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EPA JOURNAL

The Air You Breathe



Air Cleaning

Highlights of plans to control pollution discharges from automobiles and industrial and municipal sewers in the sky are reviewed in this issue of EPA Journal.

Administrator Douglas M. Costle urges industry to help persuade States and local government to move forcefully against air pollution to preserve the opportunities for expanded economic development.

He notes that under the Clean Air Act, tight restrictions will rule out the option an industry once had of moving to another part of the country with lax pollution standards.

The Administrator emphasizes the importance of keeping harmful materials out of the air and out of the lungs of people to help reduce the Nation's \$140 billion-a-year health bill.

Assistant Administrator David G. Hawkins discusses in an interview the strategies being carried out to protect air quality. Proposed regulations to curb pollution from coal-burning plants and the issue of growth and clean air are reviewed in two key articles.

Other air pollution issues covered include: The high cost of Los Angeles smog; progress in State Implementation Plans; plans to help cities reach clean air goals, the New Jersey vehicle inspection and maintenance program, EPA's new mobile car tester, and how biking gets some people to work without contributing to pollution.

Two major articles in the research area are an interview with Dr. Richard Dowd, Staff Director, EPA Science Advisory Board, and a report on a human testing program at an EPA North Carolina laboratory.

The magazine also has another in the continuing series of reports from the Agency's Regional Offices—this time from Region 9 with headquarters in San Francisco.



A third-grader's view of air pollution by Sean Wentworth of Bristol School, Kansas City, Mo. Sean received a President's Environmental Youth

Award for his effort, which was part of a contest sponsored by the EPA Kansas City Office of Public Awareness for World Environment Day.

EPA JOURNAL

Douglas M. Costle, Administrator
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EPA's Purpose: 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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Clean Air

By Douglas M. Costle, Administrator

We have made significant progress in recent years in cleaning up the air in the United States. The long term declines in particulates and sulfur dioxide are the result of successful efforts by State and local air pollution control agencies. Between 1970 and 1976 sulfur dioxide levels dropped 27 percent. Particulates such as smoke and dust decreased 12 percent. And carbon monoxide, thanks largely to auto emission controls, has declined by 20 percent.

But we still have a long way to go before we can claim that the air is healthy throughout the Nation. Smog levels remain high in cities, as this past summer demonstrated, and are even increasing slightly in some areas. Some industries still lag in pollution control.

There is no question of the need for continued controls on environmental pollutants. The more we learn about the health effects of the mixture of sulfur oxides, carbon monoxide and other airborne pollutants often present in the 16,000 quarts of air we breathe each day, the deeper our concerns become.

The kinds of problems I have just mentioned do not lend themselves to quick-fix solutions. They demand thoughtful, rational, careful analysis and decision-making. And this kind of analysis and decision-making cannot be carried out in a vacuum. The problems are deeply rooted in our highly industrialized society, and they must be addressed in terms that are not just acceptable to, but in fact arrived at by that society.

And this underscores the importance of a legislative tool that will help immensely in the battle for improved public health—the Clean Air Act Amendments of 1977.

The Amendments amounted not only to a major re-affirmation of the 1970 law's health-protective intent, but also laid out an enormous number of new directives which pose some of our greatest challenges—and some of my highest priorities. More precisely, what I am speaking of is the revision of the State Implementation Plans called for by Jan. 1, 1979—and its implications for new growth. The growth issue covers a lot of ground—including of course, energy growth.

For example, let me focus on the thorny issue of how we are attempting to accommodate new growth while meeting the requirements of the law. Initially, the 1970 Act was interpreted as not allowing any new source construction in areas which were in violation of the primary



standard. However, it became increasingly obvious that a total ban on new source growth was neither realistic nor necessary. In December, 1976, EPA established what is known as the "offset policy." This balanced the two goals of economic development and progress toward health standards. It allowed new source construction in non-attainment areas provided that there was a net air quality benefit and that emissions were curtailed from the proposed new source to the greatest extent feasible. The offset policy was officially incorporated into the 1977 Act as a viable way of handling new source growth. EPA's policy is effective until July, 1979.

At that point, the law requires States to have developed their own provisions for the review of new sources in non-attainment areas.

It is imperative that the leaders of industry not only cooperate with State and local governments in developing adequate implementation plans, but they must pressure those local governmental entities to act. It is clearly in their self-interest to do so because while the States are responsible for developing plans for handling growth, the *crunch*—if it comes (and it will)—will be on major new stationary sources. If the States and local Governments are smart and want to provide for continuing and expanded economic development in their communities, they will move quickly to develop these plans.

There is a great opportunity here for all of the major business organizations to provide an important contribution to the Nation. The Congress has made a clear commitment to ending the days when industry would have good cause to move from one area to another because of a new bank of



clean air upon which it could draw.

Since all the requirements nationwide are very tough—and particularly so for major stationary sources—it is simply good business sense to apply some ingenuity to help the States deal with the growth planning process.

For example, the States will have to devise ways to allocate pollution rights. Most are looking at our offset policy as the prototype of what they will do. But there are other possibilities, other possibly more innovative approaches. One option might be setting up a bank of emissions, going beyond what we determine is annual reasonable further progress toward meeting the air quality standard—perhaps through a rigorous approach to transportation planning. In many areas, control of automobile emissions will provide the key measure of how much new source growth will be permitted in a non-attainment area. So, let me borrow a phrase that I keep hearing from Atlantic Richfield Company (and I assume ARCO means it in the same spirit): “Get involved.” I assure the business community that it is in its own interest as well as all of ours.

The President’s Environmental Message directed EPA to assess how to best handle new construction in non-attainment areas while ensuring fair and expeditious progress toward the health standards. We have instituted an internal task force on non-attainment to review alternatives—including economic incentives—to achieve this goal. The key elements of the current act—making annual reasonable further progress and adopting all reasonable controls—will be essential parts of any future approaches we take. Making the implementation plan revision process work *now* is key. I believe that there is sufficient flexibility and incentive in the Act to preserve the approach it takes over the next few critical years.

EPA’s Regional Administrators and Regional Counsels have met with the Governors to alert them to the requirements of the Amendments and to the need to move quickly on revising their implementation plan and passing conforming legislation, when necessary. We have offered the services of our Regional Offices to assist the States as much as possible. We also have issued grants to the National Association of Counties and other local groups to educate the public and solicit extended participation in the implementation plan revision process.

I also want to mention an issue which has always been im-

portant but which will have to be addressed increasingly by the States—and to the extent that they do not do so—by EPA: That is the problem of interstate and international pollution. Quite simply, what can and should we do about pollutants from a source in one State eating up the increments or interfering with attainment and maintenance in another State?

Our present policy is that we will mediate or, if necessary, arbitrate disputes between States as to the degree of control required of existing sources or the impact of new sources. We will *not* approve an implementation plan revision which would permit one State to adversely affect the growth plans of another State through incompatible (less stringent) regulatory policies.

My concern is that this is a *very* large problem. In the East, for example, most power plants are on rivers and rivers tend to separate States. But even when an emission source is *not* terribly close to another boundary, the problem of long-distance transport—chiefly of sulfates—is very real. Another major problem is posed by ozone, which often traverses State lines, inevitably making it a regional issue.

I have had and expect to continue discussions in the near future with representatives of the Governments of both Canada and Mexico on the same basic issue: the movement of pollutants across international boundaries, interfering with the potential for growth in the United States.

Many people say that the Clean Air Act cannot work and that by next year the Congress will be forced to revisit the Act in order to eliminate the growth sanctions. Those who think the Congress will get them off the hook should look at the not too distant history. First, when Congress last examined the Act, it took more than two years. Second, what emerged was a much tougher law than before. Granted, the deadlines have been stretched. But other than that, the sanctions and requirements are stricter than ever, and the enforcement tools are more potent.

When the cost of health care in America has risen to \$140 billion a year, with most of this going for after-the-fact attempts at treatment and cure, it is obvious that we need to reorder our national and individual priorities. How much more health-effective and cost-effective it would be if more emphasis were placed on prevention—on keeping harmful materials out of the air, water, and soil—and out of our people. □

New Air Strategies

An interview with
David G. Hawkins,
Assistant Admini-
strator for Air, Noise
and Radiation

Is the air getting cleaner?
Yes. It is most noticeable in the parts you can see. Controlling invisible pollutants is the area where we are making the least progress.

What do you mean when you say we're not making much headway with what you can't see?

We've cleaned up the big dirty clouds of smoke in most areas, and we are dealing now with many of the pollutants such as toxic compounds that aren't visible. Carbon monoxide is a problem that is getting better, even though it is not visible. We still have situations like Denver, with its brown pollution cloud. This doesn't come out of individual smoke-stacks. It's a product of a lot of pollution from a lot of sources; from the automobile, from refineries, and other sources of hydrocarbons, such as automobile assembly plants. All of these things emit pollution that you cannot see. The point is these substances are emitted and they react in the presence of sunlight to form haze, smog, and brown clouds. It's that indirect pollution problem that is the most difficult challenge that we've got to solve.

Does that mean it's still mainly an urban problem?

Yes. The most severe air pollution levels in the country are in the urban areas. There are a couple of exceptions right around some major smelters in the West, but for the most part the biggest problems are in the urban areas. Major sources like pulp and paper mills have been cleaning up, while some power plants are still not clean.

Is there a major industry that we're going to help to develop new pollution-control aspects?

The major area that will require new attention is this area of hydrocarbon emissions from industrial sources. It's an area that the air pollution control community hasn't concentrated on historically.

What are the primary sources of industrial hydrocarbons?

Almost anything that uses petroleum or petroleum derivatives. Petroleum refineries are major sources, and so are solvent users, as well as factories that make paint, automobile painting facilities, furniture painting facilities, major appliance painting facilities. You don't think about it, but the fact is that there are an awful lot of refrigerators and stoves sold every year in this country and every one of them is painted with solvent, which when it evaporates goes up in the air and creates an air pollution problem.



Are those some of the difficult areas to control?

The technology is available, but it will require a great deal of convincing, persuading, and communication with industry to adopt the necessary controls and the investment that it requires will be substantial. So it won't be a very smooth transition. We know how to attack a lot of these problems.

Do you think that the new emphasis on inflationary controls is going to delay some of the actions that we're planning?

The Clean Air Act is pretty clear. It says that there's a strict schedule. If the statute is going to be obeyed, then that schedule has to be followed. I think there are ways to do this work without causing inflationary pressure. We're talking about a public health standard and when one reduces public health impacts, the fact that it costs something to do that doesn't mean that it's inflationary. You're getting something for the dollar that you are spending.

As far as regulations are concerned, according to industry spokesmen the problems are not the regulations, but the fact that EPA is telling people what to control and how. Do you care to comment on this?

Well, in the air area that isn't correct. We set numbers, which refer to the amount that can come out of a smokestack or a tailpipe, and it's up to the industry to decide how to do that. There are some limited circumstances where you don't have the ability to measure pollution as it comes out because it isn't coming out of a smokestack or tailpipe. Then you may have to specify a work practice or an equipment standard. But these generally aren't areas of controversy and in fact there is an industry standard for dealing with them. For example, oil storage tanks. These have leaks. Those leaks are sealed by various mechanisms and one mechanism used is called the floating roof tank. And that's something that is specified in a lot of pollu-

tion control regulations. It says that you shall use a floating roof tank with double seals. That's basically the latest in industry practice and there doesn't seem to be a great deal of objection to having that spelled out as a regulatory requirement. People understand that this is the way to do it.

Then there may be some circumstances where the industry has an idea for a better way to do it and the Agency is always open to hearing those ideas. What we don't want to get ourselves involved in is a situation where we write a rule and when the time comes to comply with that rule the industry says, wait a minute I have a better idea for a different way to approach this. If they have a better idea they should say it in advance of the date of compliance. Otherwise you wind up with a situation where it appears to some people that the industry is coming up with better ideas in order to avoid complying by the date they are required to comply. That will give this whole concept a bad name. The concept is a good one in principle, the industry ought to be able to use its expertise to develop the best way to meet an environmental objective. But if it doesn't use that expertise on a timely basis, there will be a lot of people who will think that is an excuse to delay putting on any controls. It's quite important for industry to recognize that if they are allowed to use their expertise, they'd better be prepared to use it on a timely basis.

Has Congress given EPA new tools under the Clean Air Act Amendments to help deal with areas that are not going to be meeting the standards?

There are a variety of tools. First Congress directed the States to adhere to a new schedule for getting in their implementation plans. It then established the responsibilities of local governments as well as State governments to be involved in this process. It set up a mechanism where they can be consulted and where they can

designate themselves as being responsible for portions of the plans. It then set up a funding program for those local agencies. The Administrator has a request for \$25 million for that particular program. The other areas in that act that will help are a ratification of the Agency's policy on emission offsets or reducing pollution from existing sources in order to make room for growth. In addition Congress allowed the State and local governments to build a margin for growth within that implementation plan so that an area can reduce its emissions faster than the minimum required by law and have in that accelerated schedule a built-in margin for growth. Finally in order to get State and local governments to assign a higher priority to this effort, Congress provided for some sanctions if the States failed to act.

Those sanctions include restrictions on new-source growth, highway funding, air quality funding, and on waste water treatment funding. Those are there, I think, as a signal by Congress that they wanted the State and local governments to get serious about this major public health problem and direct a lot of attention to it.

This is a way of getting the elected officials in the government to pay priority attention to this issue. I don't think anyone believes that the country would be better off by imposing these sanctions on a wide scale. They were put in there to make it clear that this was an important problem and that Congress wouldn't sit by and let State and local governments opt out of the process and leave the problem unsolved.

As we get closer to the deadlines does it look like we will have to use those sanctions?

Well, we're still hoping that they won't have to be used. We are not convinced at this point that we will because the States still have several months to go before those sanctions would be imposed. That is ample time for the States to meet the requirements that we have set for the first stage of complying with this law.

Is this a method of trying to encourage the States to get more involved in air quality management rather than just concentrating on pollution control systems?

The State and local governments and the Federal Government are all recognizing that we have a dynamic problem that needs a dynamic solution. Los Angeles, for example, has air quality problems that are created by the sheer size of the area. The number of people, the number of automobiles, the number of minor sources of pollution haven't typically been controlled. Other areas as they grow have a potential for causing these same problems unless some attention is paid to the environmental implications of that growth.

We need to manage that growth in a way that will minimize those environmental problems. That is something where the engineer has to be supported and supplemented by a planner and the two of them must work together in coming up with a total air quality control program.

Would this require anticipating what you want to do in the next ten to twenty years and then building it into an air quality plan?

That's right. It's like a long-range environmental budget.

There are some new terms like off-set policy and banking being used in these plans. What do they mean?

Banking is the term that refers to the margin for growth that I was talking about. It's saying that if you do more in the way of pollution reduction than the minimum required by law, you can use that excess control to make room for some additional emissions from new growth that has come into the area. So in effect you'll have an emission bank.

Can we say that States and different regions of the country are enforcing their rules as consistently as they should be?

When you have the 50 different governments, you have differences and that will always be the case. The rules themselves are different, and when you have localities you add hundreds more. The Federal government basically serves as a guarantor of the process to make sure that a State that is energetic is not going to suffer because some other State is less energetic about environmental quality. I think that we have the tools to be able to do that. We have the tools to be able to say that States that want to have good emission controls on their sources are not going to suffer because the sources that are new are basically subject to a best technology requirement wherever they locate, whatever the air quality is. That's important to prevent a source from saying, "Well if you don't relax your rules, we're going somewhere else," because there isn't anywhere else in the country they can go to get more relaxed treatment.

What happens in places with pollution problems other than stationary sources? For example, in Connecticut there were objections in the State legislature to passing an inspection and maintenance program because they felt that much of the pollution was blowing in from New York City. What is our response to that?

There are several responses. The first is it was heartening that Connecticut did realize that there were substantial benefits in having an inspection and maintenance program and they did adopt it. We are very pleased to see that. The fact is that air pollution obviously doesn't respect political boundaries. Like noise, light, or any phenomenon transmitted through the atmosphere, it becomes diluted the further it travels. The fact is that even though there are contributions from up-wind areas, those

contributions are not as great as the contributions from the areas themselves. For example, Bridgeport, or Hartford, Conn., are each putting a lot of pollution into the air. Even though there may be contributions from areas outside the State, the air quality in Connecticut will be better if it controls its own sources. Moreover, the air quality in down-wind States would be somewhat better. The fact is that everyone is going to have to control. We're telling Connecticut as well as its surrounding States that they have to control.

It's a cooperative venture and a little bit like the story of the tragedy of the commons where you have the village green and everybody puts their sheep out there. If too many sheep are placed there the green is destroyed. No family wants to take its sheep off the green because they won't get any benefits. However, if they take that attitude all that happens is that their sheep don't get any grass and the green is destroyed because no one has cooperated.

EPA will try to help all the State families to come up with a program that will allow prudent use of our air resources and avoid destructive competition for limited resources. We think the States recognize that and that Connecticut recognizes that we are going to be asking the other States to do the same thing as it is doing.

The Clean Air Act Amendments do provide, for example, for inspection and maintenance as a tool for getting those sources that really have not been touched before. It is a corrective action in some ways, isn't it?

The maintenance program is basically following through on an investment that you made when you purchased a car. When you purchase a car you purchase it now with pollution control equipment which costs a couple of hundred dollars and that's an investment in air quality. Now that investment will be lost if that air pollution

control equipment is not properly maintained. The inspection program is designed to help a motorist know that his vehicle needs additional maintenance, and know that his neighbor will also maintain his vehicle. Again you've got the same problem. Why should I fuss with my car if everybody else on the highway doesn't? I don't mind making a sacrifice or doing something inconvenient if I know that that is going to have some real-world effect. And if it's one car out of a million that does it, it's obviously not going to have a real-world effect. You need a program that says that everybody and their neighbor will be doing the same thing and that's what the inspection program helps to do.

Do you have any evidence that it indeed works?

Yes. In New Jersey, which has an inspection program, the carbon monoxide level has been decreasing and the hydrocarbon level for automobiles has been decreasing. In Arizona we have similar evidence. They have an inspection program in Phoenix. In Portland we have a program that's underway and we are doing a very detailed survey of the vehicles there—to determine at exactly what rate they improve and how long they stay clean and how long they can go before being reinspected. We are gathering more and more evidence but the fact is that we already know that you can get substantial improvements and these are real-world improvements we are seeing in those areas.

Will there be anything new coming out of the memorandum of cooperation that EPA just signed with the Department of Transportation?

Yes, I think there will. The memorandum of understanding that EPA and DOT have signed is a very significant development. In the past years, EPA and DOT have often gotten into battles with each other over highway projects, which EPA believes may contribute to an air quality problem, and the Department feels have been

planned for a long time and are needed.

The difficulty has been caused because the two agencies and their counterparts at State and local levels have not started talking to each other at an early enough stage. The environmental agency starts off on its comments, historically, at the point when the highway project is ready to be built—and that's simply too late. It causes disruption; it comes into the process at a point where there has been substantial investment—both in terms of money and political prestige—behind the project. It becomes very disruptive and controversial then.

What the memorandum does is set the stage for a remedy to that by having the groups talk to each other and satisfy each other through a process of negotiation at the earliest stage of the transportation planning process, when the very early analytical work is being done to study transportation needs within the area. It points up what questions have to be asked about those transportation needs. And one of the things the memorandum says is that one of the very important questions that has to be answered is the environmental question, the air quality question in particular. It will be asked, and the answers will be developed

and there will be a negotiating process that will involve some compromise, and recognition of the fact that there are a variety of competing demands here which can be resolved in a way that we hope will make sense. The issue will be raised at the start of the process rather than at the end of the process. I have a lot of hope that this will avoid the battles that you read about so much in the newspapers and that decisions will be made at the local level, not in Washington.

That does mean that the air program will be having effects on land use planning and urban growth?

The transportation system certainly has an effect on land use. Recognition of that effect is necessary in order to deal with the air quality problems associated with it. These issues are all bound up with each other—transportation is something that is designed to move goods and people. Land use is aided by transportation. The American West was opened up by transportation, by the railroad. The rivers provide a basis for commerce and that's why most major American cities in the East and Midwest are located on rivers. For example, Washington is located just below the falls of the Potomac. That is as far as the barges could get. The same is true of Pittsburgh and other cities along the Eastern seaboard. The availability of transportation has always determined where people will settle and where commerce will prosper. You just have to make the connection and recognize that there is a full circle here. If you want to have environmental quality you have to recognize that transportation decisions will affect that goal. 7

This interview was conducted by Inez Artico, OPA Associate Director for Air, Noise, and Radiation; Truman Temple, Associate Editor and Chris Perham, Assistant Editor of EPA Journal.



The Team Leaders

Four Deputy Assistant Administrators help David Hawkins run EPA's program for clean air, noise control, and radiation protection. They are responsible for a national effort

involving some 1,300 positions and about \$175 million a year. The Journal will review the radiation and noise control programs in future issues.

Walter C. Barber, Jr.

Deputy Assistant Administrator for Air Quality Planning and Standards

Responsible for developing national standards for air quality and emission standards for new stationary sources and hazardous pollutants; for developing national programs, technical policies, regulations, guidelines, and criteria for air pollution control, and for assessing the national air pollution control program and also weighing the success in achieving air quality goals.

Also responsible for helping States, industry and other organizations through manpower training activities and technical information; for providing technical direction and support to Regional Offices and other organizations, and for evaluating regional air quality programs. Responsible for developing and maintaining a national air programs data system, and for translating technological developments into improved control program procedures.

Previously, Barber served in EPA's Office of Planning and Evaluation, first as Director of the Energy Policy Staff and then as Director of the Standards and Regulations Division. He left his own consulting firm to become a budget examiner in the Office of Management and Budget. He also was a civil engineer with the U. S. Naval Facilities Command and a consulting engineer.



Charles L. Elkins

Deputy Assistant Administrator for Noise Abatement and Control

Responsible for the Agency's noise reduction policies and programs for source categories, such as aircraft, surface transportation, construction, and the workplace. Includes developing noise protection criteria, labeling, standards, and policies; developing research requirements for EPA's noise control and abatement efforts; coordinating all Federal noise control programs, and providing technical assistance to States and to other agencies with noise management programs.

Prior to this job, Elkins was the Director of Program and Management Operations for EPA's former Office of Water and Hazardous Materials. He also served as Acting Assistant Administrator for Hazardous Materials Control and directed Program and Management Operations for the former Office of Hazardous Materials Control.

Elkins joined EPA as Special Assistant to the Administrator, after working with the President's Advisory Council on Executive Organization (Ash Council), where he was involved in the establishment of EPA. Previously, he was the Budget Examiner for environmental health and consumer protection programs for the Office of Management and Budget.



William David Rowe

Deputy Assistant Administrator for Radiation Programs

Responsible for EPA's radiation protection criteria, standards and policies; measurement and control of radiation exposure, and assuring that research requirements for radiation programs are fulfilled.

The responsibility also includes providing technical assistance to States through EPA Regional Offices and other agencies with radiation protection programs; establishing and directing a national program measuring radiation levels; evaluating the impact of new radiation technology; helping train personnel for radiation protection programs, and maintaining legal liaison with other public and private organizations interested in environmental radiation.

Before joining EPA, Dr. Rowe directed the Environmental Systems Department of the MITRE Corporation. Previously, he was Director of Independent Research and Development Programs with Sylvania Electric Systems. He started his career as a supervising engineer with Westinghouse Electric Corporation.

Currently, Dr. Rowe holds eight patents and in 1977 published a book, *An Anatomy of Risk*. A registered professional engineer in Massachusetts, Dr. Rowe has written numerous articles, is a marathon runner, and served two terms as elected Highway and Public Works Commissioner in Sudbury, Massachusetts.



Michael P. Walsh

Deputy Assistant Administrator for Mobile Source Air Pollution Control

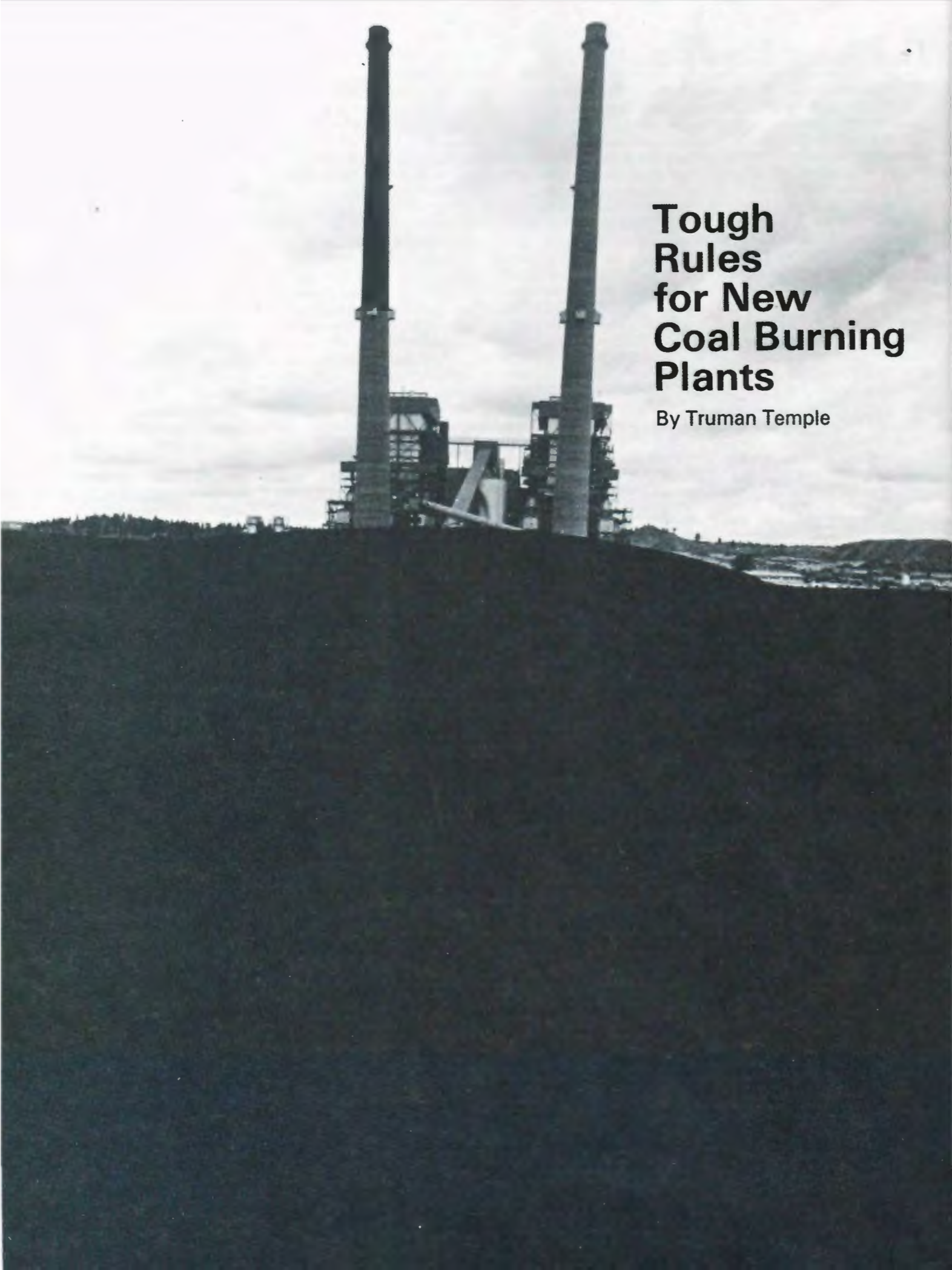
Recently named to this post, Walsh will be primarily concerned with implementing the requirements of the 1977 Clean Air Act Amendments for auto pollution control. An area of special interest will be support to States that require regular inspection and maintenance programs to reduce emissions from in-use vehicles.

Also responsible for classifying emissions from mobile sources, developing programs for their control, and assessing the status of control technology. Responsible for developing emission standards and related test procedures for mobile sources, and for carrying out a regulatory compliance program.

In previous EPA jobs, Walsh was Special Assistant to the Assistant Administrator for Air, Noise and Radiation, and Chief, Technical Support Branch, Mobile Source Enforcement Division.

Earlier, he was Director of New York City's Bureau of Motor Vehicle Pollution Control, with a key role in the development of New York's transportation control plan to attain health-related air quality standards. Walsh also worked as Project Coordinator at the New York Bureau.





Tough Rules for New Coal Burning Plants

By Truman Temple

EPA Administrator Douglas M. Costle, in what he termed "the most significant environmental judgment that I'll make this year," has proposed air pollution standards for new coal-fired power plants to help assure clean air as the Nation moves to more coal use.

The standards, required by the 1977 amendments to the Clean Air Act, are expected to affect a pattern of coal use for many years and help control sulfur dioxide, which causes billions of dollars worth of damage. They also signal that EPA is determined to continue protecting public health and welfare in a critical area—the control of emissions from the many coal-burning electric generating stations now planned or under construction. About 200 new fossil-fuel power plants are expected to burn nearly 1.5 billion tons of coal by 1990.

The Administrator's proposal set forth several alternatives. The first and only one drafted as a regulation would require an 85 percent reduction in potential sulfur dioxide emissions from all new fossil-fuel plants. This has been termed a "full scrubbing" option. The proposal also sets forth for public com-

ment various partial scrubbing alternatives which would allow less than 85 percent removal at plants burning low-sulfur coal.

"I want to emphasize strongly," the Administrator said at a news conference on the subject, "that today's proposal is not final and that all the options under discussion will continue to receive serious consideration."

The proposed standards also would reduce nitrogen oxides and particulates.

The principal source of sulfur dioxide is combustion of coal, primarily for generation of electric power. In 1976 fossil-fuel power plants contributed 65 percent of the sulfur dioxide emissions on a national basis. Sulfur is an element found in coal, and when this fuel is burned the sulfur joins with oxygen in the air to form gaseous sulfur oxides including dioxide and trioxide.

Sulfur oxides can cause harm to humans, materials, and plant life. In combination with moisture and oxygen, they damage plant leaves, dissolve marble, and eat away iron and steel. The pollutant can affect breathing in humans and in certain concentrations can irritate the respiratory tract and damage lung tissue. In the form of acid rain, sulfur oxides have been found to damage or even destroy vegetation and aquatic life in areas hundreds of miles from the pollution source. No precise figure is available on the annual cost of damage by sulfur oxides, but it runs in the billions of

dollars, for the pollutant attacks a wide variety of building materials, including limestone, roofing slate, and mortar, as well as statuary and other works of art, clothing fabrics such as cotton, rayon, and nylon, and even power lines and house paint.

The new proposed standards would require the installation of highly efficient gas scrubbers to remove sulfur oxides from the stack gas of coal-burning plants. Many utilities now use scrubbers to clean up stack emissions, but the new standards would require them even if a power plant uses relatively low sulfur coal.

The issue has broad energy and transportation implications, since Western coal fields produce lower sulfur fuel, which has raised fears among Middle Western and Eastern coal interests that they might lose some of their traditional markets. However, under the proposed regulation the regions would be largely equalized because utilities would have to remove substantial amounts of sulfur from all types of coal, regardless of origin.

Following a 60-day period for comment and a hearing to allow for public participation, EPA will promulgate final standards.

Industry, the general public, and other Federal agencies already had shown intense interest in the issue well before last month's decision. EPA had invited public participation in January, 1977, in a Federal Register announcement which indicated its intent to study revision of the standards. A public hearing was held May 25-26, 1977, and last Decem-

ber additional testimony was received from many groups and individuals at a meeting of the National Air Pollution Control Techniques Advisory Committee.

Under the Clean Air Act Amendments of 1977, Congress required that the new source performance standards be based on "the best technological system of continuous emission reduction" of pollution. The Administrator also was required to set standards for the percentage of sulfur oxides to be removed from new plant emissions and an "emission standard" or limit on the amount of pollutants for each unit of heat generated. The Department of Energy, while agreeing that the amendments required some scrubbing in new plants, had urged that softer standards be imposed to permit much less sulfur dioxide to be removed from low-sulfur coal.

Prior to announcing the proposed standards, Costle on July 28 had made a special trip to Louisville, Kentucky to inspect scrubber units at the Louisville Gas and Electric Company's Cane Run plant. The utility has gained a national reputation in the field of scrubber operations. Pointing out that LG&E was one of the first in the United States to use a scrubber, Costle said the company "has demonstrated that high-sulfur coal can be burned cleanly and cheaply." □

Truman Temple is Associate Editor of EPA Journal

Growth and Clean Air

By John Heritage

Cities and States across America have until Jan. 1 to tighten plans to meet national air quality standards and to devise ways of permitting growth without generating lung-poisoning fumes.

It's the biggest challenge yet for the Nation's clean air effort. Progress has been made in improving air quality, based on the levels of five key pollutants. But no city in the continental U.S. has yet met the standards for all five of the health-threatening wastes.

The closer the clean air drive comes to its goals, the harder the job has gotten. Experience is showing that the measures needed to actually close the clean air gap are extensive and complex. They raise the question: Can we have economic development while gaining clean air?

The answer is that growth *is* possible while catching up with clean air standards. But society must make choices regarding the location and type of new industry, the alternatives in transportation, the kind of urban development, whether to expand in areas where the air is not yet polluted, and how this should be done.

It has become a question of wisely allocating a scarce resource. "Our air is not a free good to be used by anyone as he sees fit," says EPA Administrator Douglas Costle. "A big part of our job now is good management and use."

In a major project, EPA is directly facing the issue of whether urban areas can reach the clean air standards while growing. Three cities are being studied: Houston-Galveston, Philadelphia, and Chicago. Here are the preliminary results on the first two:

Over the last ten years, Houston-Galveston has been a fast growing metropolis. It is a major area for refineries and petrochemical manufacturing. Like most urban areas, the community is heavily dependent on the automobile for commuting and daily errands.

(John Heritage is an Assistant Editor of EPA Journal)



The metropolis has high ozone levels. This compound—which aggravates respiratory problems—is formed from reactions with hydrocarbons. In turn, the hydrocarbons come from such sources as cars, refineries, paint shops, and petrochemical making. Suspended particulates also exceed the national health standards.

The study, conducted by an EPA task force, says that Houston-Galveston can meet national air standards and grow. But to control hydrocarbons, the metropolis first will need to expeditiously impose all reasonably available technologies on major pollution sources.

These measures won't be enough. An improvement in pollution control technology will also be needed, says the study. It will have to be 20-40 percent better than the known technology when the study began in August, 1977.

The challenge is not unrealistic if enough research and development is applied and existing control technologies are better used, the study concludes. With improved clean-up methods, Houston-Galveston could continue to develop as a refining and petrochemical center while gaining clean air, the study found.

Philadelphia is an older, slower-growth metropolis. In recent years it has lost population from some of its denser areas. The pollution sources are those of every large city—printing, painting, service stations, and the automobile. Petrochemical and refining industries have declined compared to other sources. Steel mills and grain elevators also pollute.

City officials want Philadelphia to grow. They favor a number of strategies such as encouraging new business which could reduce inner-city unemployment.

There is room for growth, the EPA study found. For instance, programs to help individuals start inner-city businesses would be possible. Such efforts might be aided by cooperative Federal projects to

support economic development consistent with clean air goals. These initiatives were encouraged by the President in his urban policy message in March.

The metropolis could achieve both its projected growth and clean air with pollution control technology that is already known, the study says. The problem pollutants are hydrocarbons, suspended particulates, and sulfur dioxide.

The project's analysis of the third city, Chicago, is not far enough along for answers now.

One possible result in the Nation's effort to protect the air and public health would be severely limited growth. This has often been cited as a possible danger in the clean air effort. But as the cases of Houston-Galveston and Philadelphia show, this doesn't seem likely.

Another, more positive, result would be a new kind of growth, respecting the environment and other priorities at the same time. "It will be a shift *not* to *no* growth but to *good* growth," predicts David Hawkins, EPA Assistant Administrator for Air, Noise, and Radiation.

Such a trend is already underway in some cities. It may stem from air clean-up measures. But it also may be caused by energy conservation or steps to revitalize a local economy. The results are similar though: Air quality is often helped; energy can be saved; transportation may improve; the local tax base can be strengthened.

Here are some cities that are trying to improve the environment and the economy at the same time:

—Baltimore is trying an approach to growth that provides alternatives to the automobile without restricting it. The project is a new town-in-town called Coldspring, designed by widely-known architect Moshe Safdie.

In Coldspring, residents will be able to walk across the community without ever crossing a street. They will be served by a pedestrian walkway network entirely separate from the street system.

City buses and later a mini-bus system will also serve residents. A stop on the second leg of the region's mass transit

system also is planned. Parking places aren't restricted though, because of the still-heavy dependence on cars.

Coldspring represents a philosophy of growth that could strengthen city economies while achieving environmental goals. Its aim is to make the city more attractive for middle income taxpayers.

—The goal of the District of Columbia's Transportation Director, Douglas Schneider, is to curb the single commuter, alone in his or her car. The methods include bans on commuter parking in some residential areas, bus-only lanes on major streets during rush hour, and a 12 percent sales tax on commercial garage parking.

Schneider isn't worried about hurting the city's growth. "If we move people better, we'll improve the city's vitality," he says. "With congested streets, the promise of new development couldn't come true." He adds that the one-to-a-car commuter has alternatives, including a new rail transit system and the rush hour buses.

The transportation chief expects the District's air quality to improve as the commuter control measures have their effect, although he adds that success will depend on the whole urban region taking similar steps.

—In Oklahoma City, a way was found to allow a major new industry without increasing the city's air pollution. In this approach, the emissions that a new General Motors assembly plant would have added were more than offset by reductions in nearby sources such as crude oil storage tanks. With the reductions in existing sources, the net effect of the new plant locating in the city was an actual improvement in air quality.*

Some other cities around the world are also taking steps that can improve both clean air and economic vitality. In Singapore, a simple regulatory step has affected the whole city, from the businessman to

*See EPA Journal September, 1977
"A Tale of Two Cities."

People mingle at a flea market near Independence Hall in Philadelphia as new office buildings go up in the background.

Business and industry are bringing growth back to the downtown district. But more must be done.



the pedestrian. From 7:30 until 10:15 every morning cars entering the downtown must have a pre-purchased \$1.60-a-day sticker on their windshields. The so-called "area licensing system" is designed to control the traffic that clogs streets, pollutes the air, and wastes fuel in many central business areas.

The results: The number of cars entering the downtown district during the morning rush hour has dropped by 73 percent. Carpooling has increased 80 percent. Buses run more frequently and on time. Carbon monoxide pollution has dropped sharply. People who walk to work enjoy cleaner air and are less exposed to the hazards of heavy traffic.

With such initiatives, these cities are providing a key lesson: Growth does not have to mean more air pollution from industry or transportation. Or, turning it around, air cleanup does not have to cripple local growth or economic health.

Hawkins sees hopeful signs that these innovative urban trends will gain momentum. Forces seeking clean air, energy conservation, and revitalized cities have similar goals and solutions, he says. They all want cities that are clean, healthy, efficient, and livable. Their strong mutual interest adds weight to the effort to achieve this aim.

One key solution for everyone involved is transportation systems that are "more efficient at moving people and goods," adds Hawkins. Up to now, he says, most of the attention has been on "moving the vehicles efficiently." With this priority, transportation alternatives from bicycles to car pools have been mostly overlooked and many human and environmental needs forgotten, he believes.

EPA will be making major decisions soon in the double-edged problem of gaining both clean air and economic growth. By July 1, 1979, the Agency must decide whether to approve the changes States submit by this January in their plans to meet air quality standards.

If EPA rejects a State's plan for not including key provisions, strong growth-limiting sanctions go into effect. Depending

on the pollutants concerned, Federal highway and EPA funds may be cut off and new major stationary sources of pollution might not be permitted in an area.

The national deadline for the States to clean up their air is December, 1982, with a possible extension for transportation-related pollutants. The urban areas are the main trouble spot. Their often-severe pollution problems have made the air quality standards hard to achieve.

The answer to the riddle of air quality and growth in the Nation's cities will lie in the State plans. Their strategies will include clean-up technologies for new industry, better control of existing pollution, provisions for growth, and transportation measures. It will be "the first step in a continuing comprehensive planning process," says Hawkins.

In their revised plans, the States can choose the strategy they prefer in allowing growth in areas not meeting the air quality standards. The approach they use must guarantee continuous progress toward the standards.

Two basic tools to permit development while cleaning up the air are the so-called emissions offset and the margin for growth. States could adopt either method or a combination of the two.

The "emissions offset" permits the construction of a new industry if the owner can guarantee emission reductions from exist-

ing sources in the area. The reductions must more than equal the added emissions from the planned new facility. This was the approach for GM in Oklahoma City.

The "offset" policy was established by EPA specifically to balance the goals of economic development and progress toward the air quality standards. It has been used by the States under EPA guidance. (Under earlier interpretations of the 1970 Clean Air Act, no construction of new sources would have been permitted in areas violating the air rules.)

In addition to Oklahoma City, the success with offsets includes a Volkswagen assembly plant in New Stanton, Pa. The plant emits an estimated 900 tons of hydrocarbons yearly into air considered by EPA to be already polluted. But it was found that if the State used a type of asphalt with less polluting fumes in its road maintenance operations, the necessary reductions could be achieved.

The second approach is to create a margin of growth for new sources. The margin is built up by reducing emissions from some existing sources faster than the law requires. The technique was authorized by the 1977 Clean Air Act Amendments.

For example, through the rapid acceleration of control strategies for transportation or other sources of pollution, a growth margin could be created for industrial and commercial expansion. The margin would

Perhaps in general agreement for
 after the 1974 voters in Houston
 Tex. voted authority to approve
 a tax increase, possibly used
 finance a new metropolitan
 transit system.

be like a citywide "bank" of clean air in reserve, which could be drawn on to allow new development.

In this more flexible method, all the existing sources of pollution—major and minor, stationary and transportation—are inventoried and a plan of growth is drawn up. Many choices are then available on what emissions should be cut and what kind of economic expansion encouraged.

As the emissions offset and growth margins show, industry growth and dirty air don't have to go together. New industry can result in a cleanup of existing sources. The prospect of new growth can be an incentive for an urban area to clean up faster in order to make room. To make it easier for cities to take advantage of such benefits, EPA and three other Federal agencies will be providing a total of \$4 million in demonstration grants this December.

In addition to accommodating industrial growth, the State air clean-up plans must also address transportation, which affects the whole urban environment.

The transportation problems related to clean air are so tough in many of the largest cities that a five year extension of the national clean-up deadline of 1982 is available, if EPA agrees. The extra time is to deal with two pollutants, carbon monoxide and photochemical oxidants.

To get an extension beyond 1982, States have to implement programs for motor vehicle inspection and maintenance, with testing of individual vehicles to assure that they meet specific emission limits. Many vehicles on the road are poorly adjusted and maintained, increasing their pollution output.

Inspection and maintenance programs will help to insure the maximum effectiveness of the Federal motor vehicle control effort which establishes standards for new cars. By minimizing motor vehicle emissions, the I/M programs can cut the overall pollution load in a major urban area, increasing the chances of gaining a margin for growth.

In another key area, EPA and the Department of Transportation recently issued joint



transportation guidelines to help urban planning agencies in their efforts to attain the national air quality standards.

In this guidance, the emphasis is on making better use of the transportation resources that cities already have—the highways, cars, public transit. The aim is to make transportation less polluting and more efficient.

Hawkins estimates that to clean their air, a number of large urban areas will have to improve transit systems, build bus lanes, establish car pools, adopt staggered work hours, start van pool programs, and take other similar measures.

Cleaning up the Nation's dirty air while attaining urban growth is only part of the job. Most of the country meets the national ambient air standards. Even many suburbs and cities meet the standards for one or more pollutants, such as nitrogen dioxide and sulfur dioxide.

In those vast areas where the air is still clean, the problem is to keep it that way while achieving a healthy economy. A 1973 Supreme Court decision drew the line: Under the air quality law, the Nation's clean air must be protected.

Under EPA regulations issued in 1974, a strategy was adopted to prevent significant deterioration of clean air. Three classes were established for clean air areas.

"Increments" of pollution were permitted in each class up to a level considered significant for that area. In the 1977 Clean Air

Act Amendments, a similar approach was written into law, with recent EPA rules to implement it fully.

For all three classes of clean air lands, some growth is possible. In or near the Class I areas, which include most national parks and national wilderness, growth is tightly managed. But Class II areas allow moderate, well-controlled growth. Class III areas allow even greater development. In no case can ambient air quality standards be exceeded, however.

Under the program to prevent significant deterioration of air quality, some growth has been turned down. An example was the denial of a construction permit this year by EPA's Region 8 office for Montana Power Company's proposed Colstrip Power Plant Units 3 and 4. The power plants' discharge would have degraded the air beyond the limits set by Congress for a Class I area. (The action does not preclude a future construction project with strict pollution controls.)

But growth alternatives exist in the clean air areas. Last year, EPA's Region 8 told the Intermountain Power Project that the Agency felt it would have to deny a permit to build near Capitol Reef National Park in southern Utah. The Intermountain Project, with State support, is now investigating a site in central Utah. Meanwhile, permits have been issued for the Pawnee Power Plant in Colorado, the Laramie Power Plant in Wyoming, and the Coyote Power Plant in North Dakota.

The key to growth in the clean air areas, which reach from Maine to California, is the pollution increment available. Only if it is used up would growth be prohibited, though even in this situation growth would be possible if existing sources cut their emissions.

But even in a little-developed clean air area, growth questions can include many complex issues. Competing economic interests may be involved. State and local attitudes are a factor, along with future needs and the absolute protection of air quality.

One way to resolve such growth allocation issues could be the marketplace, an approach now being weighed in an EPA study. Permits might be auctioned off by the administering agency, with the aim of ensuring the most efficient use of the air resource. Land might be zoned for allowable pollution density, with an industry buying enough air rights over the land to cover its emissions.

Among the benefits of this approach: Pollutants could be removed at a cheaper price by the most efficient industry. Better clean-up technology would be encouraged, because it would save money. The competition for the increments would indicate future growth demand, aiding decision-makers.

EPA intends to provide guidance to the States with what it has learned about such growth allocation tools. Wiser decisions could be the result, allowing more growth without exceeding clean air capacity. (While EPA now decides whether to issue an air permit for a new facility, most States are expected to take the responsibility for the permits beginning in 1979.)

Hawkins sees another benefit to growth in the air quality program, whether development is in a polluted city or a clean rural area. The key is putting very good controls on new sources as they are built, he says. With such controls, pollution is cut to a minimum and options are preserved for future growth.

Today's new source controls are tough. In clean air areas, a category called the

Best Available Control Technology is required. In nonattainment areas, another stringent class, Lowest Achievable Emission Rate, applies. But such measures are an insurance policy for clean air and future economic growth, Hawkins emphasizes.

In sum, growth can proceed while dirty air is cleaned up or clean air is protected. Careful development is possible both in cities and the countryside. At the same time, public health and the environment can be protected.

Air pollution limits may affect growth. But they needn't stop it. The tools are available to encourage clean development. The methods include the emissions offset for new industry and the more flexible margin for future growth. Transportation steps such as improved public transit can lead to less congested, more economically-attractive cities.

Other measures include the inspection and maintenance programs to reduce motor vehicle pollution, which can help cities build an air quality reserve for economic growth. Meanwhile, in clean air areas, pollution increments allow growth, and marketplace techniques could increase that growth without violating air standards.

State and local governments have a big share of the job in achieving growth with clean air. Under the 1977 Amendments, the States will have the responsibility for the emission offset or growth margin programs in dirty air areas. They also will have the option of taking over the permit program in clean air areas. More responsibility is given to local elected officials to participate in the entire air clean up process.

The Federal Government is the guarantor, says Hawkins. Its role is to ensure that one State's growth isn't penalized because other States are permitting dirty growth. "We are there to ensure that every area of the country has equal opportunities to attract clean growth."

Whether it is the air, the water, or the land, the task is the same, Hawkins adds. "In partnership, we must find a kind of growth that doesn't transform the environment into a threat." He believes we are learning such an approach. □



The High Cost of Los Angeles Smog



If clean air gives the economy a boost, what does dirty air do?

One way to find out would be to measure the difference air pollution makes in property values and people's spending views. An EPA-funded study is doing just this, picking smog-ridden Los Angeles for the review.

The air pollution price tag is high, the study is finding. Los Angeles smog is costing the average family up to \$2,000 a year due to lower property values, said Ralph d'Arge, a principal investigator for the project. D'Arge is an economics professor at the University of Wyoming.

"In these really smoggy areas, you are getting a lower value for housing. People with money and a preference for clean air are moving out," said d'Arge, who recently presented the preliminary findings to EPA. Such trends are a major factor in pushing once prime residential areas into an economic slide, he adds.

To doublecheck the property value differences, panels of residents were interviewed about what they were willing to pay to live in a clean air area. The figures almost equalled the actual difference in property values that d'Arge found and provided strong evidence of smog's economic drag.

D'Arge called the near-match between property values and people's attitudes on air quality "really striking." He said it indicates that "at least experimentally we have a way to measure the costs of air pollution."

Donna Crippen, a 48-year-old native of one suburban community, El Monte, told from first-hand experience how smog has changed the life and character of that area. She said the smog started pouring over the hills from Los Angeles on a regular basis a little more than a decade ago. "You used to be able to go up in this valley and see Mount Baldy 50 miles away," she recalled. "Now you can't even see the stars at night because of the smog," she said in a Washington Post report.

Before the smog came, Crippen, whose husband Jack is mayor, said El Monte was overwhelmingly a comfortable community of well-kept houses surrounded by walnut groves and fields of strawberries. Today, many once-substantial homes are run-down, littered with trash and scarred by graffiti, a deterioration due in part to the smog.

The EPA-funded study, according to D'Arge, found similar negative effects on communities all along the Los Angeles "smog belt," stretching 40 miles east and downwind of downtown. At the same time, d'Arge added, many once-deteriorated sections in less smoggy areas, particularly near the beaches, are experiencing an unprecedented boom in real estate.

Bob Lowes, a spokesman for the California Association of Realtors, agreed that there is no question that prices in "clean" areas are climbing above those in residential areas once considered more fashionable but that now are blanketed by smog.

In the working-class Mar Vista area, in the "clean" west side of Los Angeles, for instance, prices for modest homes have risen in the past decade from \$25,000 to more than \$110,000, according to real estate agent Joe Viestra. The average price for a home in Upland, a suburban area deep in the "smog belt," today is \$53,000, or half that in the "clean" areas, according to figures provided by Vernon Riphagen, president of the local realtors association.

While they won't publicly admit concern, businessmen in the San Gabriel Valley privately say that the almost daily reports about their area's air quality could be chasing away affluent residents and businesses. "They call the valley unhealthy on the radio and Santa Monica and the beaches healthy. Somebody hears that and you've got to admit it's not encouraging them to come to San Gabriel," one businessman said. "Nobody wants to admit it but there's no question it bothers one."

To do the EPA study, investigators picked seven pairs of subcommunities, mostly inside the city of Los Angeles. The pairs were identical in their housing, income, distance from the Pacific Ocean beach, and other factors, except that one was in a smog area and the other had clean air. For instance, one pair was El Monte and Canoga Park, moderate income, inland communities. Another pair was Irvine and Pacific Palisades, high income, beach communities.

The Los Angeles economic findings are part of a three year study under contract from EPA's Office of Research and Development. □

Blueprint for Clean Air

By Henry Thomas

EPA's Air program staff is working closely with a variety of State and local government agencies to develop air pollution control strategies for areas that don't meet national ambient air quality standards.

These are limits set for levels of particulates, sulfur dioxide, carbon monoxide, oxidants, and nitrogen oxides in the ambient air to protect the public health. Much of this current effort is a result of new requirements contained in the Clean Air Act Amendments of 1977 regarding State Implementation Plans. In order to fully understand the issues and problems being faced in the effort to revise these plans in areas that don't meet the standards, it would be helpful to look briefly at the background of the implementation program.

The Clean Air Act Amendments of 1970 envisioned two major approaches to air pollution control: (1) national emission standards, and (2) air quality management. National emission standards are set for new sources of air pollution, both mobile and stationary, and regulate the amount of any pollutant which a new source may emit. Air quality management, on the other hand, involves emission limits that are set specifically for a geographic area, based on the need to attain ambient air quality standards in that area.

The Amendments of 1970 called on all States to develop and adopt air quality management plans, which would result

in the attainment of national ambient standards by 1975.

These plans, called State Implementation Plans, can be thought of as a unifying element in air pollution control because they bring together many different types of regulations in one management plan. A State, for example, may take credit for national emission standards as well as its own regulations in its plan.

Since the plans were first submitted to EPA in 1971, they all have been revised periodically. Generally, these revisions were a "fine-tuning" of the control strategy. There were, however, a few major revisions that represented significant changes in strategy. The addition of transportation control measures by EPA in 1973 was an example. The Agency also issued regulations dealing with Air Quality Maintenance (1976) and Prevention of Significant Deterioration (1974) that affected the State plans.

In general, the first five years of the State Implementation Plan program saw widespread reductions in emissions from traditional stationary sources and a resulting improvement in air quality. Levels of particulates and sulfur dioxide dropped in most parts of the country. There are few remaining problems with sulfur dioxide emissions. These come from specific sources, often difficult to control. However, many fewer people are now exposed to air which does not meet health related air quality standards for sulfur dioxide.

Yet, there remain many areas where the standards are still exceeded. Nationally, the most widespread problems are particulates and ozone. In passing the Clean Air Act Amendments of 1977, the Congress dealt with the issue of non-attainment of standards and laid out a program to remedy it. The program envisioned by the Congress is a very careful balance of the public health and environment on the one hand, and economic growth on the other.

The Amendments called for areas where air quality does not meet standards to be designated in early 1978 and for revised State Implementation

Plans to be submitted to EPA in January, 1979. The revised plans must show how standards will be met by 1982, although extensions to 1987 will be allowed for the particularly difficult carbon monoxide and ozone problems.

The plans will generally have to contain all the regulations needed for attainment. Some of the more difficult control measures such as Inspection and Maintenance for automobiles and transportation control measures (bus lanes, carpooling, mass transit systems) can be phased in after January, 1979.

New sources of pollution proposing to locate in the non-attainment areas will be subject to the most stringent controls and even then will be allowed to build only if the existing emissions have been reduced enough to accommodate growth.

Finally, the plans must demonstrate that the emissions reductions will take place throughout the plan period and will not be concentrated at the end. Congress specified that if States don't assume responsibility for cleaning up the air, then permits for new industrial plants cannot be issued, and under certain conditions Federal highway and sewer funds will be withheld.

EPA Administrator Douglas M. Costle outlined the Agency's interpretation of the Amendments' requirements in a memorandum Feb. 24, 1978. That memo gave the States as much flexibility and time to complete their plans revisions as is permitted by the Act.

The problems which the States now face in revising those plans are considerably more complex and difficult than those faced during the initial round of planning in 1971. The initial plans and control regulations focused on the reduction of emissions from the stacks of basic industry (power plants, steel mills, foundries, etc.). Many of the traditional sources have either been controlled or are on compliance schedules.

For particulates, there are some remaining traditional



source problems. However, EPA and the State air pollution officials are increasingly finding that the remaining violations are associated with fugitive emissions and urban fugitive dust. Fugitive emissions are industrial emissions that are not vented to the air through the plant's primary exhaust system. These emissions escape from windows, roof monitors, materials handling and transfer points and in most cases are not passed through any control equipment. Urban fugitive dust, on the other hand, is dust stirred up by general urban activity (e.g., construction site activity, roadway dust, etc.). By their very nature these types of particulate sources are extremely difficult to even quantify, much less control.

In EPA's Region 1, the State of Massachusetts has a major study underway, including special sampling and filter analyses, to better characterize these problems. In Region 10 a similar study is underway in Oregon. In many areas of the country, the States and EPA Regional Offices are using new techniques, such as micro-inventories, to better under-

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stand the problems involved. Control strategies and measures being considered range from the more traditional measures such as controls on coke ovens in Birmingham to road-paving and windbreak and ground cover planting in some of the Western States.

It now appears that due to the technical complexities of the particulate problem many States will have great difficulty in meeting the deadlines contained in the Amendments of 1977. Nonetheless, progress is being made in many areas that will lead to the eventual attainment of the standard.

The oxidant problem is perhaps even more difficult and complex. It involves emissions from automobiles as well as stationary source emissions. Most of the urban areas of the country are considering strategies that will include stationary source regulations, inspection and maintenance programs for automobiles and a wide range of transportation control measures.

Oxidants have proven to be extremely difficult to reduce.

They are secondary pollutants, formed when hydrocarbons react with nitrogen dioxide in the presence of sunlight. The existing standard was established for the complex mix of compounds that make up photochemical oxidants, but there are no satisfactory methods for accurately measuring this mix of pollutants. The principal constituent of oxidants is ozone and the Agency is currently proposing to change the photochemical oxidants standard to an ozone standard and to adjust the allowable levels of the pollutant. "We feel it is more accurate to call this pollutant ozone," said Administrator Costle. "Aside from the chemical peroxyacetyl nitrate (PAN), which is an important part of the oxidant mix, the non-ozone oxidants remain essentially unidentified, cannot be measured, and have not been uniquely associated with adverse health effects."

Costle proposed to change the primary standard to 0.10 parts per million, one hour average, from 0.08 parts per million, because reevaluation of health evidence shows that significant effects occur at higher concentrations. The changed standard

still leaves a margin of safety as required by law.

Many States will be controlling hydrocarbons for the first time. This will involve controlling stationary sources which include, for example gasoline handling and storage facilities, industrial surface coating plants, petroleum refineries and chemical plants. In the past the control of hydrocarbons tended to focus on the substitution of less reactive compounds for more reactive ones. The emphasis has now shifted to require positive controls and some 25 States around the country are drafting regulations for inclusion in their plans. It is still too early to know whether EPA can approve regulations in all cases. Nevertheless, this activity in hydrocarbon regulation represents considerable progress, since in the past many States were unwilling to undertake any control of such sources.

The control of these sources will not only serve to reduce oxidant levels, but may also result in the control of toxic compounds, since more and more hydrocarbons have been found to have significant health effects. The development of regulations will continue for several years as EPA continues to provide guidance on additional source categories.

Automotive emissions constitute 50 percent or more of the oxidant precursor emissions in most urban areas. Automotive controls in the State Implementation Plans also will include the reductions achieved through the gradual tightening of the Federal automotive emission standards.

In addition to the Federal standards, the Congress mandated that States rely on inspection and maintenance programs and transportation control measures. The first program involves the periodic inspection and maintenance of automobiles to ensure that the control systems operate as designed. Portland, Oregon; Phoenix-Tucson, Arizona; New Jersey and others already have such systems operating. Other States, such as Connecticut, Kentucky, and Utah have the legal author-

ity to begin their programs and are at varying stages of development. This is a difficult program to initiate since it usually requires vehicle owners to pay annual fees and repair costs. However, in the areas where it has been started public acceptance has generally been good. In addition to the air quality benefits to be derived, inspection and maintenance results in fuel savings to the individual motorist through better tuned cars.

The development of transportation control measures is a key part of the overall ozone-control strategy. These measures range from establishment of bus and carpool lanes to provision of bicycle lanes and staggering of work hours. In most of the major urban centers of the country such planning is being conducted by metropolitan planning organizations. The inclusion of metropolitan planning organizations in the development of State plans is significant as it brings to air pollution control a fresh set of perspectives and new approaches, which will be especially important to future air quality. The Congress and the Agency have recognized that the air pollution problems of our cities cannot be solved apart from other general urban problems. This facet of air quality planning appears to be progressing very well. However, the really difficult task of implementing transportation control measures lies ahead.

Clearly the development of State Implementation Plans has posed many new challenges. The deadlines contained in the Amendments are extremely tight when measured against the complexity of the job to be done.

It is still too early to accurately predict what success individual States and cities will have in meeting the initial deadlines. The ultimate success of the program will be measured in 1982 and 1987 when the health-related ambient standards are to be met. What is clear at this time, however, is that a massive effort is taking place to develop an air pollution control blueprint for the next five to ten years. □





Aiding Urban Clean Air Goals

The Environmental Protection Agency is joining three other Federal agencies in providing a total of \$4 million in demonstration grants to help cities attract new business while meeting clean air standards.

Deputy Administrator Barbara Blum in announcing the program said the grants are the first step in fulfilling a pledge by President Carter last March that he would provide technical aid to cities facing both poor air quality and a continuing need for economic development.

The cooperative venture by EPA, the Department of Housing and Urban Development, and Departments of Commerce and Transportation, is called the Air Quality Technical Assistance Demonstration Program.

"I firmly believe that the strengths of each of these agencies will create a successful program to help cities work out solutions to the double-edged problem of achieving clean air and economic growth," Blum declared.

The technical assistance grants will be awarded to four to eight cities of more than 100,000 population to test innovative ways that can be duplicated elsewhere to meet Federal clean air standards while maintaining the ability to attract and retain business and industry. All U.S. cities over 100,000 population have been asked to submit a brief letter of intent outlining their plans. The

Planning for bus systems is one of the transportation control measures that EPA and other Federal agencies could fund through a new demonstration program for clean air in the cities.

agencies will select about 20 cities from these and narrow the choice to four to eight on December 1.

Selection will be based chiefly on three criteria: economic or social distress; severity of air pollution; and commitment to economic development and to attainment of air quality standards. The agencies will try to ensure geographic variety in awarding the grants.

"While the program focuses on problems in cities, some projects may be more appropriately carried out on an area-wide or regional basis," Blum said. "We fully encourage such projects, as long as they are properly coordinated with appropriate State and areawide agencies and other local governments."

Designated cities will have until the end of 1980 to carry out their demonstration projects. It is expected that Federal funds for similar projects will be available for all cities under existing economic and community development grant programs.

General direction of the program including final decisions on grant recipients and eligible activities, will be by a Board of Directors composed of Blum; Robert C. Embry, Jr., HUD Assistant Secretary for Planning and Economic Development; Robert Hall, Commerce Assistant Secretary for Economic Development; and Mortimer Downey, DOT Assistant Secretary for Budget and Programs. The program will be administered by Commerce and HUD.

Some examples of activities that will be eligible for funding under the program are:

- Ranking industries in terms of their relative attractiveness from an air quality and economic development perspective. This information would be valuable to economic development offices in developing their strategy for attracting industry.
- Setting up a clearinghouse to simplify the process of locating and negotiating an emission offset. (When a company wants to build a new facility in a dirty air area, EPA policy requires that the new pollution emission be more than offset by reducing emissions from an already existing facility).
- Reducing unnecessary constraints on industrial zoning and siting.
- Establishing pollution emission fees for industry, as a supplement to direct regulation. This could provide an incentive to companies for further pollution reduction, which, in turn, could provide "room" for additional economic development.
- Carrying out stringent transportation control plans to discourage automobile use. To be eligible for funding, these plans would have to be tougher than transportation measures normally required under existing regulations. □

With the passage of the Clean Air Act Amendments of 1977, it appears that inspection and maintenance has finally come of age.

My State—New Jersey—has employed a mandatory auto emission inspection program since 1974. The program began on a voluntary basis in July 1972. During the past years, programs have been started in Phoenix-Tucson, Ariz., Portland, Ore., and Chicago, Ill. and a wealth of data has been collected. Also I have gained personal insights and observations about New Jersey's program and inspection and maintenance in general, as it relates to air quality.

Healthy air in the urban areas of this country is still a far-off quest. Transportation controls relating to traffic improvement, mass transportation and many less palatable ideas promise some relief but not much. Reliance on curbing automobile emissions will still be the mainstay of the control efforts in the foreseeable future.

If we are ever to approach air quality goals, auto emission controls must prove to be more than a carbon copy of a few prototypes which have demonstrated compliance. Instead of only a fraction of the new vehicles being able to meet standards, mass-produced vehicles must be able to maintain low but rigid emission levels throughout their useful lives—often 100,000 miles or more. Thus, a new perspective must be developed in the Federal emission control program.

The solution requires not only an agreement between the Federal EPA and the automobile industry but also the participation of State and local governments. In the private sector, not only the auto industry must be involved but also the dealer, service mechanic, teachers, and, of course, the motoring public.

John Elston is Supervisor of the Mobile Source Control Division, Bureau of Air Pollution Control, New Jersey Department of Environmental Protection.

The Calm After the Storm

By John Elston

The question now is not so much how to meet motor vehicle emission standards, as how to use effectively the motor vehicle emission controls that exist, by coordinating the effort of the automobile industry, government, and the public.

A number of regulatory schemes in addition to inspection and maintenance are designed to enforce vehicle emission standards in the field. Some of these include vehicle recalls for emission control defects, warranty protection and intensive anti-tampering campaigns. I suspect, as time goes on, that EPA will stress these enforcement mechanisms more and more.

One of the most important aspects of an inspection and maintenance program is a good air monitoring network, which can answer the question "Is the air getting any cleaner?" Yet, the effect of new cars replacing old, long and short term meteorology, and a myriad of variables all make the relationship between air monitoring and control strategies evaluation difficult.

In New Jersey since the inception of the inspection and maintenance program, carbon monoxide in the air has been reduced by about 28 percent or about 8 percent per year. EPA has estimated that for the rest of the country where this program is not used, there has been a carbon monoxide reduction of about 5 percent each year. Can the difference be ascribed to the State inspection and maintenance program?

We think so but we can't say for sure. Data from other States that are consistent with our own are hard to come by and often subject to considerable error because of a lack of basic

information about the monitoring site. Recently, EPA contracted with the Statistical Department of the University of Wisconsin in an attempt to verify the carbon monoxide reduction in New Jersey. Their report concluded:

1) statistically significant improvement was monitored from all the carbon monoxide stations examined;

2) the improvement in carbon monoxide levels could not be attributed to meteorological conditions;

3) the improvement in carbon monoxide occurred at a time when traffic volume was increasing (apart from a temporary and short-lived reduction in traffic due to the oil embargo of 1973-74); and

4) the improvement *can* be attributed to the progressively more stringent Federal motor vehicle program and the New Jersey I/M program.

Wisconsin concluded, however: "Their . . . [Federal New Car Program and I/M] . . . *relative contributions to this reduction, however, are . . . best interpreted jointly.*"

This leads to my next premise that the Federal motor vehicle control program and State inspection and maintenance programs are, by definition, complementary and that stressing the relative differences between the two programs is an exercise in futility.

One issue that is increasingly clear in today's world of "throw-away" commodities is that shoddily-built or carelessly-maintained vehicles are more prevalent than once believed. I guess this should not be surprising. Until a few years ago, a new motor vehicle cost about

\$1 per pound. Compared with other commodities and considering that this is a finished, manufactured product delivered with warranty, the auto is a bargain indeed. Even in this day of rapid inflation the cost of private transportation is a bargain.

This low cost is surely a credit to the resourcefulness of the automotive engineer and good managers. Technical ingenuity, mass production methods, excellent distribution, appealing merchandising and liberal credit policies, have all contributed to a means of private transportation at minimum cost.

But yet within this resourcefulness there are gaps. For example, Detroit has learned that customers don't like the inconvenience of breakdowns or frequent repairs. Therefore, the auto engineer has designed an engine with broad tolerance ranges to accept a wide range of driving conditions and various abuses. In other words, a car works in spite of what people do or don't do to it. But as the auto engineer has been forced to tighten up tolerances in order to accommodate emission control, smaller differences in engine settings have resulted in greater relative changes in emissions.

The car of ten years ago with high emissions would run reasonably well under many conditions of engine setting such as timing, RPM, and carburetor adjustment. Today's vehicles must be kept within tight specifications for emission and performance deterioration. The catalyst has helped somewhat by providing the dumping ground for emissions that can't be tuned out in the engine. But the catalyst has limitations. In order for it to work, it too must operate within strict limitations and, of course, impurities such as lead cannot be tolerated.

Another insight is that inspection and maintenance may not have the same benefit for all regions of the Nation. My observation is that the auto service and repair industry maintains vehicles to a level of customer acceptance—and that's all. I suspect, in many areas of our Nation, this level of acceptance varies considerably just as it does within a region, State, or city. I suspect education and

the social influence of the public have a lot to do with it. Pride in the car you drive, knowledge of how it works, and an understanding of the environment in which we live are key factors.

Last year, the Governor of my State formed a Commission to study the inspection program in New Jersey (safety and emissions) and report to him any recommendations for change. A contractor made a survey for the Commission of public attitude toward vehicle inspection. A total of 83.9 percent thought that mandatory vehicle inspection (safety and emissions) should be continued. Relatively greater proportions of the educated, affluent, and aged supported the system.

Not surprisingly, those who failed most of the time liked the program least.

Another regional influence is climate. If, as I suggest, the average motorist responds to vehicle maintenance only when necessary, those areas in the southern part of our country receive less maintenance than those in the north. Those of us who live in the cold northern belt of the Nation remember each year that first cold October morning and the emergency phone call to the neighborhood repair garage begging assistance to start the car. Climate, in effect, forces many of us into annual mandatory maintenance. How this affects a State inspection and maintenance program is difficult to say but I believe it does.

Undoubtedly, the most discussed topic in starting I/M programs is the fear of public resentment. At this time, many State and local government officials are hearing from elected officials and, I suspect, a not-so-small proportion of the public, describing the woes of inspecting vehicles and obtaining repairs.

Of course, many of these same arguments raged in New Jersey when the program was about to begin. With an assemblage of news media, I can recall visiting an inspection lane on the day emission testing began for the first time. A motor vehicle inspection examiner who



Since 1974 New Jersey drivers have had their car emissions tested as part of the State mandatory annual safety inspection.

had obviously been with the system for many years casually remarked to me, "You people are going to create a hell of a hornet's nest this year." But then he added, "But don't worry, next year it will blow away. The same thing happened in 1938 when safety inspection began."

What the examiner said was exactly true. After the first cycle when everyone got their car tested at least once, the novelty was gone and with it the political doomsayers. The second cycle engendered appreciably less resentment as did the third and now the fourth. The survey cited earlier shows that two-thirds of the public now think emission inspection in New Jersey is fair. This percentage is much higher than similar surveys conducted in States about to establish an inspection and maintenance program. Starting one of these programs is much harder than continuing one.

But some of the fears are not groundless. The problem of overcharging, fraudulent, or incompetent repair, is still with us in New Jersey, as it will be elsewhere around the Nation. These problems can be and are being dealt with in an earnest and intelligent way. Auto emission control training programs are proliferating throughout the vocational education school system as the need for them expands. Spot enforcement by

our motor vehicle agencies, along with threat of stiff fines by the EPA for those who tamper with vehicles have had their effect. In a continuing survey of vehicles in New Jersey checked for tampering, we have found less than 1 percent involved. Also, the EPA Regional Office reports fewer complaints about tampering in New Jersey than in other States.

The point is that now people in New Jersey are aware of auto emissions. Their opinions and their motivations are, of course, not always the same. But they recognize that once a year they and their cars must pay their dues. The learning process has been completed. Those so inclined have found ways to beat the system. Others have found ways to live with it. And apparently, a fairly large percentage have grown to respect it or at least think it's fair. Inspection and maintenance in New Jersey is no longer a defensive issue and thus, the title for this article "The Calm After The Storm."

Because the program has been in effect for some time doesn't mean that it is without problems or that no changes should be made. Making the program more efficient remains the key issue in New Jersey. Standards that are fair for all vehicles, while allowing the State

to find polluters and tamperer vehicles, still must be achieved. Accurate and consistent tests must be found if the motorist is not to bounce back and forth between the garage and the inspection station. Vehicle pre-condition and temperature variables and their effects on emissions are still a problem; and, of course, an enforcement presence in the auto repair industry must be accepted if the integrity of the program is to be maintained.

Earlier, I spoke about carbon monoxide emissions while intentionally omitting hydrocarbons. The effect of inspection and maintenance on ambient oxidant levels is certainly less clear than for carbon monoxide. For one thing, motor vehicles make up about one-half of many sources of ambient hydrocarbons which, in turn, lead to the formation of oxidants. For another, the chemical reactions producing oxidants occur at varying speeds in the atmosphere. This air mass can be moved long distances from the source of the pollutants by prevailing winds. Unfortunately, we have not experienced a measurable reduction of oxidants from the emission inspection program. There is, however, evidence to show that hydrocarbon sources do contribute to the oxidant level. Further, it is reasonable to assume that reduction of these hydrocarbon emissions will ultimately lead to lower oxidant levels.

To demonstrate that assumption, it will eventually be necessary to have regional control of oxidants. Thus, whole regions whose hydrocarbon emissions contribute areas in excess of oxidant standards will have to adopt additional emission control regulations, including I/M programs. At the present time, EPA is involved in lawsuits in a number of States in an effort to encourage adoption of inspection and maintenance programs. In addition, New Jersey is petitioning the EPA to adopt a national strategy for the control of oxidants. Joint action in motor vehicle emission control will surely have to be matched in all affected jurisdictions for the calm after the storm to continue. □



Superintendent Douglas M. Cooke spoke at the dedication of the new Mobile Emissions Test Facility. The large truck is the first of its kind at the Port of the State of Texas.

EPA technicians prepare to set up the mobile testing facility at a remote site.

The car opposite people is being tested in the dynamometer section of the mobile facility.



New Car Tester

By Lori K. Shelton

EPA recently unveiled a new unit capable of measuring automobile air pollution emissions and fuel economy.

The Mobile Emissions Test Facility will allow the Agency to conduct the Federal auto emission test anywhere in the country. In the past, cars had to be shipped to the nearest fixed facility for emission tests.

"While providing mobility to Americans, the automobile has left a haze of harmful pollutants over most cities," said EPA Administrator Douglas Costle. "This new facility will add another dimension to our ability to ensure that cars are meeting Federal air pollution standards, both as they come off the assembly line and as they are operated on the road."

Auto emissions testing is conducted to determine whether vehicles are in compliance with the emissions requirements of the Federal Clean Air Act. The harmful pollutants of hydrocarbons, carbon monoxide and oxides of nitrogen are controlled under this Act.

EPA has a fixed test site in Springfield, Va. and will have another in Texas in 1979 to measure emissions from automobiles. EPA also has a facility in Ann Arbor, Mich. to certify new car emissions performance.

The new mobile unit, designed and produced in California by Automobile Environmental Systems, Inc., cost the EPA \$694,000 for design, development, and construction. A comparable stationary laboratory costs \$300,000 to \$500,000, but can only be used in one specific location.

This mobile facility consists of a 40-foot expandable Dynamometer Van in which to per-

form the tests, a mobile laboratory to receive and interpret data, and a Soak Test tent for temperature control.

Emission testing under the Federal Test Procedure provides accurate results, but requires very sophisticated and expensive test equipment, highly trained technicians and precise environmental controls for factors such as temperature and humidity. The procedure has three stages: Pretest, Driving Cycle and Analysis/Calculations.

In the Pretest stage, the automobile is fueled with test gasoline, driven on a dynamometer to warm it up and then is stored in a temperature controlled area (68°F) for at least 12 hours. The vehicle is then moved back onto the dynamometer and driven over a representative urban driving pattern for about 43 minutes. This simulates the freeway and stop-go driving a suburban commuter is likely to encounter on a trip to the city. During the driving phase, a sample of the automobile's exhaust is collected by a "constant volume sampler" and stored in plastic bags.

The Analysis/Calculations stage occurs when the exhaust sample is removed from the bags and is analyzed to determine the concentrations of the pollutants. Emissions are calculated in grams per mile and the results are compared with the standards to determine if the vehicle is in compliance. The full test requires 14 hours, but several cars can be checked in one day by staggering the test stages. The cost in the mobile laboratory—about \$2,000 per test—is comparable to that in a fixed facility.

The mobile facility supports three EPA programs to reduce auto-related air pollution—Assembly Line Testing, Recall, and Inspection/Maintenance.

The assembly line testing program tests production-line cars from auto plants. In this program, EPA selects automobiles directly off the assembly line to insure that they are being produced as they were designed—and that the Federal air pollution standards are being met. Currently, these cars are tested by the manufacturer in the presence of EPA observers after

shipment to the manufacturer's test facilities. The mobile facility can be used to test the cars at the production site, thus providing a check on the manufacturer's testing.

Recall testing measures the emissions of cars presently on the road to determine if they continue to comply with the emission standards during their useful life. Car owners are selected at random from motor vehicle registration lists, and then are invited to participate on a voluntary basis. For doing so, they receive a replacement car, a tank of gas, a tune-up and a U.S. Savings Bond. If a substantial number of any class of vehicles fail to meet the emission standards, EPA will require the manufacturer to remedy the emissions problem by notifying owners that their vehicles will be repaired by the manufacturer free of charge. This program can be expanded by using the mobile lab.

"A third and perhaps most important use for the mobile facility is in support of the State Inspection/Maintenance program," said Costle. Even if an automobile is properly designed and built, its emissions may in-

crease if it is not properly maintained.

"The authority to require individual owners to have their cars periodically emission tested and, if necessary, maintained, rests with the States. The test used by States for this purpose is simpler than the Federal test procedure, allowing more cars to be tested at less expense. However, the 'short test' is less comprehensive than the Federal test. The mobile facility can be used to demonstrate the benefits of I/M in a particular location. Further, it can be used from time to time to determine correlation of results between the State and Federal tests so that air quality benefits of an inspection/maintenance program may accurately be assessed. This will help the States achieve maximum results at a minimum cost. The mobile laboratory will also be used to buttress efforts to stop tampering with vehicle emission controls.

"The mobile tester will allow EPA to increase the effectiveness of these programs to ensure that automobiles comply with emission standards in all climates and at all altitudes." □



(Lori K. Shelton is an EPA Assistant Press Officer)



On June 26, 1819, William K. Clarkson of New York City was granted a patent for a "velocipede" or "swift-walker." That same year his device was banned by the Common Council, which passed a law "to prevent the use of velocipedes in the public places of the city of New York." Over a century and a half later the city is changing its stance and moving to support the use of the velocipede, or bicycle, as we know it.

This move is one of many, changing the view of the bicycle from that of a recreational diversion to that of serious commuter vehicle.

Last July New York Mayor Edward Koch announced the opening of special bike lanes along Broadway and the Avenue of the Americas. A 4-foot wide lane adjacent to the left side

parking lane has been set aside for bikers. It is marked off by street signs and diamond-shaped symbols in the roadway, an international symbol of a bicycle lane.

The three-mile downtown route is an acknowledgement of the increasing numbers of urban cyclists who defy taxis, trucks, and potholes to ride their bikes to work. The lanes are being introduced on a one-year test basis, according to the mayor, and if successful they could be expanded to cover 500 miles in the New York metropolitan area.

Bicycles are becoming a more important form of transportation for energy and environment-conscious people all across the country. While snow and ice can make biking a seasonal thing in the northern climes, bicycle use is on the increase year-round in central

and southern areas. A Washington D.C. Council of Governments study recently estimated that there are some 30,000 bike commuters in the capital area. Some 7,000 people bike to work regularly in Denver.

EPA has its own corps of bikers, active since the Agency moved into its Waterside Mall Headquarters in 1971. There are about 100 people who bike to work and use the bicycle lockers, racks, and shower facilities that the Agency provides. Three EPA Assistant Administrators, William Drayton, Thomas Jorling, and David Hawkins, have bicycle lockers and use them often. Administrator Douglas M. Costle has recently written a letter to the ten EPA Regional Administrators encouraging them to make biking facilities available to EPA employees.

Hawkins, Assistant Administrator for Air, Noise and Radiation, is a biker who found out the hard way about the increasing cycle commuter traffic. He told enthusiasts at the 1978 Bike Days Rally in Washington, "When I came to EPA they told me I had a parking space waiting for me in the garage, but I had to get on a waiting list for a bicycle locker." Hawkins bikes to work several days a week.

Since 1973, under the Federal Aid to Highway Act, States may build bikeways in conjunction with highway construction projects. Also States may develop independent bikeway projects costing up to \$2.5 million per State, with a national ceiling of \$45 million. Many studies of bikeways have been sponsored by the Department of Transportation, which has a \$6 million bikeway demonstration program. An increasing number



of Federal agencies, in Washington and around the Nation, are providing facilities for their employees, as are many private companies.

Bicycle commuting is standard transportation in many Old World countries and some increase in bike traffic there is attributed to the energy crisis of the early Seventies. During that period some countries banned auto traffic on Sundays and bikes were the only transportation available. Bicycle racks are a common sight in Europe and people often carry their bikes aboard trains.

In Japan over 50 percent of all households have bicycles. The Japanese government passed a law in 1970 to improve bicycle-riding roads. Millions of citizens in the Peo-

ple's Republic of China use bicycles almost exclusively. Furthermore, there the bicycles and three-wheel cycles are used to transport goods as well.

Many bicycle studies and surveys have indicated that people would bike to work more often if there were safe bikeways and secure parking. Bicycles account for over one-quarter of all trips made by any form of transportation in the towns of Copenhagen, Denmark; Upsala, Sweden; Rotterdam, Holland, and Stevenage, England. Stevenage is a new town that has incorporated bikeways as part of the town plan. In Holland one third of the roads have special provisions for bikes. Many main streets there have lanes designed solely for bicycles and have special stop and go signals for bikes at large intersections. In Holland and Sweden commut-

ers can check in their bikes at a train station and rent others at their destination.

One of the best examples of successful bike use on a large scale in this country is the city of Davis, Calif. Davis has a flat terrain, mild weather conditions, wide streets, and a large youth population due to the location there of a campus of the University of California.

The need for integration of bikers' requirements into city traffic planning came to a head there in 1966. A citizen group got petitions signed asking the city council to establish bike paths along principal streets and to make bicycle rights-of-way part of the city's transportation system. Candidates supporting the bikeways won in the next city election and the first paths were established along wide streets.

The bicycle boom in Davis has continued since, with the result that there are no parking meters in the city and the motor traffic at rush hour is tolerable. Some 28 miles of bicycle paths, with about 7 miles completely separate from roadways, exist in and around Davis. A city ordinance requires that bike paths be included in all new subdivisions. Davis has the highest per capita bicycle ownership in the country, with about 28,000 bikes in a city of 36,000 people.

Some of the bikeways in Davis are along the sides of existing streets. A solid 6-inch white line sets off the bikeways from auto traffic. According to David Pelz of the Davis Department of Public Works, cars may enter the bike lanes only to make right-hand turns, enter driveways, or park. He adds that Davis authorities are working to make traffic signals more responsive to bikers. Adjustments to the traffic signal triggering devices can change the light sequence to allow bikers more time to cross an intersection. The California laws relating to bike use have been standardized, says Pelz, and information on bikeways is being integrated into State driver education and driver testing manuals.

Other Davis bikeways are

macadam paths that wind through the UCLA campus and various subdivisions of the City. The bike paths are heavily used by commuters, students, and housewives. A Davis study found that one-quarter of all travel in the city is accomplished on bicycles. On some heavily traveled streets bikes make up over 50 percent of the traffic.

It is estimated that 40 percent of the "vehicle miles traveled" in rush hour are done on bicycles, and most (90 percent) of the riders at that time are adults. College students going to classes and university employees on their way to work make up a large proportion of the traffic.

A study of a nearby town that has no bike lanes, but the same mild climate, flat terrain, and wide streets, showed that almost all bikers there were school children and that less than 38 percent of them used their bikes regularly. In Davis school children use the bike paths as heavily as their elders. Some 60 percent of high school students and 80 percent of junior high students ride their bikes to school often. A poll of parents also showed that they allow their older children to use bikes for transportation to recreational events and movies on a regular basis.

Bike enthusiasts cite many advantages to the modern version of the velocipede. They will remind you that biking is non-polluting, energy efficient, space efficient, and economical.

Says Nina Rowe, a long-time EPA biker, "In a number of situations, especially in inner-city traffic, a bicycle is faster than a car. It preserves my sense of independence, by keeping me free from the gas pump and the parking meter. Best of all, bicycling provides healthy and pleasurable exercise, while it gets me from place to place."

Administrator Costle concurs. He said, "I strongly support the idea of making bicycle commuting more convenient. After all, if we are encouraging people to consider alternative forms of transportation in our efforts to clean up the air, we must set an example for others to follow." □

A Matter of Life and Breath

By Chris Perham

The intercom crackles and a voice says, "Ready to begin testing." A young man in coveralls steps up to a row of machines in a stainless-steel chamber. Under the scrutiny of a closed-circuit TV camera he grasps a plastic hose and places it in his mouth. Then, following the instructions coming over the intercom, he takes a deep breath, pinches his nose closed, and blows into the machine again, and again, and again, until he can force no more air from his lungs.

In the next room the staff of EPA's Clinical Studies Division—doctors, nurses, and technicians—watch the computers and television screens that simultaneously record, monitor, and display the results of this test.

The young man is a volunteer in an environmental health study that the Agency is conducting to document the effects of air pollution on the human body.

Chris Perham is an Assistant Editor of EPA Journal.

The medical staff can tell how his lungs function by following the line on the TV screen that registers the force and volume of each breath as peaks on a graph. After several hours of breathing air that contains ozone the volunteer coughs frequently and doctors note that lung action declines as pollution increases. A computer analyzes each breath in great detail, providing information for later interpretation.

By noting the effects of ozone on healthy young bodies, EPA scientists hope to assess the harsher impact this pollutant might have on millions of other Americans, particularly the very young, the elderly, and the chronically ill.

At its Clinical Laboratory for Evaluation and Assessment of Noxious Substances (CLEANS), EPA has one of the most advanced and complete facilities in the world for human testing. The testing lab, on the campus of the University of North Carolina at Chapel Hill, is the site of research that helps Agency scientists determine if air pollution standards, as they are now set, protect the health of Americans the way Congress intended when it passed the clean air legislation. The program is conducted by the Health Effects Research Laboratory (HERL), one of four labs making up EPA's Environmental Research Center at Research Triangle Park, N.C.

The people who volunteer to participate in this research are helping EPA study the subtle effects that specific pollutants and combinations of pollutants have on the working ability of the heart and lungs. An added benefit, according to Dr. Ralph Stacy, Senior Health Scientist in HERL's Clinical Studies Division, is that the information gathered during the studies fills gaps in medical knowledge about the normal functioning of heart and lungs in healthy young adults.

Researchers at Chapel Hill work closely with the staff of the Medical School at the University of North Carolina. A detailed protocol, or design, for each study is submitted to the Committee on the Protection of the Rights of Human Subjects at the University for approval. The protocol is a step-by-step breakdown of exposure times, exercises, and pollutant levels used in the experiments. All EPA experiments conform to the regulations of the U.S. Department of Health, Education, and Welfare on human testing.

The volunteers for EPA's health effects research are university students. They are paid a small stipend for their time and undergo a complete physical examination before taking part in the study. Each volunteer meets with one of the staff doc-

tors and receives a thorough explanation of the protocol of the experiment before signing a consent form. "I had a long talk with Dr. Haak before I started the experiment," said one. "He told me what we would be doing and why, answered all my questions. It doesn't worry me any, besides now I know why it's important to find out about these things."

Preliminary studies conducted at the facility show impaired lung function in volunteers exposed for brief periods to ozone at levels comparable to those experienced in urban areas during air quality alerts. EPA analysis of blood drawn from these volunteers indicates that exposure to ozone can hinder the ability of white blood cells to fight off infection for up to eight weeks after the time of exposure. These detrimental effects were documented on healthy young volunteers, and EPA scientists are concerned that reactions could be more pronounced in people suffering from chronic heart and lung disease.

The experiments conducted on people are coordinated, to the extent possible, with various studies involving animals. The animal studies give researchers some indication of the reaction they can expect. Says Dr. Stacy, "We can take animal studies a long way, but the crucial question is, 'How applicable are these results to humans?' Somewhere along the

This volunteer is breathing low-ozone air in a chamber that simulates conditions at the capacity of his lungs.

Volunteer exercises on a tread mill while computers analyze the amount and content of air from his lungs.

Dr. Ralph Stacy, acting director of the Clinical Studies Division, observes the lung function of a volunteer on the monitoring screen.

Banks of computers that monitor and record all aspects of the testing are located just outside of the test chambers.



line we need human exposure studies, and these must be carefully controlled."

The two chambers at the CLEANS facility were designed to include state of the art controls and precautions. Plans were drawn up based on a review completed in 1973 by Dr. John Knelson, Director of Clinical Studies, of the five chambers then existing in the U.S. for human air pollution exposure experiments. The complex design and construction took more than three years and the facility was turned over to EPA in May, 1976.

At that time Dr. Knelson set up a task force to evaluate the system and run control studies to find any defects or quirks that might exist. Questionable data would produce bad research. After checking the accuracy of the system the staff began their first pollution effects (ozone) studies late last year. After 500 subject/exposure days, the study was completed and reports will be published in early 1979.

The CLEANS chambers provide completely controlled environments for the research studies. Computers set and maintain temperature, light, and humidity. Air that enters the two 13 x 20 foot stainless-steel rooms is specially filtered, heated, cooled, and constantly monitored to remove unwanted

contaminants and add back those needed for the study at hand. By programming the computers, scientists can specify air that is pristine, contains one pollutant, or combines different levels of several pollutants, including water-soluble particulates.

Scientists emphasize that they need to know not only the responses of the body to individual pollutants but also the synergistic effect of combined pollutants. This is especially important since urban air pollution almost never comes from just one source, and research indicates that combined pollutants can present an increased health risk.

The atmosphere inside the chambers can be manipulated to maintain the concentration of a given substance to within narrow limits. The precise control of concentration levels is required to ensure the validity of the research and to protect the well-being of the volunteers.

Safety precautions built into the chambers include large viewing windows, closed-circuit TV, constant intercom communication between volunteers and the doctor conducting the tests, continuous heart-monitoring of subjects and alarms connected to automatic shut-down

systems that activate if the pollution exceeds a predetermined level. Huge fans in the space beneath the chambers recirculate the air and can exhaust both chambers in a few seconds, if necessary.

EPA scientists use three mini-computers to control the operation of the research experiments. They monitor and record the reams of data produced by the spirometer and other physiological testing instruments, govern the operation of the chambers and constantly watch over more than 250 elements that make up the system. Computer capacity and technology at the lab is continually being expanded and updated to cope with the huge amounts of information that the experiments generate.

Volunteers and medical personnel enter the chambers through an "air shower", a closet with a wall of high-powered air nozzles that blow away loose dirt, bacteria, and surface contaminants. The entryway also has brushes in the floor, which when activated scrub the shoes of anyone entering or leaving the chamber to prevent cross-contamination.

Each CLEANS chamber has work-study areas, bathrooms, and sleeping areas for long-term experiments. As many as six volunteers can live in the

chambers for up to two weeks at a time while breathing controlled amounts of pollution under computer-controlled conditions of temperature, humidity, and day/night cycles.

Volunteers who take part in the extended tests will receive food through an air-lock "pass through" into the chamber and will be able to read and watch TV to help pass the time when they are not involved in research activities.

No long-term experiments have yet been performed in the CLEANS facility. The most recent study series, which was held in 5-day increments, involved exposing volunteers to clean air on one day and to .4 parts per million of ozone for four hours on four other days. The volunteers were able to return home each night.

According to Dr. Stacy the volunteers are not told which substances they will be breathing on a given day, but he adds, "With ozone you can't fool them. They can tell when we use it because of the smell." The ozone is produced by enclosed ultra-violet lights in the control room above the chambers. It has a sharp, fresh smell something like the air after a thunderstorm.



The volunteers also say they know when they're breathing ozone. "It makes my throat burn a little," said one, "and sometimes I cough at the end of the day." Another noted, "My eyes get watery and itch. I didn't think much about it until I realized that the last time I felt that way I was in Washington, D.C. caught in a traffic jam."

Coughing, chest tightness, and eye irritation are common reactions to pollution sometimes dismissed as trivial. But researchers see them as clues to the more subtle effects—the changes in heart and lung response when pollution puts a strain on the body. They use a number of exotic devices to measure the responses of the body under different circumstances—at rest, during, and after exercise, in clean air and with pollutants added.

While taking part in the experiments the volunteers are fitted with heart monitors attached to transmitters that look like transistor radios tucked into the breast pocket of their coveralls. These ECG telemetry devices provide constant reporting on cardiac response. Staff members monitoring the experiment from the computer consoles outside the CLEANS chambers can see the electrocardiogram of each volunteer on a screen. In addition, all data are analyzed and recorded on the computer system and a photocopy can be obtained of anything displayed on the operator's console screen.

In a typical exposure after an initial rest period to allow the volunteers to acclimatize to the air in the chamber the study maneuvers begin. These usually include a battery of tests. In one such test volunteers breathe into the tube of the spirometer, and the computer makes a complete analysis of the breath, calculating the total capacity of their lungs and the rate and amount of air moved with each

breath. A computer-controlled treadmill makes it possible to exercise the volunteer at a predetermined speed and sloped angle. The scientists can measure heart rate, flow, and volume of air from the lungs, oxygen consumption, and carbon dioxide production during the exercise. A medical device takes blood pressure, and other devices can measure the time that passes between the cardiac stimulus and the contractions of the heart.

After a brief rest period to allow the volunteers to recover from the exercise, they enter the plethysmograph, a machine affectionately known to CLEANS participants as "the body box." The volunteer sits inside an enclosure, closes the clear plexiglass door, and turns a series of knobs that seal it shut. With the pressure inside the box set at a predetermined level, changes that occur as the volunteers breathe allow researchers to measure lung capacity and volume, as well as resistance to air-flow by tiny air passages that have narrowed because of disease or pollution-induced irritation.

The gas content of volunteers' breath can be analyzed for oxygen, helium, carbon dioxide, nitrogen and an isotope of carbon monoxide by means of a mass spectrometer.

From the information gained through these experiments EPA scientists are amassing a data base that should allow them to predict what the reactions will be of people exposed to masses of air pollution in an air quality alert. However, the researchers will not stop with mere projections. Once assumptions are made, based on the clinical data, they must be tested by in-the-field samples of affected populations. This is a logical extension of the CLEANS research, just as the clinical work built onto the findings of animal research studies.

EPA has converted two vans to be used as mobile testing laboratories, as part of a study called Clinical Evaluation and Validation of Epidemiological Research (CLEVER). The vans contain the same physiological monitoring devices used in the experimental chambers. They have a similar computer data

capacity and can take the same measurements. However, the vans will not need the ability to simulate different air conditions because they will travel to the scene of air quality alerts to make field studies of the people living in the affected area.

One of the vans was used recently to test Department of Defense personnel in St. Louis, Mo. Another will move this fall to a lot at EPA's main facility at Research Triangle Park, N.C. It will remain there for six months while running tests on the 1,200 Agency employees there. According to Dr. Stacy, "Research Triangle Park has relatively clean air. The people who work there range in age from 20 to 70. This study will provide a valuable source of information about the general population in a clean air area."

The recent report to Congress of the Task Force on Environ-

mental Cancer and Heart and Lung Disease stated that there is a significant connection between environmental pollution and cardio-pulmonary disease. Administrator Douglas M. Costle, Chairman of the Task Force, said, "The extent of illness, death and costs to society from environmentally-related cancer and heart and lung disease is a matter of national concern. Changes in our level of effort will be necessary to reduce the risk and occurrence of these diseases." EPA's staff at Chapel Hill is laying the groundwork for such prevention. □



When sealed, this pressurized chamber can help scientists detect resistance to air flow in the passages of the lungs of volunteers.

The Elm Battle

This is the time of year when the rasping sound of a tree surgeon's saw can often be heard in the towering heights of one of our most beautiful and threatened trees, the American elm.

This fall pruning of limbs infected with the spreading Dutch elm disease is often vital as part of the treatment process if the tree is once again to produce in the spring the glorious green canopy which has ornamented so many of the Nation's parks, city streets and private lawns.

The massive effort underway to save this tree noted for the ballerina grace of its branches has sparked considerable emotion and controversy.

There are an estimated 34 million American elms presently growing in incorporated areas of the United States. Of all the elm species, the American is the loveliest and the most susceptible to the Dutch elm disease.

Millions of elms have been killed in the United States since the disease fungus was accidentally brought into this country on imported logs in 1930.

The impact of the problem has been particularly devastating in the twin cities of St. Paul and Minneapolis, where practically all street shade trees are elms. St. Paul lost 50,000 elms to the disease last year and Minneapolis 32,000.

The disease fungus clogs the water-conducting vessels in a tree's cambial growth layers. As a defensive mechanism the tree seals off afflicted cells. However, the disease spreads relatively swiftly and the tree closes off cells behind it until it literally chokes itself to death.

The plague is spread from tree to tree by elm beetles which carry the spores of the fungus.

Although the fungus is a native of Asia it became known

as the Dutch disease somewhat unfairly because scientists in the Netherlands first identified the cause of this strange malady.

Efforts to contain this disease which has also decimated elms in Europe and Canada generally center around two major approaches—area control and individual tree control. In the first system, a unified authority attempts to contain the disease within a specific area such as a city. Emphasis is concentrated on prompt removal of diseased trees and chemical spraying to kill the carrier bark beetles and eliminate their breeding sites.

Treatment to save individual trees which have an unusual historical or esthetic value usually consists basically of cutting out infected limbs and injecting fungicides.

Among the pesticides approved by EPA for use against the Dutch elm disease is Lignasan, a chemical product. A non-profit research and educational organization, the Elm Research Institute, Harrisville, N.H., has reported good results with this product when it is promptly and properly used.

However, its use is approved by EPA only by trained arborists because special pressurized in-

jection equipment is needed to apply the compound correctly. The product can also be hazardous to people if not properly used.

The Elm Research Institute stresses the importance of early preventive treatment of elms but warns that no integrated program for care can be fully implemented without the advice of a trained tree expert.

The first visible signs of infection of an elm with the disease is the wilting or yellowing of leaves known as "flagging." When this symptom appears the institute urges the prompt injection of the tree with an approved fungicide.

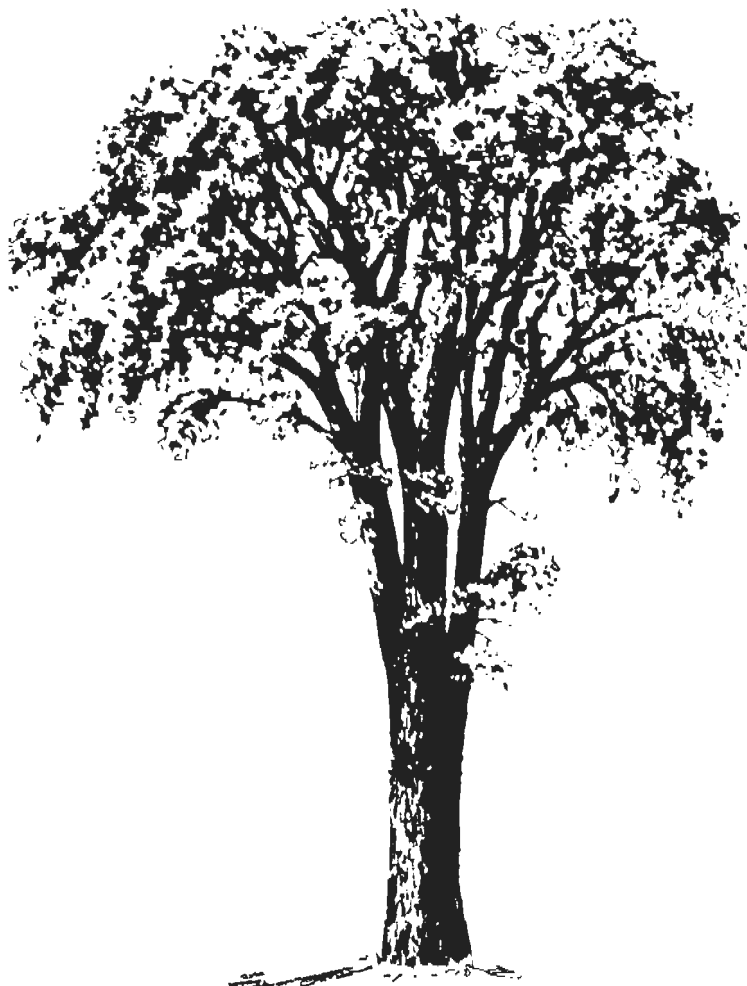
Another product registered by EPA for use by injection is Arbotect 20-S. Some sprays such as methoxychlor are also registered by EPA to help protect the elms.

Several other chemicals pesticides are now being tested under EPA permits. Extensive efforts are also being made to find suitable elms which are resistant to the disease.

However, the authorities generally agree that while treatments are available which can help control the disease, so far no miracle cure has been found.

One of the major authorities on Dutch elm disease, Dr. Frank S. Santamour of the U.S. National Arboretum, stated in a report on the current state of the art of control of this disease that the lesson to be learned from the Dutch Elm disease is that:

"It will be a mistake if we ever allow the planting of any single species . . . no matter what its credentials, to the near exclusion of others. We are not going to 'replace' American elm. Diversity of planting with regard to species, cultivar, size, form, growth rate, texture and color will help us to avert another Dutch elm disease tragedy."—C.D.P.



Update

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

Auto manufacturers must "immediately face up to the fact that they have defined their job too narrowly and have shirked their responsibilities" with regard to the compliance of autos with emission standards while in use, said David Hawkins, Assistant Administrator for Air, Noise and Radiation.

Automakers have focused only on very specific EPA requirements, Hawkins told the Auto Newsworld Conference recently. They need to focus as well on "their broad responsibility to refrain from marketing products which will not meet the law's requirements in use," he said. "Many of the vehicles that exceed standards in use do so because they are defectively built, or poorly designed, or because they drive so poorly or won't start on cold mornings. . . ."

EPA Hears Coal Issue

EPA held its second public hearing in Ohio August 22 on the source of coal for the State. Because most Ohio coal is high in sulfur content, several utilities have indicated that they intend to buy out-of-state low sulfur coal to comply with the clean air law. The aim of the hearings is to help the EPA Administrator decide whether such a step will cause economic disruption or unemployment.

A key issue is whether or not Ohio utilities should be ordered to burn coal mined in the area. "EPA shares the concern of every person in this room for the welfare of Ohio citizens. And that means jobs as well as clean air," said Marvin Durning, Assistant Administrator for Enforcement, in opening the hearing.

Air Rules For Grain Elevators

Final air pollution regulations have been issued by EPA to protect people living around large grain elevators from the

dangers of dust pollution, which can cause breathing problems and respiratory illness.

The rules apply to any large grain elevators (storage capacity greater than 2.5 million bushels) whose construction began after Aug. 3, or may start in the future. The final rules will apply to the 500 existing large elevators only if these structures are modified or reconstructed.

Regulations will be issued early next year to control noise from railroad yards and railroad equipment. Charles Elkins, EPA's Deputy Assistant Administrator for Noise Abatement and Control, has disclosed.

The rules would set overall noise limits for railroad yards. Some of the equipment affected would be: (1) retarders, which are parts of tracks used to brake the speed of railroad cars (2) refrigeration units in railroad cars, and (3) locomotive service facilities. Noise rules already have been set for locomotives and railroad cars.

After taking a long, hard look at EPA's pesticide program, "Steven Jellinek, Assistant Administrator for Toxic Substances, has concluded that the competency of its staffing is not the cause of its problems. "To my pleasure, I have found that the Office of Pesticide Programs is staffed by many capable scientists and other professionals. . . ." he told a meeting of the Southern Commodity Producers Conference. "The program is dominated neither by lawyers nor unscientific types who are ignorant of the realities of modern agriculture and out of touch with the most advanced science."

The program has a number of basic deficiencies, Jellinek continued, but the Agency is work-

ing hard to overcome them. The provisions of the amendments to the Federal Insecticide, Fungicide, and Rodenticide Act give reason to be optimistic about the program's future, he said.

Industrial Pesticide Gets EPA Review

EPA has started a review of the risks and benefits of a commonly used industrial pesticide to decide whether to allow continued use. The pesticide is 2,4,5-TCP, a chemical with some of the same characteristics as the herbicide 2,4,5-T, which is now undergoing a similar safety review.

Both compounds contain the dioxin TCDD, a toxic material, which even in extremely small amounts is capable of killing laboratory animals. Also, a number of laboratory studies have shown that TCDD is a suspected source of birth defects and cancer among people.

The pesticide 2,4,5-TCP is used in several industries, from textiles to pulp and paper mills, and in small amounts to disinfect facilities such as hospital rooms and equipment.

Pesticide Action

The EPA has cleared the way for western States to broaden the use of four EPA-approved pesticides to combat serious grasshopper outbreaks on crops. On July 26, the Agency's pesticides chief, Edwin L. Johnson, informed Kansas and Nebraska officials that the States could allow farmers to use the pesticides on all major crops being eaten by the "hoppers."

The compounds are dimethoate, Furadan (carbofuran), Dursban (chlorpyrifos) and orthene. The same permission applies to other States afflicted with the pests, such as Colorado and Oklahoma. EPA checked before acting to insure the pesticides wouldn't leave unsafe residues.

Deputy Administrator Barbara Blum said it was "highly unlikely" that EPA would grant requests for emergency use against the grasshoppers of another pesticide, heptachlor. EPA stopped most uses of heptachlor in 1975 because it was judged a suspect human cancer agent and persistent environmental contaminant.

EPA is finalizing rules to carry out a program of Federal grants to help urban areas develop resource recovery projects. At press time, final regulations were expected soon, along with Congressional action on a \$15 million appropriation requested by President Carter.

The grants will enable cities to hire capable managers and obtain adequate consulting services for preparatory steps in projects such as burning trash to create fuel for energy. Lack of specialized knowledge and skills has often caused cities to fail in resource recovery efforts.

Solid Waste Guidelines

EPA has proposed guidelines for States to use in preparing plans to manage solid wastes. Included are requirements which States would have to meet to gain EPA approval of their plans. With Agency approval, the States could receive funds to carry out the solid waste management efforts.

"We are giving States an opportunity to develop strategies which will assure that wastes are managed in a safe manner, and which will provide for resource recovery as well," said Steffen Plehn, EPA's Deputy Assistant Administrator for Solid Waste. To be approved by EPA, each State plan would have to provide for the environmentally-acceptable disposal of solid wastes and include a strategy for resource recovery.

An era of massive dumping of industrial wastes into the Gulf of Mexico has ended with an industry decision following an EPA Region 6 ruling. The industry, Ethyl Corp., has withdrawn a Federal permit application for dumping at sea. Ethyl was the last industry anywhere along the Gulf to hold such a permit.

The company decision came after an EPA ruling that six Ethyl reports related to the permit are public information under Federal law. The corporation had attempted to exclude the press and public from portions of a permit hearing last May, claiming the application documents contained confidential business secrets.

Protect Croplands

Administrator Douglas M. Costle has ordered EPA to take valuable, higher-yield croplands into account in the Agency's actions. Such croplands are as important to the environment as they are to agriculture, said Thomas Jorling, Assistant Administrator for Water and Waste Management.

The order's aim, Jorling said in a speech explaining the policy, is to help prevent the loss of such lands as an environmental or food-production resource. For example, under the new policy, EPA will be looking at the possible impact of new sewage projects on uses of agricultural lands. Jorling told the annual conference of the Soil Conservation Society of America.

EPA Grant to Ohio

A grant of \$709,950 has been authorized by EPA to the Ohio Environmental Protection Agency. The grant—to help support the State's water pollution control program—was announced by Deputy Administrator Barbara Blum after intensive negotiations between the Federal and State agencies.

"We are confident that the grant agreement reached today should result in a significant upgrading of the Ohio water permit and enforcement programs," said Blum. The funds were withheld by EPA because the Agency was concerned about apparent deficiencies in Ohio's Fiscal Year 1978 plan in the areas of enforcement and permit issuance.

Priority to Drinking Water

Financial aid to improve the drinking water systems of small rural communities will get priority consideration, says a new agreement between EPA and the Farmers Home Administration. Although such funding is available for other purposes, the agreement assigns priority to the funding of health-related drinking water projects. The Farmer's Home Administration funding will be provided from \$1 billion available this year to help rural communities build or improve waste treatment and drinking water facilities.

Wetlands Session

Administrator Douglas M. Costle is among the scheduled speakers at a national symposium on the value of U.S. wetlands and their protection. The symposium will be at Lake Buena Vista, Florida, November 7-9.

The aim, according to the National Wetlands Technical Council, is "to achieve a national consensus among scientists on the research priorities and values of wetlands, inland and coastal, in the United States." The Council is organizing the symposium. About 1,000 scientists, environmentalists and educators are expected to attend.

"I'm convinced... that government can be made to work well and to meet the real needs of citizens," Administrator Douglas M. Costle told the Public Citizen Forum. "It won't be easy. But my experience at EPA so far has given me grounds for cautious optimism that it can be done."

Costle gave two key examples of EPA policies responding to public needs. One is to give high priority to enforcing the law, showing that the Agency is serious about its mission and won't accept excuses for unnecessary delays. The second is giving high priority to measures primarily aimed at protecting public health, affirming that EPA's main concern is with people and the direct effects of environmental pollution on their lives.

Minorities, Women Recruited

Since October, 1977, EPA has hired 80 persons in a special program to recruit college graduates. Of the total, 37 were members of minorities. Also 28 women were hired, including 12 minority members. The special effort is a joint headquarters-field program to recruit candidates for hard-to-fill positions, mostly in engineering and science. The emphasis is on hiring minority persons and women.

The continuing employment effort, started last October, is in compliance with EPA's Affirmative Action program. For additional information on the special program contact Gene Harris (202) 755-2663.

Strong Public Role

EPA held an informal public meeting August 24 on its proposal to improve the Agency's process of developing regulations. While EPA has been a leader in regulatory reform, "now we're proposing reforms that go beyond those we had previously adopted," said Administrator Douglas M. Costle.

A key EPA interest, Costle said, is ensuring maximum public participation in the early stages of regulation development. "We want to be sure that the public will have every chance to have its views heard and considered by this Agency," he said.

The proposal presented at the public meeting would give additional chances for public comment as regulations are developed, consider possible reporting burdens on groups affected by the regulation, and analyze the possible impacts of a new regulation on such areas as public health and energy.

Air Cases Settled

Two Virginia Volkswagen dealerships have settled out of court on cases involving alleged violations of Federal air pollution control law. The dealerships were among 13 charged nationwide with allegedly tampering with pollution control equipment on 1975 and 1976 Rabbits and Sciroccos.

The Justice Department filed the complaints after EPA investigation and referral and the settlements were negotiated with EPA approval.

Water Rules Upheld

EPA regulations limiting water pollution by paper mills have been upheld by the U. S. Circuit Court of Appeals in Washington, D.C. With one minor exception, the court ruled that the Agency's rules were legal and had been properly adopted.

The recent decision covers a large majority of the Nation's paper mills which had previously been unregulated. The court found that "the EPA properly construed and rationally exercised the authority delegated to it by Congress" with the one exception. □

Making Environmental Science Work

Interview with Dr. Richard Dowd, Science Policy Advisor, Office of the Administrator, and Staff Director of the Science Advisory Board



What would you say is the main scientific challenge that's facing EPA now?

Probably the most challenging scientific issue we have to deal with is how to lay a solid ground-work for making valid risk assessments. We must be careful because the whole question of risk assessment and the judgment of risk is more than simply a scientific question. It includes other important issues such as economics, political policies, and social welfare concerns. We are addressing new areas, and we must move carefully to make sure that decisions are right. Yet the Agency has to make decisions on a daily basis to deal with a myriad of risks about which, if decisions are not made, there is a chance that either some segment of our environment or the public health is going to be irretrievably injured. So we cannot pause too

long because we don't have the information. On the other hand, the scientific adequacy of the information has to be assured, and we must find methods of assessing the risks in such a way that the Administrator can use them to make his judgments.

The main procedural scientific challenge is to assess the quality of the science that is carried out in the Agency and improve it. There are instances where research is not carefully done or our data is sloppy, and this needs to be improved. I think that is a procedural issue that crosses all areas of substance.

What is the role of EPA's Science Advisory Board?

The key role is to help maintain the high quality of the scientific research that goes on in the Agency. The Board also responds to Agency requests for advice on its scientific programs, and, where appropriate, to developmental issues that the Board feels the Agency should

address. In those cases, the Board provides advice to the Agency, but it is advice only. The Agency does not have to follow it.

Has the role or the make-up of the Board changed recently?

Congress supported the Science Advisory Board by legislative establishment last fall and some changes followed. We have combined all of the committees under a single charter, but the functions remain pretty much the same as in the past. The Board is made up of about 80 scientists when all appointments are filled. Those scientists are broadly divided into several different committees. There is an Executive Committee, which is chaired by the Chairman of the Science Advisory Board. The chairmanship is a major job, and the person who fills it is to give advice to the Administrator. The Executive Committee acts as a sort of steering committee for the whole Board and, where appropriate, sets up sub-committees or selects issues to be addressed by specific standing committees. Then there are five standing committees responsible for the following areas: environmental health, ecology, pollutant transportation, technology, and measurements. In addition, last fall we established a new sub-committee on toxic substances. That sub-committee is like a small standing committee, except that it is not built into the charter, and we can dissolve it at will. Also, in the Clean Air Act Amendments of 1977, the Administrator was asked to set up an independent committee to evaluate the scientific adequacy of criteria and the regulations and standards for control of the criteria pollutants. So we are in the process of establishing a new committee called the Clean Air Scientific Advisory Committee, members of which will be members of the Science Advisory Board. All of the chairpersons of the standing committees serve as members of the Executive Committee, and, in addition to them, we have several members-at-large.

How do you choose your chairpersons?

The Administrator chooses them. The Administrator chooses all members of the Science Advisory Board as well as all chairpersons. Members are appointed for staggered terms ranging from 1 - 3 years. They may serve up to four years, and, in some rare cases, more.

You said the Administrator picks people on the Board. Is it because of the community they represent or the various facets within the scientific community they are concerned with?

With an 80-member Board, we have a fair amount of flexibility and we have to select our members to reflect diversity: scientific, geographic, institutional, racial, sexual, and so on. We have to pick a Board that is broadly representative of the scientific consensus and also includes women, blacks, minorities. We have to be sure that we do not represent only the East Coast elite establishments, that we do not represent only ecologists, and that we also include chemical engineers and ground-water specialists. With only 80 people we cannot represent all specialties, but we do try to represent a broad spectrum, and we have a fair number of National Academy of Science members on the Science Advisory Board. We try to get eminent scientists, as well as working-level scientists. We started with the premise that the reason for picking a person is because of scientific training, talent, and expertise. But we don't want to pick all of the members from one university or laboratory.

How often does the Board meet, and where?

The Board as a whole does not meet. It is each of the committees that meets. The Executive Committee normally meets in the Administrator's conference room. Usually the Administrator, the Deputy Administrator, and several of the Assistant Administrators spend some time with the Executive Committee. Each of the other committees meets 3-4 times a year usually in Washington. All of these meetings are open to the public.

Do you get much public attendance at the meetings?

Yes, depending on the issue. Often representatives from industry and public interest groups attend. Much of the work of the Science Advisory Board is carried out by ad hoc subcommittees and work-groups that are set up to deal with specific issues.

If a document needs to be reviewed, we set up a subcommittee which has its chairperson drawn from one of the standing committees and members drawn from any of the committees depending on the expertise needed. We may also draw upon our long list of consultants. That allows us to cover many more issues because those subcommittees may meet as often as necessary to resolve an issue.

Do you think the Board is satisfied with the kind of progress that EPA's scientific program is making and the direction that it's going in?

I think so. It is always a struggle. Keep in mind that they are a group of outside advisors, and, as advisors, there is always the question of how much is your advice taken. The Science Advisory Board is like any group; sometimes advice is taken and sometimes it is not. When the advice is not taken the Board feels less happy than when its advice is taken. But I think generally the Board feels that the Agency is moving in the right direction and is trying to improve the adequacy of information. There has been a very good working relationship set up between the Office of Research and Development and the Science Advisory Board. Steve Gage, EPA Assistant Administrator for Research and Development, has worked very hard to make that happen.

Do you see the Science Advisory Board working more with the R&D program on theoretical problems than with the air and water programs in the enforcement of application of pollution control?

Historically that has been true. When I joined the Agency in June, 1977, it seemed that most of the impetus was to work with the Office of Research and Development. There is a traditional association between the Science Advisory Board and the Office of Research and Development. But I am trying to move the Board to deal more closely with the programs and divisions. That is important particularly since Congress is expecting the Science Advisory Board to look at such things as regulations, and regulations are clearly within the aegis of the programs. If we do not get involved in looking at the scientific adequacy of regulations, as well as working with the Office of Research and Development, we will be missing a strong bet to help the Agency. My thrust is to move the Science Advisory Board from a very strong emphasis on R&D to a somewhat reduced emphasis. Although it is clear that when you have one group of scientists, such as our members, they are most simpatico with another group of scientists, and the majority of the scientists in the Agency are located in the Office of Research and Development.

I would like to see us continue to move into the area of the programs in ecology. Our Ecology Committee has met several times with people from water programs, and I think there are some clear ways in which that committee can advise and help water programs on some of the important things that are coming up. We have been having briefings from the Office of Toxic Substances and have been working closely with them.

Do you think that the new committee that's being drawn up because of the Clean Air Act will help the move in that direction?

Oh, yes. That committee explicitly has to review both the criteria documents for air pollutants, which are produced by R&D, and the standards that follow from them, which come from the Office of Air Quality Planning and Standards. So we have the same committee being given a mandate from Congress to review something that comes from two different organizations within the Agency. I have been in fairly close contact with the air quality program in putting together this committee and in trying to figure out the best way for the committee and the program to work together so the advice can be of the highest value.

Is there a comparable mandate for water and pesticides, or do you think that will be incorporated into the upcoming legislation?

In addition to the Clean Air Act Amendments of 1977 that established this new committee, the Environmental R&D Authorization Act of 1977 gave life to the Science Advisory Board. Before that it had been an administrative decision whether the Board should exist. But at that point, Congress said, "Yes, we agree and we hereby authorize and ask you to create a science advisory board modeled very much like what you have now." In the conference report they said, "We want to make clear this authorization is not meant to change the Science Advisory Board's operation, but merely give it statutory life." That Act asked that the Science Advisory Board review the scientific adequacy of all manner of things including criteria documents, regulations—everything the Agency does. It is a mandate that crosses all lines, and it certainly overlaps with the Clean Air Act Amendments, which is why we took the committee and pulled it into the

Science Advisory Board so that we will be able to satisfy both mandates at the same time. Otherwise we would have two committees looking at the same things. The Agency also has a Science Advisory Panel for pesticides, but it is separate and outside of the Science Advisory Board, at the moment.

Do the members of the Board see a need for more contract activities, more research activities outside the Agency? Are they pretty happy with what they have?

I think that they would be happier if we could do more of our research in-house. They recognize, however, a real problem with that in the sense that if your research dollars go up but your staff stays the same, research has to become extra-mural. That is a fact of life. But I think the Board would be happier if there were some way EPA could do more of its work in-house. The Board has encouraged innovative programs that would provide for that, such as drawing scientists in under the Inter-governmental Personnel Agreement.

Do you find that Board members act as a channel back into their various communities for information about the Agency?

Not nearly as much as I would like. I was talking with a member of the Board recently and raised the issue of more institutional cross-fertilization between us and the universities.

Is the Board reviewing EPA's efforts in health research?

Congress explicitly, in the R&D Authorization Act, asked the Science Advisory Board to do a review of the Agency's health effects research. That committee has begun meeting to review all of the Agency's health effects research. We expect that to be a very large and comprehensive effort, and the result will be a report to the Administrator, the President, and Congress, according to the Act. This is a real opportunity for the Agency because so many things have shifted in the last several years that a strong look at our health research is a good thing. The Administrator has emphasized that he wants this done because he wants to see where we have strengths and where we have weaknesses. He feels, and I agree, that this is a great opportunity to see just what is going on.

It seems in the last couple of years, that the Agency has become more aware of the health implications of all the things that we do?

Well that brings up an interesting issue. The Ecology Committee, for example, is unhappy with that. They would like to see more emphasis placed on the environmental bases of things, because they see the environmental structure as being the basis for all human life. And if we don't concern ourselves with that we are not going to have the underpinnings to keep ourselves going. They have expressed that feeling very strongly to the Administrator. They know at the moment that the Agency must focus on human health because of the mandates recently placed by Congress. There is a very high emphasis on health, but it is unlikely that we are going to lose interest in ecology.

The Ecology Committee gave some advice which said, in effect, "We really would like to increase emphasis on ecology and not keep taking away from ecology for health." We all recognize that the environmental conditions that exist in the real world, even if they are not directly related to human health, are very important. They are important to our survival as a species on this planet and to the survival of all life on this planet. We can't let it go. But on the other hand, human health has got to be of a very high concern. This is an example where we have two vitally important issues that came up. The Ecology Committee gave some advice, but for the moment we can't follow it because we have other mandates that are driving us.

What kind of staff supports the Board?

We have a small staff to help the Board, a total of 14 positions. Each of the standing committees has an executive secretary, who is a staff officer for the committee and a professional in the field. So that means I have 5 professionals plus an IPA, a person who normally teaches at Penn State who is here for a year, an editor, and secretarial support. I am the Staff Director and also serve as the Administrator's Science Policy Advisor. This arrangement has, I think, strengthened the connection between the Agency and the Board in the sense that I have actually become the Administrator's representative to the Science Advisory Board. I have also become the window for the scientific community to the Administrator so that there can be meaningful interchange. My real job and responsibility to the Agency is to be a kind of scientific om-

budsman; to look around and pick up scientific problems and, where appropriate, ask the Board to deal with them, and, where not appropriate, to deal with them within the Agency and see what happens.

How do you perceive the Board's role in the future?

As the Agency turns increasingly to areas in which the scientific uncertainty is great, such as toxic chemicals, we will need the advice of outside eminent scientists. Without a backstop of scientific credibility, the Agency would have a difficult time making the decisions that will be necessary. In some cases, of course, information will still be uncertain, but if the range of uncertainty is known, then prudent decisions can still be made. □

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

People



Stanley Williams

The Director of EPA's Personnel Office is retiring after three years in that position. He was previously Assistant Director of Personnel for Executive Manpower and Personnel Evaluation. Williams began his career in the field of personnel with the Department of the Army in 1955. In 1962 he assumed positions in personnel management evaluation and career development with the Federal Aviation Administration. He joined the Federal Water Pollution Control Administration, an EPA predecessor agency, in 1965 as Deputy Director of the Division of Personnel Management. Williams received his bachelor of science degree from the University of Maryland. Richard Coccozza has been named Acting Director of Personnel.



Dr. Delbert Barth

The Deputy Assistant Administrator for Health and Ecological Effects has accepted a post as Visiting Professor of Biophysics at the University of Nevada. He will take the position under the Intergovernmental Personnel Act, which allows the exchange of people between the Federal Government and State and local organizations. As a professor in the University's College of Science, Mathematics, and Engineering, Barth will teach biophysics and will serve as a guest lecturer in courses in air quality, physics, and environmental physiology. He will also maintain ties with EPA's Office of Research and Development, according to Assistant Administrator Dr. Stephen J. Gage, who said that in addition to helping the university develop an expanded environmental curriculum, Dr. Barth will assist in developing a major EPA program between the Agency's research facilities in Las Vegas and in Corvallis, Ore. Barth has served as the Deputy Assistant Administrator for Health and Ecological Effects in EPA for the last two years. Prior to this he was the Director of the Agency's Las Vegas laboratory, and Director of the National Environmental Research Center at Research Triangle Park, N.C. Previously he held several research and management assignments in the U.S. Public Health Service.



Douglas M. MacMillan

The Director of the Agency's Management and Organization Division in the Office of Planning and Management has been selected by the U.S. Civil Service Commission to participate in their training program, Fellowships in Congressional Operations. The program is co-sponsored by the Civil Service and the American Political Science Association to give selected Federal executives an opportunity to study and learn the functions of Congress. The nine-month training includes seminars with leading Congressional, governmental, and academic figures as well as work with Congressional and Senatorial staffs. MacMillan has served as Management Division Director in EPA Region 1, and in other positions in that office. He has an undergraduate degree from the University of Washington at Seattle, a J.D. from George Washington University Law School, and a Master's Degree in Public Administration from the Kennedy School at Harvard.



John McGuire

Administrator Costle has named McGuire to head EPA's operation in the Midwest. As Regional Administrator for EPA's Region 5, based in Chicago, McGuire will be the top Federal environmental official for Illinois, Indiana, Ohio, Michigan, Minnesota and Wisconsin.

"I am confident that John McGuire will serve with distinction as Regional Administrator for Region 5," said Costle. Currently in private law practice, McGuire succeeds George Alexander who has returned to private life.

McGuire's previous experience includes serving as assistant to the Illinois Governor, Director of the Illinois Department of Conservation, and as a senior research associate with the Urban Institute in Washington, D.C. A graduate of Northern Illinois University, McGuire got his law degree at the John Marshall Law School in Chicago.

McGuire, 36, was in private law practice in Springfield, Ill., before his appointment to the EPA post.

Around the Nation



Cooling System Approved

Region 1 has ruled that an open cooling system is adequate for Boston Edison's Pilgrim I nuclear power station in Plymouth, Mass. and for the proposed Pilgrim II plant. Regional Administrator William R. Adams, Jr., concluded that the company had demonstrated that the cooling systems for both stations meet the requirements of the Clean Water Act and adequately protect fish, shellfish, and wildlife in and on the water that might be affected by the plants.

Refinery Clears Air Hurdle

The Regional Office has determined that significant deterioration of air quality will not result from the construction of the Pittston Company's proposed 250,000 barrel per day petroleum refinery in Eastport, Me. The Agency has concluded that the refinery can operate, with certain conditions, without violating the increments for prevention of significant deterioration of air quality standards. EPA has yet to consider the company's application for a wastewater discharge permit.

Saving Water

The Boston Regional Office recently issued a new publication "Water Conservation in New England: It Begins At Home." The booklet discusses why New England faces potential water-supply shortages and why water conservation is essential. It also contains water-saving suggestions that can be used in the home.



Sewer Cost Study

Region 2 will make an in-depth study of the economic impact of the Agency's pretreatment regulations for industrial wastes on the Buffalo, New York area, at the request of Congressman Henry J. Nowak (D-Buffalo). Speaking for his constituents, Nowak said, "We want to ensure that Buffalo receives every environmental benefit it needs to fulfill its obligations toward cleaning up the Great Lakes and protecting the health of its residents. However, we want at the same time to keep the costs to industry and our citizens at a minimum."

Regional Administrator Eckardt C. Beck pointed out that the Buffalo region "is a prime example of the environmental and economic problems facing the Agency in the Northeast. On the one hand, we have the serious impact of toxics and phosphorus discharged by concentrated industry and population into the fragile and vital ecosystems of the Great Lakes. On the other, we have the impact of cleanup costs on an older city with a shrinking tax base and older industrial plants."

The Buffalo Sewer Authority is upgrading its Bird Island sewage treatment plant from a primary to a secondary system that will remove phosphorus. Operating and maintenance costs will be almost doubled. Many area businessmen worry that costs of meeting standards for pretreatment of indirect discharges and discharges into a secondary treatment system will be high, forcing them to shut down or relocate.

The study will address claims of economic hardship in a way that should be applicable to many of the Nation's older industrial urban areas. EPA will seek information from public officials, industry and public interest groups for the study. It will evaluate cleanup costs for each of the different types of industry discharging to the municipal sewer system. Special attention will be given to potential plant closures or relocations. These individual plant effects will be combined to develop an estimate of the overall impact on Buffalo's economy of the regulations affecting indirect discharges.



Air Agreement Reached

EPA has agreed to grant \$400,000 to the State of Pennsylvania for programs in the Philadelphia and Pittsburgh areas that will test pollution emissions of all cars and light trucks. Owners of vehicles failing to meet State emissions standards would be required to make corrective repairs. The Agency signed a consent decree with the Penn. Departments of Transportation and Environmental Resources, the Delaware Valley Citizens Council for Clean Air, and a coalition of citizens' and environmental groups. The consent decree settles two suits brought in U.S. District Court in Philadelphia by EPA and the citizens' groups to enforce the inspection and maintenance (I/M) regulation issued by the Agency in 1973 as part of transportation control plans for the two cities. According to regional Administrator Jack

J. Schramm, "There is no doubt that motor vehicles are a major source of carbon monoxide and hydrocarbons in Philadelphia and Pittsburgh. In Philadelphia, for example, EPA estimates that motor vehicles produce 90 percent of the hydrocarbon and carbon monoxide emissions from light duty vehicles. The I/M program is expected to reduce emissions by 25 percent in these two cities by March, 1987. In addition to the pollution-related benefits, consumers should realize that I/M can result in savings up to 10 percent in fuel consumption as shown in Phoenix's inspection program."

One version of the I/M program that the State could implement would have a private company perform all inspections at facilities in the Pittsburgh and Philadelphia area. If authorizing legislation for this program is adopted inspection will begin within 21 months of enactment, and mandatory repairs of failing vehicles will be required one year later. If legislation for a private franchise system is not passed by July, 1979, Pennsylvania officials have agreed to start an I/M program at State-licensed private garages by August 1, 1980 as part of the safety inspection program, which has been in operation since 1929.



Phosphate Ban Possible

The Atlanta metropolitan area may join the handful of population centers across the Nation that have banned the sale of home laundry detergents containing phosphates. The Atlanta Regional

Commission, an area development agency, has launched a campaign to convince city and county governing bodies in the sprawling metropolitan area that such a ban is a good idea. The commission has scheduled a series of public hearings on the proposal. A spot-check with citizens by the Commission reveals that most people prefer clean water and healthy fish to the cleanest possible wash, even if they have to spend slightly more for nonphosphate detergents. According to some reports the phosphate in detergents passes through sewage treatment plants and acts as a nutrient, causing growth of green algae in downstream lakes. An overabundance of algae can use up available oxygen and contribute to fish kills. Detergent manufacturers have developed nonphosphate formulas for all major brands, which they market in areas where phosphate bans are in effect, but they often point out that the nonphosphate soaps do not clean as thoroughly. Dade County, Fla. is another area in Region 4 that has a ban on phosphate detergents. Pollution control authorities there believe the action by and large has been a good thing. However, they acknowledge they lack solid data because much area wastewater is currently discharged into the ocean.



EPA Sues Power Plant

At the request of Region 5, U.S. Attorney James C. Cissell of the Southern District of Ohio has filed a civil suit against Ohio

Edison Company and Duquesne Light Company for air pollution violations at the companies' W. H. Sammis Station in Stratton, Ohio. The suit was brought under the Clean Air Act to enforce Federally-approved State regulations that restrict emission of soot, ash, dust, and other particles. Region 5 enforcement officials call the plant "the largest in the Nation." They say air quality in the vicinity of the plant in both Ohio and West Virginia does not meet the national standards for the protection of public health.



Toxics Kill Youth

Region 6 is cooperating with State and local agencies in the investigation of an incident where a teenage boy died last July 25 as he emptied a tank truck of waste chemicals at a Louisiana disposal site. According to two witnesses the 19-year old boy slumped in the cab of his truck, overcome by toxic fumes. Worker safety is under the jurisdiction of the Occupational Safety and Health Administration and citations have been issued in regard to this incident. The State and EPA have jurisdiction over the operation of such disposal sites and the Parish sheriff asked EPA to investigate the situation. The Enforcement Division obtained a search warrant from the U.S. District Court, sampled the disposal site, and is analyzing the samples. The case is significant because the warrant is probably the first for the Agency since the Supreme Court's landmark *Barlow Decision*, requiring search warrants

when free access to facilities is denied.

The coroner's report listed asphyxiation by hydrogen sulfide poisoning as the cause of death. The State Health Department requested an injunction from State Court ordering the site to cease operation immediately. The site operators have been ordered to clean up the area within 60 days and cleanup must meet the approval of the State Health Department, which has asked for EPA assistance in overseeing the operation. Region 6 made lab findings and expert witnesses available to the State Health Department and will continue to give assistance.



Agricultural Meeting

Region 7 recently sponsored a meeting between EPA officials and the Deans of the Schools of Agriculture, the Directors of Extension Services, and the Iowa Agricultural Experiment Station. The meeting was an effort to increase agricultural emphasis in EPA's environmental programs, recognizing that a lot of issues in the Region involve both agriculture and the environment. Dr. Kay Camin, Region 7 Administrator, called the meeting to increase communication between EPA and the State land grant colleges. She wanted to find out what role the universities can play in EPA's agricultural programs and how to increase understanding and participation by those affected by EPA's programs.

University representatives explained their environmental research programs. Dr. George Bailey from the EPA laboratory

in Athens, Ga., informed participants about current Agency research in water pollution from agricultural sources. Both EPA officials and university representatives agreed to develop long-range plans to identify research needs in the Region and to gear research programs to meet those needs.



Field Office Opens

Region 8 has opened an EPA program operations office in Helena, Mont., as a pilot project. Ten people representing Agency programs in water, air, water supply, pesticides, enforcement, Federal activities, solid waste, public awareness, and energy moved into Montana's capital city to begin working closely with the State Department of Health and Environmental Sciences. People will work in the Helena office on two to four-year rotating assignments. Deputy Regional Administrator Roger Williams and the operations office director will coordinate specific program activities with the State. Regional Administrator Alan R. Merson said, "If this operations office concept works well in Montana, I may later consider proposing similar offices in other States." Merson said he placed a high priority on enhancing the relationship between EPA and the people at the grassroots level, and he felt that the operations office would foster better relations with the people of Montana. Region 10 also has State operations offices.



Air Pollution Woes

The Los Angeles area has experienced its worst smog levels in over five years this past summer. Even though second-stage smog alerts can now be predicted in advance, the new emergency traffic control plan was not effective. The plan calls for employers to advise their workers to form car pools when a smog alert is predicted, so that a normal day's commuting traffic would be cut by two-thirds, with three passengers in a car that normally carries one. Thousands of drivers obviously did not get the word. Some lone drivers were turned away from company parking lots and returned home, adding to the pollution, or parked on the streets, adding to the confusion. Companies that did not have approved plans to cut back on the number of vehicles used by employees, or that did not implement their plans were cited for violations. One official was quoted as saying, "Maybe we needed this to get the kinks out of the system. The companies now know what is expected of them and why."



Pesticides Violators Fined

More than \$8,400 in civil penalties were collected by late summer in Region 10 from 11 producers, sellers, and users of pesticide products in Washington, Oregon, and Idaho

for violations of Federal pesticide law. The largest penalty, \$3,600, was paid by the Western Farmers Association of Seattle for holding and offering for sale an unregistered, misbranded and adulterated wood preservative. One active ingredient, instead of being at a strength of 38 percent as shown on the label, was actually only 12 percent of the mixture.

Lake Restoration

Region 10 has completed three lake restoration projects and has five others in progress. Recently the Seattle office awarded \$4.1 million for the clean-up of Lake Vancouver in southwest Washington State. The project will involve dredging up 9 million cubic yards of sediment from the lake bottom. When restoration is complete hundreds of thousands of people in the Portland-Vancouver area will be able to use the newly cleaned lake for recreation.

Water Permits Enforced

At the request of Region 10, the U.S. Attorney in Seattle has filed suit against three seafood processors in Cordova, Alaska, for their failure to screen fish and crab wastes from their discharges into Orca Inlet. Their wastewater discharge permits required installation of screening equipment. When they applied for permits the firms reported they process an average of 335 tons of fish a day, with an average daily discharge of 209,400 gallons of ground-up wastes mixed with water. □

Stratospheric Problem Worsens

EPA officials will join representatives from nearly a score of other countries and global organizations in a regulatory meeting December 4-6 on the worldwide problem of protecting stratospheric ozone from depletion by chlorofluorocarbons.

The meeting, which will take place in Bonn, West Germany, has taken on a new note of urgency since estimates last July by some scientists specializing in atmospheric problems showed a startling increase in probable ozone depletion.

Stratospheric ozone can be depleted by fluorocarbon gases released from aerosol cans, refrigeration, air conditioning, and also by nitrous oxide released from nitrogen fertilizers. The scientific community has warned in recent years that the cumulative effect on the layer of ozone about 10 to 15 miles above the Earth could cause a substantial rise in the incidence of skin cancer. The layer of ozone now acts as a shield against biologically harmful ultraviolet radiation from the sun, and scientists fear that even a small percentage loss of this screen will have serious health effects around the world. In 1975 a Federal task force on the Inadvertent Modification of the Stratosphere warned that not only could skin cancers in humans increase but also other damaging biological and agricultural effects might occur.

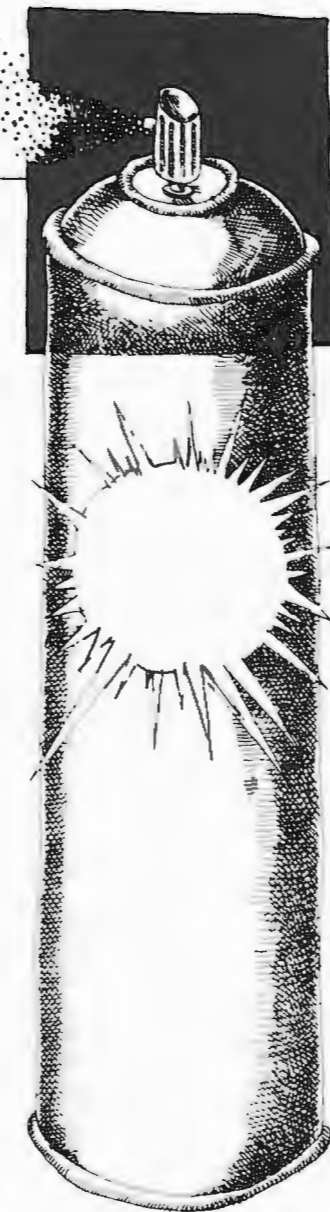
Dr. Herbert L. Wiser, EPA Principal Physical Science Advisor in the Office of Research and Development, is U.S. representative to the Coordinating Committee on the Ozone Layer, a unit of the United Nations Environmental Program (UNEP). He will attend a coordinating

committee of scientists in Bonn November 28-December 1 when the most recent findings on the world problem will be reviewed, in preparation for the December regulatory meeting there. John DeKany, Deputy Assistant Administrator for Chemical Control, Office of Toxic Substances, will attend the regulatory meeting.

Administrator Douglas M. Costle and Deputy Administrator Barbara Blum chaired the initial meeting of regulators from participating nations in Washington in March, 1977.

In 1976 a National Academy of Sciences (NAS) study, funded by EPA and several other agencies, had estimated that depletion of the world's ozone layer by fluorocarbons could range from 2 to 40 percent, with the most probable value at about 7 percent. In December, 1977, in its report to the Congress pursuant to the Clean Air Act Amendments of 1977, NAS stated: "As a result (of new knowledge) the estimated seriousness of . . . ozone reduction has been roughly doubled" to about 14 percent.

More recently, a World Meteorological Organization symposium in Toronto last June heard fresh estimates by several experts of an 18 percent depletion. It is estimated that an increase of approximately 4 percent in the incidence of non-melanoma skin cancers among Caucasians is predicted for each 1 percent reduction in average ozone concentrations, with a disproportionately greater increase in cancer expected for higher percentages of reduction in ozone levels. Non-melanoma skin cancers rarely cause death, but are considered serious and should not be neglected. Per-



sons with fair complexions and outdoor workers are more vulnerable to them, especially in southern latitudes where stratospheric ozone concentrations—and therefore protection from solar ultraviolet radiation—are lower.

There are now about 300,000 cases of non-melanoma skin cancers annually in the United

States, according to the National Cancer Institute. If the currently estimated most probable ozone reduction value prevails, it implies more than 210,000 additional annual cases of non-melanoma skin cancer. The incidence of melanoma, a much more serious disease, is about 1 to 3 percent (about 6,000 cases annually in the United States) of all skin cancers. Its cause may not be solely ultraviolet exposure, but this is considered a factor. The mortality rate for melanoma is high.

Depletion of the ozone layer also could cause other effects such as climate changes; effects to some plant and animal species; disturbances in aquatic and land ecosystems; alteration of the stability and effectiveness of farm chemicals such as pesticides and fertilizers; increases in eye cancer in livestock, and reduction in the yield of some crops, especially in areas of marginal production, according to the IMOS report.

The UNEP committee last year held meetings in Geneva as well as Washington on the ozone question. Dr. Wiser also has worked with the Department of Transportation and with the British and French in preparing a Tripartite Report (1977) on the potential impact of SST flights on stratospheric ozone.

In addition to representatives of 13 industrialized nations attending the regulatory meeting in Washington last year, five international organizations sent delegates: The Commission of the European Communities, the Organization for Economic Cooperation and Development, the World Health Organization, the World Meteorological Organization, and UNEP. □

News Briefs

Gas Mileage Rankings

EPA Administrator Douglas Costle recently released the miles per gallon figures for 1979 model year cars and trucks. The projected overall average for the 1979 models tested so far is 19.9 miles per gallon (mpg), slightly over last year's average of 19.6 mpg. EPA used a single "estimated miles per gallon" figure for each car. The cars tested were those certified by EPA as of Sept. 1, 1978, as meeting the Federal pollution standards for 1979 models. For the 1979 cars tested so far, the top ten miles per gallon ratings are:

Estimated MPG	Manufacturer	Car Line	Engine*
41	Volkswagen	Rabbit Diesel	90 CID**
40	Volkswagen	Rabbit Diesel	90 CID
36	Volkswagen	Dasher Diesel	90 CID
35	Datsun	210	85 CID
34	Dodge	Colt Hatchback	86 CID
34	Plymouth	Champ	86 CID
33	Dodge	Colt Hatchback	98 CID
33	Plymouth	Champ	98 CID
32	Dodge	Colt Hatchback	86 CID
32	Plymouth	Champ	86 CID

*Cubic-inch-displacement **5 speed manual transmission

Progress at Lake Tahoe

Negotiators for California, Nevada, and the Federal government have worked out an agreement that would prevent additional gambling casinos at pollution-threatened Lake Tahoe, it was announced recently. The proposed new bistate compact would "assure the preservation and enhancement of Lake Tahoe as one of the world's great natural assets," said Charles Warren, Chairman of the Council on Environmental Quality. The lake is suffering increasing environmental degradation due to mounting growth pressures. Under the agreement new casino development would be prohibited and growth of all kinds would be carefully moderated to meet environmental requirements. The compact must be ratified by the legislatures of both states and consented to by Congress before it becomes official.

States Served by EPA Regions

Region 1 (Boston)
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
617-223-7210

Region 2 (New York City)
New Jersey, New York, Puerto Rico, Virgin Islands
212-264-2525

Region 3 (Philadelphia)
Delaware, Maryland, Pennsylvania, Virginia, West Virginia, District of Columbia
215-597-9814

Region 4 (Atlanta)
Alabama, Georgia, Florida, Mississippi, North Carolina, South Carolina, Tennessee, Kentucky
404-881-4727

Region 5 (Chicago)
Illinois, Indiana, Ohio, Michigan, Wisconsin, Minnesota
312-353-2000

Region 6 (Dallas)
Arkansas, Louisiana, Oklahoma, Texas, New Mexico
214-767-2600

Region 7 (Kansas City)
Iowa, Kansas, Missouri, Nebraska
816-374-5493

Region 8 (Denver)
Colorado, Utah, Wyoming, Montana, North Dakota, South Dakota
303-837-3895

Region 9 (San Francisco)
Arizona, California, Nevada, Hawaii
415-556-2320

Region 10 (Seattle)
Alaska, Idaho, Oregon, Washington
206-442-1220

9 Major Region Report

The Maturing of an Agency

By Paul De Falco, Jr.
Regional Administrator

When you drive into California, you can pick up at an inspection or welcoming station an official California tourist map that touts California as "The World Within a State," and calls it "the historic, nostalgic, energetic world of America's youth." There is a bit of puffery in that claim but also a large element of truth. In terrain, climate, and geography, California has some of almost everything to be found elsewhere in the world.

We often feel the same way about the EPA's Region 9, which stretches eastward beyond California to Arizona and Nevada and westward to Hawaii, American Samoa, the Trust Territories, Guam and the Northern Marianas Islands. We have not only a little bit, but a lot of everything.

Much of Region 9 is famous for its scenic beauty, and some of my friends in the northeastern part of the United States, where I worked for many years, tend to doubt that we have anything like the severe pollution problems of some other regions. Perhaps not. But we have our share and the potential causes for all the rest are to be found here. In addition we have the equally important responsibility of protecting the high quality environment found in vast areas of this Region as well as repairing the environment in the polluted areas. In this sense Region 9 is a microcosm of the United States. This Region is no more than a small part of the EPA, but it is a representative part, in its efforts and challenges, of the Agency as a whole.

Now the EPA has reached the ripe young age of nearly eight years. For a person or a Federal agency, eight years is not the age of maturity, but it is far from infancy. EPA is growing up and learning to face the responsibilities of maturity in a complex and often unforgiving world.

Much has happened in environmental management in the past eight years. For one thing, we are charged with the administration of some fifteen different pieces of legislation. And much

has not yet been done that we thought could and should have been done by now. Yet, when we view the EPA's history in a temporal perspective, we see that much has been accomplished. In Region 9 we have solved a few problems in the past eight years—at least to the extent of permitting us to work on problems still harder to solve. If we have success stories, they are the Agency's success stories, of course, and we can recall a few.

It is safe to say that the trade-off concept for achieving less polluted air while allowing new industries to be built in problem areas was developed first in Region 9, and it is now a section of the Clean Air Act Amendments of 1977. The use of the Environmental Impact Statement process in the construction grants program as a means for drawing together all environmental aspects along with many social and political aspects has resulted in the development of mitigation measures to protect air quality.

The early use of Section 208 of the Clean Water Act as an environmental management process (as a Regional philosophy) has been extended to



other metropolitan areas throughout the Nation. We are seeking, together with State and local governments, to develop a set of environmental programs that fit within the existing political and social structure. We are not giving up any of our aggressiveness, but at the same time we are not shooting from the hip as some would have us do.

Our purpose in looking backward briefly is solely to find clues, if not instruction, on how to move ahead. We don't have the luxury of only one kind of problem that we can concentrate on to the exclusion of all other kinds of problems. We have many inter-related problems. We have to recognize and hear from a variety of constituencies which have many priorities and desires and, working with State and local governments, districts and other organizations of governments meld these desires together into a workable program of environmental management for the areas affected.

Preventing deterioration of the environment is one of the most challenging problems in the Region. We see it as our job to ameliorate the problems that face us now but, what is even more important, to prevent new problems from occurring. We believe that it is in prevention that we can make our most effective investment of time, energy, and resources. Our goal is not only to solve all of yesterday's environmental problems. Some of the damage to our environment is, we believe, beyond repair. We will do all in our power to repair it if we can, but our main objective now is to help prevent that damage to the environment, which if unchecked, will be the unsolvable problems of 20 years from now. Because our Region has so many desirable locations to live, people crowd into them and place heavy burdens on sewage facilities. Industries, too, tend to locate and expand where the people are, close to large markets, to highways and ocean shipping lanes. Escalating housing costs in Los Angeles, for instance, have caused some to buy homes in



Smog hangs low over
San Gabriel Valley, Calif.

San Diego or Riverside, and drive 75 miles each way to work, leading to increased auto traffic and to air pollution.

The recent drought also has taught more of us that water is a precious and limited commodity—and that the drought will come again. But these are by no means problems exclusive to this Region. The problems of our States and territories, in terms of limited resources, of land, water, and air, and the pressure of increasing population, are also the problems of Florida, Texas, the Virgin Islands, and even of Alaska. They are, in short, the problems of the United States and, for that matter, of the world.

As I see it, EPA is responsible

for leadership down the pathway that will minimize adverse impact of this development on the environment and thus provide for maximum protection of the public health. We can do this by placing the facts on the table of public opinion saying, in terms of the trade-offs involved, "This is what it will cost you if you do *not* act to control this pollution. This is what it will cost you if you do act. This is what you can do to minimize impacts—and *this* is the threshold of intolerable costs in health, life, and money, that you may not want to pass." And we must do this in a co-operative leadership role with State, local, and other Federal agencies. Our desire for a balanced approach must demonstrate our understanding of the problems, and the intricate relationships of people, their

elected and appointed officials, their governmental and social organizations, and the finite resources of the Region and Nation.

Obviously, we could use more resources than those we have. But these resources have limits, not only in the form of tax cuts of which California's Proposition 13 is in the vanguard, but limits also in other political, economic, and social facts of life. The most useful tools in solving environmental management problems, once the problems are understood by all concerned, are patience, perseverance, responsibility, and imagination. These resources are unlimited if we can instill or inspire them in our people. □

Back cover: Cactus silhouetted against the sunset outside Tucson, Ariz., by Henry Lansford.



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