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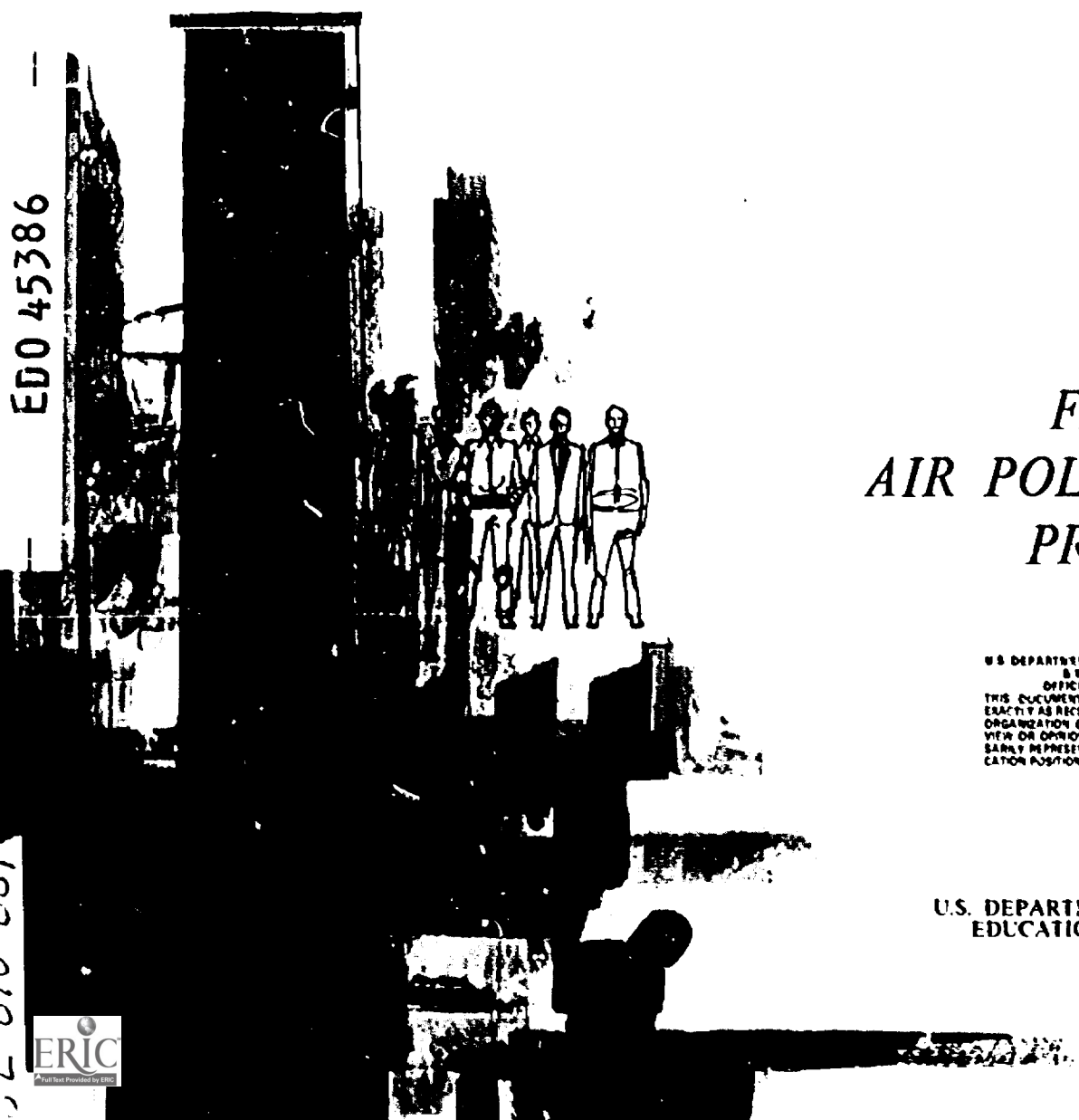
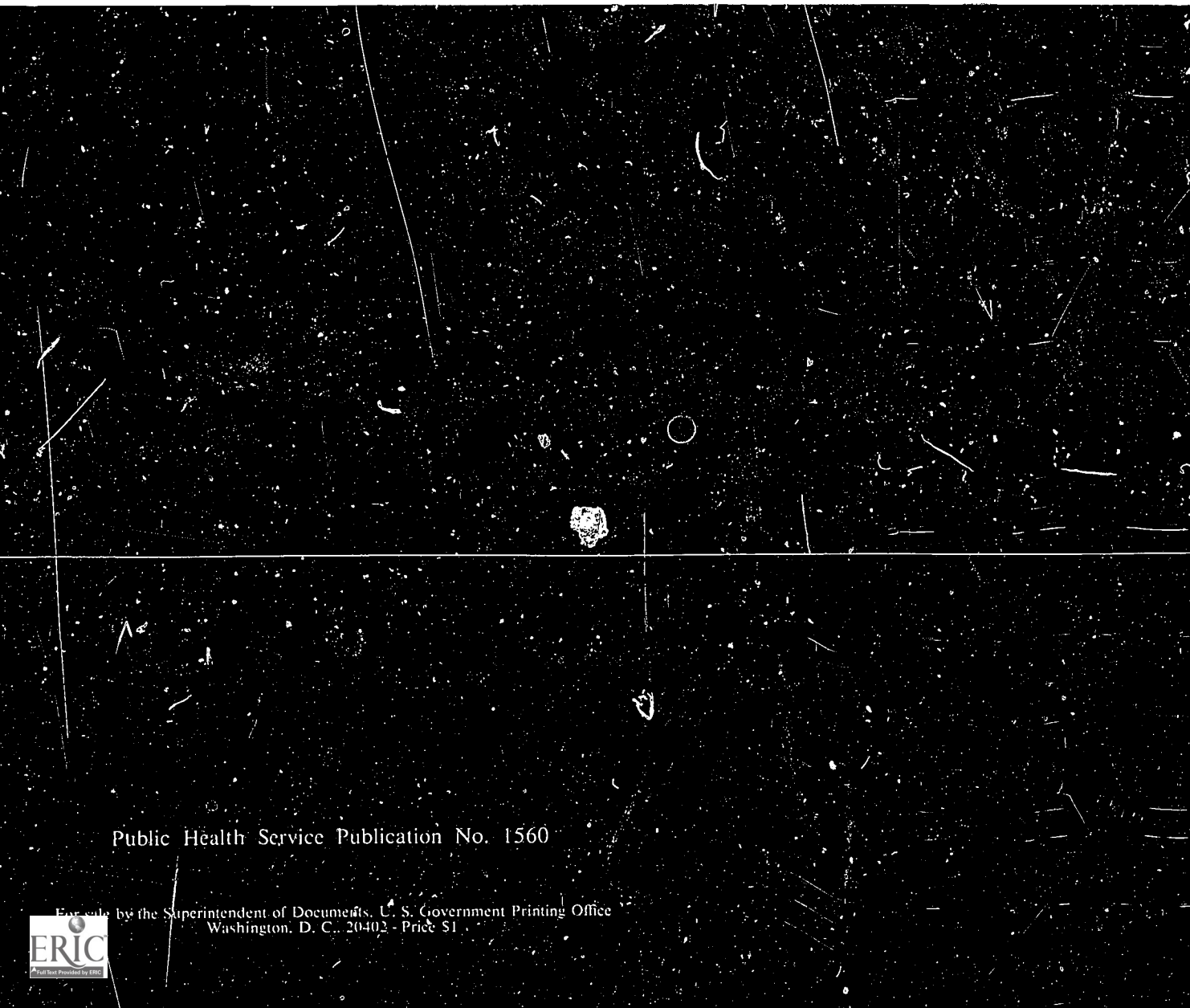
ABSTRACT

Described is the Federal air pollution program as it was in 1967. The booklet is divided into these major topics: History of the Federal Program; Research; Assistance to State and Local Governments; Abatement and Prevention of Air Pollution; Control of Motor Vehicle Pollution; Information and Education; and Conclusion. Federal legislation has established that State and local governments have the primary responsibility for dealing with community air pollution problems, with Federal leadership and support. Federal research concentrates on two broad areas--the effects of air pollution on health and property, and the improvement of air pollution measurement. Progress is being made as State and local control efforts have expanded greatly, and there are signs of a general increased interest in prevention and control of air pollution. (TF)



THE FEDERAL AIR POLLUTION PROGRAM

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service



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THE FEDERAL AIR POLLUTION PROGRAM

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
National Center for Air Pollution Control
Washington, D. C. 20201

Economic expansion and technological progress are hallmarks of our modern society. They have enabled Americans to enjoy the highest standard of living men have ever achieved. But these important trends of the 20th century, coupled with the trend of increasing urban population, have had many unplanned and unwanted side effects on our health and welfare. Air pollution is one such side effect — a very serious one whose impact is being felt by millions of Americans in all parts of the country.

The sources of air pollution are numerous and varied. They include such activities as the burning of fuel to produce heat and electric power, the use of motor vehicles, the burning of refuse, and the manufacture and use of such staples of modern life as steel and other metals, paper, and chemicals. [illegible] town is entirely without sources of air pollution. And [illegible]nds of cities and towns, there are enough sources emitting enough gases and solid particles to cause a community air pollution problem.

The solution to the problem is by no means simple. Our modern civilization would collapse if we were to stop all the activities that contribute to air pollution. But we need not take such drastic measures. There are acceptable ways of reducing air pollution without disrupting the economy, without stopping the forward progress of technology, and without depriving Americans of any of the conveniences of modern life.

Techniques for controlling most of the important sources of air pollution are already available. And research is steadily moving toward the development of new and better techniques. The challenge that this country faces is two-fold — to use those control techniques that are already available and to intensify the search for new and better ways of dealing with the problem.

Prompt action is vital. The effects of air pollution are

already serious. Through research, it has been found that the types and levels of air pollution which are common in many American communities are associated with the occurrence and worsening of such chronic respiratory diseases as asthma, bronchitis, emphysema, and lung cancer. Air pollution is also a cause of widespread damage to property and vegetation. Economic losses resulting from air pollution are measured in the billions of dollars each year.

There are still other reasons why control is needed now. The problem of air pollution is steadily growing and worsening. And it can only continue growing unless measures are taken to bring it under control. The economy is growing. Demands for heat and power are increasing. The use of motor vehicles is increasing. Production and consumption of manufactured goods are rising. The amounts of refuse discarded are mounting. All these trends tend to increase the Nation's capacity for polluting

Thus, air pollution, which is already a very serious problem, threatens to become a critical problem in the not-too-distant future. Only prompt and effective control action can keep this from happening.

For its part, the Federal Government is fully committed to a course of action that is intended to result in better control of air pollution throughout the United States. The responsibility for Federal air pollution activities has been assigned to the Department of Health, Education, and Welfare ever since 1955, when the Congress first enacted legislation dealing with air pollution.

The air pollution program was conducted by two units of the Public Health Service until 1960, when the Division of Air Pollution was created. In January 1967 the Division was reorganized and renamed The National Center for Air Pollution Control.

This booklet is a portrait of the Federal air pollution program as it looked in mid-1967.

History of the Federal Program

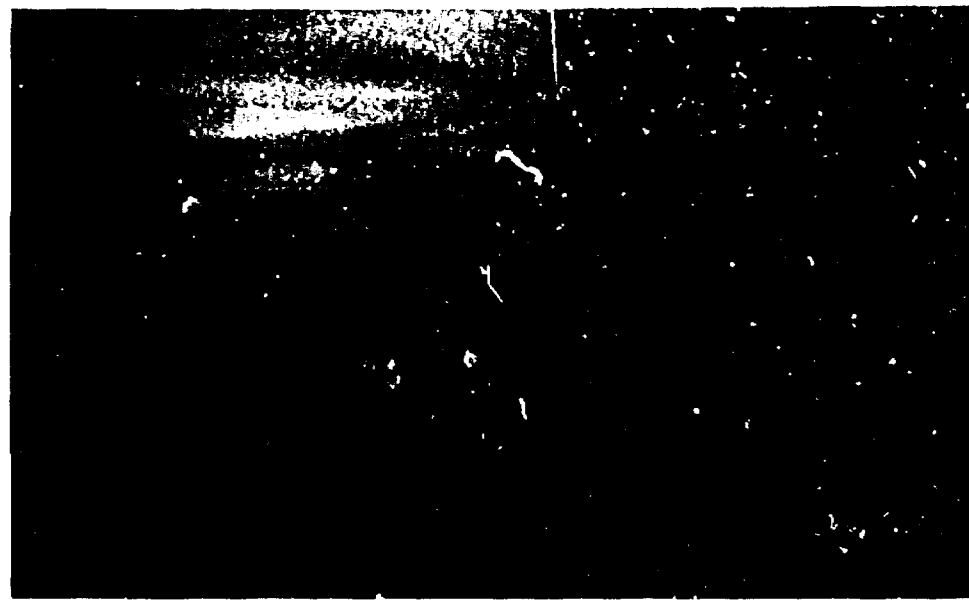
State and local governments have a basic responsibility for controlling air pollution

For most of the past 100 years, air pollution and smoke pollution have been considered one and the same. They were thought to be a nuisance, rather than a real threat to anyone's health and, in any case, purely a local problem demanding only local attention. And they were given very little of that until the problem reached acute proportions, for the annoyance of smoke pollution was long considered a small price to pay for the high level of economic activity it symbolized.

We know now that air pollution is not a mere nuisance, but rather that it poses serious hazards to human health and welfare. Nor is it—if it ever really was—purely a local problem associated with a relatively few factories in the industrialized areas of a few large cities. Today, sources of air pollution are scattered throughout our cities and suburban areas and in many smaller communities — the very same places where a majority of the American people live and work.

Air pollution, someone has remarked, was once a problem that affected only those people who lived on the so-called wrong side of the tracks; now, with people and sources of air pollution crowded together and more numerous than ever before, we are all on the wrong side of the tracks. In short, air pollution is now a truly national problem requiring national attention.

Moreover, the modern air pollution problem, in contrast to the old smoke problem, is more often subtle than obvious. It has only been in the past decade that the Nation has begun to realize that the trends of urbanization, economic growth, and technological advance were having a sinister but serious adverse effect on the quality of the air.



The experiences of two communities helped to focus national attention on the growing problem of air pollution and to pave the way for the creation of the Federal air pollution program. One of them was Donora, a town of 14,000 people in western Pennsylvania, where a brief episode of severe air pollution in October 1948 resulted in 20 deaths and widespread illness.

The other was Los Angeles, whose explosive growth in the 1940's and 1950's helped to make it the first major city to feel the full impact of the modern air pollution problem. The experience of Los Angeles, where the smog problem emerged and grew to serious proportions within a very few years, was, perhaps, a blessing in disguise for the rest of the Nation, since it provided advance warning of a problem that was developing more slowly in other cities and towns.

In July 1955, the Nation began to respond. The initial response came in the form of legislation authorizing a Federal program of research in air pollution and technical assistance to State and local governments.

In this legislation, the Congress established the policy that State and local governments have a fundamental responsibility for dealing with community air pollution problems, and further, that the Federal Government has an obligation to provide leadership and support. This policy remains in effect, though the ways in which the Federal Government can help have undergone marked change.

In the first eight years following the creation of the Federal

program, its activities helped to take much of the mystery out of the modern air pollution problem. In direct and indirect ways, the Federal effort helped to produce a substantial improvement in scientific knowledge — as well as public awareness — of the nature and national extent of the air pollution problem, its impact on public health and welfare, the existence of techniques for controlling many important sources of air pollution, and the need for new and better techniques in some cases.

An amendment to the legislation in 1960 called for a special study of motor vehicle pollution, which helped to bring this important problem into much sharper focus and thus pave the way for national control action.

Of paramount importance was what the Federal effort revealed about the national response to the problem of air pollution, for it showed that progress toward better understanding of the problem was not being matched by real progress toward better control. In 1963, most State and local governments were still not equipped to assume responsibility for preventing and controlling community air pollution problems.

For the most part, State and local control efforts are still not adequate today, but thanks to the enactment of the Clean Air Act in December 1963, more progress has been made in the past three years than ever before. This is exactly what the Clean Air Act was intended to achieve; all its provisions were designed to provide a real opportunity for State and local governments to join the Federal Government in a concerted nationwide attack on air pollution.

The Clean Air Act authorized new Federal activities in support of control efforts

The Clean Air Act authorized two major new Federal activities in support of air pollution control efforts across the country — awarding of grants directly to State and local agencies to assist them in developing, establishing, or improving control programs and Federal action to abate interstate air pollution problems, which are essentially beyond the reach of individual States and cities.

In addition, the Clean Air Act authorized accelerated research, training, and technical assistance activities, and it assigned the Federal program major new responsibilities for research and development on two of the most important aspects of the national air pollution problem — motor vehicle pollution and sulfur oxide pollution arising from the burning of coal and fuel oil — and for the development of criteria of the effects of air pollution on health and property.

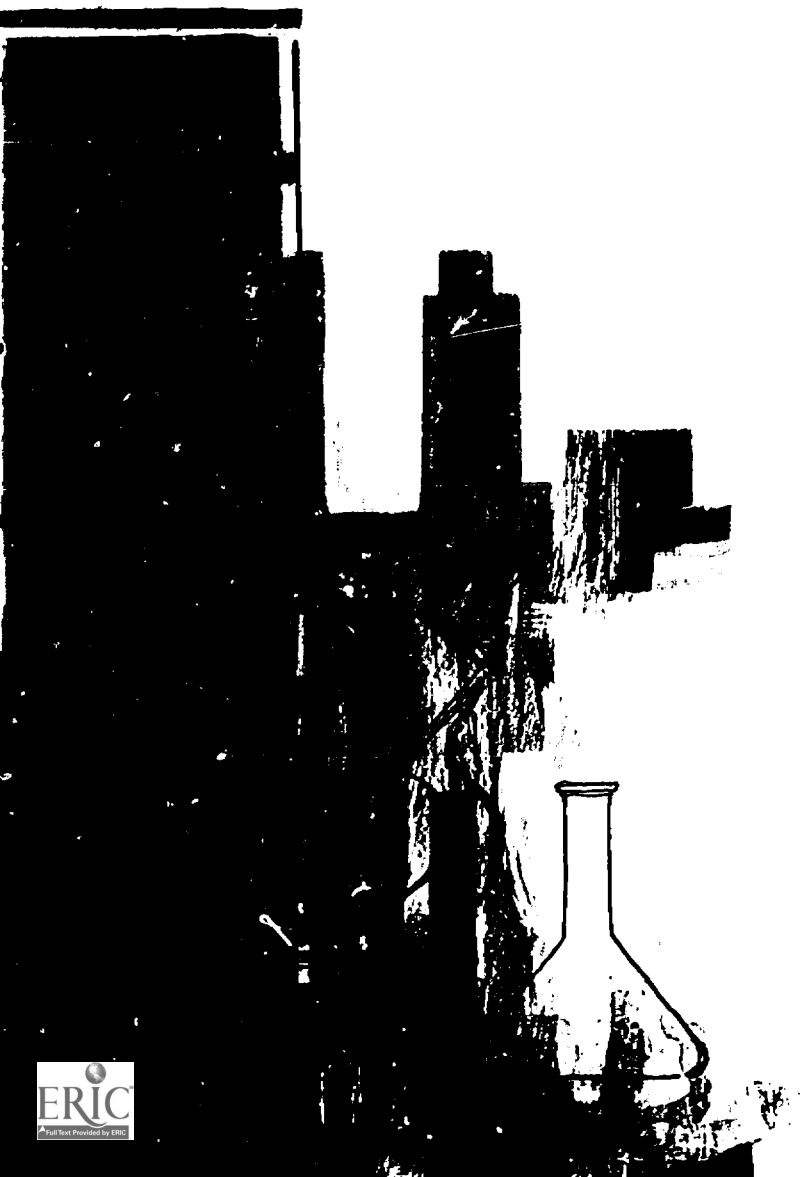
In October 1965, when it became apparent that national control of motor vehicle pollution was technically feasible, the Clean Air Act was amended to enable the Secretary to establish appropriate standards. Another amendment enacted at the same time empowered the Secretary to investigate and seek to prevent potential new air pollution problems.

Additional amendments were enacted in October 1966. One major provision of this new legislation authorized Federal grants to State and local agencies to assist them in *maintaining* effective air pollution control programs; this supplemented the authority for awarding of grants to promote the development, establishment, or improvement of such programs.

Another important feature of the new legislation called for substantially increased Federal budgeting for air pollution activities. From 1956 to 1963, annual appropriations for the Federal program increased gradually from less than $2 million to about $11 million. Appropriations under the Clean Air Act reached a peak of slightly more than $35 million. The 1966 amendments to the Clean Air Act authorized an appropriation of $46 million for the 1967 Fiscal Year, which ended June 30, 1967, and sums of $66 million and $74 million in the succeeding two years.

The legislation of October 1966 is the latest chapter in the history of the Federal air pollution program. The ways in which the program has grown and changed over the past decade are a reflection of growth in national awareness of the threat of air pollution and important changes in the way air pollution is viewed by all segments of our society — public officials, scientists, leaders of business and industry, and millions of citizens in thousands of American cities and towns. As knowledge of the problem keeps improving and as attitudes toward it undergo further change, the Federal program will undoubtedly change and evolve in whatever ways are necessary to meet the rising challenge of air pollution.

In the sections that follow, the activities of the Federal program are described and explained. The arrangement of the material reflects the major areas of program activity — research, assistance to State and local governments, control activities, and public information and education activities.



RESEARCH

Research activities are an important part of the Federal air pollution program

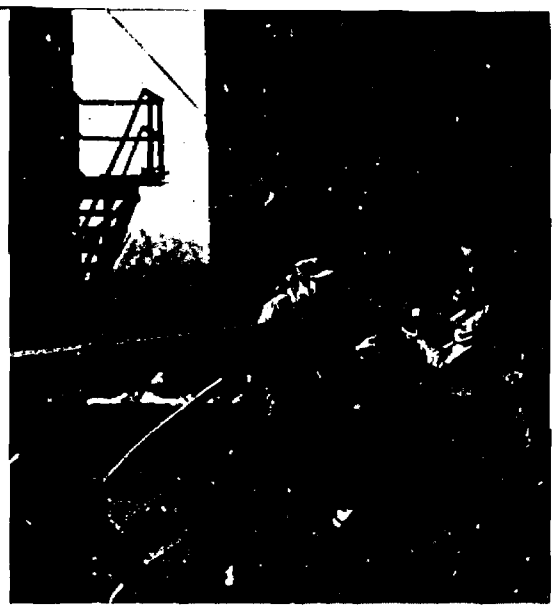
A decade ago, when the Federal air pollution program was created, the idea that the air could be polluted without necessarily being blackened by coal smoke was new and baffling.

It had been relatively easy to sense the impact of smoke pollution: the thicker it was, the more annoying it was. The partially successful efforts that some communities made to curb smoke pollution were based not on detailed scientific knowledge of its hazards to life and health — though it surely posed such hazards — but rather on the fact that it was an obvious and often intolerable nuisance.

Los Angeles' early efforts to cope with its notorious smog problem had one important thing in common with other cities' efforts to deal with smoke pollution — they were motivated by insistence on action to solve a very obvious problem.

But the experience of Los Angeles helped to demonstrate that a new and more complex air pollution problem was emerging, for as they began their control efforts, officials in Los Angeles found themselves faced with many technical problems that could not be solved through the traditional methods of smoke abatement. One of the results was that the citizens of a single county were soon supporting a research effort needed not just in Los Angeles but for the entire country.

Awareness of this fact was slow in developing, but by 1955 it was apparent that the entire Nation was headed down the path of growth and air pollution and would need answers to the same questions that Los Angeles was trying to answer: How could there be air pollution without black smoke? What was causing this new problem? What effects was it having on health



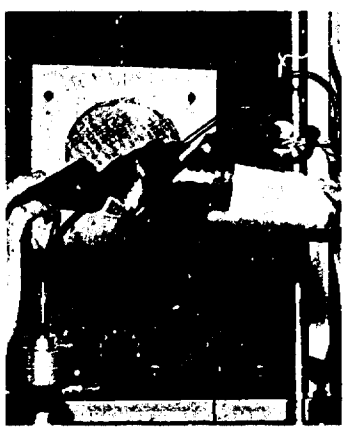
and property? And, above all, how could it be controlled?

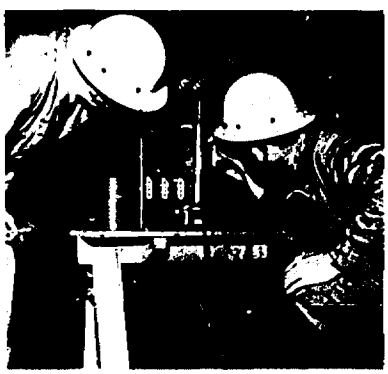
Thus, when the Federal air pollution program was established, there was an immediate need for a much better scientific understanding of the modern air pollution problem and ways of dealing with it. For this reason, the functions of conducting and supporting research were — from the start — an important part of the Federal program. They still are.

Though many basic questions about the nature and effects of air pollution and about its prevention and control have since been answered, there is a continuing need for more precise information about the problem and for better ways of dealing with it.

To help meet this need, a substantial portion of the funds the Congress appropriates each year for the Federal air pollution program is used to conduct and support research activities. In the 1966 Fiscal Year, for example, approximately $14 million — about half the total budget — was used for research.

The Federal research effort is concentrated in two broad areas — studies of the harmful effects of air pollution on health and property and the development of improved ways of measuring and controlling air pollution. In both areas, the research effort includes work at the Robert A. Taft Sanitary Engineering Center, which is a Public Health Service research center in Cincinnati; grant-supported research at universities and other non-profit institutions; research by industries under contracts from the Federal Government; and projects carried on by other Federal agencies with support from the Department of Health,





Education, and Welfare. Among the latter are the Bureau of Mines of the Department of the Interior, the Environmental Science Services Administration and the National Bureau of Standards of the Department of Commerce, the Tennessee Valley Authority, and the Agriculture Research Service of the Department of Agriculture.

Effects of Air Pollution on Health Knowledge of the harmful effects of air pollution on human health is gained in three principal ways — statistical studies of health records to find any correlations that may exist between past illness and death and factors that may have influenced the extent of a person's exposure to air pollution, such as his place of residence; epidemiological studies of correlations between the occurrence of tory disorders and death, on one hand, and variations in people's exposure to air pollution, on the other; and laboratory studies of the ways in which exposure to individual pollutants or combinations of pollutants affects animals or, in some instances, human beings.

Through these types of investigations, a substantial fund of information on the health hazards of air pollution has already been accumulated. This evidence indicates that exposure to ordinary levels of air pollution impairs the health of many people, is associated with the occurrence and worsening of chronic respiratory diseases, and is often implicated in the premature death of aged and ailing persons. Among the specific diseases associated with air pollution are asthma, chronic bronchitis, emphysema, and lung cancer. There is even evidence that exposure to air pollution increases people's susceptibility

to upper respiratory infections — including the common cold.

To permit a more precise appraisal of the association between air pollution and specific diseases, research in this area is continuing. For example, efforts are being made to assess the impact of relatively brief exposures to elevated levels of air pollution, which, because of the occurrence of meteorological conditions that prevent dispersion of pollutants in the air, may occur in any community for three or four or more days at a time. The difference in air pollution levels may be so slight that people scarcely notice it. But in terms of effects on health, the consequences may range from a sudden increase in colds or asthmatic attacks all the way to the occurrence of sudden death among older people or persons afflicted with respiratory

In addition, increasing emphasis is being placed on studies of the more insidious ways in which air pollution may affect human health. The extent to which it may produce subtle but progressive impairment of respiratory function — its impact on persons who are particularly sensitive to inhaled gases and particles — the extent to which in-traffic exposure to carbon monoxide may impair a driver's ability to handle difficult situations — the effects of other pollutants and combinations of pollutants on the many biochemical processes that sustain human life — these and many other factors need to be evaluated if we are ever to know the full impact of air pollution on our lives and health.

Effects of Air Pollution on the Economy Air pollution soils and damages buildings and other structures, as well as clothing

Air pollution is a serious threat to public health and the Nation's welfare

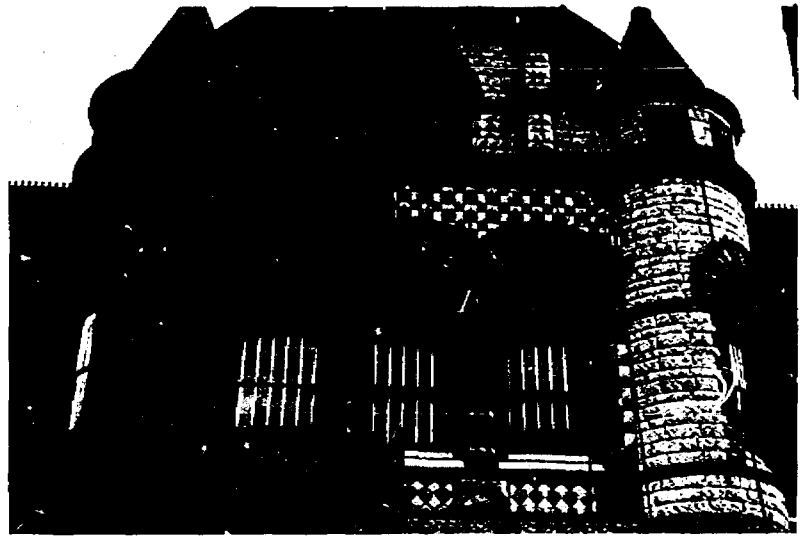
and home furnishings, and thus adds to expenses for cleaning and replacement. It contributes to urban decay and depression of property values. It causes injury to crops and livestock and, in some areas, has made certain types of farming impossible. And it reduces visibility, thus increasing the risk of accidents on highways and in the air.

Economic losses resulting from air pollution amount to several billion dollars annually. The total has been estimated as high as eleven billion dollars, but the true figure may be even higher.

For one thing, such estimates do not include costs of medical care for people who have respiratory diseases associated with air pollution, nor do they include factors such as lost earnings, reduced productivity, which are almost invariably associated with illness and absence from work.

Also, a part of the economic burden of air pollution is hidden in various indirect expenses — in the cost of farm products whose price has been raised to offset losses caused by air pollution, in the price of manufactured goods specially designed to withstand the corrosive effects of air pollution, in the cost of replacing materials whose useful life has been shortened by repeated cleaning to remove airborne dust and grime, and so on.

Efforts to develop a more precise appraisal of the economic burden of air pollution are a part of the Federal research program. These efforts include extensive research on the effects of air pollution on vegetation and livestock, as well as investigations of more efficient and comprehensive ways of measuring the overall impact of air pollution on the economy.



Air Quality Criteria An important objective of the air pollution research effort is to determine the level of air quality necessary to safeguard people and property against the adverse effects of air pollution. In this connection, the Clean Air Act called for the establishment of air quality criteria based on the best available scientific and technical knowledge. It is important to recognize that such criteria are not regulations for the control of air pollution. They are simply an indication of the effects that can be expected from exposure to various concentrations of a single air pollutant or a combination of pollutants. The first to be developed will be criteria for sulfur oxides, which arise mainly from the burning of sulfur-containing fuel, and oxidants, a prime ingredient of photochemical smog.

nitoring To supplement the efforts of State and local agencies — which are expected to perform the function of gathering detailed data on air pollution in American communities — and to gather specialized data for research purposes, the Federal air pollution program carries on limited air monitoring activities in selected locations around the country.

In more than 200 urban places, air measurements are made periodically, usually bi-weekly, to determine the amount of solid particles suspended in the air. In many instances, the air samples taken for this purpose are also analyzed to determine their content of metals, organic matter, and other types of pollutants. About 50 of the stations that take such samples are also equipped to make periodic measurements of two important gaseous pollutants — sulfur dioxide and nitrogen dioxide.

A second major air monitoring project at the Federal level

Studies of control methods are focused on automobiles and burning of coal and oil

involves continuous, automatic measurement of six important gaseous pollutants — carbon monoxide, nitric oxide, nitrogen dioxide, sulfur dioxide, hydrocarbons, and oxidants. Air monitoring stations equipped with the sophisticated instruments needed to make such measurements are located in six major cities — Chicago, Philadelphia, Denver, St. Louis, Cincinnati, and Washington, D. C. From time to time, the stations are moved; thus, in earlier years, stations have been located in San Francisco and New Orleans. Local agencies in New York, Detroit, and Los Angeles gather comparable data.

Atmospheric Sciences Knowing the kinds and amounts of pollutants released into the air is not sufficient to gauge the full dimensions of the air pollution problem. A number of things happen to pollutants once they reach the air. They can be blown away by wind or drawn upward by rising air currents; or, when the air is still, they may remain near ground level. Also, pollutants may enter into chemical reactions with one another or with moisture in the air and thus be transformed into new substances, which are often more injurious than the original pollutants.

Efforts to improve scientific understanding of factors such as these are a part of the Federal air pollution research activity. This includes research in meteorology, chemistry, and physics. Among its more important objectives are the development of improved techniques for predicting the occurrence of meteorological conditions that will permit build-ups of pollution in the air, the development of more precise methods of identifying and measuring individual pollutants and reactions among them, and

identification of relationships between the physical and chemical properties of pollutants and their effects on health and property.

Control of Air Pollution An increasing amount of research on new and better ways of controlling air pollution is being conducted and supported by the Federal air pollution program. This effort is focused in large measure on three of the most important aspects of the national air pollution problem — motor vehicle pollution, sulfur oxide pollution from fuel combustion, and nitrogen oxide pollution.

Of the three, motor vehicle pollution is the only one for which widely applicable control techniques are now available. Techniques which have been found effective in reducing motor vehicle tailpipe emissions include the passage of exhaust gases afterburners before they are released into the air, various engine modifications to achieve more complete combustion, and injection of air into the exhaust system to oxidize the gases before they reach the tailpipe. American manufacturers have indicated they will rely on the latter two approaches in order to comply with standards which the Secretary of Health, Education, and Welfare has established for the control of emissions from new motor vehicles. beginning with the 1968 model year. The Secretary is also issuing standards for the control of evaporative losses of hydrocarbons from automobile gas tanks and carburetors. It is expected that controls needed to comply with these standards will be installed in 1969 model cars. The Federal research effort in this area is currently concerned mainly with ways in which internal combustion engines might be modified to produce major improvements in their com-

bustion efficiency.

Sulfur oxide pollution arising chiefly from the combustion of sulfur-containing coal and fuel oil is a widespread and very serious problem in the United States. In some large cities, sulfur oxide pollution consistently reaches high levels. This problem requires attention and control action for two principal reasons — first, because sulfur oxides are not only among the most common of all air pollutants but are also among the most injurious to health and the most damaging to property and vegetation; and second, because increasing demands for electric power, most of which is now being produced by the burning of sulfur-containing fuels, threaten to result in as great as a sixfold e in sulfur oxide pollution by the year 2000.

help achieve a solution to this problem, the Federal air pollution program is not only conducting and supporting research activity, but is also encouraging increased examination of the extent to which sulfur oxide pollution can be reduced by greater use of low-sulfur fuels, particularly in places where the problem is already very serious. Some low-sulfur coal and low-sulfur petroleum fuels are available; in addition, natural gas, widely used for space heating, is essentially free of sulfur.

In the area of technology, there are two principal approaches to reducing sulfur oxide pollution. One is to remove sulfur from fuels before they are burned. Effective ways of desulfurizing fuel oil are available, but they are not used in the production of the type of fuel oil used by such large installations as electric power plants. As for coal, only a fraction

of its sulfur content can be removed with present methods; research in this area is continuing.

The second major approach to the sulfur oxide problem is to remove the sulfur oxides from the combustion gases before they escape into the atmosphere. A number of promising techniques for accomplishing this have been developed and tested on a pilot-plant scale. Large-scale testing of the most promising of these techniques, most likely at Tennessee Valley Authority electric generating stations, is being planned by the Federal air pollution program.

A third major area of Federal research on the control of air pollution concerns emissions of nitrogen oxides. The nitrogen oxides are a by-product of all combustion processes, including those involved in powering motor vehicles. Though nitrogen oxides are not yet as serious a problem as sulfur oxide pollution, rising trends of fuel combustion will inevitably result in significant increases in the dimensions of this problem, unless effective control methods are found and applied. The most promising approaches are being explored as part of the Federal program.

Assistance to State and Local Governments

The adoption of the Clean Air Act in 1963 paved the way for the Federal Government to play a more direct and effective role in the fight against air pollution, but it did not mean that the Federal Government was assuming total responsibility for dealing with community air pollution problems. In the Clean Air Act, as in the previous Federal legislation concerned with air pollution, the Congress called on State and local governments to accept a major share of the responsibility for preventing and controlling air pollution from sources lying within their jurisdictions.

To do this job, State and local agencies need money and manpower. They need legal authority to adopt and enforce regulations which will prescribe limitations on pollutant emissions from existing sources and require adequate provisions for control of pollution from new facilities. They need technical data on the nature and magnitude of air pollution in the communities they serve and equipment to gather and analyze such data.

In December 1963, very few State and local agencies were equipped to meet these needs. It was to help rectify this situation that authority was provided in the Clean Air Act for new and increased Federal assistance to State and local governments. This assistance was not — and still is not — intended to be a substitute for State and local activity; rather, its purpose, and indeed, the purpose of the entire Federal program, is to encourage and support such activity.

This section explains the ways in which the Federal Government can — and does — provide direct assistance to State and local air pollution control agencies.

Federal funds are available to help state and local agencies fight air pollution problems

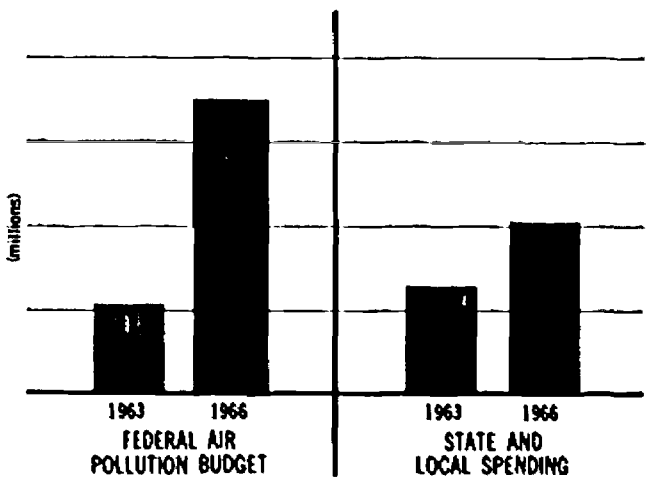
Control Program Grants Awarding of Federal grants directly to air pollution control agencies is one of the most important of the ways in which the Federal Government helps State and local governments equip themselves to fight air pollution more effectively.

The authority to make such awards was provided for the first time by the Clean Air Act. This legislation authorized grants to State and local governments for any of three purposes — the development of new air pollution control programs, the establishment of programs already authorized by State or local law, or the improvement of existing programs.

The objective of this activity is to stimulate new or increased control effort at the local, State and regional levels of government. For this reason, grants are made exclusively for programs which are intended to result in either the creation of new control programs or the strengthening of existing programs.

As much as two dollars of Federal funds can be made available for every one dollar of State and local spending on projects being undertaken by agencies serving a single State or municipality. In the case of agencies serving two or more municipalities, either in the same or different States, awards can be made on a three-to-one basis. This greater degree of assistance is designed to encourage efforts to deal with air pollution on a regional scale; such efforts are needed in numerous areas throughout the country.

This activity has already resulted in a significant expansion of State and local control activity. Awards totaling $9.18 million — the full amount appropriated by the Congress — were made in the first two years following adoption of the Clean Air Act. This money, together with increased spending by State and



local government, produced an increase of about 65 percent in the national level of funds available for local, State, and regional control efforts.

The annual level of State and local budgeting for air pollution control activity jumped from $12.7 million to slightly more than $20 million. The number of State control programs in operation or under development reached 40; the corresponding total of local and regional programs was 130. This is in contrast to the total of only 100 programs at all levels of government prior to the adoption of the Clean Air Act.

In December 1963, when the Clean Air Act became law, local and State efforts to deal with air pollution were, with rare exceptions, totally inadequate. They are still far from adequate; many cities that need the services of effective government control programs are without any, and many of the local and State programs in existence are not really equipped to carry on effective enforcement of regulations for the prevention and control of air pollution. In short, the work of launching an effective attack on air pollution in all our cities and States is just beginning.

Maintenance Grants In October 1966, the Congress took action to help sustain and accelerate the progress made under the Clean Air Act. The law was amended to authorize a new type of Federal assistance to State and local control agencies — grants to help them *maintain* effective air pollution control programs.

Since air pollution is already a very complex and serious problem, and since it threatens to grow and worsen in direct proportion to the rising trends of urban and economic growth

and technological progress, dealing with it in a truly effective way will require a sustained effort by all levels of government.

The new amendments to the Clean Air Act assure State and local governments of continuing Federal assistance in their efforts to meet the challenge of air pollution in the years to come. They will be able to receive Federal grants equal to as much as one-half the cost of maintaining air pollution control programs serving a single State or municipality.

Again, an incentive is provided for regional programs; grants covering as much as three-fifths of the cost of maintaining such programs will be available.

Survey Grants In many instances, State and local agencies seeking to develop air pollution control programs have neither technical data they need nor legal authority to prevent and control air pollution; they must have, or be in the process of acquiring, such authority, in order to qualify for control program grants or maintenance grants from the Federal Government.

To assist such agencies in taking the preliminary steps leading to the creation of a control program, the Federal Government can award survey grants. Among the purposes for which such grants may be used are surveys to assess the nature and extent of air pollution in a specific area, determine the need for a governmental control program, or measure the effectiveness of existing control programs.

Demonstration Grants Under the provisions of the Clean Air Act, Federal grants are also available to State and local agencies to assist them in evaluating the technical and economic

● University Graduate Training Programs supported by grants from the Division of Air Pollution

feasibility of methods of preventing and controlling air pollution or demonstrating the applicability of specific control techniques.

Such grants are currently being made exclusively for projects to demonstrate methods of controlling and extinguishing fires in coal refuse piles in the Appalachia area. Fumes and smoke from such piles are an important factor in the area's air pollution problems.

Technical Assistance The function of providing technical assistance to State and local air pollution control agencies has always been an important part of the Federal air pollution program.

Technical assistance may range from short-term consul- on specific problems to extensive guidance and help in planning and conducting comprehensive community air pollution surveys. In any case, the objective is always the same — to promote a more effective attack on air pollution by helping States and communities assess their air pollution problems and plan appropriate control programs.

In the past decade, technical assistance has been provided to numerous States and scores of communities in all parts of the country. Examples include assistance to 14 States in connection with State-wide air pollution surveys, assistance to such communities as Louisville, St. Louis, and Charleston (West Virginia), and assistance in planning and conducting short-term air pollution studies in some 30 cities.

Long-term continuing assistance in the development of control programs is currently being provided to governmental

bodies in such places as Chicago, northwest Indiana, the St. Louis metropolitan area, the National Capital area, and the States of Illinois and North Carolina.

Technical assistance activities also include compiling and publishing information on air pollution problems associated with specific industries and on available ways of dealing with those problems.

Comprehensive reports have been prepared on such air pollution sources as petroleum refineries, iron and steel mills, coal and fuel oil combustion, kraft pulp mills, sulfuric acid and nitric acid manufacturing, and scrap auto body burning. These reports, which are made widely available, are of direct benefit to State and local control agencies and to industry.

Legislative Assistance The development and enactment of appropriate laws at the State and local levels of government are a vital part of the attack on air pollution. To help meet this need, the Federal air pollution program furnishes State and local agencies assistance in all phases of the legislative process. This includes providing guidance on the basic principles of effective air pollution legislation, as well as advice and consultation on the drafting of specific legislative proposals. It also includes dissemination of information on legislative developments at all levels of government, judicial decisions affecting air pollution control efforts, and administrative regulations and procedures pertaining to the prevention and control of air pollution.

Training Funds and equipment for an air pollution control program are of little value without skilled personnel to plan

Federal support is being provided for advanced training at 24 institutions

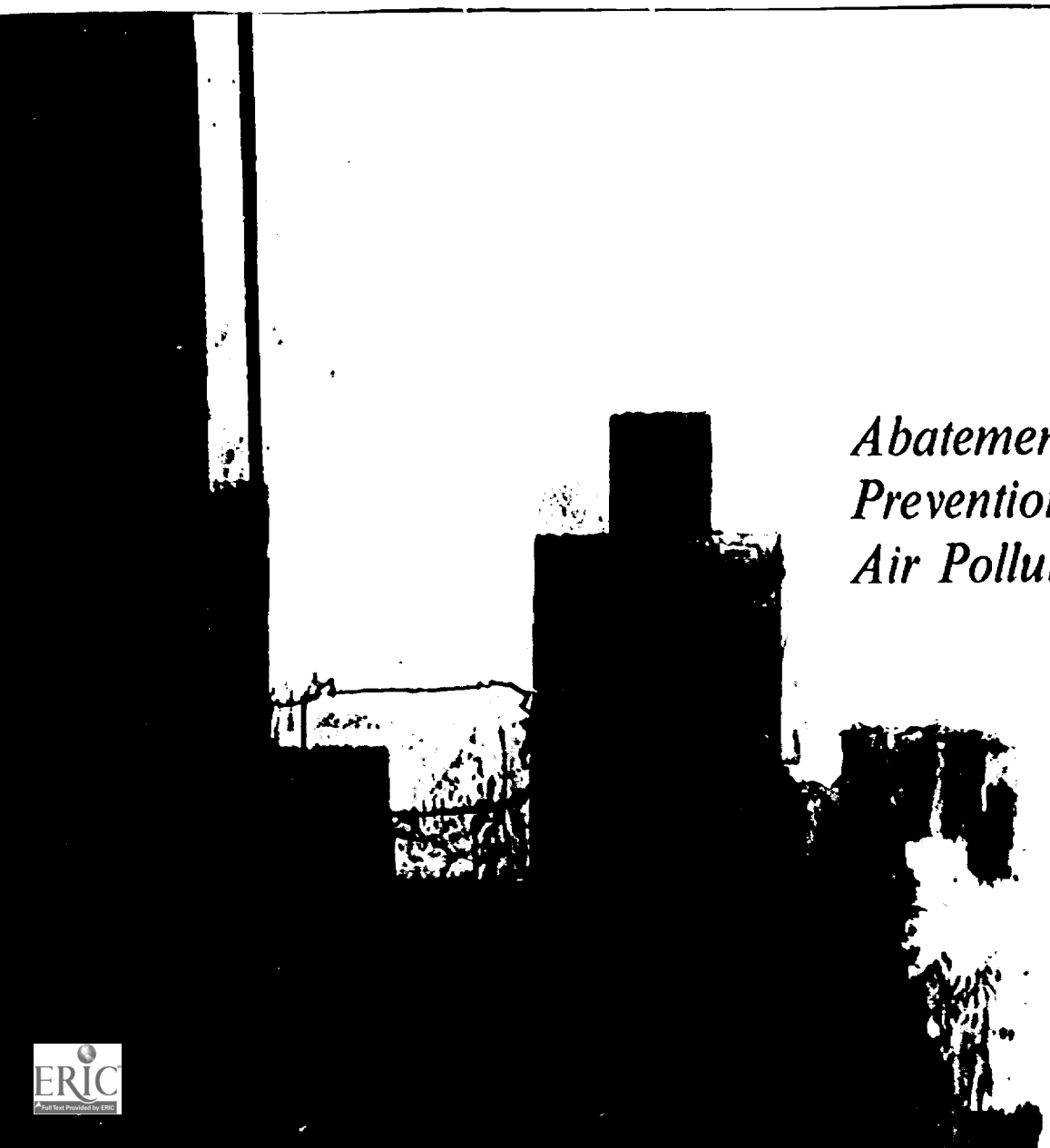
and operate the program. The needed technical manpower includes engineers, chemists, meteorologists, statisticians, and technicians; large agencies, especially at the State level, may also need physicians and other biomedical and public health specialists.

Over the past decade, State and local control agencies have never been able to meet all their needs for trained technical personnel. This problem threatens to become even more serious as the level of State and local control activity rises.

The Federal Government is assisting State and local agencies with their manpower problems in three ways — sponsoring graduate-level training programs, awarding fellowships to individual trainees, and conducting short-term training courses for persons already working in the air pollution field.

Awarding grants to universities and other academic institutions to help them conduct graduate-level training programs is the principal way in which the Federal Goverment seeks to increase the overall supply of personnel trained for air pollution control work. By mid-1967, support was being provided for such programs at 24 institutions. In addition, many individual trainees had been given fellowship awards to help them meet the expenses of advanced training in the air pollution field.

Short-term training courses in all aspects of air pollution control activity are conducted both at the Robert A. Taft Sanitary Engineering Center in Cincinnati and, quite often, at other places around the country. The prime purpose of these courses is to upgrade the technical competence of air pollution control agency staffs. Over 200 such courses have been conducted, with a total attendance of more than 3,500.



Abatement and Prevention of Air Pollution

Action can be taken to abate interstate and intrastate problems

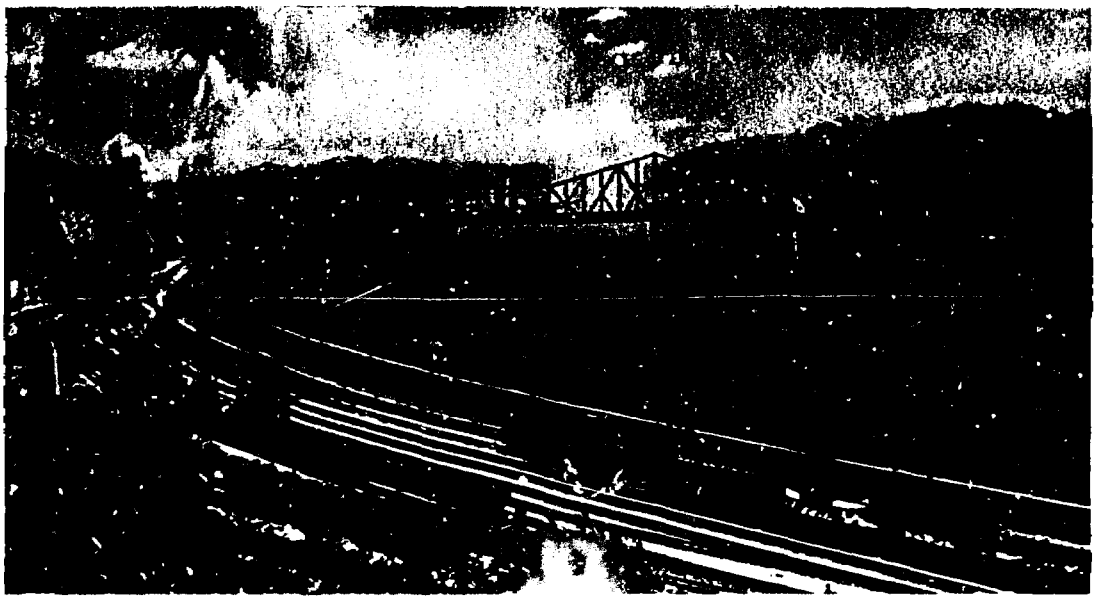
Air pollution knows no boundary lines. The air — polluted or not — flows freely across State lines. Thus, pollution from sources in one State can affect people living in another one; it can and, often, it does.

There are some 70 large urban areas in the United States which adjoin or overlap State boundary lines. They are all areas of potential interstate air pollution. And there are countless smaller communities — no one knows exactly how many — which are either periodically or chronically affected by air pollution originating outside their own States.

But while boundary lines do not block the flow of polluted air, they are a very serious obstacle to control action at the local and State levels of government. Officials of one State may ...ction to control air pollution in another State, but they cannot force another State to act. And while people can insist on better control of air pollution in their own State, they neither have a voice nor a vote in the affairs of any other State.

Abatement of Interstate Air Pollution To provide a means of dealing with such situations, the Clean Air Act authorized the Secretary of Health, Education, and Welfare to seek abatement of interstate air pollution problems. He may take such action either on his own initiative, when he has reason to believe that health or welfare may be in danger, or upon official request from an affected State.

As of mid-1967, abatement action had been undertaken in nine interstate areas, including a 17-county area of New York and northern New Jersey and the area of Washington, D. C.-suburban Maryland-northern Virginia, where the



Nation's capital is located. Technical surveillance activities were in progress to assess the need for abatement action in numerous other interstate areas in all parts of the country.

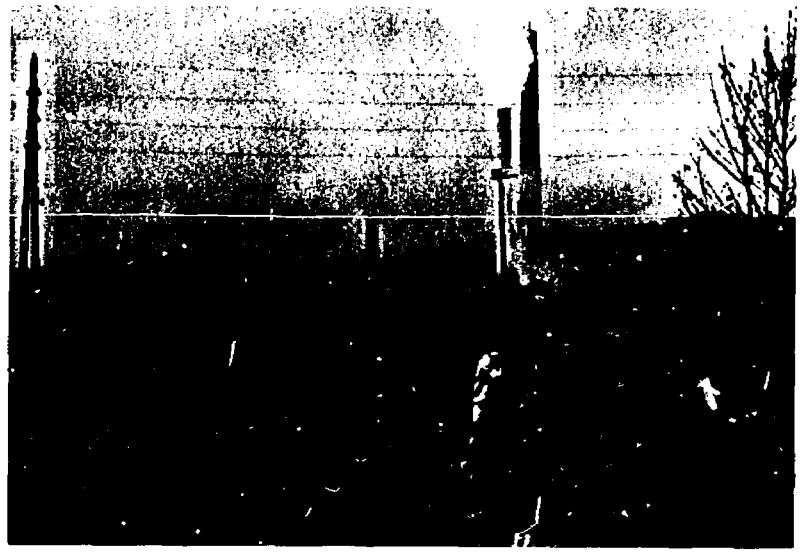
A technical investigation by the Department of Health, Education, and Welfare is often the first step taken in abatement action. The purpose of such an investigation is to identify sources of interstate air pollution in each State in the area where a problem is alleged to be occurring and to determine the extent to which pollution from sources in each State is affecting public health or welfare in the other.

A conference with officials of the States involved must be held in all cases. When the Secretary begins abatement action on his own initiative, he must first consult with the appropriate officials. If he is acting at the request of a State, no

is required, but a conference must still be held. In actice, officials of the Public Health Service, acting on the Secretary, hold such consultations and conferences

pose of an abatement conference is to provide an r Federal and State officials to present any inform may have about the problem in question, as well mendations they think are justified. Other pers ng local officials or representatives of alleged poll -- may participate only at the invitation of Fed gencies.

ot mean, however, that attendance at abatement is restricted. Such conferences are usually held where interstate pollution is alleged to be



occurring, and they are always open to the public and representatives of news media.

Following a conference, the Secretary is empowered to issue recommendations for abatement; that is, he may recommend steps to be taken by the States involved. He may recommend, for example, that an appropriate State agency require that persons responsible for an alleged source of interstate pollution submit abatement plans and carry them out. In any case, the Secretary must allow a period of at least six months for action to be taken.

If adequate progress is not made, the Secretary may then take additional steps. He is empowered to appoint a panel of five or more persons to hold a public hearing open to participation not only by State officials but also by local officials, representatives of alleged interstate pollution sources, and the public.

The panel presents its findings and recommendations to the Secretary, who may then transmit them to the responsible State and local agencies and the persons responsible for alleged sources of pollution. And once again, a period of at least six months must be allowed for action to be taken.

Finally, if adequate progress is still not being made, the Secretary may request the Attorney General of the United States to initiate court action to secure abatement.

Abatement of Intrastate Air Pollution The authority of the Secretary to seek abatement of air pollution extends also to problems of a purely *intrastate* nature — problems in which people's health or welfare is endangered by air pollution from sources in their own State.

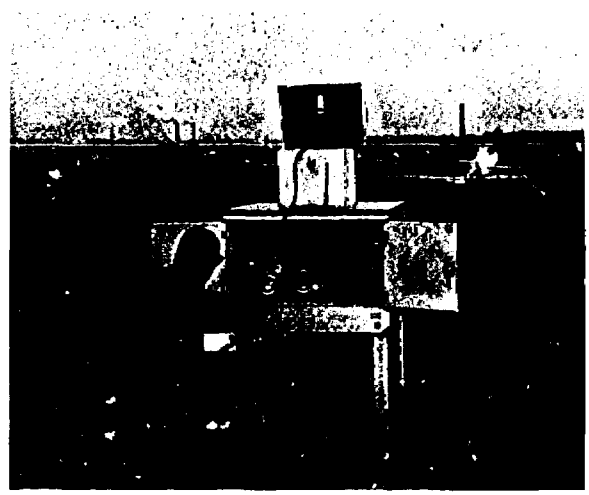
Federal agencies are expected to follow exemplary practices in dealing with air pollution

This power enables the Secretary to assist State governments in dealing with air pollution problems which are difficult to deal with even though they originate within a State's own jurisdiction.

The procedures for abatement of intrastate pollution are similar to those employed in cases of interstate pollution, with two important exceptions. The first is that the Secretary may begin intrastate abatement action only upon official request from a State. The second is that he may seek Federal court action only on request from the State.

Abatement of International Air Pollution As amended in October 1965, the Clean Air Act extended the Secretary's abatement authority to include air pollution problems arising in United States which may endanger public health or welfare in a neighboring country. In such cases, the Secretary may undertake abatement action whenever a duly constituted international agency or the U. S. Secretary of State advises him that a problem exists. This authority can be invoked only when the United States is given reciprocal right to seek abatement of air pollution sources located in the country involved and affecting people in the United States.

Control of Air Pollution from Federal Facilities Across the country, Federal agencies carry on many activities that may — and often do — contribute to community air pollution problems. A very few of these activities are unique: testing of rocket engines is a prime example. For the most part, however, sources of air pollution at Federal installations are similar to those found elsewhere in American cities and towns. They in-



clude such routine activities as the burning of coal and fuel oil to heat Federal buildings, incineration of refuse, processing of food, and so on.

The President of the United States and the Congress have both called on Federal agencies to set an example for the Nation to follow in preventing and controlling air pollution arising from their various activities. And the Department of Health, Education, and Welfare has been assigned the responsibility of helping Federal agencies comply with this policy.

In May 1966, the President issued an Executive Order directing all Federal agencies to take steps to prevent and control air pollution in accordance with standards set by the Secretary of Health, Education, and Welfare. The standards were promulgated the following month.

The Executive Order requires that plans for new Federal facilities include provisions for whatever air pollution control measures may be necessary to comply with the Secretary's standards. And with respect to existing facilities, all Federal agencies were given until July 1967 to submit plans for controlling air pollution.

Prevention of New Air Pollution Problems In the Clean Air Act amendments passed in October 1965, the Secretary of Health, Education, and Welfare was given an important new weapon to use in the fight against air pollution — authority to investigate potential new air pollution problems and seek to prevent them.

In a Nation such as ours, with its high rates of economic and population growth, potential new sources of air pollution are constantly being planned and built. And since such things

Conferences can be called to investigate potential new air pollution problems

as new factories, power plants, and incinerators are usually located in or near population centers, their effects are often felt in the very same areas where air pollution is already a problem. A potential new air pollution source may have an equally objectionable effect in an area used primarily for recreational activities.

In either case, timely preventive action can help to protect public health and welfare against needless worsening of an existing air pollution problem or the creation of a major new problem. In addition, it is almost always more economical to provide appropriate air pollution control measures at the time new facilities are designed and built rather than later.

To deal with such situations, the Secretary is authorized to make investigations and hold public conferences concerning potential new air pollution problems and to make recommendations for preventive action. He may initiate such proceedings whenever he has reason to believe that an air pollution problem of substantial significance may result from a new activity of any kind.

Though the Secretary's recommendations are purely advisory, they may nevertheless serve to focus attention on the opportunities that exist for preventing major new air pollution problems from coming into being.

There is one way, however, in which he can take further action. If — after a conference has been held and recommendations for preventive action issued — a new source of air pollution comes into being and later contributes to an interstate problem involved in Federal abatement proceedings, the conference record and recommendations can be made a part of the abatement proceedings.

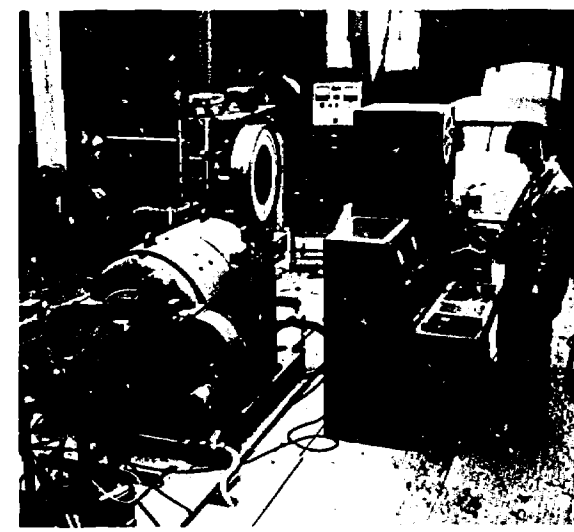
Control of otor ehicle Pollution

In all parts of the country, cars, trucks, and buses are an important source of air pollution. The gaseous pollutants released into the air from gasoline-powered motor vehicles are not only harmful in themselves; they are the raw materials for the formation of photochemical smog, a major factor in the air pollution problems of countless American communities, as well as a cause of widespread damage to vegetation, often in areas distant from large cities.

To deal with this problem, the Congress has authorized the Secretary of Health, Education, and Welfare to establish national standards for the control of air pollution from new motor vehicles. This authority was provided in amendments to the Clean Air Act adopted in October 1965; in March 1966, standards were established which will apply, beginning in the 1968 model year, to all new gasoline-powered passenger cars and light trucks, including both American-made and imported vehicles.

These standards call for reductions in hydrocarbon and carbon monoxide emissions from the exhaust system tailpipe, which is the major source of motor vehicle pollution, as well as 100 percent control of hydrocarbon emissions from the crankcase. For most of the motor vehicles to which the standards apply, they will result in an overall reduction of about 60 percent of hydrocarbon emissions and about 50 percent in carbon monoxide emissions.

The manufacturers of motor vehicles are not required to use any particular techniques or devices for complying with the standards. They may use any techniques capable of reducing



emissions to the prescribed levels. But they are required to test representative models before offering them for sale and make the test results available for inspection by officials of the Department of Health, Education, and Welfare. In addition, representative motor vehicles must be furnished for testing by the Department. A facility for this purpose has been established in the Detroit area.

Further standards are being issued for evaporative losses of hydrocarbons from automobile gas tanks and carburetors. It is expected that the controls needed to comply with these standards will be installed on 1970 model year cars.

As new motor vehicles equipped to meet the standards older models, the national level of motor vehicle pollution will begin to decline. But increases in the number of motor vehicles in use will soon offset the effect of these initial standards. To deal with this, the Secretary can — and will — revise the standards; under the legislation of October 1965, he is empowered to revise his standards in accordance with new knowledge of the nature and effects of motor vehicle pollution and improvements in technology for controlling it.

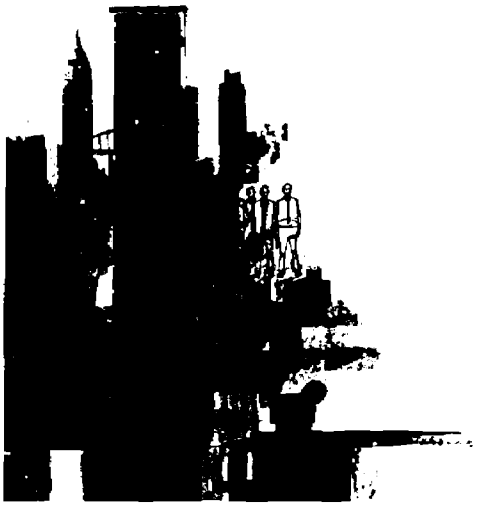
This does not mean, however, that the motor vehicle pollution problem has now been solved for all time. The number of motor vehicles in use has now reached 90 million and is still increasing. Though the approaches now being taken may be sufficient to keep the problem from worsening for several years, it seems certain that their effect will eventually be offset by the

continuing increase in the Nation's use of motor vehicles. In short, unless other approaches are found, the problem may eventually become even more serious than it already is.

In the long run, if we are to continue depending on motor vehicles for a major portion of our transportation needs, we may eventually need essentially pollution-free sources of motive power. In both government and industry, some research is already in progress on such approaches as turbine engines, fuel cells, and electric cars. In the years ahead, efforts of this nature will almost certainly become a part of the Federal program of air pollution research and control activities.

Efforts to control pollution from diesel engines are another important part of the Federal program. To those inhaling the fumes from a diesel bus or truck, the need to curb such emissions may well seem of paramount importance. There may be no other aspect of the problem of air pollution that makes so many people so indignant on so many occasions.

The smoke and the odors that come from diesel engines are an obnoxious nuisance; moreover, diesel-powered motor vehicles contribute to community air pollution in other ways, as well, though their overall contribution is less than that of gasoline-powered vehicles. A number of technical problems must be resolved before standards for diesels can be established by the Secretary of Health, Education, and Welfare; needed research is in progress, and a 1970 target date has been set for the issuance of diesel standards.



Information and Education

In our society, the public is in a position to influence decisions on which national problems will receive attention and on how much attention they will get. To use this power intelligently, the people must have an opportunity to understand the choices they can make. This means that they must have continuing access to accurate and reliable information about a problem and the ways in which it might be solved.

Because the modern air pollution problem is often more subtle than obvious, it is particularly important that efforts be made to sharpen public awareness of its impact on society and of the existence of ways to bring it under control. Efforts to build wide public understanding of this problem are another important part of the Federal air pollution program.

These efforts take many forms — assisting national and local groups in planning and carrying on programs of information-and-action in the air pollution field, providing information to newspapers and magazines, assisting and consulting in the production of television programs concerned with air pollution, publishing booklets and pamphlets containing up-to-date scientific facts about the air pollution problem, and distributing publications about air pollution, including reprints of articles from various communications media.

The major thrust of this activity is to help individuals and groups understand and support community efforts to deal with air pollution. A high degree of public involvement is essential to an effective control effort in any community. Since they are

Public involvement is a vital part of an effective attack on air pollution

faced with the task of preventing and controlling pollution from many activities that make a vital contribution to our way of life, State and local control officials must have wide public support, if they are to do their jobs effectively.

In addition to its public information and education activities, the Federal air pollution program serves also as a source of scientific and technical information on air pollution and its prevention and control. Such information is provided, in part, through the publication of technical reports and the reprinting of technical articles. To expedite the flow of technical data to control officials and others who may need it, an Air Pollution Technical Information Center has been set up; it will employ various modern techniques for the processing, storage, and retrieval of scientific data.

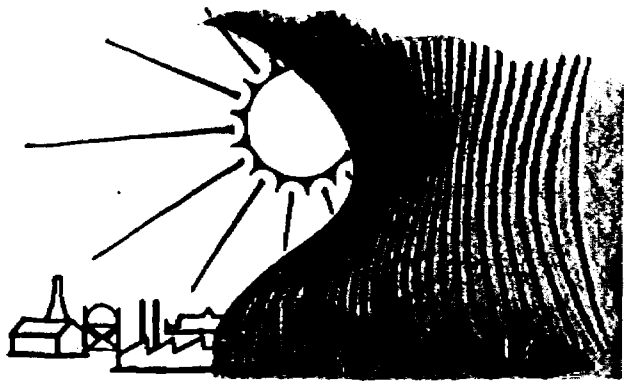
Conclusion

With the adoption of the Clean Air Act in December 1963, government, industry, and the public were given an opportunity to join forces in a new attack on the problem of air pollution.

No one can deny that progress has been made. There has been an unprecedented expansion of State and local control efforts. On the Federal level, a start has been made toward dealing with the problems of interstate air pollution and motor vehicle pollution. There have been many signs of change in attitudes toward the prevention and control of air pollution; enlightened leaders of business and industry are increasingly more responsive to the problems and opportunities of air pollution control. And in all parts of the country, people are more aware than ever before that their voices and their votes are among the most powerful weapons available in the war against air pollution.

That war is far from won; indeed, the task of arming ourselves for the fight has barely begun. There are still many deficiencies in State and local control efforts, in the activities of industry, and in the degree of public involvement in the struggle for cleaner air. There are still countless sources of air pollution that could be controlled with available technology but are not — primarily because regulations requiring control are either non-existent or are not enforced. And there are still needs for improved control technology — needs which industry, as well as government, has an obligation to meet through accelerated research.

In the past several years, the Federal Government has



substantially increased and improved its ability to support air pollution control activity. The major thrust of the changes that have taken place in the Federal program has been to create a climate in which all segments of society have the opportunity to meet their respective responsibilities for dealing with the problem of air pollution.

If the present pattern of control efforts falls short of meeting the national need for cleaner air, there can be no doubt that people in all parts of the country will insist upon changes. Nor can there be any doubt that the Federal Government will respond. The Congress and the Executive Branch are both committed to taking whatever measures are necessary to protect the American people against the worsening threat of air pollution.

Photograph credits

	Page
Fuller Company, General American Transportation Company	2, 4
Reading Record-Searchlight, Reading, California	10
Robertson Studios, Bartow, Florida	22
Department of Engineering, UCLA	24
Wayne State University	32
Los Angeles County Air Pollution Control Board	45