create a canal with a 280-foot drop that would be a secondary source of cheap direct-current hydroelectric power. His dream was to divert some of the Niagara River's potential water power to new areas in the hope that new industries and towns would spring up nearby.

But before the project was completed, alternating electrical current was developed so industry no longer needed to be near the source of power. The canal project was abandoned, leaving behind, according to newspaper reports, approximately one mile of 30-foot deep, 80-foot wide excavation.

From 1942 to 1953, the Hooker Electrochemical Company dumped about 21,800 tons of chemical wastes from its nearby plants—which produced pesticides and plasticizers—into the abandoned canal.

In 1953, the Niagara Falls Board of Education purchased the property from Hooker and built the 99th Street School on the site. Because of the school, the number of young families moving into the surrounding area increased. During the next 25 years, chemical odors and black oily substances oozing into the nearby basements became more noticeable, and as the dirt fill settled, barrels and chemical wastes were exposed.

In August of 1978, after some investigation by the New York State

Department of Environmental Conservation (NYSDEC), the state's Commissioner of Health declared the area around the old dump site to be a health hazard. The 99th Street School was closed immediately, and over 230 families were permanently relocated from the first two rings of houses around Love Canal. The area was fenced off. A Presidential emergency declaration let the federal government provide funds to assist the state in its relocation efforts. The state purchased homes located along 97th and 99th Streets, at full replacement value.

In May 1980, President Carter issued the second emergency declaration for Love Canal. New boundaries which established the horseshoe-shaped Emergency Declaration Area (EDA) affected approximately 800 additional families. Again, extensive federal funding supplemented the state's resources.

Remedial Actions Taken

Prior to the 1980 developments, EPA and NYSDEC had signed a cooperative agreement to develop a program to contain the chemicals at Love Canal.

The first step by NYSDEC was installation of a collection system around the dump site and the construction of a facility to treat the collected contaminated ground water (leachate). A 16-acre, three-foot thick clay cap was placed over the Love Canal dump.

Leachate moving through the ground was caught and carried to a drain pipe.



This collection system lowers the level of the water inside the dump site and causes water in the ground—outside the canal itself—to flow inward toward the pipes. The system is a barrier, preventing leachate from moving into the ground water. The leachate collection system and treatment plant began operating in December 1979.

The clay cap acts as an umbrella, preventing rainwater and melting snow from mixing with the toxic and hazardous chemicals underneath it. The cap decreased the amount of water entering the dump site; prevented the runoff of contaminated rainfall; prevented human contact with the waste in the dumpsite; and stopped atmospheric emissions from the buried chemicals.

The abandoned homes in the area immediately adjacent to Love Canal were bulldozed into their basements and covered with earth. The 99th Street School was demolished.

Now the way was clear for completing the expanded remedial program by extending the 16-acre cap to about 40 acres. These additional remedial measures further reduced the amount of water entering the leachate collection system.

Eighteen inches of soil materials were put on top of the plastic liner and seeded with a mix of grasses and fertilizer. Before 1984's first snowfall, healthy grass covered the dumpsite. The eight-foot high chain link fence still limits access to the area.

In 1983, NYSDEC investigations in the EDA indicated that Love Canal chemicals had moved from the dump site into the storm and sanitary sewers. Dioxin-contaminated sediments were found in Black and Bergholtz Creeks. EPA and NYSDEC are currently developing plans to clean the sewers and creeks. It is hoped that this will be completed by 1986. One concern, however, is where and how to dispose of the dioxin-contaminated sediments

when they are removed. This issue is still unresolved as this article is written.

Additional work will include an extended perimeter survey achieved by drilling into the ground to determine the extent of chemical contamination from the Love Canal dumpsite. Any needed additional work will be done as soon as possible.

Love Canal Habitability Revisited

EPA conducted a study of the Love Canal EDA in 1980 to provide an environmental data base for decisions related to the sale of the homes there. The study results, released in May 1982, showed no clear evidence of environmental contamination in these residential areas which could be directly attributed to the movement of chemicals from Love Canal.

In June 1983, the Congressional Office of Technology Assessment (OTA) issued a report, "Habitability of the Love Canal Area—An Analysis of the Technical Basis for the Decision on the Habitability of the Emergency Declaration Area." The principal OTA finding is that "with available information, it is not possible to conclude either that unsafe levels of toxic contamination exist or that they do not exist in the EDA."

The OTA says: "There is still a need to demonstrate more unequivocally that the EDA is safe for human habitation now and in the future....If that cannot be done, it may be necessary to accept the original presumption that the area is not habitable."

Since the OTA report was released, a new government committee has been formed to re-study the habitability question. This Love Canal Technical Review Committee (TRC) includes representatives of EPA, NYSDEC, the New York State Department of Health (NYSDOH), and the U.S. Department of Health and Human Services (DHHS). This group acts as a managerial body, coordinating the many interrelated

In September 1984, a plastic cap covers a 40-acre area at Love Canal.

governmental activities necessary to resolve the complex issues related to habitation of the Love Canal EDA and cleanup and protection of the site.

A second group of non-governmental expert scientists from a variety of disciplines was formed by DHHS and the NYSDOH to develop the criteria upon which the habitability of the EDA could be judged. These scientists have met on several occasions in a public forum in the City of Niagara Falls to discuss the development of these habitability criteria.

Their task is not a simple one. New technologies capable of detecting the most minute amounts of chemicals are being developed and perfected each day. But despite these technological advances, we're still left with the extremely difficult question of assessing risk to humans and establishing habitability policies based upon that risk assessment.

The Human Impact

As for the people of the Love Canal area, their lives have been altered irreparably.

Those living closest to the Canal had to create new lives elsewhere. For those in the EDA, the situation is more complex. Given the choice of selling or remaining, based on available information, the majority left. Each day brings new questions for those who stayed, but the underlying one is: Will this become a residential community again or will it remain an eerie, desolate monument to improper hazardous waste disposal practices? Both those who left and those who remain have become knowledgeable and capable community organizers and lobbyists. They understand the importance of working with the news media to find new ways to express their viewpoints.

For those who stayed, the search for a solution is endless, demanding, and frustrating. They are caught up in a problem without choices as to solutions. Owners of commercial properties in particular feel this lack of choice because they were never given an opportunity to sell their properties to the government. As more families left, churches moved away, businesses closed down, and rental properties sat vacant.

Even those who still believe that living in the EDA poses no additional risk to their health are losing the will to remain. They long for the friendship of a community and the sounds of children playing in the streets. And they need an end to the plaguing question: Did I make the right choice? □

Auto Inspections in the Far North

by Tony Knowles



Alice Puster, The Anchorage Times

As the first step in a concerted effort to stop the deterioration of its air quality, Anchorage is now implementing a vehicle inspection and maintenance program. The residents of Alaska's largest city want the assurance that the air they breathe is safe and will continue to be safe in the future.

Particularly in the winter months, the carbon monoxide level in our air too often exceeds levels of acceptable public safety. The harmful health effects during these periods are clear, particularly for those with lung ailments, pregnant women, the elderly, and for the very young.

Anchorage's immediate goal is to stop any further deterioration of air quality and begin improving the quality during

those times of particular health hazard. Key programs are intended to:

- Implement an acceptable inspection and maintenance program for vehicles;
- Complete planned road projects to increase basic traffic speeds (within safety limits) so engines operate efficiently;
- Increase transit ridership in rush hours to 15 percent of all riders through park-and-ride lots and improved scheduling and routing;
- Promote alternative transportation in congested areas through the use of shuttle buses and improved pedestrian and bicycle facilities;
- Promote railroad commuter service using the state-owned Alaska Railroad;
- Reduce rush-hour congestion by staggering work hours in both public and private sectors; and
- Promote good land use planning to minimize needless transportation.

Under a rooftop thermometer reading of five degrees below zero, traffic inches along a main street in downtown Anchorage. The city's carbon monoxide problem from vehicles is most severe in cold weather.

Concern about air quality in Anchorage and throughout Alaska dates back to 1975 when much of the nation began looking to vehicle inspection and maintenance programs to reduce carbon monoxide emissions. At that time the two largest cities in the state, Anchorage and Fairbanks, were reluctant to participate in such a program in the absence of data indicating benefits under cold weather conditions.

Between 1975 and 1979, various studies were undertaken by the University of Alaska at Fairbanks to quantify the difference, if any, between hot and cold start emissions and to identify the benefits of a vehicle inspection and maintenance program in the far north. The studies were not

(Knowles is Mayor of Anchorage, Alaska.)

conclusive, but they seemed to indicate that Alaska, with its long cold winters, would benefit little from an inspection and maintenance program. It was in light of these inconclusive studies that EPA gave the Alaska Department of Environmental Conservation the equipment and funds necessary to continue studies and, possibly, disprove the initial findings by the university.

This second wave of cold-start research followed EPA procedures to the letter and included over 400 valid tests in Fairbanks.

Owners were offered \$100 bonds, free rental cars and a free fill-up upon return for the use of their vehicles. Because of the extensive testing necessary vehicles were kept for a period of one to four weeks.

The research, which was conducted from 1981 to 1983, determined that there were benefits to a vehicle inspection and maintenance program under cold weather conditions. However, in order to achieve results comparable to inspection programs in warmer climates, the standard tailpipe inspection needed to be supplemented with a check under the hood.

It was also determined that low-level thermal inversions (lids of warm air that trap cold air below) create severe atmospheric conditions in Alaska, the likes of which are not found in many other places. The effect of the inversions, combined with natural geography, created adverse meteorological conditions beyond anyone's control. The inversions are a real problem in Anchorage, which sits in a bowl created by the Chugach Mountains and the Cook Inlet.

In 1983, with the results of the EPA-sanctioned study in hand, Anchorage air quality personnel began to design a vehicle inspection and maintenance program specific to our city. In developing our program, we had the enormous benefit of learning from the experiences of all the programs that had already come on line in other cities, and were able to design a program based on what worked around the nation.

The Anchorage program will utilize the most advanced instrumentation, infrared analysis of exhaust gas, tight controls on testing, and an extensive mechanics manual for use in conjunction with a 40-hour mechanic training course. The internal system of each infrared exhaust gas analyzer is

designed to minimize tampering so customer and station attendant alike are assured of unbiased test results. We have integrated our program with the Alaska State Division of Motor Vehicles to assure timely notification to all motorists and refusal of re-registration without inspection certification.

Our favored option for testing was a centralized program with three or four contracted high-speed test facilities for convenience to the consumer, efficiency of operation, and reduced cost. The Anchorage Assembly opted instead for a decentralized format to allow any interested business or individual the opportunity to participate.

The program is scheduled to go on line July 1, 1985. Approximately 184,000 vehicles registered with the Division of Motor Vehicles in Anchorage will require testing. Between now and July 1, our inspection and maintenance program personnel will be working to guarantee that start-up is as trouble-free as possible. Receiving particular attention at this time are our computer system and its relationship with the State Division of Motor Vehicles; software for our test analyzer must be programmed to meet Alaska standards.

Testing will include all vehicles registered for street use which are 15 years old or newer, gasoline powered, and weigh 12,000 pounds or less unladen. Model year 1975 and newer vehicles will receive both tailpipe and under-hood checks, whereas 1974 and older vehicles will receive a tailpipe inspection only.

In addition, all inspections will be piggybacked with Alaska's first mandatory safety inspection. The safety check will be walk-around only and focus on visible safety defects such as broken headlights and missing wiper blades. Repairs for safety infractions will be voluntary. In the first six months of the program, we will compile data as to the number of unsafe vehicles on our highways and streets, and then consider what action is appropriate.

Public response to the concept of a vehicle inspection and maintenance program has been mixed. Fortunately, Alaska has a significant number of people who work hard to protect the natural beauty and condition of their state. A large number of people feel that an inspection and maintenance program is not enough and that other, more stringent strategies should be applied. They have also offered the administration some excellent ideas in the areas of mass transit, benefits to non-polluters, and incentives to car pool.

On the other hand, there are those individuals who are having a difficult

time accepting the invisible carbon monoxide problem as "real" and even a harder time having government dictate a new program to them. The three primary resistant factors are government intervention, cost, and perceived efficiency of vehicle operation.

Public education is vital to the success of the program. An informed public, one that understands the severity of the carbon monoxide problem (44 exceedances and three alerts during 1984), will be a more supportive public. Our information approach is two-fold. First, we will educate the public regarding carbon monoxide in the air, the associated health risks, and the long-term effects. Second, we will introduce the vehicle inspection and maintenance program as the first element in a planned solution to the problem. We want program compliance, but we also want program understanding and support.

Unfortunately, costs for the Anchorage program are higher than elsewhere. This is due to the generally higher cost for services faced by Alaskans, and the decentralized program format. In order to protect the consumer and in fairness to service station operators, the Assembly placed a \$40 ceiling on the amount a station could charge for inspection. Stations may charge as little as they like, but no more than \$40. A \$10 charge for the actual certificate of inspection must be added. The yearly repair expense ceiling for an unaltered vehicle is \$150. The owner of a vehicle that has been tampered with or altered must pay up to \$150 the first year, \$300 the second year, and \$500 the third year and each year thereafter towards restoration. There is consideration pending of a hardship fund for those that truly cannot afford inspection or repairs.

As we plan the implementation of this program, we're moving forward with the development of an updated Air Quality Plan that will be a call to action. Vehicle inspection and maintenance is only the first step. We are determined to improve our air, protect our health, and maintain the quality of life that is so important to all Alaskans. □

Acting to Protect a Vital Resource

by Robert Kerrey

I've often been surprised by the number of people from other states who think Nebraska, located in the heartland of the United States, is blessed with the most abundant, pristine ground-water resource of any state. In part, that belief is true. The quantity of ground water that underlies Nebraska—perhaps as much as 547 trillion gallons—may be unequaled. That's enough water to create a 34-foot deep lake that would cover the whole state.

Unfortunately, however, those who still believe that Nebraska's ground water is as pristine as it was 20 years ago are mistaken. It is true that the vast majority of our ground water is as pure as it was in our forefather's time, but there are signs that mankind is beginning to take a toll on its quality.

Our state relies heavily on this abundant resource. It supplies drinking water to nearly all our farms and to all but two communities. We use it heavily in livestock production, to irrigate millions of acres of cropland, and for a variety of industrial uses. In fact, Nebraska ranks third in total ground-water usage of all states. No wonder then, that we feel we've got a big

stake in protecting that resource from pollution.

In Nebraska, a growing trend in ground-water contamination is associated with nitrates. In a recently completed study by the Blue River Association of Ground Water Conservation Districts, about 270 rural domestic wells were sampled in June and September of each year from 1980 through 1984. Although most wells were found to be in the safe range (10 parts per million of nitrates or less), a number of areas with higher levels were found. Similar studies conducted by other natural resource districts show that nitrate contamination is fast becoming a major concern in the state. And the Nebraska Department of Health has identified 86 community water supply systems that have had or are currently suffering from high nitrate levels.

However, in recent years, with growing industrialization and more sophisticated, in-depth ground-water testing, other types of contamination are becoming more apparent in Nebraska.

One of the most highly publicized contamination sites is the old Cornhusker Army Ammunition Plant

(Kerrey is Governor of Nebraska.)

A center pivot irrigation system waters a cornfield in southwestern Nebraska. Agricultural chemicals applied through a system like this can contaminate ground water.



near Grand Island. RDX, an explosive compound from the plant, leached into ground water and contaminated 246 wells in the Capital Heights area of the city. Last fall, the city managed to install enough water lines to serve 149 of the affected homes. A temporary dewatering system may be set up this spring so that construction of the remaining water lines can proceed.

At one time, the Army was supplying bottled water to 860 homes. It is still supplying water to those homes that have not been hooked up to the city water supply.

Other ground-water contamination problems involving industrial chemicals have been identified in Nebraska. Carbon tetrachloride has been discovered in four municipal wells that serve the City of Waverly. Municipal wells in the Hastings area have been found to be contaminated with carbon tetrachloride, TCE, and other manmade chemicals. A galvanizing operation at a plant near Lindsay, Neb., has resulted in sulfuric acid leaching from holding pits. Again, a municipal water supply system was contaminated.

All of the sites I've mentioned have been placed on the EPA Superfund National Priorities List.

Situations such as these have helped to focus the attention of the people of Nebraska on the issue of ground-water quality protection. Our state is fortunate not only to have escaped so far the majority of the kinds of ground-water problems that many other states have faced, but to have had the foresight to begin ground-water protection efforts before the problem in Nebraska reaches the magnitude it has in some other parts of the United States.

Over four years ago, the Nebraska Department of Environmental Control began working on the Nebraska Ground-Water Quality Protection Strategy. The plan has already been called a prototype by the EPA and is expected to be used as a tool in the development of strategies for other states.

The Nebraska strategy identifies six major potential sources of pollution: chemical and fuel storage; agricultural chemical use; waste treatment and disposal areas; improper design, installation, and abandonment of wells and test holes; industrial facilities; and accidental spills and leaks during transport of hazardous or contaminating materials.

The ground-water strategy takes a close look at each of the major potential pollution sources and recommends a series of protective measures for each source. The intent of working up these recommended protective measures is to

Tim McCabe, USDA/Soil Conservation Service



Cattle graze in an irrigated Nebraska pasture. The state makes heavy use of ground water for livestock production, irrigation, and drinking water.

give us a framework for developing future Nebraska legislation.

There are two major recommendations in the Nebraska strategy. The first is that the state set up an emergency and remedial response fund for use in situations where no responsible party can be identified and made to pay for cleanup. The second recommendation would create intensive ground-water quality protection areas, or areas where local government agencies would have the ability to help draft more strict ground-water protection requirements. Such special protection areas would be identified by a set of criteria that would take into account an area's dependence upon a specific ground-water source, soil permeability, and other factors that would indicate the area had special need for extra protection.

The Nebraska Department of Environmental Control is working up a timetable for implementation of the various portions of the strategy and expects that full implementation will take about five years.

The efforts of Nebraska have not gone unnoticed by EPA. In January, Nebraska became the first state to receive a federal grant to help protect ground water. The \$100,000 grant will be used to develop programs identified in the strategy. In addition, the University of Nebraska, which has long been involved in ground-

water research, was recently awarded a \$1 million grant from the Burlington-Northern Railroad to aid in its work.

In the current session of the Nebraska Unicameral, the state legislature, a variety of bills aimed at ground-water protection have been introduced. Many of the bills stand a good chance of passage, due to increased public awareness of the numerous ways we could potentially pollute ground water.

Two of the bills deal with chemigation, the practice of applying agricultural chemicals through center-pivot irrigation systems. One is intended to reduce the possibility of ground-water contamination through well back-flow by requiring the proper installation and maintenance of check valves. The second bill would completely eliminate the possibility of so-called back-siphoning, by requiring total separation of the well pump and the flow conduit used for the application of farm chemicals.

Another bill introduced this session deals with the ever-increasing problem of leaking underground storage tanks. If adopted, this bill would provide the authority for a program regulating the underground storage of petroleum and hazardous substances. The bill is written to be consistent with the 1984 amendments to the Resource Conservation and Recovery Act by providing for future state program assumption. This is considered to be an especially important bill in view of the fact that instances of leaking underground storage tanks in Nebraska have doubled in 1984, compared to the previous year.

As Governor of the State of Nebraska, I've targeted water quality as one of the major items of concern in 1985. The budget I recently sent to the state legislature earmarked \$300,000 to aid the efforts of the Nebraska Department of Environmental Control (NDEC). I've also been working with members of the Department to secure additional federal funding for research and for the accumulation of ground-water data and data on potential polluters.

Of course, ground-water quality is also becoming a nationwide concern. The efforts of Nebraska may be somewhat ahead in some respects of those of other states, but the work needed to protect our nation's ground water is certainly well underway across the United States.

It is up to all of us, each person in every state, to think about the water that lies beneath our feet, about the endless ways we are dependent upon that water. We must work collectively to find the measures necessary to protect one of our most valuable resources for ourselves and for generations to come. □

Rounding Up a Dangerous Chemical

by Tom Kalitowski

Thousands of pounds of arsenic and arsenic mixtures have been discovered in hundreds of half-forgotten, unsafe locations throughout Minnesota. This well-known poison can be toxic even in small quantities, and is believed to be carcinogenic as well.

Before the advent of synthetic chemical pesticides, generations of Americans used arsenic for pest control. Now, 40 years later, the leftovers pose a toxic threat. Fortunately, after passage of a state hazardous waste cleanup law similar to the federal Superfund, the Minnesota Pollution Control Agency (MPCA) has been able to begin eliminating this danger that has been overlooked or underestimated for far too long.

Evidence of a problem had been accumulating since 1972, when construction workers drilling a new well in Otter Tail County in western Minnesota began to suffer from a strange kind of "flu." Stomach complaints would develop during the work week but disappear on weekends, only to recur on Monday. Eventually, a doctor diagnosed the "flu" as arsenic poisoning, but not before several workers had been permanently injured. The new well was tested and hastily capped after analysis showed it to be severely contaminated with arsenic.

In 1975, a Clay County farmer lost five head of cattle from a mysterious illness. His detective work revealed that a scrap iron pile contained an old wooden keg from which the cattle had been licking up pure lead arsenate. When, in 1980, 12 cows on a farm near Two Harbors died after getting into an old shed used to store arsenic-laced grasshopper bait, people began realizing that the isolated incidents might be a small part of a much larger problem. The MPCA began to collect reports of buried or stored arsenic, but the agency at that time had no money or mechanism to deal with the emerging problem.

The arsenic had come from a U.S. Department of Agriculture (USDA) program conducted in the late 1930s and early 1940s. In those Depression years, grasshoppers were a serious pest in the Midwest, causing disastrous damage to crops. The USDA provided

arsenic (\$1.9 million worth in Minnesota) for local governments to distribute to farmers. The arsenic was then mixed with water and molasses and either bran or sawdust, making a sort of poison granaola which was used as a grasshopper poison.

Eventually the grasshopper plague subsided, and better insecticides came into use. No one knew what to do with the leftover arsenic and bait. Some people buried it. Others stored it in a shed or barn, or in the attic, and then forgot about it. Some people even recycled it as insulation, spreading it in the walls or on the ceilings of buildings.

In the late 1970s, people became generally aware of the serious consequences of toxic leftovers, and the federal Superfund was enacted in 1980. However, it was apparent that some hazardous waste sites in Minnesota, including many of the arsenic caches, would never qualify for federal funds, and few responsible private parties would be willing or able to deal with the problem. (The arsenic was, after all, left over from a government distribution program.)

Then, in 1983, Minnesota legislators enacted a state Superfund law, making it possible for the MPCA to clean up the arsenic and other "orphan" hazardous waste disposal sites.

At that time, the old arsenic disposal sites were known to number more than 70. Three burial sites had been studied and became individual state and federal Superfund projects, but the remaining burial sites and the arsenic stored above ground could not be handled in the same way. They became known as the "generic" arsenic sites. Certain that many sites had not been reported, the MPCA developed a large-scale publicity campaign to encourage state residents to report burial or storage sites to the agency.

The MPCA printed posters that were placed in libraries, seed and feed stores, and city and township halls. Articles were distributed to newspapers, county agricultural agents, farm journals, and the newsletters of electrical co-ops and other organizations. The electronic media picked up the story and reported it throughout the state.

The calls began to pour in. A farmer recalled his father burying some bags of grasshopper poison. The purchaser of farm property found burlap bags of sawdust spilling out onto the dirt floor

of a shed. A dusty box of unmixed arsenic was noticed resting on a shelf.

By the end of the year, the MPCA had a list of more than 220 above-ground storage sites and 60 burial locations. Numerous callers also reported the unexplained deaths of pets or livestock. Several larger sites also were reported and were cleaned up by responsible parties.

By late in the summer of 1984, the agency's contractor began visiting each location to evaluate the nature and quantity of the arsenic or bait mixture. Small, easily identifiable quantities were collected on the spot.

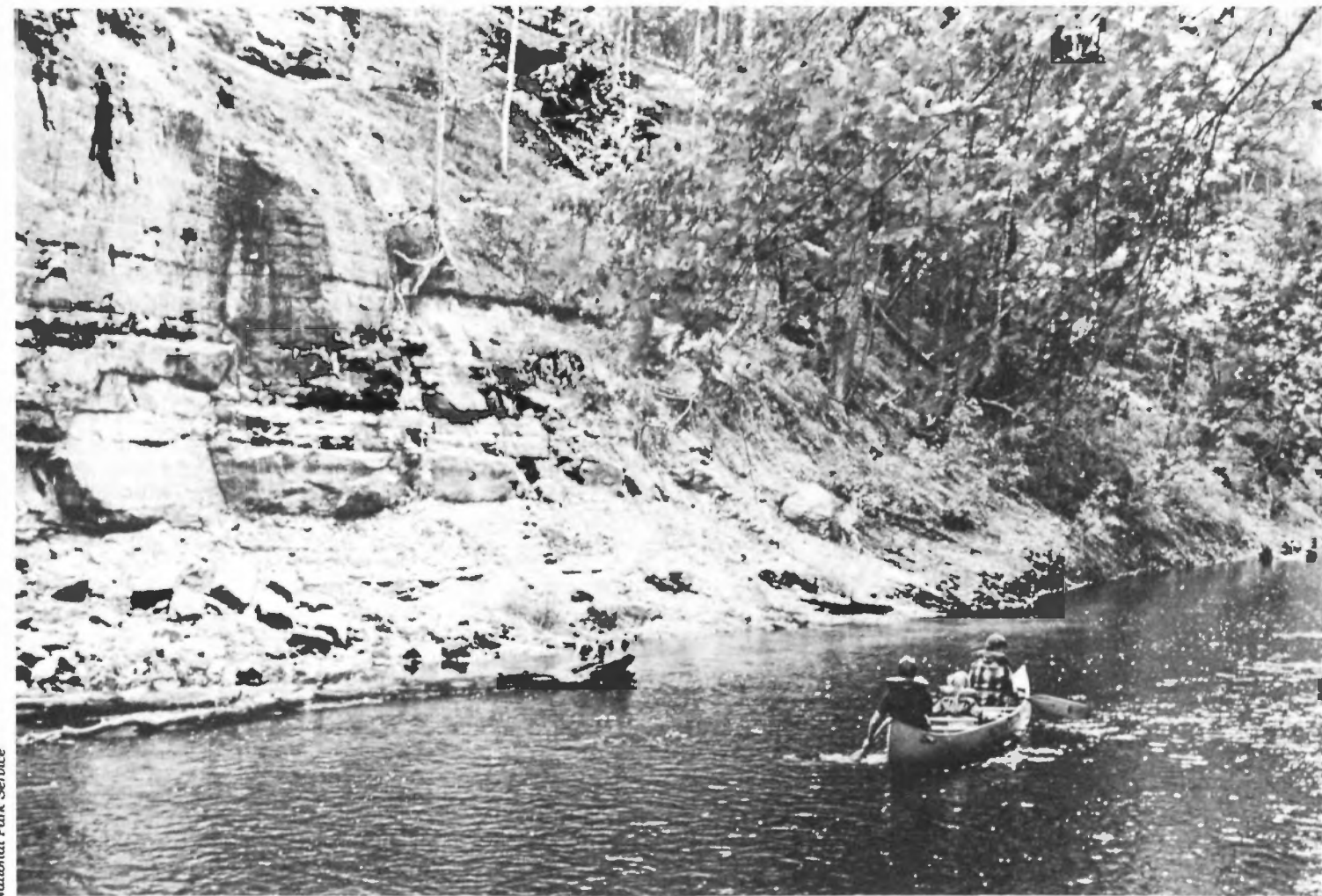
Where boxes or bags had deteriorated in the many years of storage, workers repackaged the arsenic or bait in safe containers. Dressed in protective clothing, they found it difficult to keep citizens from helping them by carrying the poison in their bare hands. "Why, we played on those bags when we were kids," they were told.

Workers vacuumed arsenic-sawdust bait out of the walls and off the ceilings where it had been used for insulation. At one site, an insulated building was being used as a chicken coop. Apparently healthy chickens pecked the ground within inches of the toxic materials.

By the end of 1984, the agency's contractor had collected approximately 3,000 pounds of "pure" arsenic. An estimated 20,000 pounds remains to be collected and the MPCA believes another 20,000 pounds of arsenic bait mixtures must be safely disposed of. The MPCA is investigating alternatives for recycling, treatment, or disposal. Review of the reported burial sites indicates that nearly 10 merit detailed site investigations, based on the amount of arsenic believed to be buried or its proximity to drinking water wells.

So far, the MPCA has spent nearly \$500,000 of state Superfund money on the generic arsenic sites. Whether all the stored or buried arsenic has now been reported is unknown, and more action will be needed in the future, certainly, to deal with other hazardous materials quietly accumulating in homes across Minnesota. Still, the arsenic removal project has been an important and satisfying step in resolving problems resulting from past disposal practices. The MPCA was able to directly help individual Minnesotans who literally were left holding the bag. □

(Kalitowski is Executive Director of the Minnesota Pollution Control Agency.)



National Park Service

An Extra Effort Wins Water Quality Payoffs

by Jeff Smoller

Wisconsin's license plates announce to all that the state is "America's Dairyland." It's a popular myth that cows outnumber people.

It's no myth, however, that in addition to milk and cheese, water is an important commodity in both rural and urban Wisconsin. The waters of the Great Lakes and great rivers like the Mississippi, Wisconsin, and Fox have had much to do with the social, cultural and economic development of the state.

In part because of water's importance to Wisconsin's recreational, agricultural and industrial economies, the state saw its responsibility to clean up pollution at a relatively early date. In the late 1950s and early 1960s, governors like Warren Knowles, a Republican, and Gaylord Nelson, a Democrat, focused public attention on conservation and environmental issues.

With water pollution cleanup often linked to enhanced recreational opportunities, governor-sponsored

funding programs—utilizing bonds, a cigarette tax, and other revenue—received widespread public support. Labor and business as well as hunting, fishing, youth, and women's groups supported legislation and referendum questions establishing the programs.

But tens of millions in state dollars committed to water cleanup through the early 1970s notwithstanding, Wisconsin still found itself short of its water quality goals.

So in 1978, at the initiative of acting Governor Martin Schreiber, the legislature passed the Wisconsin Fund, a tax-supported grants program to bring municipal wastewater treatment systems into compliance with the Clean Water Act's July 1, 1983, deadline.

Clean water was the legislature's primary goal. But the state also was aware of the need to capitalize on the availability of federal matching funds—without which the desired cleanup could not take place. And it wanted to carefully manage the timing and direction of Wisconsin's design and construction process.

(Smoller is Information Director for the Wisconsin Department of Natural Resources.)

Canoers paddle along the St. Croix River, designated as a national scenic riverway. The riverfront town of Hudson, Wisc., improved its wastewater treatment with help from a special state fund.

"Wisconsin has had a remarkable environmental record because of the collective will of its people to keep our state a special place in which to live and work," recalls Wisconsin Governor Anthony Earl.

But back in 1978, when Earl was the chief officer of the Department of Natural Resources (DNR), he "wondered how close even Wisconsin could come to the commendable clean water goals Congress established for the states."

Earl needn't have doubted. On June 30, 1983, Earl's DNR successor, C.D. Besadny, announced that nearly all of the state's communities would meet the wastewater discharge limits of the federal Clean Water Act. Of 570 municipal wastewater treatment plants, about 90 percent were in compliance with their permits. The same could be said of about 95 percent of the 1,040 industrial dischargers, most of whom met an earlier 1977 deadline.

The handful of communities not in compliance—many through no fault of their own because of construction and other delays—were given extended deadlines of December 31, 1985, although only about 15 will need that long. In the case of Milwaukee—the state's largest city—a court-ordered schedule will result in compliance long before the 1995 termination date of a \$2.1 billion water pollution construction program.

There is general agreement that the progress toward the 1983 goals made by most Wisconsin communities—and the progress Milwaukee is now making—would not have been possible without the Wisconsin Fund.

Public leaders realized, at an early date, that funding of water pollution control improvements required strong public support. Initially, they drew upon the state's historic conservation ethic, advanced by writers such as Ernie Swift

and Aldo Leopold. But they soon realized that gaining support for a costly cleanup effort would take more than conservation rhetoric.

So the leaders did the obvious: they pointed out that in Wisconsin, clean water and jobs go together, that when water quality was protected in Wisconsin's North Woods, the state's tourism was protected, too; that in the hilly southwest, proper wastewater treatment meant security for dairy foods and milk processors; and that in the rich soils of the central and eastern counties, clean water was essential to vegetable processing.

With public support, the Wisconsin Fund Point Source Program was enacted with little difficulty. The program parallels the federal grant program and covers up to 60 percent of the cost of constructing or upgrading wastewater treatment facilities. Eligible communities receive grants in three steps.

Step 1 grants finance the planning of the facility; Step 2 grants supplement the cost of designing the facility; and Step 3 grants finance a major portion of the actual construction. Since 1980, Wisconsin Fund appropriations have exceeded appropriations from the federal grants program. More than 200 municipalities have received Step 3 grants since the Fund was created. More than \$786 million of state funds have been committed to wastewater treatment since 1978.

The state is looking beyond the Wisconsin Fund, assessing ways to maintain the wastewater treatment facility investment that has already been made and to address other important water quality problems, like nonpoint source pollution.

There was increasing concern about maximizing sewage treatment plant operations not only to maintain the facility but also to achieve water quality goals. The Wisconsin Department of Natural Resources initiated an operation and maintenance technical assistance approach that saved municipalities money and yielded higher quality

discharges. This approach is part of a program to maintain compliance so as to prevent a recurrence of the widespread inadequate or degraded treatment systems that once existed.

In another example, the legislature in its 1983-5 session passed ground-water protection legislation. Because of the relationship between sludge disposal methods and ground-water quality, the state is promoting and facilitating the safest possible land disposal methods.

Since the Wisconsin Fund is slated to expire in three years, the legislature is expected to give in-depth consideration to the state's continued role in wastewater facility construction and financing.

As in many other states, the demands of numerous legitimate interests are forcing difficult and oftentimes unhappy choices. Yet, because Wisconsin has been there before—and confronted its responsibility head-on—there is optimism that solutions will be found. The realization that water is important to the state's economic future is part of it. Another part might be the ghosts of luminaries like "Fighting Bob" La Follette, whose values and respect for the citizens' collective rights continue to be embraced on both sides of Wisconsin's political aisle. □

A New Tactic Against Hazardous Waste

by Robert E. Hughey and Anthony J. McMahon

Negotiations with representatives of the Ford Motor Company were progressing slowly.

In 1982, ground-water contamination had been found at the company's defunct manufacturing facility in Mahwah, N.J. Additional monitoring the following year had confirmed the existence of a problem. Further sampling would be needed to pinpoint the source and extent of the contamination. It looked like actual cleanup could not begin for at least several years.

Then, in April 1984, New Jersey's newest environmental protection tool was put to its first full test. By mid-September, Ford had completed several rounds of soil and ground-water sampling, and the New Jersey Department of Environmental Protection (DEP) had approved a full cleanup plan. In addition, Ford had provided the Department with financial assurance equaling the estimated cost of cleanup, \$4.3 million.

The surge of activity and sudden willingness of the company to provide the monitoring and cleanup can be directly attributed to the implementation of New Jersey's Environmental Cleanup Responsibility Act (ECRA).

Law Requires Environmental Audits

ECRA entered the New Jersey lawbooks in September 1983, with an effective date of December 31, 1983. Its purpose: to determine the environmental acceptability of properties, establish responsibility for remedial actions at contaminated sites, and assure potential buyers that the property they are purchasing is free of significant contamination.

(Hughey is Commissioner of the New Jersey Department of Environmental Protection, and McMahon is Chief of the Department's Bureau of Industrial Site Evaluation. The Bureau was created to implement the program described in this article.)

Texaco, Inc.



Under the new law, industrial establishments must provide the Department with what is essentially an environmental audit of their facility before ownership of the plant or property can change hands or the plant can cease operations.

If, on the basis of this environmental review, the company finds that its industrial establishment is free of hazardous wastes and substances, it may submit a "negative declaration," stating either that there have been no discharges of hazardous wastes or substances on the site or, if there have been such discharges, that they have been dealt with in a manner consistent with environmental concerns.

The Department then conducts a review of the facility, including an on-site inspection. If it agrees with the company's findings, the negative declaration will be approved and the transaction which triggered the review may be finalized. If, however, it finds

An aerial view of the Texaco Eagle Point plant in Westville, N.J., where petroleum has contaminated soil and ground water. Before Texaco can sell the site, it must get state approval of a cleanup plan.

that the site is not environmentally acceptable, the company must develop and implement a Department-approved cleanup plan. The company must also provide financial assurance for the full estimated cost of the cleanup plan.

Strict Penalties

The unique driving element of ECRA is its penalty section. The law provides three possible penalties.

First, fines up to \$25,000 per day per violation may be collected, and anyone who knowingly gives false information under ECRA may be held personally liable for the penalty.

Second, the Department is authorized

to void any sale where the selling party fails to submit a negative declaration or cleanup plan.

Finally, the purchaser may void a sale for any violation of ECRA and may recover any damages.

This means in effect that no industrial establishment can be sold without first complying with the law. Given the possible voiding of the sale, title companies will not insure titles and banks will not lend funds unless Department approval has been gained.

The new law does not apply in all cases. According to its three-part applicability test, there must first be a transaction: a sale, transfer, or closing. Second, the facility must be classified in one of a number of major manufacturing categories listed in ECRA. And third, the company must be engaged in operations which involve hazardous wastes or substances.

In all, approximately 23,000 companies in New Jersey are subject to ECRA. Each year between 700 and 1,000 of these facilities are expected to be sold and therefore reviewed under the law.

There was initial concern that the law would disrupt industrial real estate transactions and discourage investment developers in the state. Clearly, this has not happened. In fact, we are seeing the reverse. In at least two cases, the ECRA program was responsible for laying the foundation for major economic development and reinvestment efforts in otherwise vacant and abandoned industrial complexes.

One such case involved the Singer Company facility in Elizabeth, N.J. The company had formerly manufactured industrial sewing machines at the 106 acre site. Then, in 1983, the New Jersey Economic Development Authority became interested in redeveloping the complex as an urban industrial business facility.

The Authority's plan was nearly scrapped when it was discovered that the site and buildings were contaminated with high levels of polychlorinated biphenyls (PCBs), petroleum hydrocarbons, and volatile organics.

Under the ECRA program, Singer moved quickly to develop a detailed cleanup plan, which the Department approved last July. The cleanup, which will cost over \$1.2 million, includes the following remedial actions:

- Excavation of soil contaminated with up to 350 parts per million (ppm) of PCBs;
- Excavation and disposal of underground storage tanks;
- Cleaning PCBs (up to 8,000 ppm) from building floors, walls, and ceilings.



Pre-Crisis Intervention

New Jersey has been blessed with some of the most progressive environmental legislation in the United States. But traditional environmental legislation focuses primarily on two areas.

Permitting programs typically lead to scrutiny of new or modified discharges or emissions before they begin, while traditional environmental law leads to enforcement after environmental problems have become visible or public health has been threatened.

ECRA differs from these situations by providing pre-crisis examination of industrial property prior to the emergence of significant problems. In case after case, environmental problems have been detected and corrected on-site before they developed into threatening situations, before unwitting buyers worsened a problem, before economic development efforts turned into economic disasters, before innocent employees of the new owners of an industrial property suffered health effects, and before public monies were required for cleanup.

For example, at the Midland-Ross facility in Somerset County, N.J., an underground waste oil and solvent tank was checked for leakage only because the property was involved in the ECRA process. The tank failed the test. It was excavated and the company discovered that the fill pipe had never been properly connected to the tank. Soil sampling confirmed that the oil and solvent contamination had reached bedrock. Ultimately, ground-water monitoring wells were installed and the contamination detected in the aquifer matched the tank contents and soil contamination on site.

Finding and remedying this dynamic pollution plume was critical to rural

A 20,000 gallon underground storage tank leaking fuel oil was removed from the Stokes Molded Products facility in Trenton, N.J. Under a new state law, industrial establishments cannot be sold unless they meet certain environmental standards.

Somerset County, where many residents get their drinking water from private wells. Under the ECRA program, the expanding subsurface contamination plume was identified and a cleanup plan quickly implemented, preventing contamination of local water supplies.

In the first year under the new law, over 100 properties were involved in ECRA-generated cleanup actions. These ranged from removal of a few drums or a small amount of soil to such major efforts as those required at the Ford and Singer sites.

ECRA was the next logical step in New Jersey's continuing efforts to protect public health and the environment from hazardous materials. It fixes accountability for environmental contamination on the responsible parties at a time when they can be easily encouraged or, if need be, compelled to eliminate the problem. The legal powers provided to the state under ECRA are powerful. The ability of either the Department or an unsuspecting buyer to void the sale of real estate has left no doubt about this state government's commitment to proper hazardous materials management and to the rapid correction of problems. □

Ideas to Improve State/Federal Relations: A Forum

How could state/federal relationships in environmental protection be improved? This is a question of key concern as federal, state, and local governments try to solve environmental problems that often involve many agencies, legislatures, and a wide spectrum of the public. EPA Journal asked this question of five leaders who observe environmental affairs and intergovernmental relations from different vantage points. Here are their answers:



William K. Reilly
President
The Conservation Foundation

The past fifteen years have witnessed a grand experiment in environmental cleanup involving numerous federal-state-local partnerships and billions of dollars earmarked for abating pollution. Although the nation can point to some significant achievements, progress has not come easily. As federal, state, and local governments have sorted through their appropriate roles, environmental programs have operated with an ever-present tension—a tension between the need for intergovernmental cooperation to get the job done and the conflicting interests of different levels of government. At times this has been constructive, with parties challenging each other to perform better. Other

times it has been destructive, with fights over turf and money consuming everyone's energy.

Within recent years, there have been encouraging signs of intergovernmental dialogue on long-festering problems. Task forces of federal and state officials, for example, have drafted guidelines for federal auditing of state air quality programs and have discussed protocols for sharing enforcement responsibilities. EPA's nascent experiments in negotiated rulemaking have passed some early hurdles.

The initial success of these and other experiments in cooperative problem-solving suggest the time is right to try new roles for partnerships in responding to ever-more challenging environmental problems. While in the 1970s, the federal government often dictated requirements to state and local governments, in the '80s and '90s we are likely to see far more give-and-take in determining policy. We are recognizing the value of "policy dialogues" in bringing together diverse interests, including government at all levels, to frame mutually acceptable responses to policy questions before positions become too sharply defined or polarized.

An example is the new National Groundwater Policy Forum, organized by The Conservation Foundation and the National Governors' Association, and chaired by Governor Babbitt of Arizona. Ground-water contamination is a challenge of the first order for intergovernmental relations. Some states and localities have enacted ground-water protection statutes, but most communities remain uncertain about their role, their authority, and the ultimate federal and state leadership. In this Forum, leaders in industry, environmental groups, science, law, and engineering are working with three governors and other state and local officials to build consensus on a strategy for addressing the country's increasingly serious ground-water problems. These discussions include the division of responsibilities among different levels of government.

Partnerships will not solve all the tensions inherent in a system of environmental policy-making that necessarily involves different levels of government and different sectors of society. But with a stalemate in Congress on reauthorization of key environmental laws, due in large part to the standoff between environmental and industry groups, new ways of framing policy options seem not only desirable but necessary to further environmental progress.



Anthony Earl (D-Wis.)
Governor of Wisconsin
Chair, Energy and Environment
Committee
National Governors' Association

Subtly and slowly, the relationship between EPA and the states has been changing from one of contention to one of program coordination and cooperation. It is in everybody's best interest to continue the trend. Nevertheless, some concepts are difficult to overcome and some perceptions and practices still inhibit orderly cooperation.

To a large extent, the early relationships between individual states and EPA was shaped by a mixture of fact and mythology. Laws and administrative practice were adopted encompassing these perceived values and beliefs. Early on, states were perceived as being not as attuned to environmental necessities as was the federal government and not having competent personnel to run the difficult program assignments, and it was believed that states, especially as represented by governors and legislators, would compromise the integrity of environmental laws if local political considerations intervened.

In a like manner, states believed that federal agencies were out of touch with reality, that Congress was not serious about the laws that it passed, and that standards established in federal agencies could not be managed in the field. Today some of the descendants of these myths remain, but in order to continue the development of cooperative management, they must be laid to rest.

As a partial prescription for improving the health of the EPA/state relationships, a number of ailments still need attention and a set of roles should be considered.

Federal agencies need to acknowledge that they do not necessarily have the inside track on the total body of knowledge on a subject. States need to understand that they are not the sole preservers of federalism. To this end, increased joint management understanding should be promoted with contacts occurring at all staff levels, well before final policies are approved. True

cooperation in management requires continual communications at all levels.

Federal and state personnel need to be reminded that they did not create environmental awareness and that their actions alone will not save our environment. Both federal and state actors in the management process must exhibit trust in the professional integrity of their counterparts so as to allow fruitful discussions and debates on policy and management. All should remember that solutions conceived are not necessarily divinely inspired.

In any advanced bureaucracy, reporting and accountability are always present. Frequently the level of reporting becomes out of proportion to its worth and value to program administration. Personnel at all levels must guard against the natural tendency to load up accountability with heavy doses of meaningless statistics. Federal agencies in particular need to restrain themselves from using their natural desire to always have information to answer any conceivable congressional inquiry as a license for requiring massive amounts of statistical reporting by the states. Management information is useful when it aids in the management of a program. In a joint, cooperative management setting, both the states and EPA should examine the value of data before requiring its collection.

With these ailments addressed, the course of EPA/state relations can continue to improve. But a few role models seem appropriate as a guide.

- EPA should assume responsibility and aggressive leadership in major research areas and in the identification of new environmental problems.
- EPA should lead standard setting, but should involve the managing states in technical discussions and policy analysis.
- EPA should provide financial and technical assistance to state and local agencies, especially where issues are of overriding national interest.
- Federal agencies should seek to assure uniform national enforcement. State agencies should take primary responsibility for general enforcement.
- EPA should carry out general program operations only when state or local administration is not possible or feasible.
- States ought to manage the vast majority of all environmental programs, coordinating these operations with specific state laws and regulations.

● New and revised environmental legislation should more fully recognize the management partnership between the states and EPA so that both are assigned specific responsibility and authority, and are held appropriately accountable.



Betty J. Diener
Secretary of Commerce and
Resources
State of Virginia

For the most part, the Virginia-EPA relationship is working well. Several major improvements are still necessary, however, if we are to achieve the kind of partnership needed to truly protect our environment.

One of the most serious roadblocks to achieving this partnership results from critical delays by EPA in establishing key national environmental regulations. For example, repeated delay in the issuance of guidelines for organic chemicals in industrial effluents and final chlorine standards hampers our efforts to develop an effective comprehensive program to manage state water quality. These delays also make fiscal planning difficult under Virginia's biennial, balanced budget system. These delays are not entirely EPA's fault; however, EPA could significantly reduce this problem by being more flexible in using results-oriented standards rather than detailed process-oriented regulations. Tell us the specific goals we want to achieve, not every detail of how to achieve them.

Another strain on our relationship is the approach EPA takes to ensure state compliance with federal regulations. In some major programs, EPA seems reluctant to show real trust. I believe that on any given program, EPA should first work with states to reach a common understanding of objectives and to ensure that the states' programs are established in accord with appropriate federal statutes, including proper procedures and adequate funding. Then, except for periodic and meaningful audits, EPA should allow states to tailor programs to meet their individual needs.

This is well illustrated by the Chesapeake Bay Program, a joint effort by EPA, Pennsylvania, Maryland, Virginia, and the District of Columbia. A conflict surfaced in negotiations over how states should use EPA funds. EPA insisted that the funds be used primarily for reducing nonpoint source pollution. That may have been appropriate from an overall multi-state point of view; however, in Virginia we had adequately funded nonpoint source programs. Our need was in dealing with pollution from specific point sources. Unnecessary delays and aggravations could have been avoided if EPA had concentrated on coordinating states' efforts to ensure progress toward a common goal, while leaving the specific use of funds to be decided based on each state's understanding of its needs.

Virginia and EPA can also enhance the development of an environmental partnership by constant attention to day-to-day working relationships at all levels. A lack of consistency in responses from different departments, slow response times, and delays in answering requests are problems that occur in any bureaucracy, whether at the federal or state level. Individually these may be minor, but they are a source of frustration when they persist. There is a need for constant managerial vigilance and for a commitment on both sides to minimize such problems.

The states and EPA have, generally, a good relationship which can be made even better; but improvement will require the attention, in all the areas I've mentioned, of top officials and staff alike, on both sides.



Phoebe A. Chardon (R-N.H.)
Assistant Majority Leader
New Hampshire House of
Representatives
Vice Chair, Natural Resources and
Environment Committee
National Conference of State Legislatures

As a member of the New Hampshire House of Representatives, I believe there must be more involvement of state

legislators in EPA programs; the key to expanded legislative involvement is improved communications. State legislators are the first on the firing line with the general public. We are often required to interpret state and federal laws and programs to the citizenry. We're the ones called upon at town meetings to explain state and federal policy on air standards and solid waste.

In addition, state legislatures must pass specific legislation in order to implement federal policies, or must appropriate state funds to continue programs begun with federal seed money. For example, if a state revolving fund concept is adopted when the Clean Water Act is reauthorized, a number of states will require additional legislative action, and many may need to modify state laws to implement requirements related to leaking underground storage tanks. Despite the importance of keeping state legislators informed on such EPA programs, the agency seems to be making no major effort to involve them. Yet, participation by state legislators in environmental problem solving is vital; successful, long-term implementation of federal programs may depend upon it.

In the last annual report of EPA-Region 1 (New England), Administrator Michael Deland mentions the importance of re-establishing relationships with EPA constituencies: the congressional delegation, governors, state environmental directors, environmental and business organizations, the media, and citizens. In the report of the Director of Government Relations in Region 1, members of Congress, governors, and other senior officials are mentioned. Nowhere could I find mention of relationships with state legislatures.

EPA has initiated some attempts to involve state legislatures, such as, for example, a grant to the National Conference of State Legislatures for providing information on the 1984 amendments to the Resource Conservation and Recovery Act, but as the total lack of mention in the Region 1 report makes evident, far more needs to be done.

In New Hampshire, a Legislative Water Resources Management Committee is studying the intrastate institutional arrangements for managing water supply. In the absence of a comprehensive management plan, New Hampshire has an incomplete approach to the water programs which have evolved to a great extent through participation in federally funded activities. The legislature has been slow in delineating policy and exercising its oversight responsibilities, and meager in its financial support, and the situation

has been exacerbated by lack of knowledge about federal program grants. If New Hampshire legislators had been briefed in detail as federal environmental grant programs developed over the years, the gaps in our existing programs might well have been avoided. Improving communications would bring improvement in complementary state and federal environmental programs.

In summary, states and the EPA are working well and productively to achieve their mutual goals of protecting public health and the environment, but there are still areas in which relations can be improved. Improved two-way communication between EPA and state legislatures will bring greater legislative involvement. This, in turn, should improve prospects for full state support of EPA programs.



Peter Galbraith
Chief, Bureau of Health Promotion
Connecticut Department of Health
Services

The relationship between EPA and state health departments is improving, but still has a long way to go. EPA Administrator Lee Thomas, in recent meetings with state health officials, has given us good reason to be optimistic about the future of this relationship. His support of the liaison group involving EPA and state health officials is evidence that this optimism is well-founded.

In the past, EPA and state health departments have not tended to collaborate in a meaningful way. From my perspective, the EDB in food episode highlighted this gap. EPA performed the risk assessment and the process of developing guidelines with minimal input from risk assessment experts in the various states. As a result, some states found themselves publicly pressing for stricter standards than those imposed by EPA.

The Centers for Disease Control (CDC), on the other hand, has a long tradition of working closely with state health departments. Under

extraordinarily few circumstances would CDC implement investigations or programs without prior consultation with the state epidemiologist or state health officer. This is a model to be emulated.

Even though the Association of State and Territorial Health Officers has an ongoing committee that addresses critical issues with EPA, serious communication problems continue to surface. For example, EPA has a pilot air toxics strategy being implemented in fourteen states. Potentially, they could come up with fourteen different mechanisms for dealing with acrylonitrile, the carcinogen currently under discussion. How then do you explain the health effects and different approaches to the citizens of each state, especially if they read about the varying approaches in national media or hear about them through the broadcast news media?

Addressing concerns related to asbestos is another area where EPA acts independently with results that are less than ideal. It is not uncommon for EPA to do asbestos investigations without any prior notice to a state health official. Not only can this sometimes cause unwarranted anxiety, but the failure to work with local officials negates the opportunity for meaningful followup by those officials where the investigations find that a problem exists.

Regardless of one's philosophy of government, it makes no sense for state health departments to be doing the research required for setting individual drinking water standards. Clearly, this should be the function of a central government agency while the states should focus on identification of contaminants and appropriate solutions. Reasonable people can disagree as to who should set the final standards; nevertheless 50 different states ought not to be doing the data collection and analysis. Without adequate technical support (lacking in a number of states) and in the absence of federal standards, you indeed could have a different kind of standard in some states—one which accepts whatever level of a particular contaminant is present.

The prospects for improved relations are, however, excellent. But it will take an ongoing commitment from state health officers—which has been made through the establishment of the Association's permanent Committee on the Environment—and an equal commitment on the part of the EPA management to get the word out about this needed working relationship to their various programs and regional offices. □

Old-Time Heat Source Yields New Pollution

by Tom Super

Ask any child roasting a marshmallow in front of a fireplace on a cold winter's night. Ask Sigmund Freud, who believed that staring at fires is one common human response to the mystery of the unconscious. Ask the thousands of outdoorsmen who cut their own wood and thus are twice warmed. Or ask the millions of American families who bought wood stoves over the past decade in order to free themselves from the tyranny of skyrocketing oil, gas, and electricity prices. There is a special magic in that wood fire burning in the den or living room.

But those same wood stoves and fireplaces heating so many American homes are also heating up tempers in some parts of the country. As more and more people turn to wood as an alternative source of residential heat, their neighbors are beginning to complain about smoke and the smell. They are pointing to scientific evidence linking wood smoke to human health problems such as emphysema, chronic bronchitis, asthma, and cancer. In some communities, nuisance complaints and health concerns have led local governments to survey the extent of local wood-burning, estimate its effect on local air quality, and pass ordinances to reduce the air emissions from wood stoves. Despite all the apparent benefits, the combustion of wood in American homes is being scrutinized and—in some places—regulated as a potential threat to public health.

The current popularity of wood stoves and fireplaces in fact reflects only partially their former predominance as sources of residential heat. During the 18th and 19th centuries, wood was the main—and in some places the only—source of heat for American homes. Toward the end of the 19th century, wood began to be replaced by coal, gas, and oil, but even as late as 1940, over 20 percent of U.S. households used wood as their primary source of heat.

(Super is a writer and consultant to EPA's Office of Air and Radiation.)



Craig Blount for Wood 'n' Energy Magazine

Smoke from wood burning stoves rises from the chimneys of a house in New Hampshire.

After World War II the combustion of wood in U.S. homes declined dramatically. By 1950, only eight percent of U.S. households burned wood as their primary source of heat. By 1960, that number had dropped to four percent, and by 1970 to two percent. Over the course of 100 years, wood's contribution to U.S. residential heating had fallen from virtually 100 percent to virtually nothing.

Then in 1973 the flow of oil from the Middle East to the United States was embargoed temporarily. World oil prices

started to climb; by 1980 the price of a barrel of oil had increased by a factor of ten. Americans were shocked to find that the prices of fuel oil, gas, and electricity—the major sources of residential heat—were rising almost as fast. Some people dusted off their old wood stoves, and many more bought new ones. By 1980 wood stove sales in the United States exceeded two million units per year, and the number of U.S. households using wood as a primary source of heat was again approaching four percent of all homes.

Over the last few years the world price of oil has leveled off, and so have sales of wood stoves—down to about one million units per year. Yet because of their long useful lives (fifteen years or more), more and more air pollution will be emitted by wood stoves in the years ahead. And that air pollution is raising serious health questions in many parts of the country.

Wood stoves emit three main kinds of air pollutants: particulate matter or total suspended particulates (TSP), carbon monoxide (CO), and polycyclic organic matter (POM). Because the first two—TSP and CO—are criteria pollutants for which National Ambient Air Quality Standards have been set, EPA tracks total national emissions of those pollutants by various sources. Those national emissions data tell much the same story as the fluctuations in the world price of oil.

Particulate emissions from residential wood combustion declined from 0.38 to 0.33 tons per year (TPY) between 1970 and 1973, and then climbed to 0.89 TPY by 1982. In other words, TSP emissions from residential wood combustion increased by over 250 percent from 1973 to 1982. Whereas in 1970 residential wood combustion contributed only two percent of total national particulate emissions, in 1982 it contributed 12 percent. By 1982 residential wood combustion was the cause of almost as much airborne particulate matter as all U.S. coal-fired power plants, and more particulate matter than the coal mining, metallic ore mining, iron and steel, cement, and pulpwood industries combined.

The recent trend in national CO loadings is almost as striking. In 1970, residential wood combustion contributed only about two percent to total national CO emissions, while in 1982 it contributed more than seven percent. By 1982 wood stoves and fireplaces were emitting more CO than all U.S. industrial processes combined.

There are no similar trends data for POM. However, EPA estimates that wood stoves now contribute about 40 percent of total national POM emissions. Because of the sharp rise in the number of wood stoves in operation, POM emissions from those sources undoubtedly have increased over the past decade.

National data on wood stove emissions do not illuminate the most serious health concerns related to wood smoke, concerns which are being raised in a number of cities and towns across the country. Where large numbers of wood stoves have been installed in mountain valleys subject to periodic air

inversions, wintertime wood smoke has caused local governments to take actions which the community at large has considered to be necessary to protect public health.

For example, in Missoula, Mont., wood burners are asked to shut down their stoves and fireplaces when winter air quality begins to deteriorate. A city ordinance prohibits wood fires when air quality standards are exceeded, or when meteorological conditions are likely to cause exceedances. Similar voluntary and mandatory wood-burning curtailment ordinances have been passed in Juneau, Alaska; Medford, Ore.; and Reno, Nev. Albuquerque, N.M., has instituted a voluntary wood-burning curtailment program that is triggered when high levels of CO are measured. In Aspen, Colo., all fireplaces must be equipped with glass doors and an outside source of combustion air, and only one stove or fireplace may be installed in a new structure. New residences in Vail, Colo., are limited to one wood stove. In Beavercreek, Colo., wood stoves are prohibited altogether.

Some communities have recognized that to the extent that home heating requirements can be reduced, wood stoves will burn less wood and thus emit less pollution. For instance, in Crested Butte, Colo., homes with wood stoves are subject to stringent insulation requirements. In Medford, Ore., residents installing new wood-burning stoves must meet minimum weatherization requirements, and all wood-heated homes must meet the same requirements prior to sale or rental.

States with widespread wood smoke problems also are beginning to act. Oregon's legislature has passed a wood stove certification program requiring that all stoves sold in the state after July 1986 meet a state-defined particulate emissions limit. The Colorado State Environmental Commission has been authorized to establish the same kind of wood stove certification program. Colorado's program is scheduled to go into effect in July 1987.

At the federal level, EPA has just begun a process to determine the feasibility of setting emission limits on all new wood stoves manufactured or sold in the United States. If a New Source Performance Standard eventually is applied to wood stoves, by the 1990s wood stove emissions of TSP, CO, and POM will begin to decline. Depending on the stringency of the standard, particulate emissions from wood stoves may be cut almost 90 percent by the turn of the century.

When the history of environmental regulations is written, the control of

wood stove emissions will not be a typical chapter. For one thing, local, state, and federal governments have never before tried to regulate air pollutants emitted from private residences. It is one thing for government to impose controls on large industrial or utility smokestacks; it is quite another to tell families to douse the fires that are heating their homes. As the experience in some U.S. communities has already demonstrated, there are people who do not take kindly to a perceived invasion of home and hearth.

But as local communities grapple with their wood smoke problems, they are coming up with unique solutions responsive to local circumstances. They have seen the value in educating wood-burners about the environmental costs of their stoves and the benefits that accrue from sensible operating practices. They have seen the value in trying different approaches. Voluntary and mandatory shutdowns, insulation requirements, and design and equipment specifications are all examples of the different kinds of ordinances that different communities have passed to address basically the same problem.

Perhaps the most interesting aspect of wood smoke pollution control is economic. Virtually every technique used to control wood stove emissions saves money for the wood-burner. Wood smoke is essentially uncombusted hydrocarbons; so is creosote, which is caused when wood smoke condenses in the chimney. Both are made up of carbon that could have been burned to help heat the home. To the extent that wood smoke is reduced—through the use of catalytic converters or more efficient wood stoves, for example—less wood has to be burned for the same amount of heat, and less creosote builds up in the chimney. Similarly, to the extent that a home's heating requirements can be reduced through insulation, weatherization, or solar gain, less wood will be needed. Thus the costs absorbed by the wood-burner to reduce air emissions repay themselves through reduced energy and chimney maintenance costs. Pollution control in this case may be "free," a happy circumstance government regulators rarely experience. □



Negotiation Instead of Confrontation

by Cynthia Croce

Imagine that it was the end of the public comment period for a proposed new rule being handled by Chuck Freed of the air program's Office of Mobile Sources at EPA. Freed stared at his silent phone, his empty wooden in-box, and desk top free of protests and urgent pleas for reconsideration. The proposed rule, which sets penalties for heavy-duty vehicles unable to conform with Clean Air Act emissions standards, had been out for over a month, and there were still no outcries from the "parties of interest"—manufacturers, trucking companies, and construction people. That morning he'd been down to the Central Docket Office to check the microfiche comments received in response to the Notice of Proposed Rulemaking (NPRM), and drawn a blank. And, just minutes earlier, he'd checked the file drawer marked "NONCONFORMANCE PENALTIES: PUBLIC RESPONSE" expecting to find stacks of the ubiquitous computer runs

(Croce has worked as a management consultant for various EPA offices for the past six years. She is the author of the agency's Regulatory Management Handbook and the new two-volume Survey Management Handbook.)

and other bulky substantiating documents that affected parties typically submit to support their positions. The paper file, too, was bare.

By this time he had expected to be involved in constant meetings with domestic or foreign truck manufacturers, attorneys, environmentalists, trade association reps who wanted to present their positions to him in person. But his calendar was clean. It's lonely, Chuck thought...lonely being a regulatory negotiator....

In reality, Chuck and his colleagues had not been lonely long. Nor were any of the parties of interest who were concerned with this particular rulemaking and the penalty negotiations indifferent to the NPRM. For four months, the EPA representative and representatives of all the parties worked with great fervor to achieve consensus on the proposal EPA expected to publish soon in the *Federal Register*.

The fact that EPA and the "parties of interest" had worked together to develop a rule was unique. The effort was the first of two pilot attempts EPA is conducting to evaluate the effectiveness of a supplemental procedure for proposing rules. The new procedure, called "regulatory negotiations," brings the parties together to air their concerns and resolve conflicts in face-to-face negotiations before the proposed rules are published. The desired end-product is consensus on all key issues. EPA then uses the consensus agreement as a basis for writing the NPRM.

The motivation to reach consensus is high. If the negotiations fail, EPA has to resort to the traditional "notice and comment" rulemaking process—an adversarial process, which, more often than not, is marked by long delays,

Members of EPA's Pesticide Emergency Advisory Committee at a negotiating session last November.

excessive costs for all parties involved, uncertainty, and litigation. Moreover, 80 percent of the time, EPA's final rules are challenged in court!

Former Administrator William D. Ruckelshaus, a lawyer himself, was one of the project's staunchest supporters. In his keynote address last year to The Conservation Foundation's Second Annual Conference on Environmental Dispute Resolution, Ruckelshaus said: "Conducting environmental business through attack and counter-attack, suit and counter-suit, is wasteful, expensive, and exhausting."

The huge waste of time and resources that so often results when the traditional process is used, in fact, is the principal reason EPA initiated the project. Under a regulatory negotiation system, the parties will be encouraged to share information and to collaborate in finding creative solutions. The goal of the negotiations is to determine the requirements and restrictions that make up the substance of the rule EPA will propose.

History of the Project

In April 1982, the Administrative Conference of the United States (ACUS) recommended that agencies consider assembling the interested parties to negotiate the text of proposed rules. To date, three regulatory agencies—the Federal Aviation Administration, the Occupational Safety and Health Administration, and EPA—have undertaken such negotiations.

In January 1983, Joseph Cannon, then Associate Administrator for Policy

and Resource Management, launched EPA's project because he believed it had the potential "to produce substantially superior rules, acceptable to a wide range of interests, more quickly, and without the need for litigation."

One of the main hurdles that had to be addressed was how EPA could have representatives at the bargaining table and, at the same time, maintain a sense of impartiality and fairness. EPA took two organizational steps to deal with this:

- The Office of Standards and Regulations (OSR) in the Office of Policy, Planning and Evaluation was given authority for "managing" the project. Chris Kirtz of OSR's Regulation Management Branch was named project director.

- The senior official of the program office responsible for the rulemaking was designated as EPA's representative. That official spoke for EPA during the negotiations and was responsible for presenting and selling the agency's viewpoints both at the negotiations and within the agency itself.

A second major question was how to ensure that the initial rulemakings selected to test the concept were "appropriate" for a negotiated approach involving representatives of both public and private interests. Perhaps 10 percent of the 200 to 250 rules under development at any one time are suitable for such an approach. A rigorous selection procedure was devised. The regulations that were considered were those offering "typical" yet "negotiable" opportunities. They included ones with a reasonable number of affected interests (15 to 25 was considered "ideal"); those where there was some existing agreement about the technical basis of the rule; those with a firm timetable for EPA action; and those that had a reasonable number of related issues on which parties might have common positions from which to begin. The regulations also must involve rules under which negotiated agreement could be implemented under current legislation, and where the parties have a genuine interest in producing a consensus Notice of Proposed Rulemaking.

Making the selection took time. On February 22, 1983, EPA published a notice in the *Federal Register* asking the public to suggest rules that might be suitable for a pilot test. EPA also solicited suggestions from the program offices, and 66 environmental groups, trade associations, and other organizations.

Over 50 regulations were nominated. Two were selected:

- *Nonconformance penalties under Section 206(g) of the Clean Air Act.* The purpose of such penalties is to provide temporary relief for manufacturers of heavy-duty trucks or vehicles until they can tool up to meet the standard.

Manufacturers will be allowed to certify, produce, and sell engines that don't meet the standards provided they pay the appropriate penalty. The penalty is intended to cost the manufacturer of a nonconforming vehicle or engine at least as much as compliance with the standard would have cost, as well as to create an economic disincentive for future noncompliance. The negotiating group identified some 11 issues for resolution.

- *Pesticide emergency exemptions under Section 18 of the Federal Insecticide, Fungicide and Rodenticide Act.* FIFRA authorizes the Administrator of EPA to exempt federal or state agencies under appropriate emergency conditions. Current EPA regulations, established in 1973, identify three classes of exemption (specific, quarantine, and crisis). The original purpose of the rule was to allow for prompt, effective processing of exemption requests. An internal audit, reinforced by a Congressional review, suggested that the agency might improve the current system. The negotiation committee's task was to suggest what changes, if any, were called for.

In April 1984, Milton Russell, the new Assistant Administrator for Policy, Planning and Evaluation, announced EPA's intention to negotiate the Clean Air Act nonconformance penalties as one of the demonstration projects. The first meeting of the committee was held in June last year, with Charles Freed serving as EPA's representative. The 22 members included representatives of small and large domestic, European, and Japanese manufacturers, environmental organizations, state pollution control officials, and trade associations.

In October, the committee reached tentative consensus, which was transformed into a consensus statement signed by all 22 parties in December. The proposed rule appeared in the March 6, 1985, *Federal Register*.

As for the status of the pesticide exemption negotiations, EPA published a notice of intent on August 3, 1984, and the committee held its first meeting in late September of that year. Members include representatives of environmental organizations, pesticide users, state agricultural and health departments, trade associations, and the U.S. Department of Agriculture. Consensus

on this second rule was achieved early in 1985. Publication of the NPRM is imminent.

Preliminary Conclusions

It is too early to draw any hard conclusions about the project to date. However, based on preliminary comments from Larry Susskind, Executive Director of Harvard Law School's Program on Negotiation, which is documenting the project, and EPA staff, former Administrator Ruckelshaus reported:

- It does seem possible to obtain the meaningful participation of all those known to have a stake in the outcome of a regulatory negotiation. Despite the heavy workload, it is encouraging that virtually every participant seems to feel that the time spent was worthwhile.

- Laying the proper groundwork for the process is essential. Using a convener to identify interested parties for each rulemaking and to determine whether they are willing to negotiate in good faith, seems a key factor in promoting a harmonious process.

- The give-and-take of negotiation provides an opportunity to explore the rationale and needs of the participants which often leads to an approach satisfactory to all.

- So far, the process seems to be meeting the expectations of producing more balanced rules in a less adversarial fashion, reducing the likelihood of costly litigation.

These preliminary conclusions, coupled with EPA management's strong support, voiced on a number of occasions, suggest that the project's success has demonstrated that the regulatory negotiation process is, as former Administrator Ruckelshaus put it, "lean, workable, and consistent in its production of good environmental rules that everyone can support." Although Ruckelshaus cautioned that it is unrealistic to think we will ever be free of the adversarial process, or of litigation as the ultimate recourse, he added: "I think the potential exists to build on our current momentum, to resolve disputes before they erupt in heat, and to replace a lot of fractiousness with good, old-fashioned cooperation."

Next Steps

EPA's new top management is very enthusiastic about the project and the progress to date. They have authorized going forward with additional pilot negotiations. The project staff is actively searching for qualified regulatory items.

□

EPA and Biotechnology

by Roy Popkin and Dave Ryan

EPA has a major role in coordinated federal efforts to monitor and regulate the dramatically evolving biotechnology industry.

All federal departments that expect to have a role in the biotech revolution are part of a special working group of the White House Cabinet Council on Natural Resources and the Environment. The Council's purpose is to decide the proper jurisdiction of different agencies in the biotech field and to ensure a consistent approach to the subject by the federal government. Towards this end, the respective roles of the EPA, the Food and Drug Administration (FDA), and the Department of Agriculture (USDA) were outlined in policy statements published in the December 31, 1984, *Federal Register*. After receiving public comments, the Council and the agencies will finalize the policy later this year.

Although the terms "biotechnology" and "genetic engineering" are often used interchangeably, they are not the same thing. Genetic engineering is just one branch of biotechnology, the use of biological science to produce chemicals or living organisms for commercial use or for something with commercial potential.

Biotechnology is as old as the fermentation of grapes to produce wine. Fermentation is the use of microorganisms to convert sugar into alcohol. What is moving the field towards new and dramatic change is the kind of molecular engineering that has been able to isolate, for example, the DNA and RNA factors in genes. Through such genetic engineering, scientists are developing microorganisms that can degrade pollutants (eat up an oil spill, if you will), that will produce industrial enzymes and chemicals more efficiently, that will add a gene to an existing bacterium that lives in an agricultural

A scientist conducts basic genetic research in an effort to develop new pesticides.

Monsanto Co.



area and turn that particular bacterium into a pesticide. An outstanding example of such biotechnology is the new ability to place the insulin-producing human gene into bacteria that then become tiny insulin-producing factories.

The *Federal Register* proposal details plans for interagency coordination and scientific review, a matrix of the various federal statutes that apply to biotechnology, and a glossary of biotech terms that apply to the lexicon of this burgeoning new industry. There are special sections prepared by EPA, FDA and USDA.

Recognizing that there are conflicting views of biotechnology ranging from those who view the new technology with alarm as a possible danger to the environment to those who believe absolutely no regulation is required, "EPA's primary goal is to ensure a reasonable balance between the need to protect society from unreasonable risk and the benefits to society provided by

the products of biotechnology," says John Moore, the agency's Assistant Administrator for Pesticides and Toxic Substances.

"Recent developments in the biological sciences have increased our ability to select or combine the genetic materials of different organisms to produce new products or to produce better or more consistent versions of old products. Such products may apply to a wide range of industries, including chemical production, agriculture, and environmental protection," Moore adds.

"There are, however, concerns about the health and environmental implications of releasing such genetically altered or other new bacteria into the environment," he continues. "EPA and other agency reviews of such products before they go into commercial use will address such concerns."

Initiating its regulatory role in relation to the biotech industry, EPA has published two *Federal Register* notices,

(Popkin is a writer and Ryan is a press officer in the EPA Office of Public Affairs.)

laying out the limits of the agency's legal authority and also the framework for actual registration. The emphasis of EPA's biotechnical policy is on the relatively new techniques of using microorganisms that occur naturally, but using them in places where they aren't native (non-indigenous microbes, so to speak), and on the use of microorganisms altered or manipulated through genetic engineering techniques.

Last October, the EPA issued its first *Federal Register* notice, an interim policy statement under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), requiring companies to notify EPA 90 days before starting up any small-scale field testing involving the release of genetically engineered or non-indigenous microbial pesticides into the outdoors. The 90-day notification period will give the agency an opportunity to review the project and determine the potential for health or environmental dangers.

A number of companies have already complied with this interim policy and have informed EPA of their desire to initiate such experiments. One of them, Monsanto, notified the agency that it wishes to field-test a genetically engineered microbe that could destroy root-eating black cutworms. The experiment is scheduled to take place this spring on a research farm near St. Louis.

In November, EPA followed up this specific pesticide policy with a much broader one, covering the potential regulation of genetically engineered microbiological products under both the Toxic Substances Control Act and FIFRA. This action was included in the December *Federal Register*.

Here are some highlights of EPA's position on FIFRA's applicability to biotechnology:

- FIFRA established EPA's authority over the distribution and use of conventional pesticides, as well as non-indigenous and genetically engineered microbial pesticide products.
- Under this statute, EPA requires the submission of data and information concerning each pesticide product in order to make regulatory judgments on its safety. If, based on this information, the agency decides the product poses no unreasonable risk to human health or the environment, it may then be registered and sold in the United States. Additional microbial information, over and above that sought for conventional pesticides, may be required.

(Interestingly, the first pesticide registration in the biotechnical field was 27 years ago, in 1948, when a bacterial product used to kill Japanese beetle larvae was registered by the Department



A researcher uses a fermenter to grow bacteria which have been genetically engineered to produce larger quantities of proteins or chemicals for use in scientific studies.

Monsanto Co.

of Agriculture. Since then USDA and, after its formation, EPA, have evaluated and registered 14 microbial pesticides intended for a wide variety of uses in agriculture, forestry, mosquito control, and private homes. The same type of data required from manufacturers in the past for these registrations will continue to be required in the future. The Pesticide Assessment Guidelines, available through the National Technical Information Service, provide detailed recommendations on developing necessary data for microbial registration.)

- EPA has decided that plants and animals used as pesticides are already adequately regulated by other federal agencies, and therefore has exempted them from FIFRA.

As indicated earlier, EPA has also indicated that the Toxic Substances Control Act (TSCA) can also be applied to biotechnology. This law is intended to identify and control chemicals that pose an unreasonable risk to human health or the environment through their manufacture, processing, commercial distribution, use, or disposal.

TSCA does not, however, apply to pesticides, which are regulated under FIFRA, or to biotech products in the fields of drugs, cosmetics, foods, food additives, nuclear material, and tobacco. These are regulated under other federal authorities.

Some highlights of EPA's position on how TSCA does apply to biotech are:

- TSCA gives EPA authority to gather information on "chemical substances" used in industry and consumer products, and, if necessary, to control their exposure to humans or the environment. TSCA defines "chemical substance" as any organic or inorganic substance of a particular molecular identity; microorganisms, as well as nucleic acids (such as DNA) and other

substances that make up living organisms, fall under the TSCA definition. Thus, the Act gives EPA authority to regulate certain biotech products such as microorganisms used to produce chemicals, degrade pollutants, accelerate plant growth, extract minerals from ore, or make it easier to get oil out of the ground.

- EPA is proposing that companies give EPA a 90-day notice before they begin manufacturing new microorganisms. In the December *Federal Register* notice, EPA stated its position that microorganisms produced by recombining DNA molecules, fusing cells, and perhaps by other genetic engineering techniques, are "new" chemical substances, subject to pre-manufacture notice (PMN). The 90-day notice would give EPA time to decide if there are any potential health or environmental dangers related to the product and, if so, to take some form of regulatory action. Microorganisms that occur in nature or that are developed through artificial selection would be considered products "already in existence" and would not be subject to this requirement. (Artificial selection techniques are imposed on groups of organisms to favor the growth or multiplication of a particular organism at the expense of others.) Following receipt of comments, a final determination about the 90-day requirement will be made.

- Substances produced solely for research and development are exempt from the PMN requirement under current TSCA regulations. This exemption would extend to microorganisms field-tested in the open environment. EPA is, however, considering the need to modify the research and development exemption so that it has an opportunity to review microorganism products before they are field-tested. □

Oil, Water, and the Osage Mineral Reserve

by Dick Whittington

This is the seventh in a series of articles in the Journal by EPA's regional offices on major environmental concerns they are addressing. The author is Administrator of Region 6 in Dallas, Texas.

The Osage Indians are an old and proud people. They are also a wise people.

When they were driven out of Kansas in the 1880s, the tribe purchased one and a half million acres of land in Oklahoma from the Cherokees. The subsequent discovery of substantial quantities of oil beneath the land made that a very beneficial purchase for most members of the tribe.

As the oil field was developed, the tribe retained the mineral rights to the full acreage, although individual Indians were allowed to sell their surface rights.

Now, most observers say, the Osage tribe has made another smart move in agreeing to a deal with EPA and the Department of Interior's Bureau of Indian Affairs (BIA) to protect underground sources of drinking water from pollution from oil and gas operations.

It did not take long after the land was bought in 1883 for the black gold to appear. The first well was drilled on Osage land in 1896 in what was then the Oklahoma Territory.

When Oklahoma became a state on June 16, 1906, the Osage lands became Osage County, Okla., and 12 days later Congress passed the Osage Allotment Act which established the Osage Mineral

Reserve. That set the stage, in the 1920s, for the most highly publicized oil boom on Indian lands in the history of the United States.

In recent years, Osage County has consistently ranked among the nation's top counties in oil well completions. Today, some 12,000 wells produce about 30,000 barrels of crude oil per day.

When the oil comes out of the ground, it is accompanied by large quantities of brine. In fact, about 70 percent of the fluid coming out of a well is brine, with 30 percent oil plus gas. As a general rule, the oil is separated out, and the brine is injected into the earth, either for disposal or to increase the yield of the well field.

If these injection wells are not properly constructed, the brine may leak into freshwater formations. Or, improper operation may create pressures that break confining layers and allow brine to enter freshwater zones.

Osage County is primarily a rural area with a total population of between 25,000 and 30,000 people. Of these, some 3,000 are Osage Indians, and 10,000 are Indians representing about 50 other tribes. Many of these residents rely on wells for their drinking water.

There is convincing evidence that

some individual and community wells have already suffered damage from oil field brines.

When EPA developed the Underground Injection Control (UIC) program under the Safe Drinking Water Act, one objective was to delegate implementation of the program to the states. In the case of Oklahoma, the program was delegated to the Oklahoma Corporation Commission.

But the Corporation Commission has no jurisdiction over the Osage Mineral Reserve. The Osage Allotment Act authorized the Osage tribe to set leasing policies and obtain royalties from oil and gas production on the Reserve through the Bureau of Indian Affairs, and that means federal jurisdiction.

From the outset, the Bureau of Indian Affairs (BIA) has regulated oil and gas production on the Reserve through permitting and field inspection programs. The BIA also is responsible for protection of freshwater resources from oil and gas production activities.

In 1979, EPA began a series of meetings with the Osage tribe and the Muskogee Area Office of the BIA, aimed at development and implementation of a cooperative program to solve the tangled jurisdictional problem and control

Geological technician Andrew Yates of the Osage underground injection control office in Pawhuska, Okla., logs information from pressure test of injection well. This helps insure that the well is mechanically sound.





Workers do maintenance check on oil well in Osage County, Okla.

providing for the tribe to share certain administrative functions of the program with EPA. Under this agreement, an EPA field office was set up at the Tribal Headquarters at Pawhuska, some 60 miles north of Tulsa, and grant funds for support staff for both office and field operations were provided. The Tribe provides a variety of administrative functions to support the field office.

Once these arrangements among the three parties were in place, the development of Underground Injection Control regulations specifically tailored to the Osage Mineral Reserve was undertaken. The regulations were published last November.

Those regulations include provisions to meet EPA requirements and are compatible with state regulations set forth by the Oklahoma Corporation Commission and the BIA regulations already in existence.

But there are some provisions specially developed to satisfy the concerns of the Tribal Council. For example, one provision applies to existing disposal and enhanced recovery wells. For the most part, these existing wells will be regulated under general operating requirements, and they will not have to have individual EPA permits. (However, all existing wells will undergo a technical review and a mechanical integrity test and will be required to meet stringent operating standards. In wells where specific problems are encountered, an EPA permit will be required.)

The new program, now underway on the Reserve, targets some 3,800 injection wells for increased regulation. The program will have two major impacts on ground-water quality. It will prevent further deterioration from oil and gas operations, and it will make it possible for water quality in some already damaged wells to improve through dilution resulting from the natural recharge of freshwater aquifers. □

injection wells in the Reserve. The following year, in a major step forward, the Osage Tribal Council adopted a resolution which sanctioned the framework for an EPA/BIA joint agreement as well as a cooperative agreement between the Tribe and EPA.

Under an Interagency Agreement signed in May 1980 between the two federal agencies, coordination of permit

procedures and data collection and management was achieved, and agreement was reached to share geologic and hydrologic data. This working relationship also covered areas of technical assistance, staff training, surveillance and investigation, and the initiation of special studies.

In addition, a Cooperative Agreement was signed with the Tribal Council,

AIR

Lead Phasedown

EPA has announced final standards for cutting the amount of lead used in gasoline by 90 percent starting January 1, 1986. The agency's new standard will limit the lead content of gasoline to 0.10 grams per gallon. The current standard allows 1.10 grams per leaded gallon. EPA has also set an interim standard of 0.50 grams per leaded gallon, effective July 1, 1985.

Adverse health effects from elevated levels of lead in blood range from behavior disorders and anemia to mental retardation and permanent nerve damage. EPA estimates that between 1985 and 1992 the new standards will result in almost one million fewer incidences of blood lead levels exceeding 25 micrograms per deciliter, the level recently established by the Center for Disease Control as a measure of elevated blood lead levels.

The agency has also estimated that the new standards will save \$6 billion over the same period from reduced vehicle maintenance, reduced levels of exhaust emission pollutants (by discouraging misfueling), and lowered medical and rehabilitative costs that result from excess exposure to lead.

Emissions Standards for Trucks and Buses

EPA has issued standards that will significantly reduce nitrogen oxide and particulate emissions from light and heavy-duty trucks, as well as urban buses. The new standards, established under the Clean Air Act, will become effective with the 1988 model year.

Particulate emissions remain a serious air quality problem in many major urban areas. Heavy-duty diesel engines are a major source of particulate emissions, including the smaller, fine particles that pose the greatest threat to public health.

EPA's action is considered likely to result in a 50,000 tons per year (46 percent) decrease in urban diesel particulate emissions by the year 2000. The agency has estimated that without these additional controls, nitrogen oxide emissions from all sources would increase 23 percent nationwide by the year 2000.

Bulkheads Proposed for Uranium Mines

EPA has proposed a requirement that large underground uranium mines install bulkheads to reduce the release of radiation into the air.

The agency's proposed work-practice standard would require the sealing off of mined-out and inactive mine areas to reduce levels of radon-222, a uranium decay product. This sealing procedure for unused areas is called "bulkheading." Bulkheading would allow radon-222 to decay in the closed-off areas rather than be discharged into the air.

Radon-222 is considered the most significant radionuclide emitted by uranium mines to the above-ground air. It decays into a series of short half-life solid radionuclides that attach to dust particles. These particles, when inhaled, become lodged in the lung and cause irradiation, which increases the risk of lung cancer.

GM Recall

The General Motors Corporation is voluntarily recalling approximately 290,000 1982 and 1983 vehicles to repair catalytic converters that may be defective. California vehicles are also included in the recall.

The recall affects vehicles equipped with 4.1 liter V-8 gasoline engines. The models being recalled are the 1982 and 1983 Cadillac DeVille, Fleetwood Brougham, Eldorado, and Seville.

Owners of these vehicles can identify their engine through the vehicle identification or serial number. The figure "8" in the eighth position of the serial number of these models indicates that the vehicle is equipped with the 4.1 liter V-8 engine.

HAZARDOUS WASTE

Superfund Reauthorization Bill

EPA has submitted to Congress President Reagan's proposal for reauthorization of the Superfund law, which is formally known as the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

The proposed CERCLA Amendments of 1985 would allocate \$5.3 billion to carry out Superfund activities through fiscal 1990. This would triple resources available for Superfund over levels authorized when CERCLA was first passed in 1980. In addition, the bill would target those resources on hazardous waste sites and augment EPA enforcement capabilities by increasing all civil and criminal penalties.

Other key provisions of the President's proposed Superfund reauthorization include:

- Targeting Superfund over the next five years at hazardous waste sites, municipal and industrial sites with problems, and sites regulated under the Resource Conservation and Recovery Act but held by insolvent firms;
- Increasing the maximum criminal penalties under Superfund to \$25,000 and the maximum civil penalties to \$10,000, as well as creating civil penalties to augment criminal sanctions where they do not already exist;
- Establishing benchmark cleanup standards at Superfund sites and promoting permanent cleanup solutions at sites;
- Guaranteeing a meaningful role for affected citizens by requiring that they be notified of proposed cleanup action and given an opportunity to comment on proposed cleanup decisions and alternatives.

Hazardous Waste Ground-Water Task Force

EPA has formed a Hazardous Waste Ground-Water Task Force to evaluate all commercial land disposal facilities that receive, or may receive, Superfund or other hazardous wastes. The mission of the task force is to determine whether these facilities are meeting Resource Conservation and Recovery Act regulations for protecting ground water against contamination by leaking hazardous constituents.

The task force will evaluate about 18 commercial hazardous waste land disposal facilities in 1985. Approximately 41 other such facilities will be evaluated on an accelerated schedule in 1986.

Fred Lindsey from the Office of Solid Waste has been appointed director of the task force. He and other task force members at EPA headquarters will coordinate each site evaluation with task force teams from the state and from the EPA regional office where the site is located.

The objectives of the task force are to:

- Determine if there are significant ground-water management, contamination, and compliance problems at commercial hazardous waste land disposal facilities, and take enforcement or other administrative actions to correct these problems;
- Determine under what conditions Superfund wastes may be disposed of at the facilities;
- Make recommendations for long-range improvements in ground-water regulations, guidance, inspection procedures, enforcement actions, training programs, and general program infrastructure.

Clean Sites Indemnified

EPA has agreed to indemnify Clean Sites, Inc. (CSI), against legal liability that may arise from its efforts to promote cleanups of hazardous waste sites. CSI is a private, non-profit organization created to expedite cleanups by encouraging private parties to become involved in the process.

Under this new agreement, EPA will consider, on a site-by-site basis, giving CSI advance authorization to submit a claim for reimbursement should it be sued and held liable for third-party injuries as a result of planning potential or actual cleanups of hazardous waste sites. The agency would pay such claims from the trust fund established under the Superfund law (CERCLA).

Reporting Levels for Hazardous Spills

EPA has announced final reporting levels for 340 hazardous substances whose accidental spill or release into the environment has to be reported to federal emergency response authorities. The agency has also proposed reporting levels for 105 other hazardous substances.

Under the Superfund law (CERCLA), 698 hazardous substances must be reported to federal authorities when accidentally spilled or released into the environment (air, land, surface water, ground water) at levels at or above specified levels.

EPA's latest action formally re-establishes or adjusts the reporting requirements for 340 of these substances. The agency has also proposed to raise, lower, or re-establish reporting requirements for another 105 of the 698 hazardous substances it regulates for accidental spills or releases.

RESEARCH

Visiting Scientist Program

EPA's Office of Research and Development (ORD) has developed a competitive program for bringing as many as ten internationally recognized scientists and engineers to its laboratories for research in environmentally related fields.

Scientists selected by ORD for its 1985 Distinguished Visiting Scientist Program will conduct their research at one of 14 EPA laboratories located in Research Triangle Park, N.C.; Cincinnati, Ohio; Las Vegas, Nev.; Athens, Ga.; Corvallis, Ore.; Duluth, Minn.; Gulf Breeze, Fla.; Narragansett, R.I.; and Ada, Okla.

Successful candidates for the program will be appointed for terms of up to three years on a full- or part-time basis. The nature, location, and term of the appointment—as well as salary, travel expenses, and equipment needs—are negotiable. They will be tailored to the specific research objectives of the 10 successful candidates, whose names are expected to be announced by May 1.

TOXICS

Union Carbide Fined

EPA has fined the Union Carbide Corporation \$3.9 million for delaying the reporting to EPA of new carcinogenicity information on diethyl sulfate.

EPA's administrative civil complaint charges Union Carbide with delaying for over four years the reporting of the results of a study which showed that diethyl sulfate causes skin cancer in mice.

Specifically, EPA charges Union Carbide with violating Section 8(e) of the Toxic Substances Control Act (TSCA), which requires any company that manufactures, imports, processes, or distributes a chemical to immediately notify the EPA Administrator if the company obtains information which reasonably supports the conclusion that a chemical poses a substantial risk of injury to health or the environment—unless the company is sure the Administrator already knows of this information.

Information on 15,000 Chemicals

EPA is proposing to collect up-to-date production information on chemicals manufactured in this country or imported into the United States at levels above 10,000 pounds per year. The agency expects this action to provide important, updated information on approximately 15,000 chemicals.

This information is the first update of production data for EPA's inventory of existing chemicals in the United States. The original inventory was developed under authority of the Toxic Substances Control Act (TSCA) and based on 1977 production information.

EPA is proposing to exclude four categories of substances from reporting requirements: polymers (the basic molecular ingredients in plastics), inorganics (substances without a carbon atom), naturally occurring microorganisms (bacteria, fungi, etc.), and naturally occurring substances (natural gas, crude oil, minerals, etc.).

EPA has chosen to exempt substances that fall into these four categories for one of two reasons: either because they are of little health concern or because the agency has determined that it would be more cost-effective to obtain data concerning them via a different mechanism.

Asbestos Training Center

EPA has opened its first formal training center to help the public identify and control friable asbestos in buildings. The Southeast Asbestos Information Center is located at the Georgia Institute of Technology in Atlanta.

A major focus of the training will be on proper control techniques. In some cases, careless asbestos abatement can be more dangerous to public health than leaving the substance in place. The center also will hold general awareness courses for parents, school officials, teachers, building owners, and other laypersons.

The program will be carried out in the form of a cooperative agreement between EPA's Region 4 office in Atlanta and the Georgia Institute of Technology. Georgia Tech has received \$125,000 for operation of the center.

WATER

Ocean Incineration Rules

EPA has proposed rules to regulate the incineration of liquid hazardous wastes at sea. The proposed regulations would provide specific criteria for the agency to use in reviewing and evaluating ocean incineration permit applications for incinerating wastes at sea. It would also provide guidance for the designation and management of ocean incineration sites.

The rules are being proposed under the authority of the Marine Protection, Research, and Sanctuaries Act of 1972 as amended. The regulations also incorporate the requirements of the London Dumping Convention and adopt the requirements for land-based incineration of the Resource Conservation and Recovery Act and the Toxic Substances Control Act.

The public has until May 20 to comment on the proposed rules. EPA is planning to hold public hearings on the proposals in April at the following locations: West Long Branch, N.J.; New Orleans, La.; Brownsville, Tex.; and San Francisco, Calif.

Treatment Plants Training

Compliance with the Clean Water Act has shown significant improvement at many wastewater treatment plants, thanks to a training program for plant operators made possible by special funding from Congress since 1982.

The gains have been especially marked at small treatment facilities where states are focusing their attention. Forty-nine states and Puerto Rico are now participating in the training program.

EPA policy emphasizes that effective operator training is of paramount importance in protecting the public's very large financial investment in wastewater treatment facilities. Since the Clean Water Act was passed in 1972, EPA has provided more than \$40 billion in construction grants for wastewater treatment. □

Appointments at EPA



Seif



Ravan



Jeter



Elkins



Sweeney

James M. Seif has been named Administrator of EPA's Region 3, which has its headquarters in Philadelphia. In addition to Pennsylvania, Region 3 includes Delaware, Maryland, the District of Columbia, Virginia, and West Virginia. Seif replaces Thomas Eichler, who has accepted an appointment to be Secretary of Health and Social Services for the State of Delaware.

Seif has been Regional Manager of Government Relations for the American Telephone and Telegraph Company's Washington, D.C., region since 1983. From 1979 to 1983, he was Administrative Assistant to Governor Dick Thornburgh of Pennsylvania.

In 1977 and 1978, Seif served as deputy campaign manager for the Thornburgh-for-Governor Committee. Also in 1977 he was assistant general counsel for the Rohm and Haas Company of Philadelphia.

Between 1975 and 1977, Seif served on the staff of the Assistant Attorney General in the U.S. Department of Justice's Criminal Division. From 1973 to 1975 he was Chief of the Legal Branch of EPA's Region 3 office, where he supervised the development of cases involving all of EPA's programs and developed enforcement guidelines and procedures. From 1971 to 1973 Seif was an Assistant U.S. Attorney in Pittsburgh, where he concentrated on litigation involving environmental matters.

Seif received his B.A. in political science and American government from Yale University in 1967. He graduated from the University of Pittsburgh School of Law in 1971. Seif is a member of the Pennsylvania Bar.

Jack E. Ravan has been named Regional Administrator of EPA's Region 4 office headquartered in Atlanta. Region 4 encompasses North and South Carolina, Kentucky, Tennessee, Mississippi, Alabama, Georgia, and Florida.

Ravan has been EPA's Assistant Administrator for Water since 1983. During his two years in that position, he has reorganized the Office of Water and administered a number of programs of national importance, including reauthorization proposals for the Clean Water Act, and creation of the Office of

Ground-Water Protection and the Office of Marine and Estuarine Protection.

Ravan previously was Administrator of EPA's Region 4 between 1971 and 1977. From 1977 to 1980 he served on the executive management committee and as director of business development for Jordan, Jones & Goulding of Atlanta. From 1980 to 1982 Ravan was Director of the Alabama Department of Energy. From 1982 until his return to EPA in 1983, he served as vice president, in charge of project development, for the Signal Clean Water Corporation of Atlanta.

Prior to joining EPA for the first time, Ravan was special assistant to the federal co-chairman of the Coastal Plains Regional Commission from 1970 to 1971. He also served as an administrative assistant to Senator Strom Thurmond of South Carolina from 1969 to 1970. Ravan was a technical manager with the National Aeronautics and Space Administration from 1968 to 1969.

A 1959 graduate of the U.S. Military Academy, Ravan served for eight years in the Army.

Charles R. Jeter, who has been Administrator of EPA's Region 4 since 1981, has been appointed Special Assistant for Ecology in EPA's Office of Policy, Planning and Evaluation. He will be based at EPA's Environmental Research Laboratory in Athens, Ga. In his new position, Jeter will be concentrating on programs associated with water quality and wetlands, but he will also focus on the interaction of EPA programs with those of other federal agencies as well as state and local governments.

Jeter worked for the South Carolina Department of Health and Environmental Control from 1967 to 1981. He began as a staff chemist and later became Director of the Industrial Agricultural Wastewater Division and then Chief of Wastewater and Stream Quality Control.

Jeter received his B.S. in Environmental Engineering from Clemson University in 1963, and his M.S., also from Clemson, in 1971. Jeter is a past national President of the Association of State and Interstate Water Pollution Control Administrators.

Charles L. Elkins has been appointed Acting Assistant Administrator of EPA's Office of Air and Radiation, replacing Joseph A. Cannon who has resigned to become a partner in the Washington office of Pillsbury, Madison & Sutro, where he will practice environmental law.

This is the third time that Elkins, a career EPA official, has been called upon to serve in this capacity. As Acting Assistant Administrator, he is responsible for setting and enforcing standards for national ambient air quality, hazardous air pollutants, new source performance, and prevention of significant deterioration in air quality. In addition, he is responsible for establishing and enforcing emission standards for mobile sources and for establishing radiation standards.

Elkins' most recent previous assignment in the Office of Air and Radiation was as director of the acid rain policy staff. He was a member of the task force that advised President Nixon to create EPA in 1970 and has served the agency in various high-level positions since that time.

Daniel S. Sweeney has been named EPA's Deputy Assistant Inspector General for Investigations. In this position, he supervises and directs investigative activities relating to programs and operations within EPA as required by the Inspector General Act of 1968.

Sweeney came to EPA from the Department of Transportation (DOT), where he served for the past year as Director of the Inspector General's Office of Washington Operations.

Prior to that, Sweeney was Director of DOT's Office of Special Assignments. He also held other positions in the Office of the Inspector General and in the Secretary of Transportation's Office of Investigations and Security.

Sweeney began federal service in 1965 as a special agent with the Naval Investigative Service, in which he served until he joined the Department of Transportation in 1972.

Sweeney, who graduated from Boston College in 1960, received an M.A. in Public Administration at American University in 1969.



Jordan



Henderson



Shapiro



Fulford



Diamond



Morthole

J. William Jordan has been appointed Director of the Enforcement Division in EPA's Office of Water Enforcement and Permits. In his new position he is responsible for directing a national compliance monitoring and enforcement program for the Clean Water Act and the Marine Protection, Research and Sanctuaries Act.

For the past nine years, Jordan has been Chief of EPA's National Pollutant Discharge Elimination System (NPDES) Technical Support Branch.

Jordan has been with EPA since its inception in 1970. From 1970 to 1976 he worked as a Chemical Engineer in the agency's Permits Division and served as the national expert for permitting steam electric power generation facilities.

Between 1968 and 1970, Jordan served in the U.S. Army Corps of Engineers. For two years prior to joining the Army, Jordan was a process engineer for the Ethyl Chemical Corporation in Baton Rouge, La.

Jordan received his B.S. in Chemical Engineering from Mississippi State University in 1966. He earned an M.S. in Chemical Engineering at Louisiana State University in 1968. In 1977 Jordan received an M.B.A. from George Mason University.

William M. Henderson has been named Director of the Resource Systems Staff in EPA's Office of the Comptroller. In this position, which he has held on an acting basis since November 1984, Henderson is responsible for implementing three programs at EPA: the Federal Managers' Financial Integrity Act and internal control systems; OMB Circular A-76, "Performance of Commercial Activities"; and Reform '88 and Grace Commission initiatives.

Prior to joining EPA, Henderson worked for five years at the Office of Management and Budget (OMB). From 1979 to 1982, he served as Deputy Director of the Debt Collection Staff in OMB's Management Improvement and Evaluation Division. Between 1982 and 1984, he was the Director of the Cash Management Staff in the Financial Management Division of OMB.

Henderson began his civil service career in 1971 as an auditor at the Department of the Treasury. From 1972 to 1974, he worked as a systems accountant in the Special Financing

Staff of Treasury's Banking and Cash Management Division. From 1974 to 1976 Henderson served as a bank analyst and cash management specialist in the same division. From 1976 to 1978 he was a fiscal affairs specialist in Treasury's Office of the Fiscal Assistant Secretary.

Henderson received his degree in Business Administration and Accounting from Brescia College in 1971.

Dr. Michael H. Shapiro has been named Director of the Economics and Technology Division in EPA's Office of Pesticides and Toxic Substances (OPTS). He has served as Acting Director of this division since the end of 1981.

As Director of the Economics and Technology Division, Dr. Shapiro is responsible for managing all economic, chemical engineering, and industrial chemistry analyses required to support the activities of the Office of Toxic Substances.

Dr. Shapiro joined EPA in 1980 as an environmental engineer in OPTS. In 1981 he was appointed Chief of the Regulatory Impacts Branch in OPTS.

From 1976 to 1980, Dr. Shapiro was an Assistant Professor of City and Regional Planning at Harvard University, where he was awarded his Ph.D. in Environmental Engineering in 1976 and his M.S. in 1972. He received his B.S. in Engineering from Lehigh University in 1970.

Donald W. Fulford has been named Director of EPA's Office of Data Processing at Research Triangle Park, N.C. This position, which he has held on an acting basis since 1983, gives Fulford responsibility for managing EPA's data center and telecommunications facilities and for supporting all other automatic data processing technologies.

Fulford has been with EPA since its inception in 1970. His most recent previous assignment within EPA was as head of the Data Center Branch.

Fulford began his civilian government career in 1966 with a position as mathematician in the Department of the Navy. Later he served as a computer specialist in the Department of the Army before joining the National Air Pollution Control Administration in 1969.

Fulford earned his B.A. in Mathematics from Atlantic Christian

College in Wilson, N.C., in 1965, and his M.A. from East Carolina State in 1969.

Bruce M. Diamond has been appointed Regional Counsel of EPA's Region 3 office in Philadelphia. As Regional Counsel, Diamond will be responsible for legal enforcement matters as well as legal and policy advice to the Regional Administrator and other senior managers. He is returning to EPA after two years as an associate professor of law at Rutgers University in Camden, N.J.

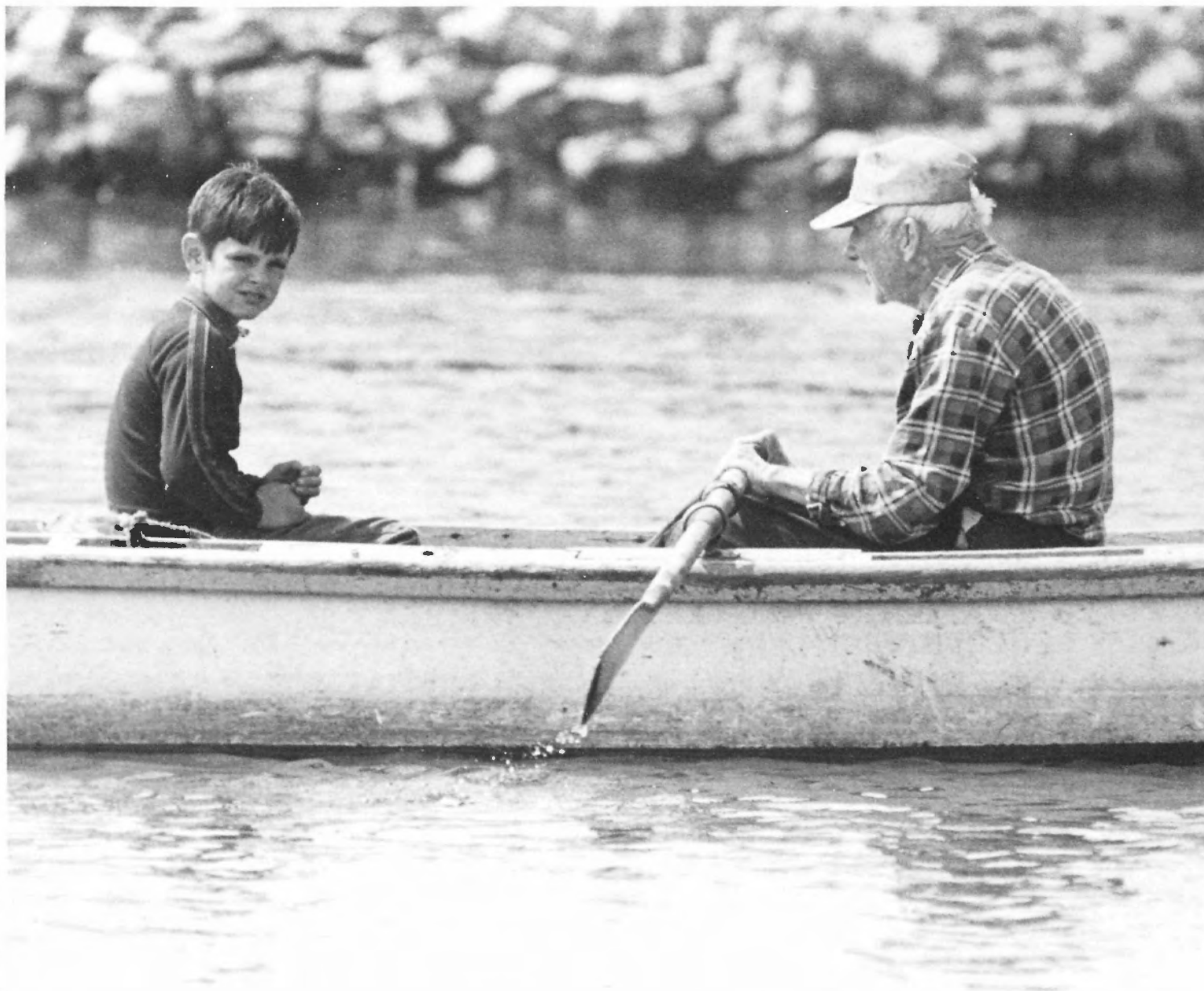
Diamond first joined EPA in September 1974 as a general Attorney-Advisor in the Water Division of the headquarters Office of General Counsel. In 1978 Diamond moved into the Toxic Substances Division at EPA headquarters as Deputy Associate General Counsel for Litigation. From 1979 to 1981, he served as the Deputy Associate General Counsel for the Stationary Source and Air Deterioration Branch in the Air, Noise and Radiation Division. In March 1981, Diamond moved back into the Water Division as the Acting Associate General Counsel.

Diamond completed his undergraduate education at the University of Pennsylvania, where he received a B.A. in Biology in 1968. He received his J.D. magna cum laude from the University of Michigan Law School in 1972. He worked as a law clerk in the U.S. Court of Appeals for the First Circuit from 1973 to 1974. Diamond is a member of the District of Columbia Bar.

Karl R. Morthole has been appointed Regional Counsel of EPA's Region 9 office in San Francisco. As Regional Counsel, Morthole will be responsible for legal enforcement matters as well as legal and policy advice to the Regional Administrator and other senior managers.

Morthole has been a general attorney for Union Pacific Railroad Company in Omaha, Neb., since 1978. From 1976 to 1978, he was in private practice in Boston, Mass. He was an associate with Herrick and Smith in Boston from 1974 to 1976.

In 1968 Morthole graduated magna cum laude from Princeton University, where he was a University Scholar. From 1969 to 1972 he taught at the Koaga Harambee Secondary School in Meru, Kenya. Morthole received his J.D. from Harvard Law School in 1974. □



Two different generations enjoy a springtime excursion on a creek in Maryland.

Back cover: A butterfly alights on a mountain laurel bush. Photo by T.C. Flanigan, ©1984, Folio Inc.



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