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Chemicals and the Environment



Chemicals and Choices

This issue of EPA Journal takes a look at some of the problems of management in general and managing in particular the wastes from chemicals which have brought modern society so many benefits.

EPA Administrator Anne M. Gorsuch explains how she hopes to tighten and improve management of the Agency's programs. Part of a new emphasis on efficiency, she said, will include "avoidance of the extraordinarily complex rules and excessive number of permits required under past programs."

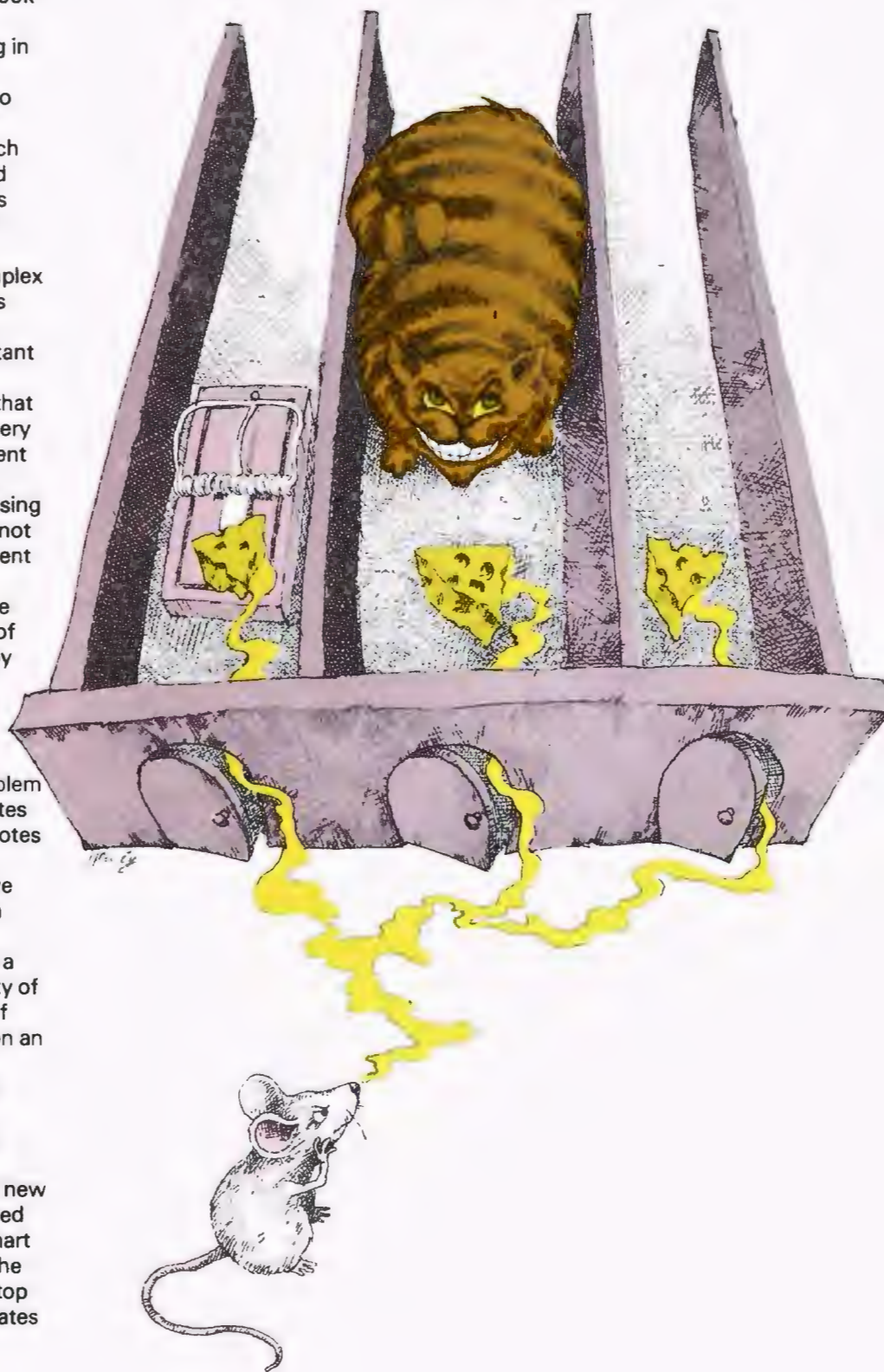
Dr. John A. Todhunter, EPA Assistant Administrator, Pesticides and Toxic Substances, explains in an interview that there is a new awareness "that not every human interaction with the environment constitutes an adverse impact. Living with, cherishing, conserving, and passing on to our heirs the environment does not require that we embalm the environment in a morass of useless paperwork."

The complexities of dealing with the problem of acid rain and other forms of deposition are reviewed in an article by Kathleen M. Bennett, EPA Assistant Administrator for Air, Noise and Radiation.

Two articles give a report on EPA and State efforts to deal with the problem of chemical and other hazardous wastes around the country. Another article notes that while waste chemicals can be a blight, some chemical companies have proved they can live successfully with their natural environment.

Other articles on chemicals include a report on aid being provided to the city of Niagara Falls to help with treatment of chemical and other wastes, a report on an EPA decision to extend a deadline involving chemicals to keep the trains running, and a review of information about the impact of chemicals on the ozone shield.

This issue also contains a report on new EPA appointments and honors awarded Agency officials. Also included is a chart on the Agency headquarters, giving the names and phone numbers of EPA's top leadership, and a map showing the states in each EPA region and listing the Regional Administrators.



EPA JOURNAL

Anne McGill Gorsuch, Administrator
Byron Nelson III, Director, Office of Public Affairs
Charles D. Pierce, Editor
Truman Temple, Associate Editor

Articles

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 marine shorebird, the black skimmer, wings by a Dow Chemical plant in Freeport, Tex., where some of these birds nest. (See P. 19)

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The annual subscription rate for EPA Journal has been changed again because of an across-the-board increase by the Government Printing Office for all publications it prints. The new annual rate for subscribers in the U.S. for the bi-monthly EPA Journal is \$9.50, an increase of \$1 over the previous rate. The charge to subscribers in foreign countries will increase from \$10.65 to \$11.90 a year. The price of a single copy of the Journal will be \$2.75 in this country and \$3.45 if sent to a foreign country. All these prices include mailing costs. Subscriptions to EPA Journal, as well as to other Federal Government magazines, are handled only by the U.S. Government Printing Office. Anyone wishing to subscribe to the Journal should fill in the form at left and enclose a check or money order payable to the Superintendent of Documents. The request should be mailed to: Superintendent of Documents, GPO, Washington, D.C., 20402.

Tighter EPA Management Planned

In recent testimony before Congressional committees, EPA Administrator Anne M. Gorsuch has spelled out how the agency is moving rapidly to improve management of its major functions.

In the regulatory program under the Resource Conservation and Recovery Act, Mrs. Gorsuch promised a "comprehensive management approach" rather than targeting specific problems for specific actions.

This approach, she said, will include more cooperation with the states, an emphasis on enforcement, and avoidance of the extraordinarily complex rules and excessive number of permits required under past programs.

The EPA Administrator has also:

- Pledged to require more efficient allocation and expenditure of EPA's funds to continue protection of the environment.
- Announced plans to revamp EPA's Office of Research and Development to relieve scientists who are burdened "by an astoundingly complex and cumbersome management system and budget planning process that seems more to frustrate than support their efforts."

Testifying before the Senate Committee on Environment and Public Works, Mrs. Gorsuch said that the agency will undergo spending and personnel reductions to help achieve the President's goal of a balanced budget.

"One of the most challenging and important aspects of managing EPA today and in the years ahead is to ensure that resources are concentrated on programs producing the greatest environmental benefits," Mrs. Gorsuch said. "The agency can and must fulfill its Congressional mandate, with reduced funding. That will occur with better management."

Mrs. Gorsuch cited these actions as ways in which the agency will rely on better management techniques:

- Development of a new accountability system that will track every senior agency manager's performance according to predetermined goals and production levels;
- Improved case management, better use of more than \$50 million annually in automatic data processing equipment and tighter oversight of contractor costs and performance;
- New enforcement procedures to eliminate a backlog of cases, reduce paperwork and eliminate stale and premature cases;
- Reform of the construction grant program for sewage treatment plants that will reduce the volume of original regulations by one third;
- Simplification of the National Pollutant Discharge Elimination System so that it is more cost-effective and responsive, thereby improving the ability of States to take over operation of the program;



A major reform is planned for the regulations which governed construction of sewage treatment facilities such as these in the District of Columbia on the Potomac River.

- Implementation of a peer review process for the agency's scientific research to improve its consistency and improved management techniques to assure that a greater percentage of research funds goes into actual research;
- Increased priority to handling State Implementation Plans for improving air quality to dispose of a large backlog of proposed plan amendments.
- Management improvements in EPA's radiation office so that inactive uranium mill tailing standards originally set to be promulgated in January 1983 will now be issued by March of 1982.
- An improved correspondence management system that will ensure timely and responsive answers to inquiries about EPA and its programs.

In remarks before the House Subcommittee on Environment, Energy and Natural Resources, Mrs. Gorsuch said that the agency will initiate new cost accounting procedures to track Superfund expenditures, and will use available enforcement mechanisms to force responsible parties to clean up sites where possible.

"Both the (Superfund) statute and the legislative history indicate that the Fund should be used wisely and for the most critical remedial actions," said Mrs. Gorsuch. For that reason, "vigorous enforcement is essential to a successful Superfund program. The agency fully intends to make maximum use of enforcement authorities, both to secure site cleanup by responsible parties as an alternative to fund-financed cleanup and to pursue cost recovery actions . . . to reimburse the government."

"Success in establishing an effective and comprehensive (Superfund) response

program lies in state participation," said Mrs. Gorsuch. "The states can function as true partners in our implementation effort . . . we have already entered into partnership with nine states through cooperative agreements for remedial site cleanup" in which "the States and the Federal government work together in response actions."

"EPA and States are also implementing and enforcing (RCRA hazardous waste) standards," Mrs. Gorsuch continued. "As of the end of September, 25 States and territories have received interim authorization for Phase I (general standards). For those states not yet authorized, we have entered into cooperative arrangements with a total of 28 states and territories."

Mrs. Gorsuch noted that under Superfund, considerable work has already been completed by EPA, the Coast Guard, state agencies and responsible private parties. Over 10,000 sites have been identified, 6,400 preliminary assessments have been undertaken and over 3,000 on-site inspections have been completed.

Enforcement under RCRA to date has resulted in the filing of 61 federal judicial actions, 11 negotiated consent decrees and preliminary judicial relief in another 10 cases. "We estimate that \$53 million worth of privately financed site cleanup is currently completed, underway or legally committed as a result of these actions," said Mrs. Gorsuch.

In testimony before the House Committee on Science and Technology, Mrs. Gorsuch said that problems with EPA's research program include "a lack of responsiveness to the agency's real research needs, ineffective and unreasonably complex planning processes, excessively cumbersome and top-heavy management, a failure to properly balance long-term research against short-term problem solving scientific and technical activities, and a lack of consistent scientific quality."

Mrs. Gorsuch noted that these problems have been identified in the past by Congress, the General Accounting Office, the National Research Council and others. She added that an evaluation by the new administration at EPA started in June has confirmed the existence of these problems.

At the same time, she said, the agency has "the basic materials for a fine program" including "considerable scientific and technical staff talent, good indications of professional dedication, and many excellent research facilities and equipment." But the program's operations must be improved to produce "significantly better research and contribute more effectively to EPA's decision-making," she stated.

"Although many people in ORD do their job well, the present system seems to encourage building or protecting existing organizations and activities without regard to real research needs," the EPA Administrator added.

". . . ORD had created complex layers of headquarters managers whose interactions often result in a higher priority on paperwork than on research," Mrs. Gorsuch said. "An astonishing 31 percent of the 230 permanent full-time employees in ORD headquarters are

managers at the Senior Executive Service or GS-15 level, as compared with only seven percent of the 1,440 people in our laboratories . . . Up to 26 percent of EPA's total personnel are devoted to administrative matters, rather than to substantive agency missions."

Mrs. Gorsuch described current research planning as a "labyrinth" and said "the official who originally requested the research must wait an average of 18 months from the time of the request until the laboratory can begin work on it . . ."

Mrs. Gorsuch said she and an advisory group, consisting of EPA senior scientists and career managers, have identified goals for improving the program. These include:

- a stronger peer review process and an evaluation of ORD's present incentive system;
- more attention to the relevance of research to the agency's regulatory mission;
- a faster response time "with a greater portion of resources devoted to real research, and less to paper-pushing and administrative trivia."

Final changes in the program will not be made until the advisory group completes its findings, Mrs. Gorsuch indicated. □

Living With Chemicals

Man can learn nothing unless
he proceeds from the known
to the unknown.

Claude Bernard

SciQuest

*Claude Bernard was a noted
French scientist.*

American Chemical Society posters
printed are part of a set. Further
information on the posters is available
from the American Chemical Society,
Room 210, SciQuest posters,
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Investigating Acid Rain



A country church in Highland County, Va., seen through a rain-streaked window.

The depth of our concern about acid deposition should be reflected in public policies that are based on sound science, EPA's top air pollution control official has explained to a Congressional Committee.

Kathleen M. Bennett, Assistant Administrator for Air, Noise and Radiation, told the U.S. Senate Committee on the Environment and Public Works that there are major "uncertainties" in many critical areas about the transportation and causes of acid rain.

The major uncertainties include, she said, "the transportation and transformation of possible precursor

emissions into acid deposition, the effects, and the policy implications of acid deposition. In passing the Acid Precipitation Act of 1980, Congress itself established a comprehensive intergovernmental and interdepartmental research plan so that the complexity of acid precipitation could be more fully addressed.

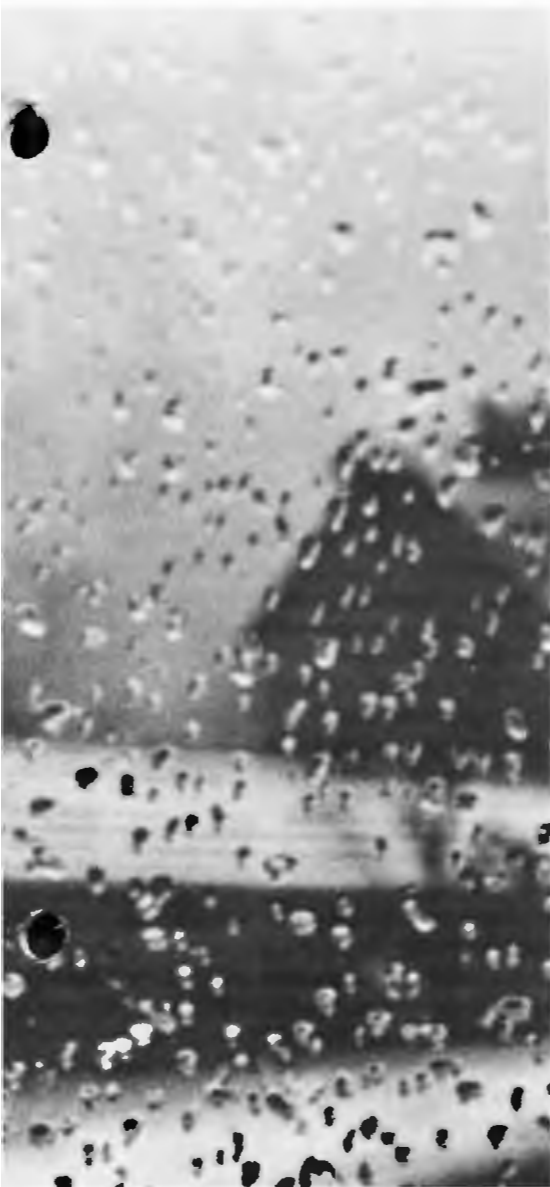
"Without such a firm foundation on which to base our decisions on whether controls are necessary, in what areas and to what degree, any regulatory action at this time would involve guessing."

In view of the many unknowns about acid rain, and the possible substantial cost burden of additional controls, Bennett said that EPA is proceeding with its program to investigate this environmental malady over a 10-year

period, as directed by Congress.

Reviewing the history of this problem, Bennett explained that "acid deposition" is a general term for the deposition of acidic materials, whether wet or dry, from the air onto the surface of the earth or upon structures or objects.

Neither acid deposition itself nor the terminology by which we describe it is of recent origin. Although references date back to 1661, most relevant research through the 1950's was conceived originally for other purposes. Historical lake surveys were done to assess fishery or water quality resources. Large-scale precipitation chemistry networks were established by agricultural scientists to study precipitation as a source of plant



Acid Deposition — Knowledge and Uncertainties

While acid deposition exists, and causes varying effects, there is considerable debate over the circumstances of its formation and the feasibility of potential controls. Scientists may see the same data on acid deposition and circumstantially associated pollutant emissions and reach quite different conclusions, Bennett noted.

"Currently, we do know something about the emissions of oxides of sulfur and nitrogen which can be the precursors of acid deposition. The majority of man-made emissions of sulfur oxides in the United States comes from utilities; the remainder comes from other combustion sources, non-ferrous smelters, and transportation sources. U.S. nitrogen oxide emissions come mainly from transportation and from utilities and industrial boilers.

"We know that emissions tend to be highly interactive, and that multiple emissions must be considered simultaneously.

"Both sulfur and nitrogen oxides can be transformed into nitrogen and sulfuric acids by reacting with the moisture as well as other substances in the atmosphere. These transformations can take place in cloud or rain droplets or after deposition. Depending on a number of variables, emissions may be deposited relatively near their sources or transported over long distances."

Bennett said one of a number of major uncertainties in our current knowledge about acid deposition is the pH level at which precipitation should be considered acid.

The conventional definition is based on pure water saturated with atmospheric carbon dioxide. It has a pH of 5.6 which is therefore, the theoretical level of "normal" rainfall. Naturally occurring precipitation

may be considerably more or less acidic.

"In addition, although oxides of sulfur and nitrogen are precursors of acid deposition, the transformation processes are still not understood. While there are significant differences in the composition and acidity of rain between seasons, geographical regions, and even during and between storms, no clear evidence is yet available which can explain or predict accurately how precursors are transformed or why the observed variations occur.

"Yet another uncertainty exists with regard to the transport and distribution of precursor emissions. Remote regions of the globe have rains with a low pH, as do Hawaii and Alaska, and there is controversy over the role that localized emission sources may play. To resolve such controversies, both better data and more accurate modeling techniques are necessary."

Additional uncertainties that point to the need for better data, she said, include the relative impact of local sources as compared to more distant sources and the role of other photochemical pollutants and how they affect acidity levels.

Need for Responsible Action

"Any Administration action must be based on a reasonable degree of certainty that it will, in fact, accomplish its intended purpose. The American people have the right to expect that their government will not impose an additional multi-billion dollar program without first determining with some assurance that the intended environmental benefits will be achieved.

"In this case, quick and simple solutions are unlikely. Given the length of time it has taken to recognize the magnitude and complexity of the problem

nutrients, and atmospheric scientists even studied rain as a method of removing air pollutants.

A synthesis of information from such independent disciplines by Swedish soil scientist Svante Oden in 1967 sparked scientific and public interest. Later, re-analyses of earlier precipitation chemistry data and studies of fish populations in the Adirondacks and Sudbury, Ontario, lakes stimulated North American interest. This led to the development of government and industry sponsored research programs in both the United States and Canada. Thus, the scientific study of acid deposition as a separate field is scarcely more than a decade old, and our understanding has improved considerably in the last five years.

and the many fundamental questions that remain to be answered, Congress wisely authorized a comprehensive research program.

"Currently, in an effort to reduce uncertainties so that meaningful and effective program options can be considered, EPA is working on a number of projects.

"EPA alone has committed more than \$9 million in FY 1982 just to its research efforts on acid deposition; other Federal efforts will bring the total to more than \$18 million.

"The three major areas of uncertainty toward which EPA's portion of the research program is directed are:

"(1) transport, transformation, and deposition processes;

"(2) effects of acid deposition; and

"(3) assessments and policy studies."

Other Federal Acid Deposition Research Activities

"When in 1980, Congress passed the Acid Precipitation Act, it established an interagency Acid Precipitation Task Force to prepare a ten-year comprehensive research plan to identify the causes and effects of Acid Deposition. Congress directed that an annual report be submitted 'which shall detail the progress of the research program under this subtitle and which shall contain such recommendations as are developed'."

"The comprehensive research plan, entitled the National Acid Precipitation Assessment Plan, is currently being updated to incorporate public comments. EPA has been designated as the "lead agency" for three of the research areas, including aquatic effects, control technology, and data assessments and analysis.

"Furthermore, the results of research from all sources, public and private, are compiled and evaluated in assessments that provided research support for regulatory decision making."

Anticipated Research Results

Bennet said "over the next three to five years, we anticipate that many ambiguities and uncertainties will be reduced." Specifically, she said, we expect to have the following information:

- Additional studies of historical lake, stream, and reservoir data.
- The results of five models for predicting sulfate deposition on an annual basis.
- Status reports on acid deposition effects on agricultural crops.
- A new report on the role of clouds and storm fronts in formulating and scavenging acids in the atmosphere.
- The results of pilot tests and a completed demonstration of new combustion processes for controlling oxides of nitrogen and sulfur dioxide at significantly reduced costs.
- A summary report on the impacts of acid deposition on materials.
- Additional results from Sweden on forest productivity.
- A progress report by the National Oceanic and Atmospheric Administration on acid rain in remote locations.
- An aquatic model for predicting the rate of acidification occurring in lakes.
- A series of second-generation models for predicting the transport and deposition of sulfur and nitrogen over long distances.
- Field studies validating laboratory experiments of the effects of acid deposition on selected major crops.

Global Transboundary Air Pollution

Because transboundary air pollution is a global concern, Bennett continued, EPA has been consulting with other interested countries, particularly Canada, and will continue to do so.

"With the August 5, 1980, Memorandum of Intent on Transboundary Air Pollution, Canada and the United States agreed to begin cooperative steps to deal with transboundary air pollution and to develop a bilateral agreement. Formal negotiations began in June.

"Within this structure, Work Groups are preparing the technical summaries on currently available information. The Work Groups are comprised of representatives from EPA; the Departments of State, Agriculture, Interior, and Energy; the Council on Environmental Quality, the National Oceanic and Atmospheric Administration; and other agencies as well as representatives from corresponding Canadian departments. Interim Work Group reports currently under review and revision are due to be completed early next year."

Senate Amendments Addressing Long-Range Transport

"The amendments proposed by Senators Mitchell, Moynihan, and Dodd each provide mechanisms for dealing with acid deposition or, more broadly, the interstate transport of air pollutants," Bennett said.



A drenching rain pours from a towering storm cloud.

"Although the Mitchell and Moynihan bills are based on different equations, each basically calls for substantial reductions in sulfur dioxide emissions over the next decade. In general, the impact of these reductions would fall primarily on those few states whose emission sources rely most heavily on locally available high sulfur coals. Thus, some states will experience large (perhaps over 10%) increases in their utility bills while many other states will be virtually unaffected. This uneven impact could increase the tension already evident between states and make it more difficult to secure state cooperation in developing a cost-effective control strategy for acid deposition.

"Although the regional impact of the proposed bills is obvious, EPA has not had an opportunity to analyze the consequences of these bills in detail. Therefore, I am not prepared to address the specific effects of the types of measures mandated in these bills. I would like to reiterate that the scientific uncertainty surrounding the causes and effects of acid deposition at this time

demands that we proceed cautiously and avoid premature action, unless we have some confidence that the intended environmental benefits would be produced.

"Since the passage of the Clean Air Act of 1970, it is estimated that our nation has spent approximately \$150 billion on air pollution control. Those expenditures have been driven by our attempts to meet the health and welfare requirements of the Act. We estimate that the approach proposed in these bills could increase expenditures by roughly \$2 to \$4 billion per year. Further, the implementation scheme for both bills is unclear and could be exceedingly difficult to administer. These bills involve a radical new concept in pollution control based on a total loadings approach. Such an approach would represent a sweeping departure from our current national program which is based on protection of health and welfare through control of local ambient air quality levels. Before proceeding with such a dramatic and expensive overhaul of the underpinnings of our air cleanup efforts, we must better understand the need for and impact of a loadings reduction approach."

Bennett also addressed a pending bill proposed by Senator Dodd to improve the decision-making process concerning state petitions to EPA on interstate pollution problems. She said, "While we support the goal and general approach of the bill, we are concerned about some of its specific provisions.

"The most troubling aspect of the bill is the new penalty provision which requires the court to assess a penalty of \$100,000 against the United States, if the Administrator fails to act on a petition within 120 days," Bennett noted. "I am deeply disturbed by the concept that the general taxpaying public would be punished for the Agency's failure to act within the short statutory period. This provision could serve as an incentive for a state to complicate the process — at the expense of taxpayers in other states. This provision could divert the attention and resources of the agency from other statutorily mandated responsibilities. Delays already result from many factors, including the demands of meeting other statutory obligations, the complexity of interstate pollution questions, and the vagueness of the current statutory guidelines."

The Assistant Administrator said the bill also "provides for control of pollutants for which no national ambient air quality standard has been set. In essence, it grants the Administrator broad discretion to require potentially costly emission reductions for pollution control, without provision for the type of scientific review and procedural protection provided in the national standard-setting process." □

Risks and Challenges

Interview with
Dr. John A. Todhunter
*Assistant Administrator
Pesticides and Toxic Substances*



Q. Why did you take this job?

A. I took it because I've had a long-standing interest in the whole area of science as it relates to public policy decision making. I saw an opportunity to bring science of good quality into the data base that the agency uses to make its decisions, and then actually go one step further and get into the area of policy decision. I saw it as a personal challenge to apply my own personal technical expertise to the public interest.

Q. What opportunities do you see in your new post?

A. Opportunities to contribute to two goals vital to the future of EPA:

protection of the public health and the environment and the cultivation of sound science as a data base for regulatory decision making. EPA is the lead Federal agency in the protection of human health as it is affected by the physical environment. I am personally committed to these goals. I, with other senior EPA managers, am also committed to achieving these goals in ways which do not overly burden the taxpayer or our economy relative to the effects realized as a result of our regulatory stances.

We enjoy, in the United States, a rich environmental heritage. We also enjoy a standard of health in which we can take pride. Over the last ten years, we have seen continuing discussion and an evolving definition of the relationship of Americans to their environment. We have come to learn that the environment is at times benevolent and, at times, less than benevolent. We have been coming to grips with the enormity of the interdependence between humans and the environment. We have come to a sensitivity that fouling of the environment is not a private act but one which can compromise the rights of our neighbors.

We have also, I hope, come to an awareness that not every human interaction with the environment constitutes an *adverse* impact. Living with, cherishing, conserving, and passing on to our heirs the environment does not require that we embalm the environment

in a morass of useless paperwork. There is ample room for concordance of the activities of a technological/industrial society with the aim of health and environmental protection.

Q. Do you think that your background as a scientist will be useful in this position?

A. I think it's exceptionally useful. The Toxics Substances Control Act calls for an Assistant Administrator for Toxic Substances who is a person with the training and experience to head up a program in chemical safety.

Q. What do you think of the proposed Peer Review Program for the agency?

A. I think it's something that we need. I'm a little surprised, to be perfectly honest, by the negative reaction in some sections of the mass media to the program. Most of the EPA staff views have been very supportive. There have been some concerns as to exactly the volume of documents that may be processed, which particular types of things, just general questions as to what will be expected. Obviously, those things haven't been worked out. But I don't

know of any first rank research or technical institution that does not have an internal peer review process. I've been in several and I've been through the review processes, and they can be frustrating because often times your own colleagues will call you up short on your mistakes or your oversights. But that's important because you don't maintain a reputation as a first rate scientific institute if you don't have that kind of a process. And I think that's one thing we really need here.

Q. Do you see it as strictly an internal peer review or external as well?

A. I think that Dr. John Hernandez (EPA Deputy Administrator) is envisioning a combination. For some major documents I think he may use outside peer reviewers for the simple reason that these people may at some point be called to testify on what they have assessed. It's important in that case to have people who have standing in the scientific community and are credible witnesses. Use of outside reviewers also prevents us from becoming captives of our internal biases. In any institution you can become inbred in terms of your thinking.

Q. One concern about peer review expressed in the news media was that there might be excessive delay or paralysis. Is there some safeguard that can be used to prevent that?

A. Yes, there is. Two things can happen. One is, knowing that you have a review cycle ahead, you can start putting your package together sooner. Your front end work has to be better done. Also you do have to give peer reviewers a guideline

that they must return documents by such and such a date. And I think if you have a sufficient number of people reviewing, no one person will be so overburdened that he can't meet those deadlines.

Q. Do you think that in the future EPA will be less likely to make strong correlations between animal studies and potential human effects?

A. No, I don't think so. I think that what we will be more likely to do is to make better correlations. I don't think anyone in this agency or outside who has a lot of experience in toxicology, pharmacology and related disciplines which rely on animal experimentation has any discomfort with using animals as test models. But for certain types of effects there has been a tendency not to factor in some of the considerations that one uses in going from the animal model to the human. In the area of carcinogenesis, for instance, which is the area where we probably make the weakest types of correlation, we simply make what is essentially a leap of faith. If you look at the way one establishes, let's say the safety of a drug, there are a whole series of tests that are carried out. You test not just a rat but a rat and a mouse. You check beagle dogs, rabbits, or guinea pigs. And these procedures give you some confidence in how general a particular effect is. You may observe a particular toxic effect which could affect humans. You normally take into account any differences in physiology or anatomy, differences in specific biochemistry and things like this. So far the only thing we take into account in making the correlation for a carcinogen is simply the body surface area — which is, of course, one fundamental thing you have to take into account, but it leaves out all the other things that really let you understand where you are going.

Q. Do you think it changes the way you consider benefits vs. risk in deciding whether a chemical should stay on the market?

A. I think what we have to do is to do a better job on identifying benefits. We don't have many economists in this agency. And so we depend very much for benefit information on other Federal agencies or on trade groups and, as a result, we don't have the best quality control over that information. We probably need to do a better job in-house on that benefit side of the equation.

Q. How about on the risk side, are you satisfied with the work that's done there?

A. Well, Congress designed both the Toxic Substances Control Act and the Federal Insecticide, Fungicide and Rodenticide Act as risk balancing statutes. They do not speak of absolute risk or zero risk but of reasonable vs. unreasonable risk. Therefore, we have to move to the system where we're getting a better picture of what the risk actually is. I think some of the comments I made before with regard to translating animal studies are pertinent. When we do a risk calculation, we probably do need to sit down and instead of running just one model, run several and see how well they agree or disagree. Some of these risk models can disagree with each other by several orders of magnitude. And the question is where does the risk really seem to be. If you happen to pick the one model that gives you an inappropriate risk number, then you're not basing your decision on a good analysis.

We need a better data base. We need to see a return of informed professional judgment to an area which

has been abdicated to "risk" numbers generated by computer curve fitting programs. And we need to see an attempt to apply our developing knowledge of toxicological and physiological principles to the interpretation of risk data.

Q. Is it true that perhaps one of the most potent carcinogens is a natural product?

A. Oh yes, aflatoxin is among the most potent of carcinogens. It's out there. But we can't do anything about it. The only way to get to zero risk on aflatoxin is simply to ban peanut products and certain grain products. FDA is not going to do that. There are tolerance levels for aflatoxin that mitigate the risk to what FDA feels is a safe level.

Q. How many new chemicals have been registered under TSCA now?

A. The Pre-Manufacturing Notice Program has been in effect for about three years, and I think we're talking approximately 1,000 chemicals at this point. Next year we anticipate maybe an additional thousand notices.

Q. Have we had any problems accepting any of these so far?

A. We have had problems in that a lot of the manufacturers basically don't give us enough information to evaluate whatever level of risk may be present. They may just let us know they have compound X and sometimes they'll leave off the tonnage or the structure or things like that. However, it's been getting better. A lot of manufacturers generate a great deal of data as part of their product

liability and product stewardship programs. And a lot of manufacturers have been getting into the habit of sending the data along with the material. That makes our life very easy when they do that.

Q. How is the generic registration for pesticides proceeding?

A. You mean the registration standard? It's proceeding pretty much on schedule. In 1981 we have gotten out 15 registration standards. We anticipate getting out a similar number in 1982 and more again in 1983. We are changing somewhat the structure of a registration standard to put more reliance on having the industry do some of the work involved there. There's no reason since we do provide them a service of licensing a product, that we should be doing all the searching out of where the studies are and things like that. We're moving in the direction at EPA of simply identifying the product that we want to re-register, seeing what is in our files, identifying where we have data gaps and then simply telling the registrants that it's up to them to supply this information, and if they can tell us that we have it somewhere or if it's in the literature or if they have to do a new study. That's their business.

Q. In retrospect, would you say that the decision made by the agency to ban DDT was a wise one?

A. I think that right now the DDT question probably is insignificant because DDT is something that most domestic insects have developed quite a lot of resistance to. Even back when DDT was first banned, it was in many cases losing its effectiveness. I'm informed that in some experimental uses that were

granted after the DDT ban was instituted, they actually got higher yields in the non-DDT treated fields than they did in the DDT-treated fields for the simple reason that the DDT knocked out the natural predators of the pests they were trying to get rid of, but the pests were reasonably resistant to DDT. Looking back at the record, I'm not sure that the decision could have gone but the way that it did.

Q. What will be your philosophy in administering the Toxic Substances Control Act and the Federal Insecticide, Fungicide, and Rodenticide Act?

A. I am seeking the opportunity to administer TSCA in an integrated fashion which will provide a greater measure of public and environmental protection as well as a reduction in the complexity of toxic substances regulation and the burden of these regulations on the regulated community. I am committed to bringing more credibility to the science used in decision making.

With FIFRA, I am again seeking the opportunity to administer the law so as to improve public and environmental safety while ensuring that FIFRA regulations are structured so as to not discourage the development of those products needed to support our efforts to raise food and protect our citizens from certain of nature's less than benevolent creatures.

I am also supportive of Administrator Gorsuch's policies regarding greater involvement by the states. EPA has had a long history of looking down its nose at state agencies. I would like the opportunity to change that attitude in the Office of Pesticides and Toxic Substances. □

Aid for City of Niagara Falls



Water thunders over Niagara Falls a short distance above the site where thousands of gallons of poorly treated wastes are discharged daily into the Niagara River.

EPA has announced that it will increase a construction grant to the city of Niagara Falls, N.Y., by \$4 million to improve treatment of poorly treated wastes now being discharged into the Niagara river below the falls.

Money from this grant will be used to rebuild carbon filtration beds which have been inoperable since 1978.

The award of the increased sum is conditioned on acceptance by the city of a state discharge permit requiring control of the waste it accepts and the successful operation of the plant.

While an increased grant is being awarded to the city, a claim by the city for \$2.4 million spent for the design and construction of the carbon beds to be replaced is being disallowed.

An investigation is under way to determine what, if any, action EPA can take to recover funds spent or damages from parties involved in the design, engineering or construction of the original carbon filtration beds.

The decision to provide additional funding for correction of the carbon bed problem is the first action resulting from a comprehensive review of the environmental problems in Niagara County started by EPA in mid-August.

The Inspector General of EPA, together with EPA's National Enforcement Investigation Center located in Denver, the EPA Water Programs Office, the EPA Enforcement Center and the Agency's Regional Office in New York City is completing an investigation of other deficiencies in the Niagara treatment plant and will present a report and recommendation to the EPA Administrator shortly.

Based on the findings of this study, EPA will decide whether to provide up to an additional \$8 million to the city of Niagara Falls for improvement of the treatment plant.

EPA began surveying the Niagara area in August as a first step in developing a more comprehensive approach to pollution abatement in Niagara and its neighboring counties.

The survey includes a review of existing wastewater discharges, air emissions and some 330 hazardous waste sites, including approximately 150 which are less than three miles from the Niagara River.

Scheduled for completion soon, the survey will guide a stepped-up and carefully targeted enforcement program now under development. □

Sites Ranked



Administrator Anne M. Gorsuch fields questions at a press conference announcing the 115 worst hazardous waste sites.

A total of 115 hazardous waste sites have been ranked as the worst in the country in the first stage of a \$1.6 billion Superfund Federal cleanup campaign.

Anne M. Gorsuch, EPA Administrator, declared:

"This is a milestone in the development and implementation of Superfund. The list we have developed represents a program to which we have given the highest priority, and one we are determined to make successful."

Mrs. Gorsuch emphasized that the Reagan administration is "committed to the cleanup of hazardous waste sites as quickly and effectively as possible."

Superfund, known formally as the Comprehensive Environmental Response, Compensation and Liability Act, provides funds from industry and the Federal government to clean up hazardous waste sites when responsible parties cannot be found or cannot afford to pay for cleanup.

The ranking of sites was based on a hazard-scoring system developed by EPA and one of its contractors, with extensive input from states and industry. The greatest emphasis was on potential threat to public health, but the threat to the environment was also taken into account.

Pollution via three "pathways" — air, groundwater and surface water — was measured for potential impacts. Fire, explosions and the possibility of direct contact received separate evaluation as more appropriate for emergency action.

In some cases, EPA authorized an emergency removal action based on information uncovered during the hazard-scoring process.

The list of 115 sites was developed from an initial list of 585 sites evaluated by the

Metal barrels are removed in program to reduce hazards at the "Valley of the Drums" site in Kentucky.

states and EPA's 10 regional offices this summer. The final quality-assurance phase of the process was conducted by EPA Headquarters.

The sites announced will be candidates for inclusion on the list of 400 national priority "response targets" that the Superfund law required EPA to identify.

That list will be made final after public participation and after the results of further study and data collection are incorporated into the hazard scoring.

Under Superfund, states must contribute at least 10 percent of the actual long-term costs of cleanup per site, unless the site is publicly owned. On publicly owned sites, the state is required to pay or assure at least 50 percent of the costs.

Detailed plans for cleanup will be worked out in conjunction with the states. Cleanup can occur through three mechanisms: direct Federal contracts; cooperative agreements under which the state takes the lead in directing cleanup, and private cleanup through voluntary or court-ordered action.

"The Agency will continue to press responsible parties — through legal action, if necessary — to clean up sites threatening public health or the environment," Mrs. Gorsuch said. "Where this cannot be done, or if it cannot be accomplished in a timely manner, EPA and the states will finance remedial action under Superfund."

To date, EPA has spent some \$17 million in Superfund money on emergency action for 41 sites. It has also awarded \$17 million for design and engineering studies on 25 other sites in 19 states.



Who's Who on the List



*Worker crosses an important boundary
at the "Valley of the Drums" Taylor site in Brooks, Ky.*

Of the 44 States and territories which have the 115 top-priority sites, Florida heads the list with 16. New Jersey is next with 12 sites.

Other States with more than one site are:

New York, 8; Pennsylvania, 8; Minnesota, 5, Massachusetts, Texas, Arkansas, and Ohio, 4; California, New Mexico, New Hampshire, Rhode Island and Delaware, 3; and Virginia, Oklahoma, Indiana and Missouri, 2.

The following list contains the sites, listed in groups of 10, with the most serious hazard groups listed first:

Commencement Bay, Tacoma Industrial Complex, Tacoma, Wash.; Keefe Environmental Services, Exeter Rd., Epping, N.H.; Lipari Landfill, Mantua, Gloucester County, N.J.; Mark Phillip Trust, North Woburn IndustriPlex, Woburn, Mass.; McAdoo Associates, McAdoo, Pa.; Nyanza Chemical Waste Dump, Ashland, Mass.; Pollution Abatement Services, Oswego, N.Y.; Price Landfill, Pleasantville, Atlantic County, N.J.; Tar Creek, Pitcher Mining District, Ottawa County, Okla., and Tybouts Corners, New Castle, Del.

Biscayne Aquifer, Hialeah, Fla., along with Miami International Airport and Miami Drum Services; Bruin Lagoon, Bruin, Pa.; Burnt Fly Bog, Tylers Land, Marlboro Township, Middlesex County, N.J.; Delaware Sand and Gravel-Llangollen Army Creek Landfills, New Castle, Del.; Goose Farm, Plumsted Township, Ocean County, N.J.; Lone Pine Landfill, Burke Rd., Freehold Township, N.J.; Motco, La Marque, Tex.; Pijack Farm, Plumsted Township, Ocean County, N.J.; Spence Farm, Plumsted Township, N.J., and Vertac Inc., Jacksonville, Ark.

Bridgeport Rental and Oil Services, Bridgeport, N.J.; D'Imperio Property, Hamilton Township, Atlantic County, N.J.; French Limited Disposal Site, Crosby, Tex.; Love Canal, Niagara Falls, N.Y.; Old Bethpage Landfill, Oyster Bay, N.Y.; Picketville Road Landfill, Jacksonville, Fla.; Reeves Southeastern Corp., Tampa, Fla.; Seymour Recycling Corp., Seymour, Ind.; Sikes Disposal Pits, Crosby, Tex.; South Carolina Recycling and Disposal Company, Richland County, S.C.



Aerojet-General Corp., Sacramento County, Calif.; American Creosote Works, Pensacola, Fla.; Charles George Land Reclamation Trust, Tyngsborough, Mass.; Iron Mountain Mines Inc., Keswick, Calif.; Kin-Buc Landfill, Edison, N.J.; Oakdale Dump Sites, Oakdale, Minn.; Olean Well Fields, Olean, N.Y.; Picillo Farm Site, Coventry, R.I.; Stauffer Chemical Company, Delaware City, Del., and Taylor Road Landfill, Tampa, Fla.

Andover Sites, Andover, Minn.; Broward County Solid Waste Disposal Facility, Davie, Fla.; Butler Tunnel, Pittston, Pa.; Facet Enterprises Inc., Elmira, N.Y.; Fulbright Landfill, Springfield, Mo.; Ottati and Goss-Kingston Steel Drum, Kingston, N.H.; Pioneer Sand Company, Warrington, Fla.; Timber Lake Battery Disposal, Tampa, Fla.; Whitehouse Waste Oil Pits, Whitehouse, Fla., and Whitewood Creek, Deadwood, S.D.

Chem-Dyne Corp., Hamilton, Ohio; Chemical Control, Elizabeth, N.J.; Coleman-Evans Wood Preserving Company, Whitehouse, Fla.; Davis Liquid Chemical Waste Disposal Site, Smithfield, R.I.; Fritt Industries, Walnut Ridge, Ark.; Hollingsworth Solderless Terminal Company, Fort Lauderdale, Fla.; Re-Solve Inc., North Dartmouth, Mass.; Laurel Park Landfill, Naugatuck, Conn.; Reilly Tar and Chemical Corp., St. Louis Park, Minn., and Stringfellow Acid Pits, Glen Avon, Riverside County, Calif.

Allen Transformer, Fort Smith, Ark.; Alpha Chemical Corp., Galloway, Fla.; Fields Brook, Ashtabula, Ohio; Koppers Gas and Coke Plant, St. Paul; Mid-South Wood Products, Mena, Ark.; Neal's Landfill, Bloomington, Ind.; United Nuclear Corp., Churchrock, N.M.; Upper Freehold, Monmouth County, N.J.; Zellwood Ground Water Contamination Site, Zellwood, Orange County, Fla., and 19th Avenue Landfill, Phoenix, Ariz.

Batavia Landfill, Batavia, N.Y.; Gold Coast Oil Corp., Miami, Fla.; Homestake Mining Company, Milan, N.M.; Hranica Landfill, Buffalo Township, Butler County, Pa.; A.L. Taylor Site, Brooks, Ky.; Lord-Shope Landfill, Piper Road, Girard Township, Pa.; National Lead-Taracorp Site, St. Louis Park, Minn.; Outboard Marine Corp., Waukegan, Ill.; Sapp Battery Salvage, Jackson County, Fla., between Alford and Cottdonale, Fla., and Tower Chemical Company, Clermont, Fla.

Abm-Wade, Chester, Pa.; Ellisville area sites, near Ellisville, Mo.; Chemicals and Minerals Reclamation, Cleveland; Gratiot County Landfill, St. Louis, Mich.; Lehigh Electric and Engineering Company, Old Forge, Pa.; Marathon Battery Corp., Philipstown, N.Y.; Mathew's Electroplating, Roanoke County, Va.; Sylvester's, Nashua, N.H.; West Virginia Ordnance, Point Pleasant, W. Va.; Western Sand and Gravel Site, Douglas Pike, Burrillville, R.I.

Atchison, Topeka and Santa Fe Railroad refueling and car washing site, Clovis, N.M.; Bioecology Systems Inc., Grand Prairie, Texas; Chisman Creek Disposal, York County, Va.; Criner Waste Disposal Site, Criner, Okla.; Denver Radium Sites, Denver; Lindane Dump, Harrison Township, Natrona, Pa.; Niagara County Refuse Site, Wheatfield, N.Y.; Summit National Liquid Disposal Services, Deerfield, Ohio; Triana, Triana, Ala., and Winthrop Town Landfill, Winthrop, Maine.

Aidex Corp., Council Bluffs, Iowa; Arkansas City Dump Site, Arkansas City, Kan.; Arsenic Trioxide Disposal Site, southeastern North Dakota; Chemical Metals Industries Inc., Baltimore; Fort Lincoln Barrel Site, Washington, D.C.; Luminous Processes Inc., Athens, Ga.; North Hollywood Dump, Memphis; Ordot Landfill, Guam; PCB wastes, Trust Territories of the Pacific; PCB spills, multiple sites on 210 miles of highway shoulder in 14 counties in North Carolina; PCB Warehouse, Saipan, Northern Mariana Islands; Rose Park, Salt Lake City; Pine Street Canal, Burlington, Vt.; Taputimu Farm, American Samoa, and Walcott Chemical Company warehouses, Greenville, Miss. □



Birds, Flowers and Chemicals



Azaleas and other flowering plants thrive in Cypress Gardens.

While carelessly dumped chemical wastes have scarred the landscape in parts of the country, some chemical plants have proved they can coexist successfully with their natural surroundings.

Examples of the latter include the DuPont polyester fiber plant on the Cooper River near the noted Cypress Gardens in Charleston, S.C., and the Dow chemical facilities at Freeport, Tex., where black skimmers, long-winged marine birds, nest on a former company parking lot.

The Dupont polyester fiber plant can be seen behind a screen of trees near the famed Cypress Gardens in Charleston, S.C.

The DuPont plant occupies only about 200 acres of the 2,000-acre site owned by DuPont near Charleston. The remaining 1,800 acres of wood and marshland act as a buffer to shield the plant from the outside world.

During construction of the DuPont plant elaborate precautions were taken to minimize any adverse impacts on the beauty of the surrounding marshes, swamps and woodlands.

"... deer have continued to thrive on the site, feed on the newly planted grass along the swales leading to the river," a company report noted. "Alligators sun themselves within sight of the main gate while ospreys and egrets nest in the old rice fields along the Cooper. Fishermen and hunters steer their craft along the winding course of the river, oblivious to the work that goes on behind the tree screen."

Thousands of people visit the azaleas, camellias and other exotic plants that grow around the large stand of cypress trees at Cypress Gardens. Most of them are unaware that around the next bend in the road is one of the world's largest fiber manufacturing plants.

Charleston Mayor Joseph P. Riley Jr. has said that the city and the DuPont plant on the Cooper River "have been very compatible." He added that DuPont has been "extremely supportive of the city-owned Cypress Gardens."

At the Dow plant in Freeport, black skimmers have been nesting at an old oyster shell parking lot area for several years.

These uncommon marine birds, with odd-shaped bills, are noted for their unusual feeding habits.

A skimmer soars over the Dow plant on the coast of the Gulf of Mexico.

When looking for food they drop their lower bill so that it plows the water as the bird maintains position by beating its long uplifted wings and slowly flying forward.

After knifing through the water with its lower mandible, the bird suddenly doubles back on its trail and snatches up the small shrimp and fish which may have been disturbed or attracted by the ripple.

Officials of the Dow plant, fascinated by these unusual birds and anxious to keep them near their plant, attempted one year to improve their parking lot nesting site by digging drainage channels. One of the results was an increase in growth of plants.

However, when the skimmers then rejected the site, the Dow officials learned later from a bird authority that these birds prefer to nest on bare and uncluttered shorelines.

So for the next nesting season the Dow bird watchers, acting on the advice of an ornithologist, scraped off the site and installed some painted skimmer decoys to attract these birds again.

This plan worked and the skimmers now spend their summers once again skimming over the Gulf coastal waters near the Dow plant. □



Black Skimmers flying and landing near the Dow Chemical plant at Freeport, Tex.

An Amtrak passenger train, the Senator, crosses the Mystic River, at Mystic, Conn., on its way to New York and Washington, D.C. The train changes its diesel locomotive for an electric one at New Haven for the rest of the trip to Washington, D.C. Amtrak hopes eventually to provide electric service for the entire Boston-Washington service.

Keeping the Trains Running



To avoid halting commuter rail service in the northeastern U.S., EPA has extended the deadline for reducing the levels of polychlorinated biphenyls (PCBs) in transformers used in 792 electrically powered railroad locomotives and self-propelled cars.

Without the 21-month extension, EPA officials noted, most of the daily commuter service in the Northeast would have come to a halt in January, 1982.

Despite efforts by the railroads to find substitute fluids, EPA found in November that the railroads would not be able to meet the Jan. 1, 1982, deadline for using alternative substances.

Since almost all the rail transformers would have been out of compliance by Jan. 1, the railroads would not have been able to use the locomotives and cars containing them.

The result, EPA found, would have been more auto traffic, more air pollution, greater risk of traffic accidents, lay-off of railroad employees and revenue losses to the railroads.

PCBs belong to a broad family of organic chemicals known as chlorinated hydrocarbons. Their primary use is in electrical transformer cooling liquids and capacitor dielectric fluids.

Because PCBs present risks through chronic exposure at extremely low levels, EPA on May 31, 1979, banned their manufacture, distribution and use in non-totally enclosed units. However,

continuance of some non-totally enclosed uses were authorized.

For one of these uses — PCB transformers in railroad locomotives and self-propelled cars — EPA ordered that the level of PCBs not exceed 60,000 parts per million (6 percent) by Jan. 1, 1982, and 1,000 ppm (0.1 percent) by Jan. 1, 1984.

Noting that the railroads operate on their own restricted rights-of-way, have spill and clean-up programs and provide employee protection, EPA preliminarily concluded that the risks associated with extending the deadline are outweighed by the benefits of continued operation of the northeastern railroad system and of taking the time to develop an appropriate substitute for PCBs.

Five railroad organizations have PCB transformers in service: Southeastern Pennsylvania Transportation Authority; Connecticut Department of Transportation; New York Metropolitan Transportation Authority; National Railroad Passenger Corp. (Amtrak); and New Jersey Transit Corp. The Consolidated Rail Corp. (Conrail) and Maryland Department of Transportation also have PCB equipment, but these units have been retired from service.

EPA said that mineral oil, a common substitute for PCBs in non-railroad uses, poses an unacceptable safety hazard on

passenger trains because its fire point is 170 degrees centigrade. The minimum standard for passenger service application is 300 degrees centigrade.

During early tests, EPA said, several other non-PCB dielectric fluids overheated or caused pumping problems in railroad transformers. Four new dielectric fluids passed the tests, but the railroads have expressed concern that the chlorinated benzenes contained in three of these fluids may themselves be hazardous and make them subject to possible future government regulation. The fourth substance has a fire point of 310 degrees centigrade, only slightly above the minimum standard.

EPA estimated that the total retrofilling cost of reducing the PCB concentration to 60,000 ppm could be as high as \$12.5 million. This estimate assumes a one-time refilling cost of \$15,000 per car and \$30,000 per locomotive. EPA noted that the alternative step of replacing the transformers would cost about \$108 million (\$130,000 per car and \$250,000 per locomotive).

Southeastern Pennsylvania Transit Authority, which has the largest number of affected cars, has told EPA that the earliest it could complete the first stage of retrofilling would be October 1, 1983. In view of the circumstances, EPA said it is proposing to extend the date for complying with the 60,000 ppm requirement until Oct. 1, 1983. □



Questions in the Stratosphere

Any decision on EPA's future course of action regarding chlorofluorocarbon emissions suspected of depleting stratospheric ozone will need "to reflect the fundamental problem of coping with the scientific uncertainties," a key EPA official recently stated.

Don R. Clay, Director of the EPA Office of Toxic Substances, told a House Energy and Commerce Subcommittee that chlorofluorocarbons, also known as CFCs, are a family of chemicals that have found extensive use as aerosol propellants, solvents, heat transfer media in air conditioning and refrigeration and various other uses.

In the mid-1970's, he noted, atmospheric modeling and laboratory studies indicated that continued world CFC emissions might lead to depletion of stratospheric ozone. Since stratospheric ozone limits the amount of solar ultraviolet radiation reaching the earth's surface, there was concern that reduction of the ozone layer might cause adverse health and environmental effects.

Solar ultraviolet (in particular UV-B) radiation contributes to the approximately 300,000 cases a year of non-melanoma skin cancer.

However, Clay told the subcommittee that "uncertainties about the impact, extent and direction of stratospheric ozone changes due to CFC emissions still remain. EPA recognizes that some uncertainties regarding whether depletion will occur, and what its magnitude would be, will probably remain for years.

"Domestic and international research efforts will continue to improve our understanding of the causes, magnitude, and potential effects of changes in stratospheric ozone.

"EPA intends to monitor and encourage support of research efforts by other nations, international organizations, industry, academia, and other agencies, where feasible. The data available from these many sources, carefully

scrutinized, should enable us to determine whether additional regulatory measures need to be undertaken and, if so, when."

Clay noted that further regulatory action by the U.S. acting alone would have only a limited effect in protecting the world ozone shield.

Meanwhile, he continued, "the Agency will continue its current international program focused on collecting data, improving cooperation and pursuing international understanding. We expect that, as our knowledge grows, so too will international agreement on this issue."

Reviewing the history of the issue, Clay said that after receiving a report from the National Academy of Sciences in 1976 on the theory that damage to the ozone layer might cause adverse health and environmental effects, and regulatory recommendations by the Interagency Task Force on Inadvertent Modification of the Stratosphere, the Food and Drug Administration and EPA prohibited non-essential aerosol uses of CFCs in the United States.

EPA decided to regulate aerosol uses separately from non-aerosol uses because substitutes were readily available for most aerosol applications while alternatives for many non-aerosol uses were difficult to identify, Clay explained.

Since the mid-1970's, he continued, scientists at the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration and other agencies, as well as those in universities and industry, have been studying the potential effects of CFCs and other compounds on the stratosphere.

"These studies have employed laboratory measurements, atmospheric observations, and theoretical analyses (modeling). Numerous advances have been made over the last seven years; however, scientific uncertainties remain. We are still unable to predict with confidence any amount of ozone depletion for a particular level of CFC emissions."

Clay said that stratospheric scientists from throughout the world convened in a NASA/World Meteorological Organization workshop in May 1981. Present estimates of their various models are that continued emissions at present levels of CFCs-11 and -12 (the most widely used CFCs) may eventually result in 5-10% stratospheric ozone depletion, he added. "Existing uncertainties in stratospheric chemistry and physics are such that these values may be in error by a factor of about two in either direction (from one-half to double the central estimates). Historically such estimates have changed substantially in either direction as new or better scientific data emerged but the present estimates have returned to the initial lower central values. Consideration of other halocarbon emissions and their potential impact on stratospheric ozone may increase the estimates by about a third.

"Best existing instrumentation and statistical methods limit our ability to reliably determine global average stratospheric ozone trends to about a 2 percent change per decade. While no measureable change to date has been detected, we should not expect to detect any changes. Current models of ozone depletion due to CFCs, if correct, estimate less than a 1 percent decrease in global average stratospheric ozone should have occurred to date. Moreover, if the latest model calculations are correct, the 5-10 percent estimates imply that stratospheric ozone may be decreasing at the rate of less than 0.1 percent per year. Scientific experts of the United Nations Environment Program's Coordinating Committee on the Ozone Layer (UNEP/CCOL) at its annual meeting held in October 1981 concurred with these estimates.

CFCs and other halocarbons, Clay noted, are not the only chemicals with the potential to impact on stratospheric ozone. Nitrogen oxide emissions may decrease or increase stratospheric ozone. For example, nitrogen oxide emissions from aircraft flying in the region of the tropopause (the boundary between the

Plane heads for the stratosphere through a cloud-studded sky.

troposphere and the stratosphere — about 5 miles at the poles and 11 miles at the equator) may cause an increase in ozone in that region, whereas stratospheric ozone may be decreased by aircraft flying at higher altitudes. Nitrous oxide from decayed vegetation diffuses to the stratosphere where it may also cause a decrease in ozone.

"Carbon dioxide is calculated to cause a decrease in stratospheric temperature, which in turn may partially ameliorate the ozone depletion due to CFCs because many key chemical reaction rates slow with lower temperatures. The uncertainty in this effect is large; theoretical estimates by atmospheric scientists range from a tenth to a half amelioration with the doubling of atmospheric carbon dioxide concentrations expected to occur by early in the next century due to present levels of fossil fuel combustion.

Estimated Effects of Ozone Depletion

"Ozone filters out most of the biologically-damaging solar ultraviolet (in particular, UV-B) radiation. The role of UV-B radiation in causing non-melanoma skin cancer (rarely fatal) is well known, and the changes in non-melanoma skin cancer and UV-B exposure as a function of stratospheric ozone depletion can be estimated. In the U.S., there are approximately 300,000 cases a year of non-melanoma skin cancer.

"We don't know whether UV-B radiation is linked to melanoma, the frequently fatal form of skin cancer. Animal studies are not possible because the human being is the only animal that gets melanoma skin cancer."

Only limited data exist on the effects of increased UV-B radiation on terrestrial and aquatic plants, fish, and other biota, especially in their natural environment where organisms may have the capability to adapt to small changes, Clay said. Studies on selected key crops in the field and on aquatic organisms are underway.

"Little knowledge exists on the effect of CFCs and other atmospheric aerosols

and gases such as carbon monoxide on climate, although some scientists predict a warming at the earth's surface. Changes in ozone distribution with altitude, even if not in total amount of ozone, may produce temperature changes and result in climate changes. These effects cannot yet be quantified.

"In sum, present scientific knowledge is unable to predict accurately the effects of increased UV-B radiation due to ozone depletion."

CFC Production and Use

Total CFC production and use has changed in the last decade, Clay testified. "In the United States, CFC production peaked at over 1 billion pounds in 1974, then dropped sharply to level off at approximately 835 million pounds in 1979 and 1980. The decline in production between 1974 and 1979 is the result of a large decrease in aerosol use of CFCs, which declined from about 500 million pounds in 1974 to about 25 million pounds in 1979 and 1980. Non-aerosol use, however, including use of CFCs in refrigeration, air conditioning, foam product manufacture, solvent applications, and in a variety of other uses, grew about 8 percent annually in the U.S. from 1975 to 1979, then fell slightly in the 1979-80 economic slowdown. Anticipated recovery of the economy, combined with the expected market growth in the use of CFCs for insulation, solvents, food freezing, and other applications could lead to an eventual increase in domestic production over the 1974 peak.

"Available statistics indicate that world production of CFC-11 and -12 also peaked in 1974. As in the U.S., there was a significant drop in aerosol use in the years following 1974, while CFC demand for non-aerosol uses increased. World growth (including the U.S.) in non-aerosol uses in recent years has varied from 5 to 11 percent per year. Recent data show only slight growth in demand for non-aerosol uses between 1979 and 1980.

"In the U.S., the major applications of CFCs include their use as a heat transfer

agent in refrigeration and air conditioning, a blowing agent in the manufacture of flexible and rigid foams, and a solvent to clean and dry metals and electronic components. Numerous miscellaneous uses also exist, including sterilization, food freezing, coal cleaning and personal protection warning devices.

"Five manufacturers of CFCs supply approximately 5,000 direct purchasers of CFCs and tens of thousands of firms that purchase CFCs through distributors. At times the distribution chain involves five or six different firms, including a repackager. These distributors and users of CFCs include both large and small firms. Many ultimate users of CFCs are service establishments using small amounts of CFCs to recharge air conditioning and refrigeration systems. Other small businesses that use CFCs include building contractors, hospitals and clinics, and plants using CFCs as a solvent.

"Because of the variety of ways in which CFCs are used, their importance to the economy, and the complexity of the markets involved, EPA has performed and continues to perform extensive economic analyses as well as to solicit information on the cost of alternative technologies and the economic impact of CFC regulations, including the impact on small businesses."

International Activities

All major CFC-producing nations have taken actions to reduce CFC emissions, Clay noted. "Canada, Sweden, and Norway have banned most aerosol propellant uses of CFCs-11 and -12, as we did in 1978, and they are considering further actions. Other countries have reduced aerosol emissions without regulatory action. The Japanese government and industry have agreed to cap CFC-11 and -12 production capacity at current levels.

"The ten member nations of the European Economic Community (EEC) are required to ensure that production capacity for CFCs-11 and -12 does not

increase and to reduce aerosol propellant uses of these CFCs by at least 30 percent of 1976 levels by December 31, 1981. The EEC and several other nations, including Canada and Japan, are considering further emission controls and are working with industry on the technology required to do so.

"The Organization for Economic Cooperation and Development (OECD), composed of twenty-four industrialized countries, has been a forum for exchanging information on science, technology, economics, and regulatory aspects of CFCs. The OECD is currently nearing completion of a comprehensive report on CFCs.

"The Coordinating Committee on the Ozone Layer (CCOL) of the United Nations Environment Program (UNEP) meets annually to prepare assessments of scientific information on the ozone depletion hypothesis, to facilitate the exchange of information, and to make suggestions for future research.

"In April of 1980, the UNEP Governing Council recommended that member governments achieve significant reductions in uses of CFCs-11 and -12, not increase production capacity, pursue further research, and reexamine control measures already taken in light of available data. In May 1981, the Governing Council initiated work on a global framework convention for the protection of stratospheric ozone. The first meeting of the the convention's technical and legal experts will be in Stockholm, Sweden in January 1982.

"EPA has been involved in international cooperation on scientific research and monitoring, such as the work of the UNEP Coordinating Committee on the Ozone Layer, the World Meteorological Organization (WMO), various international scientific organizations, and bilateral research projects with the Netherlands and Federal Republic of Germany on effects of UV-B radiation. In view of the global implications of the CFC issue, it is important that we continue to work with other countries to monitor the science and develop appropriate

governmental responses, and that we consider our domestic CFC efforts in the context of the work of the international community."

Recent and Current EPA Activities

In October of 1980, EPA issued an Advance Notice of Proposed Rulemaking (ANPR) in response to concerns raised by the findings of the 1979 assessment of the CFC/ozone depletion issue by the National Academy of Sciences (NAS) and other reports, Clay stated. The purpose of the rule-making notice was to gather information about the validity of the ozone depletion theory, the appropriateness of restricting the use of CFCs, and possible alternative courses of action for the Agency. The notice alerted the public, Clay explained, that EPA was concerned about possible resultant effects on human health and the environment due to possible growth in the use of CFCs, and that EPA was considering whether it should issue a proposed rule to limit non-aerosol use of CFCs.

"EPA received over 2,000 comments on the Notice. It is clear that many segments of industry consider additional regulatory action — particularly the regulatory strategies discussed in the ANPR — to be premature and controversial. The Agency believes that the issues raised in these comments deserve considerable attention and further analysis which has been initiated.

"EPA staff are working closely with the experts inside and outside of government, studying the unresolved scientific questions and economic implications of CFC emission reductions. Scientists at NASA, NOAA, the Federal Aviation Administration, and other agencies as well as in academia and industry are evaluating the potential effects of CFCs and other compounds on the stratosphere, employing laboratory measurements, atmospheric observations, and theoretical studies (modeling). The Rand Corporation, under contract to EPA, is performing an

assessment of currently available technologies for reducing CFC emissions in nonaerosol applications. Under another EPA contract, Rand Corporation has examined the economic and policy implications of restricting domestic CFC production and is presently examining innovation in the CFC-manufacturing and CFC-using industries.

"On May 1, 1981, EPA entered into a contract with the National Academy of Sciences (NAS) for an assessment of the most recent scientific information regarding stratospheric ozone changes and the resultant effects.

"One part of the study will focus on new scientific information developed since the last NAS reports on the subject in 1979, including the information reported at the NASA/WMO workshop on the stratosphere in May, 1981 and other pertinent reports relevant to stratospheric processes. There is every indication that the information from the NASA/WMO workshop is among the best available, and it will be fully considered in the NAS evaluation.

"Another part of the NAS assessment will examine the environmental and health effects due to changes in stratospheric ozone concentrations. In this part, NAS will examine and assess current understanding of UV-B radiation effects on terrestrial and aquatic plants, fish and other aquatic organisms, ecosystems, climate and human health. Their assessment of human health effects will include an examination of current clinical and epidemiological data as well as data obtained from animal studies.

"The NAS study was originally intended to be completed by December 1981; however, EPA is modifying the contract to allow the NAS additional time for a more thorough review of their assessment. At present, EPA anticipates receiving the NAS report by March 1982." □

Chemical Waste Cleanup

A proposed consent decree has been filed with the U.S. District Court in Little Rock, Ark., conatining an agreement reached by EPA and the State of Arkansas with two chemical companies to correct waste disposal problems in Jacksonville, Ark.

The agreement is designed to settle suits filed against Vertac Chemical Corp. and Hercules Inc. by the Justice Department on behalf of EPA in March 1980.

The suits were filed to correct chemical waste disposal practices at the Jacksonville plant site, which is owned by Vertac and was formerly owned by Hercules.

Following a hearing held in April of last year, Vertac conducted an extensive program of remedial work on the plant site. The work was designed to contain the discharge of any contamination from the plant site, and to monitor ground water under the site.

Provisions of a preliminary injunction have been fulfilled by Vertac, and company officials estimate that in excess of \$1 million, not including work by company personnel, has been spent by the company in accomplishing these remedial actions to date.

"The steps that Vertac has agreed to take under the terms of the proposed decree will, when taken with the remedial work which has already been performed by the company, constitute one of the most thorough remedial programs of its type," said Anne M. Gorsuch, Administrator of EPA. "Vertac is, by agreeing to undertake the responsibilities contained in the decree, acting as a responsible corporate citizen, and is making a significant commitment to reducing any hazard to human health and the environment," Mrs. Gorsuch said.

Under the terms of the proposed consent decree, Vertac will:



A fisherman (in the foreground) tries his luck in Lake Dupree, a body of water in a Jacksonville, Ark., park, before the lake was closed because of pollution problems EPA is now trying to help solve.

- retain independent consultants to study conditions on and under the plant site that may require further remedial work;
- propose and implement remedial action, if any, necessary to prevent the discharge of pollutants from the plant site into the environment;
- develop a plan for orderly management of the wastes stored on the plant site, by treatment or off-site disposal;
- conduct a study of the fate and movement in the environment of any pollutants in Rocky Branch Creek and Bayou Meto;
- propose potential remedial measures for the removal or stabilization of pollutants in Lake Dupree, located in the Jacksonville City Park;
- establish a trust fund in the principal sum of \$60,000 especially restricted to assure long-term maintenance of remedial work performed on the plant site; and
- develop and implement standards for pretreatment of waste water discharged from the plant site to the Jacksonville sewage treatment plant.

The proposed decree, when fully carried out by Vertac, will satisfy essentially all of the claims raised by EPA and the state against Vertac. In the proposed decree, Hercules does not admit any responsibility for conditions on or off the plant site, but does agree to negotiate with Vertac on sharing the costs of studies and remedial action which Vertac undertakes. The government agencies do not release any claim which they may have against Hercules, and they may petition the U.S. District Court at anytime for a determination of Hercules' responsibility.

The Vertac plant site was included in a preliminary EPA list of nationwide waste sites targeted for action under Superfund, the federal program for cleaning up hazardous waste sites.

"This proposed consent decree will help assure that it will be unnecessary at this time to expend federal monies on this site, thereby making available those much-needed funds for expenditure on other sites where there is no responsible owner or operator to undertake remedial work," said Mrs. Gorsuch.

The proposed decree, which has been signed by all of the parties to the suit, has been filed with the U.S. District Court in Little Rock, and will be submitted to the court for signature after an opportunity for public comment.

EPA Collects Overdue Bills

A campaign of collecting its overdue bills which could amount to as much as \$32 million has been started by EPA.

"Until now, the Agency has made no concerted effort to collect its overdue bills," EPA Administrator Anne M. Gorsuch stated. "We now intend to make that effort. We want to make the best use of every available tax dollar."

Mrs. Gorsuch said that the total debts owed EPA are now known to exceed \$16 million, but that this amount could double when audits now under way are completed.

Most of the delinquent accounts involve overpayments in contracts or grants awarded municipalities, scientists, consultants, and others. Money is also owed the agency for services rendered and employee payback obligations.

A new system is being started to collect the bills which will use claims officers in Washington, D.C., and 10 EPA regional offices to coordinate the campaign.

While some debts will require only the issuance of an invoice for payments, others will need extensive collection efforts.

The Agency will be collecting money due from overpayments on grants, such as those that occur when a grantee overstates the cost or the federal share of a project.

In the case of contracts, the overpayments might have been for charges for unnecessary parts on a project or charges exceeding the acceptable rate. In either case, such discrepancies might not become apparent until an audit is conducted.

Examples of EPA services for which the agency remains uncompensated could include fees for processing a discharge or emission permit or Freedom of Information requests. Current

or former employees might have incurred payback obligations on excessive advance payment for travel or for moving expenses which are determined to be unallowable. The overpayments also could involve leaving government service after costly training before fulfilling employment obligations that were part of the training agreement.

Mrs. Gorsuch said the agency has not used vigorous collection procedures in the past. She said the agency has available to it such procedures as the use of the Internal Revenue Service's missing debtors' locator service, and the credit reference departments of commercial credit bureaus.

Interest can be charged on contracts, grants and employee debts beyond the negotiated due date at the rate paid by the federal government

on its obligations, which is currently 17 percent.

Except for fraud, there is normally a six-year statute of limitations applied to debts. If fraud violations are uncovered, they will be handled under other legal procedures.

EPA can agree to accept less than the full amount of an unpaid debt if the debt is less than \$20,000. If it is over that amount, there is a different procedure for reaching a compromise involving the Department of Justice or the General Accounting Office. Actions by either of these agencies can result in a legal suit to resolve the dispute.

The new system of debt collection consolidates collection responsibilities of three separate agency operations.

EPA is preparing a new claims manual for the debt collection campaign, setting forth standards and procedures for collecting the agency's outstanding debts.

HONORS AND APPOINTMENTS



Paul C. Cahill



David G. Stephan

Several new appointments have been made at EPA recently and five Agency officials have received national honors.

Paul C. Cahill, former deputy attorney general of California, has been named Director of the EPA Office of Federal Activities by EPA Administrator Anne M. Gorsuch.

Cahill will be responsible for liaison with other Federal agencies and will participate in the Reagan Administration's sub-cabinet working groups promoting regulatory reform. In his new position he is responsible for review of all Federal activities to ensure compliance with environmental laws.

"Paul Cahill has had extensive legal and policy-formulating experience in California government," Mrs. Gorsuch said. "As a state attorney and deputy attorney general he has worked with diverse governmental organizations and has interpreted the application of laws and regulations for such organizations. His expertise will be a great asset in directing the Agency's relations with other Federal government operations."

Cahill had been deputy attorney general of California since May 1980, working principally with the State Lands Commission and the California Coastal Commission. From 1973 to 1979, he was attorney-advisor to Commissioner William Symons Jr. of the California Public Utilities Commission. In 1973, he assisted in then-Governor Reagan's merger of three state departments into a consolidated Department of Health.

He was in private law practice from 1970 to 1972. Cahill, 40, is a longtime

participant in the Commonwealth Club of California. In 1980 and 1981 he served as Secretary of the Club's Section on Energy and Environment.

A graduate of Saint Mary's College and the Boalt Hall School of Law at the University of California, Cahill has done postgraduate work in administration, political science and economics at Michigan State University, the University of California at Los Angeles and the University of Maryland. He has taught graduate level administrative law at the Golden Gate University in San Francisco.

Other recent appointments at EPA include the selection of **William N. Hedeman Jr.**, the former director of EPA's Office of Federal Activities, as director of the Office of Emergency and Remedial Response—EPA's Superfund program—and **Gary M. Dietrich**, promoted from Deputy Director of the Office of Solid Waste, to Director.

Michael B. Cook, former Director of the Office of Emergency and Remedial Response, was named Deputy Director of the Office of Solid Waste.

"One of our constant goals at EPA is to improve the efficiency and effectiveness of our varied operational programs," said Administrator Gorsuch. "These reassignments in the Superfund and solid waste programs constitute a refinement of existing management structures, and will result in the more efficient use of our top managers' talents and experience."

EPA officials who have received national honors in their respective fields include:

David E. Menotti, EPA Associate General Counsel for Air, Noise and Radiation, who received a \$20,000 Distinguished Presidential Rank Award for his key role in developing regulatory reforms. Winners of \$10,000 Meritorious Presidential Rank Awards were **Thomas P. Gallagher**, Director, EPA National Enforcement Investigations Center at Denver; and **Alvin R. Morris**, Deputy Regional Administrator, EPA Region 3, headquartered in Philadelphia.

David G. Stephan, Director of the Industrial Environmental Research Laboratory in Cincinnati, has been named the recipient of the 1981 Environmental Award in Chemical Engineering of the American Institute of Chemical Engineers. He received the award for research in air and water pollution control, particularly his work in the areas of wastewater treatment and water renovation.

Dr. David McNelis of EPA's laboratory in Las Vegas, Nev., has been chosen as the Federal Environmental Engineer of the year. He is Director of the Advanced Monitoring Systems Division at EPA's Environmental Monitoring Systems Laboratory. McNelis was selected from 18 outstanding environmental engineers nominated by Federal agencies nationwide for their exemplary work and accomplishment.

Advisory Groups

Other recent appointments at EPA include the selection of members to two advisory groups. Named to the National Drinking Water Advisory Council were:

Fletcher G. Driscoll. Dr. Driscoll received his undergraduate degree from Carleton College and his Ph.D. in hydrogeology from the University of Minnesota in 1976. He is a consultant to the Johnson Division of UOP Inc., of St. Paul, Minn., and an assistant professor in the Department of Engineering and Applied Science at the University of Wisconsin. Dr. Driscoll is chief author and editor of a 550-page textbook on groundwater geology, well hydraulics and water well design and construction that will be published in early 1982.



David Menotti receives award from Administrator Gorsuch

Joanne Howell. Mrs. Howell is a graduate of the University of Maryland and served as mayor of Bernards Township, N.J. in 1978 and 1979. She is currently a member of the local environmental commission and the planning board. She also sits on the solid waste advisory committee for Somerset County, N.J. Mrs. Howell's public service has brought her extensive experience in dealing with groundwater problems at the municipal government level.

Nina I. McClelland. Dr. McClelland has degrees from the University of Toledo and received her Ph.D. degree in environmental chemistry from the University of Michigan in 1968. She is currently president and chief executive officer of the National Sanitation Foundation in Ann Arbor, Michigan. As vice president of the foundation from 1974-1980, she was responsible for administering water, wastewater, research and development and testing laboratory programs. Dr. McClelland has edited and written numerous publications and papers on water quality issues.

E.J. Middlebrooks. Dr. Middlebrooks is currently dean of the College of Engineering at Utah State University in Logan, Utah. He received his bachelor of civil engineering and master of science and engineering degrees from Mississippi State University in 1966. He has accepted the Newman Chair of Natural Resources Engineering in the Department of Agricultural Engineering at Clemson

University, S.C. Dr. Middlebrooks is a chlorination expert with a strong background in statistical application in water and wastewater and the health effects of contaminants.

Richard Moser. A graduate in chemistry from the University of Pittsburgh, Moser is vice president for system water quality at the American Water Works Service Company in Haddon Heights, N.J. He is responsible for drinking water quality for systems serving over five million people in 540 communities, across 20 states. This is the largest privately owned water utility system in the country.

Named to the management advisory group to EPA's construction grants program were:

J. Edward Brown. Mr. Brown received his B.S. in chemistry from Marquette University in 1966, his M.S. in chemistry from Pennsylvania State University in 1969, and his law degree from the University of Virginia in 1972. He is director of the water quality division of the Department of Environmental Quality for the state of Iowa. In this position, he provides leadership for water quality improvement throughout the state. Brown is president-elect of the Association of State and Interstate Water Pollution Control Administrators, which is composed of representatives from organizations that have administrative responsibility for enhancement of water quality, including wastewater treatment construction grant projects.

George Erganian. Mr. Erganian graduated from Purdue University in 1943 and received his M.S. from the same university in 1947. He has been a partner in the engineering firm of Howard, Needles, Tammen and Bergendoff of Indianapolis, Ind., since 1973. His firm has designed many wastewater treatment facilities. Erganian is a diplomat of the American Academy of Environmental Engineers and is a member of both the National Society of Professional Engineers and the Water Pollution Control Federation.

Eric Erickson. Mr. Erickson received a B.S. in construction management in 1968 and a degree in architecture in 1974 from the University of Nebraska. He is vice president of the engineering and architectural firm of Johnson, Erickson, O'Brien and Associates Inc. of Wahoo, Neb. His firm specializes in consulting engineering work for villages and small towns—areas where EPA is making special efforts to assist in building wastewater treatment facilities. Erickson is a member of the American Institute of Architects, American Consulting Engineers Council, and the Construction Specifications Institute.

John Hornback. Mr. Hornback received his B.S. in engineering from the University of Michigan in 1956. He is city engineer for the city of Grand Rapids, Mich. Hornback is experienced in the construction of efficient municipal wastewater treatment facilities. Hornback is a member of the American Consulting Engineers Council, and the National Society of Professional Engineers. He also has experience in community planning.

F. Thomas Westcott. Mr. Westcott received his B.S. in engineering degree from the Massachusetts Institute of Technology in 1946. He is president of the Westcott Construction Corp. of North Attleboro, Mass. Westcott's firm has constructed many wastewater treatment facilities. Westcott is on the national board of directors of the Associated General Contractors where he has developed many improvements to the contracting process, and has served on many committees concerned with the environment. □

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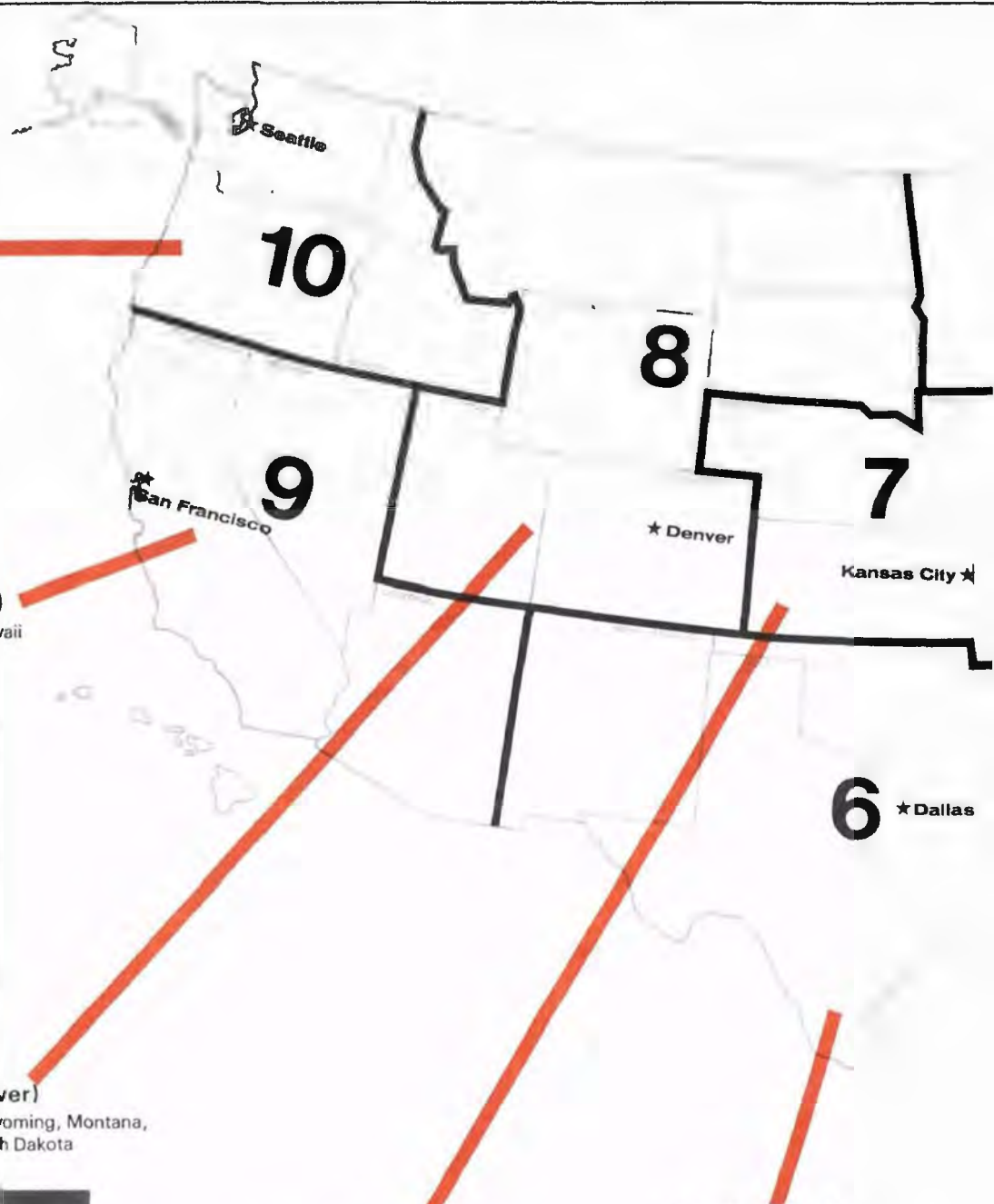
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