PROGRESS IN THE PREVENTION AND CONTROL OF AIR POLLUTION IN 1980 AND 1981

ANNUAL REPORT OF THE ADMINISTRATOR
OF THE ENVIRONMENTAL PROTECTION AGENCY
TO THE
CONGRESS OF THE UNITED STATES
IN COMPLIANCE WITH
SECTIONS 313, 202(b)(4), and 306
OF
42 U.S.C. 7401 ET SEQ.

THE CLEAN AIR ACT, AS AMENDED

CONTENTS

PREFACE

The Clean Air Act, as amended, authorizes a national program of air pollution research, regulation, and enforcement activities. This program is directed at the Federal level by the U. S. Environmental Protection Agency (EPA). However, primary responsibility for the prevention and control of air pollution at its source continues to rest with State and local governments. EPA's role is to conduct research and development programs, set national standards and regulations, provide technical and financial assistance to the States, and, where necessary, supplement State implementation programs.

Section 313 of the Clean Air Act requires the Administrator to report on measures taken toward implementing the purpose and intent of the Act. This report covers the period January 1, 1980, to December 31, 1981, and describes the issues involved in the prevention and control of air pollution and the major elements of progress toward that goal that have been made since the last report. In addition, this report also includes two other EPA reports to Congress required under the Clean Air Act, as amended:

1. Section 202(b)(4) report on measures taken in relation to motor vehicle emissions control (Chapter VII); and

2. Section 306 report on Federal procurement and violating facilities (Chapter VIII).

I. INTRODUCTION AND SUMMARY

A. OVERVIEW

This report describes the progress that the Environmental Protection Agency (EPA) has made in the prevention and control of air pollution during the two-year period 1980-81. In many cases this progress builds on the experiences of the prior decade. The following paragraphs summarize the contents of the remaining chapters of this report, especially insofar as those chapters illuminate current understanding of air quality problems, controls, and administrative apparatus.

B. AIR QUALITY TRENDS, MONITORING, AND MODELING

With the exception of nitrogen dioxide, data trends over the period 1975-1981 show continuing improvements across the country in ambient air quality and total pollutant emissions. For example:

- Between 1975 and 1981, total suspended particulate (TSP) emissions from man-made sources decreased approximately 20 percent, while average ambient TSP levels decreased 3 percent.

- Average ambient levels of sulfur dioxide (SO_2) decreased 27 percent between 1975 and 1981 and total SO_2 emissions decreased 12 percent.

- Average ambient carbon monoxide (CO) levels decreased 26 percent between 1975 and 1981, and the annual rate of improvement has been approximately 5 percent. Total CO emitted during this time decreased 10 percent.

- Average ambient nitrogen dioxide (NO_2) levels increased 5 percent between 1975 and 1981, but the levels were declining between 1980 and 1981.

- Between 1975 and 1981, average ambient ozone (O_3) levels decreased 14 percent. Total emissions of volatile organic compounds (VOC's), which are ozone precursors, declined approximately 9 percent during this same period.

- The composite maximum quarterly average of ambient lead levels decreased 57 percent between 1975 and 1981. This is consistent with a reduction in lead consumption in gasoline of 67 percent in this period.

In order to correct past problems associated with ambient air quality monitoring across the United States, EPA promulgated air quality monitoring regulations on May 10, 1979. Since promulgation, overall monitoring activities have been improved significantly. The States have established a network of stations to monitor pollutants to which national ambient

air quality standards apply. State and Local Air Monitoring Stations (SLAMS) are designed to assist States in meeting their State Implementation Plan (SIP) requirements. National Air Monitoring Stations (NAMS), a subset of SLAMS, emphasize urban and multi-source areas. By the end of 1981, almost 5,400 SLAMS and 1,400 NAMS were operational.

Although air quality models are an effective means of predicting the transportation and dispersion of pollutants from different sources, there has been growing concern about their use. The technical community has expressed concern about the imposition of regulatory guidance on a highly technical and evolving discipline. Models also have been perceived as being too imprecise to be used as the sole determinant of new source permissibility, siting, and allowed emissions levels.

To address these problems and others, EPA entered into a cooperative agreement with the American Meteorological Society for peer scientific review of EPA's modeling guidance. EPA also sponsored workshops and the Second Conference on Air Quality Modeling. In short, during 1980-81 EPA worked to improve the credibility of models and to develop methods of using models properly in the decision-making process.

C. AIR POLLUTION RESEARCH PROGRAMS

In 1980-81, EPA conducted a comprehensive, broad-based research program to support all phases of the air pollution control program. In the health effects area, research involving clinical (controlled human), animal, and epidemiological studies was conducted to support the review and revision of national ambient air quality standards and decisions whether to regulate other hazardous pollutants or pollutants from mobile sources. In the environmental processes and effects area, research was conducted to determine the ecological effects of various pollutants (e.g., damage to crops resulting from O_3, SO_2, and $SO_2/O_3/NO_x$ combinations, acid deposition impacts on aquatic and forest ecosystems) and to develop techniques for relating source emissions to air quality impacts (e.g., source apportionment methods for particles, atmospheric dispersion and transformation models for ozone, fine and inhalable particles, acid deposition, and visibility). Research in the monitoring area included providing quality assurance and standard reference materials to support State and Regional monitoring activities, conducting special monitoring studies, and developing new monitoring techniques for size-fractionated particulate and potentially toxic compounds. Scientific assessment activities produced air quality criteria documents for carbon monoxide, nitrogen oxides, sulfur oxides, particulate matter, and hydrocarbons, and comprehensive health assessments for a number of potentially hazardous air pollutants.

During 1980 and 1981, the potential environmental problems posed by the transportation, transformation, and deposition of acid or acid-causing air pollutants were a major focus of EPA research efforts. The interagency acid deposition research budget grew from $11 million in FY 1980 to $13 million in FY 1981.

D. DEVELOPMENT OF NATIONAL AMBIENT AIR QUALITY STANDARDS

In 1980-81, there were significant changes and improvements in the procedures for reviewing the National Ambient Air Quality Standards (NAAQS) as a result of the new and expanded role of the Clean Air Scientific Advisory Committee (CASAC). In addition to reviewing the criteria documents which assemble and assess all the relevant studies on the health and welfare effects of a pollutant for which an NAAQS will be established, the CASAC also reviews agency staff papers which interpret the critical studies in the criteria documents for use in the standard-setting process. The expanded CASAC role in the NAAQS process has improved the inputs of the scientific community and has provided better guidance to the Administrator in selecting the level of final standards.

In 1980, a revised carbon monoxide (CO) criteria document was published, the staff paper evaluating the critical studies in the CO criteria document was reviewed and concurred on by CASAC, and revised standards were proposed on August 18, 1980. EPA proposed to retain the current 8-hour standard at 9 ppm and to make adjustments to the 1-hour standard and to the statistical form of the standard. Final promulgation of revised CO standards is expected in 1983.

In 1980 and 1981, CASAC reviewed the nitrogen oxides (NO_x) criteria document and a combined criteria document for sulfur oxides (SO_x) and particulate matter (PM) and concurred on the scientific adequacy of the documents. In 1981, CASAC also reviewed and concurred on the adequacy of final drafts of the PM and NO_x staff papers. Proposal of revised PM standards is expected in 1983. A revised standard for NO_x will also be proposed in 1983. Proposal of revised SO_x standards, if necessary, also will occur in 1983.

An EPA review document evaluating vapor phase hydrocarbons was reviewed and received CASAC concurrence in early 1981, including concurrence with the main conclusion that no significant human health or ecological effects are associated with such hydrocarbons as a class at existing U.S. ambient air levels.

E. STATUS OF STATE IMPLEMENTATION PLANS (SIP's)

In March 1978, EPA promulgated a list of areas that had not attained applicable national ambient air quality standards. For these areas, States were to submit revised implementation plans providing for attainment of the air quality standards as expeditiously as practicable. The revised State plans were to be submitted to EPA by January 1, 1979. Through 1981, all 52 States and Territories whose plans were due officially submitted partial or complete plans. Of these, 13 States and one Territory submitted partial plans, and 38 States submitted complete plans. Final action has been taken by EPA on 31 of the complete plan revisions. Of this number, 12 were approved without conditions, 16 were approved with conditions, and three had most of their plans approved with portions disapproved.

Through 1981, 30 lead SIP's have been formally submitted to EPA and six have been submitted in draft form. The 20 remaining lead SIP's are in various stages of completion.

Improvements in the processing of SIP's were a major accomplishment during 1981. A review of the SIP revision approval process determined that the typical SIP review and processing procedure took approximately 220 workdays and involved 24 steps. Because of the time and administrative complexity involved in the process, an inventory taken in 1981 found almost 650 revisions waiting to be processed. Some of the revisions were well over a year old. In order to reduce the backlog of SIP revisions and ensure that future revisions were processed as quickly as possible, EPA experimented with several improved processing procedures: 1) tailoring the extent of the review to the importance of the revision; 2) reducing the steps in the review process and the total processing time; and 3) parallel processing of SIP revisions at the State and Federal levels. Because experience with these improved SIP review procedures indicated substantial time and resource savings were possible, the procedures were applied to all EPA Regional Offices on July 22, 1981.

Another major EPA activity in 1980-81 was the development and implementation of various controlled emissions trading concepts. These concepts include the emissions offset policy, the bubble policy, and the emissions banking and trading program. EPA is developing these different emissions trading concepts in the belief that they provide strong economic incentives to industry by applying market principles to the control of air pollution.

Implementation of the bubble policy focused on developing EPA Regional expertise, assisting States and localities in learning about the policy, and working with industry and environmental groups to understand the policy and how it can be used to achieve environmental and cost-cutting objectives. During 1980-81, approximately 100 bubble applications were received by EPA. Twenty applications were approved and three others were proposed for approval through 1981.

On August 7, 1980, EPA promulgated amendments to the Prevention of Significant Deterioration (PSD) regulations originally promulgated in June 1978. The amendments involved changes in the criteria for determining which new or modified air pollution sources are subject to the regulations as well as changes in the air quality monitoring requirements, Best Available Control Technology (BACT) applicability, and calculation of increment consumption.

In 1981, EPA reproposed regulations to comply with Section 123 of the Clean Air Act, which requires that an emissions limitation for a source not be affected by stack heights that exceed good engineering practice or by any other dispersion technique. These regulations, promulgated in February 1982, focus on the setting of a good engineering practice (GEP) stack height for use in determining emissions limitations.

On December 2, 1980, EPA promulgated regulations for the protection of visibility in mandatory Class I Federal areas. These regulations allow a phased approach to visibility protection, with the first phase of the program dealing only with visibility impairment that is reasonably attributable to a specific source. Through 1981, EPA has not received any visibility SIP's from any of the 36 States required to submit them.

F. CONTROL OF STATIONARY SOURCE EMISSIONS

In the area of stationary source controls, work progressed on the development of emissions standards for those major source categories not yet regulated under New Source Performance Standards (NSPS). A total of four NSPS were promulgated in 1980 and 1981, and 12 were proposed. The major thrust of the NSPS effort is now being directed toward control of volatile organic compounds.

EPA listed inorganic arsenic and radionuclides as hazardous air pollutants under Section 112 of the Act in 1980. Work continued to develop standards under Section 112 for coke oven emissions and for major benzene sources. Four standards to control benzene emissions were proposed in 1980-81.

Research projects aimed at demonstrating and assuring cost-effective control technologies capable of reducing pollutants from various stationary sources were undertaken in 1980-81. Outputs of the research programs support regulatory standard-setting activities and provide information to industry for solving air pollution problems.

G. CONTROL OF MOBILE SOURCE EMISSIONS

EPA undertook a number of actions in 1980-81 aimed at complying with the mobile source requirements of the 1977 Act. At the same time, EPA recognized that there were certain requirements of the Act that were technologically infeasible to meet or that may result in excessive costs, while achieving little in terms of environmental improvement. Accordingly, EPA proceeded with a series of regulatory relief measures consistent with the law as well as with the continuing movement toward cleaner air.

In 1980-81, particulate emissions from light-duty diesel vehicles were controlled by the establishment of a 0.6 gram per mile standard to take effect in model year 1982. In addition, EPA established interim standards for light-duty vehicles sold at high altitudes for model years 1982 and 1983 and established exhaust standards for light-duty trucks for model year 1984. In 1980, a final rule was promulgated setting a 90 percent reduction in hydrocarbon and carbon monoxide emissions for heavy-duty trucks starting in model year 1984. This rule requires the use of a catalyst. In 1981, EPA initiated a re-evaluation of this standard in view of questions raised as to the technological feasibility of the use of catalysts on trucks.

During 1980-81, EPA proceeded with a series of major changes in the preproduction certification program. These changes were directed toward reducing the unnecessary complexity and cost of this program and reductions in the paperwork and reporting burdens were achieved. As a long-term reform, EPA is considering whether to replace certification with a program designed to control in-use emissions performance directly.

EPA provided technical support to those States and localities that are implementing Inspection/Maintenance (I/M) programs. Areas in nine States had begun operating programs as of the end of 1981. Projects at the national level also were implemented in order to promote the acceptance and effectiveness of I/M programs. Section 176(a) of the Clean Air Act prohibits grants to areas not in attainment with standards for transportationrelated pollutants where there is a finding that the State failed to make reasonable efforts to submit an approvable State Implementation Plan. That finding was made in 1980 in California and two counties in Kentucky because of lack of I/M legislation.

H. ENFORCEMENT

During the 1970s EPA embarked on a program to bring stationary sources which had never installed pollution control equipment into initial compliance with applicable regulations. During 1980 and 1981, EPA conducted over 6,000 inspections, issued almost 800 notices of violations and almost 100 administrative orders, and initiated 130 civil actions. By the end of 1981, over 93 percent of all U.S. sources had achieved or were on a schedule to achieve initial compliance.

The EPA mobile source enforcement program is directed primarily toward achieving compliance with motor vehicle emissions standards and fuel regulations. This includes ordering the recall of vehicles if they do not conform to standards, granting waivers of emissions standards where appropriate, and auditing vehicles on the assembly line to determine compliance. In addition, EPA operates a nationwide fuels enforcement program to ensure that retail fuel outlets comply with regulations pertaining to fuel additives and to minimize the use of leaded gasoline in vehicles designed to use unleaded gasoline.

EPA promulgated two sets of regulations related to mobile source enforcement in 1980. One set established emissions performance warranties requiring that a vehicle manufacturer repair, at no charge to the owner, certain emissions control devices or systems that are defective. The second set of regulations established a program under which manufacturers of automotive aftermarket parts can certify that the use of their parts will not cause a vehicle to exceed emissions standards.

I. LITIGATION

In matters related to national ambient air quality standards, the U.S. Court of Appeals for the D.C. Circuit upheld EPA's national primary and secondary ambient air quality standards for lead in 1980. In addition, the D.C. Circuit Court also upheld EPA's national ambient air quality standard for ozone.

With regard to new source performance standards (NSPS), the Court held in 1980 that the achievability of EPA's NSPS for lime plants was not adequately supported by the record. In 1981, the Court did uphold, however, the 1979 NSPS for fossil fuel-fired utility boilers as well as EPA's procedures for reviewing and revising the NSPS for basic oxygen furnaces in steel mills. Finally, in 1981, the Court overturned EPA's determination that boilers owned by PPG Industries, Inc., were subject to the 1971 NSPS for fossil fuel-fired boilers.

In other areas, in 1981 the Court upheld EPA's conditional approval of the Texas Part D nonattainment SIP, holding, among other things, that EPA's conditional approval policy was authorized under the Act. In 1980, three Courts of Appeal ruled on the validity of area designations issued by EPA under Section 107 of the Act. One upheld EPA's actions and two did not.

In 1980, the Ninth Circuit Court of Appeals upheld EPA's imposition of a construction moratorium and funding limitations against California for failure to meet the requirements of Part D of the Act. In addition, the Tenth Circuit in 1980 rejected an attempt to challenge EPA's action in imposing a construction moratorium and Federal funding restrictions on Colorado for the State's failure to enact I/M legislation.

Litigation over many mobile source regulations continued throughout 1981. Many of these cases are now the subject of discussions to explore whether out-of-court settlement is practical.

II. AIR QUALITY TRENDS, MONITORING, AND MODELING

This chapter is divided into a discussion of ambient air quality and emissions trends, air quality monitoring, and air quality modeling. The section on air quality monitoring discusses the status of the State and Local Air Monitoring Site (SLAMS) Network and the National Air Monitoring Site (NAMS) Network. The section on air quality modeling discusses work in progress on modeling techniques.

A. NATIONAL AIR QUALITY AND EMISSION TRENDS

National ambient air pollution levels have dropped for each of the major pollutants between 1980 and 1981. This is the first time that a short-term improvement has been observed for each of the pollutants for which there are national ambient air quality standards. The ambient air quality data used in the following pollutant assessments were obtained from EPA's National Aerometric Data Bank. The data were gathered primarily from State and local air pollution control agencies through their monitoring activities.

Total Suspended Particulate (TSP) - The composite annual average of ambient TSP levels measured at 1972 sites decreased 3 percent during the 1975 to 1981 time period. The TSP trend was relatively stable during the 1975 to 1980 time period and then fell between 1980 and 1981. The median rate of decrease among the 1289 sites with data in 1980 and 1981 was 6 percent. Most of the decrease between 1980 and 1981 occurred in the Northeastern, North Central, Rocky Mountain, and Northwestern States. The lagest decrease in ambient TSP levels was observed in the Northwestern States which fell 13 percent between 1980 and 1981. Particulate emissions, on the other hand, exhibited a decrease of approximately 20 percent during the 1975 through 1981 time period with a decrease of approximately 2 percent between 1980 and 1981. It is not entirely clear why particulate emissions decreased so much more than ambient TSP levels during 1975-1981. A possible explanation may be attributed to high background levels of naturally occurring particulate emissions, as well as uninventoried area source emissions, such as reintrained dust, which contribute to ambient concentrations but which are not included in the emission inventory. This explanation, however, does not satisfactorily explain the drop in ambient levels between 1980 and 1981, which could be due to reduced industrial activity, changes in the weather, or a combination of both.

Sulfur Dioxide (SO_2) - Annual average ambient SO_2 levels measured at 416 sites with continuous SO_2 monitors decreased 27 percent from 1975 to 1981. A similar decrease of 31 percent was observed in the trend in the composite average of the second maximum 24-hour average. Correspondingly, there was a 12 percent drop in sulfur oxide emissions. The difference between emissions trends and air quality trends arises because the use of high sulfur fuels in large power plants was shifted from urban areas, where most of the SO_2 monitors are, to rural areas where there are fewer monitors. The SO_2 ambient air quality improvement continued between 1980 and 1981 with a median rate of improvement of 8 percent for the annual mean and 4 percent for the second maximum 24-hour averages.

Carbon Monoxide (CO) - The second highest nonoverlappying 8-hour average ambient CO levels at 224 sites decreased at a rate of approximately 5 percent per year, with an overall reduction of 26 percent between 1975 and 1981. An even greater improvement was observed in the estimated number of exceedances, which decreased 84 percent. The improvements generally reflect CO levels at traffic-saturated monitoring sites in the center city, which have experienced little or no change in the number of vehicles in their vicinity. Consequently, the improvement in CO levels reflects the reduction in emissions from new cars resulting from Federal standards for vehicle emissions. CO emissions decreased 10 percent during the same period. Between 1980 and 1981, the median rate of improvement was 3 percent among the 163 sites with both 1980 and 1981 data. If only the sites with second maximum values above the level of the 8-hour CO standard are considered, the median rate of improvement was 7 percent, so that the higher sites continued to show improvement for the second maximum value between 1980 and 1981.

Nitrogen Dioxide (NO_2) - Annual average ambient NO_2 levels measured at 445 sites increased from 1975 to 1979 and then began declining. The air quality trend is very similar to the trend in nitrogen oxides emissions. The net long-term change between 1975 and 1981 is an increase of 5 percent in NO_2 levels and a 5 percent increase in emission levels. A decrease was observed between 1980 and 1981 in both the air quality, as measured at 201 sites with data in both years, and emissions levels of 8 and 2 percent, respectively.

Ozone (O_3) - The composite average of the ambient second highest daily maximum 1-hour O_3 values recorded at 209 sites decreased 14 percent between 1975 and 1981. An even greater improvement was observed in the estimated number of exceedances in the third quarter ozone season, which decreased 42 percent. Volatile organic compound (VOC) emissions decreased 9 percent during the same time period. The greater improvement observed in ozone levels appears to be a combination of reductions in VOC emissions and the change in the calibration procedure which took place between 1978 and 1979. Between 1980 and 1981, the majority of the 159 trend sites with ambient data in both years decreased with a median rate of improvement of 8 percent. This is consistent with the 7 percent drop in VOC emissions during this period.

Lead (Pb) - The composite maximum quarterly average of ambient lead levels, recorded at 92 sites, decreased 57 percent between 1975 and 1981. The sample of 92 sites is heavily weighted by monitors in the States of Texas, Maryland, and Pennsylvania. Individual trends in each of these States show decreases. The lead consumed in gasoline dropped 67 percent, primarily because the use of unleaded gasoline is required in catalyst-equipped cars. Between 1980 and 1981, the maximum quarterly average lead levels decreased 18 percent among the 113 sites with data in both years. The decrease in lead consumption over the same time period is 29 percent.

B. AMBIENT AIR MONITORING

Air quality monitoring regulations promulgated by EPA on May 10, 1979, require each State to establish a network of monitoring stations to monitor pollutants for which National Ambient Air Quality Standards (NAAQS) have been established. The new regulations were designed to correct past air monitoring problems such as untimely or incomplete reporting of data, improper monitor location and sampler probe siting, and the lack of uniformity in sampling methodology and quality assurance practices. Since promulgation of the regulations, major changes to correct these deficiencies have been made, resulting in a significant improvement in overall monitoring activities. The stations required by the regulations are termed State and Local Air Monitoring Stations (SLAMS), National Air Monitoring Stations (NAMS), and Special Purpose Monitoring (SPM).

State and Local Air Monitoring Stations (SLAMS)

This network must conform to the requirements of 40 CFR 58 and must be a carefully planned network of fixed monitoring stations whose size and distribution are largely determined by the needs of State and local air pollution control agencies in meeting their respective State Implementation Plan (SIP) requirements. The stations in the network, termed State and Local Air Monitoring Stations (SLAMS), are intended to be the backbone of the ambient monitoring program relative to SIP activities. To ensure quality data, the SLAMS must meet the following criteria:

- Each site must meet network design and criteria for instrument exposure and sample inlet design.

- Quality assurance programs including precision and accuracy assessments and control and corrective actions must be developed and followed.

- All sampling methods and equipment must meet EPA reference or equivalent requirements.

- Acceptable data validation and recordkeeping procedures must be followed.

In addition, data from the SLAMS must be summarized and reported annually to EPA. SLAMS must meet all requirements of the regulations by January 1, 1983.

National Air Monitoring Stations (NAMS)

The NAMS are a subset of the SLAMS network emphasizing urban and multi-source areas. NAMS, like SLAMS, must conform to EPA siting criteria and operate according to quality assurance procedures that equal or exceed EPA's minimum specifications. The NAMS differ from the SLAMS in that:

- NAMS were to be in operation by January 1, 1981.

- NAMS must use continuous automated instruments for gaseous pollutants.

- A minumum number of NAMS must be established in specified urbanized areas.

- NAMS data must be reported to EPA on a quarterly basis and be accompanied by precision and accuracy data.

The NAMS are intended to provide data for national policy analyses, for regulatory analyses, for identification of trends, and for reporting to the public on the air quality in major metropolitan areas.

Special Purpose Monitoring (SPM)

Special purpose monitoring (SPM) activities consist of well-defined studies needed by State and local agencies to support SIP's and other air program activities. SPM is not permanently established and thus can be adjusted easily to accommodate changing priorities. SPM can be used to supplement the fixed monitoring network as circumstances require and resources permit. Some principal SPM applications are:

- To make preliminary attainment or nonattainment determinations in areas where fixed station data are insufficient.

- To establish or check compliance with State air quality standards.

- To determine background or downwind concentrations relative to SIP development.

Table II-1 lists, by pollutant, the number of SLAMS as well as NAMS. As of December 1, 1981, 1,277 (93 percent) of the 1,369 NAMS sites were operational and meeting the network design, siting, and quality assurance requirements of the regulations. By the January 1, 1983 deadline, essentially all of the SLAMS are expected to be in operation and in conformance with the regulations.

Table II-1. National Summary of Air Monitoring Stations

Pollutants	SLAMS (including NAMS)	NAMS
TSP	2710	652
SO_2	779	231
NO_2	460	56
CO	475	113
O_3	640	214
Pb	328	103
TOTAL	5392	1369

C. AIR QUALITY MODELING

An air quality model is a set of mathematical equations describing the transport and dispersion of certain pollutant species, such as TSP, SO_2, CO, etc., from emissions sources to prescribed receptor locations. Chemical and physical transformations of pollutant species may be described by additional equations. By means of these equations, a model can be used to calculate or predict the air quality impacts of emissions from proposed new sources, emissions from existing sources, or changes in emissions from either of these source categories. These models are of great utility because they provide a means whereby the effectiveness of air pollution controls can be estimated before action is taken.

Air quality models have been widely accepted, but there has also been growing concern about their use. This concern became evident at several public hearings held in 1980 and 1981 to consider changes to the modeling guidance. The concern appears to stem from two areas. First, the move toward consistency in this highly technical field and the limited effectiveness of the public hearing process for considering complex scientific issues have led to dissatisfaction within the technical community about the imposition of regulatory guidance. In 1979, EPA entered into a cooperative agreement with the American Meteorological Society for peer scientific review of the modeling guidance. The review was completed in 1981 and a final report was widely circulated. EPA is developing plans for or already has begun implementing many of the recommendations contained in that report. For example, a systematic evaluation of models was recommended so that the accuracy and limitations of the models can be adequately documented. In response, EPA developed in 1981 a multi-year plan to evaluate proposed and recommended models. As performance evaluations are completed, independent technical peer reviews will be conducted.

The second basis for concern is the way in which estimated concentrations are employed in regulatory decision-making. Estimated concentrations are frequently used as the major, and in some cases as the sole, determinant of (1) the permissibility of a new source, or (2) the acceptability of certain levels of emissions from an existing source. However, models are perceived by many as being too imprecise to be the only basis for such decision-making.

In response to this concern, EPA has undertaken a program to determine how best to treat model uncertainty in regulatory decision-making. This program was reflected in a workshop and subsequently the Second Conference on Air Quality Modeling conducted by EPA in 1981. The workshop and conference were attended by many individuals, ranging from lawyers to mathematicians, representing government, industry, consulting firms, and environmental groups. Issues such as the accuracy of models, quantification of model uncertainty, and how best to use model estimates in decision-making were addressed. Topics related to the technical review of modeling guidance and the proper application of models were also considered.

However, few technical solutions were provided. EPA's program currently is seeking resolution of these problems with the ultimate goal of establishing a more probabilistic basis for pollutant emissions limits. One example of progress in this area is the expected exceedances (ExEx) method, which allows variability in fuel quality to be considered. The use of the ExEx method as a regulatory policy is being reviewed.

III. AIR POLLUTION RESEARCH PROGRAMS

Major changes in the way EPA's Office of Research and Development (ORD) plans research to support development of air pollution control activities took place in 1980-81. ORD's air research program was divided into four broad categories: oxidants, mobile sources, gases and particles, and hazardous air pollutants. The research in each area is planned by a Research Committee composed of ORD managers and representatives of EPA's regulatory, regional, and enforcement offices. Each Research Committee plans the full range of research for the pollutants covered by the committee. This research includes health and ecological effects, environmental processes and effects, energy impacts, control technology, and monitoring. This discussion of research highlights for 1980-81 is divided along the lines of the Research Committees.

In addition, these four committees are complemented by the Energy Research Committee, which assesses environmental effects of energy development and the cost-effectiveness of control technologies for energy production and consumption processes. Research on acid deposition is planned in conjunction with the Energy Research Committee. Another major component of the research program--control technologies for stationary sources--is discussed in Chapter VI of this report.

A. OXIDANTS

The oxidants research program primarily covers ozone (O_3), nitrogen dioxide (NO_2), and volatile organic compounds (VOCs), with secondary attention devoted to other photochemical products such as nitric acid vapor and peroxyacyl nitrates.

Health Effects

Clinical (controlled human) studies were conducted in 1980 and 1981 to investigate the effects of O_3 and NO_2 in a variety of situations including the following: healthy individuals subjected to heat, humidity, and exercise stress; subjects with chronic obstructive lung disease at rest and with exercise; asthmatics challenged with a bronchoconstricting drug and NO_2; adaptation to repeated exposures to O_3 on successive days; and subjects exposed to a cold virus followed by O_3 exposure. Various endpoints (manifestations of effects) were studied in these tests, including pulmonary functions (e.g., airway resistance), biochemical changes, symptomatic effects (e.g., cough, sore throat), and resistance to viral challenge.

Experiments on animals permitted investigation of effects that could not be examined in humans, including chronic effects due to long-term exposures, direct observation of morphological structural damage to lung tissue, and effects on the lungs of very young animals. Substantial work also was done to enable the modeling and extrapolation of animal experiments to human exposures.

Epidemiology studies involving pulmonary function tests were conducted in Los Angeles on healthy and asthmatic children. Epidemiology studies were also conducted in the Texas Gulf Coast Area (Houston) involving asthmatics and runners.

Environmental Processes and Effects

The bulk of the work in this area focused on the development and validation of photochemical dispersion models for use by the States in the development of SIP control strategies for O_3. Air quality models under development include urban models that treat a single metropolitan area and regional models applicable to multi-State areas, allowing better treatment of the long-range O_3 transport problem. Studies and assessments related to the development and use of these and more simplified O_3 models were conducted. These included the development of hydrocarbon emissions factors from vegetation, assessment of the impact of these emissions on O_3 concentrations, and the impact of stratospheric ozone intrusion on ground-level O_3 concentrations.

Another major activity in the processes and effects area involved determining the effects, especially in terms of yield reduction, of O_3 on economically important crops. Dose-response functions for various crops were developed at field stations located in different areas of the country. These will be used to estimate national economic losses for these crops due to O_3 pollution.

Monitoring

A remote sensing system was demonstrated for use in oxidant transport modeling. Also, the nationwide Air Pollution Background Network was operated to obtain O_3 measurments in national forests.

Different methods for monitoring nonmethane hydrocarbons were evaluated. Optimum methodology was recommended for use in field measurements. A standard ultraviolet spectrophotometer was developed, designed, and tested for use by Regions and States for calibration of existing ozone measurement devices. A quality assurance (QA) progam was developed for operational use. Data are now being obtained with improved precision and accuracy. Operational support was provided to the Regions in the Northeast Oxidants Study (a multi-State study of the transportation of oxidants across State boundaries).

Scientific Assessment

In 1980 and 1981 external review drafts of the updated NO_x criteria documents were reviewed by the public and the Clean Air Scientific Advisory Committee (CASAC), followed by editing and preprinting of the documents in 1982. Beginning in the spring of 1981, tasks were initiated to update the photochemical oxidants criteria document.

B. MOBILE SOURCES

The Mobile Sources research program contains studies to determine the health effects of motor vehicle emissions with emphasis on diesel exhaust and carbon monoxide (CO). The program also develops methods for measuring unregulated pollutants in automotive exhaust and for measuring or estimating actual population exposures to motor vehicle emissions.

Health Effects

A variety of studies were conducted to examine the carcinogenicity and mutagenicity of diesel particulate and whole diesel exhaust in several animal species and in short-term bioassay systems. Studies were begun to develop bioassay techniques and protocols for identification of toxic components in mobile source emissions and in fuels and fuel additives. Work was also begun to develop advanced methods for investigating the effects of carbon monoxide on humans with coronary artery disease.

Environmental Processes and Effects

Research was conducted to determine automobile emissions factors for over 60 individual hydrocarbon compounds in order to assess potentially harmful constituents in auto exhaust. Emissions factors for in-use light-duty and heavy-duty diesels were also determined. A smog chamber study was conducted to determine the biological activity of diesel exhaust under simulated urban air conditions.

Monitoring

A study on CO intrusion into sustained-use vehicles (school buses, taxicabs, and police vehicles) mandated by the Clean Air Act was completed. The study identified major points of intrusion and developed recommendations for abating the problem. A pilot study measuring direct human exposure to CO by using personal air quality monitors was completed in preparation for a full-scale study in 1982. A field survey of CO concentrations in commercial settings in four California cities was completed, and a study of the year-round CO exposures of occupants of motor vehicles traveling on urban arterial highways in California was completed.

The Fuel and Fuel Additives Registration Program continued to register all new fuel additive compositions. A program to determine the precision and accuracy of State and local CO measurements was instituted for use in trend analysis. Quality assurance for all CO monitoring studies was provided.

C. GASES AND PARTICLES

Research on particulate matter, sulfur dioxide, and lead is carried out in the gases and particles program. This program also includes studies of the interactive effects of combining SO_2 and particles with other pollutants such as O_3 and NO_2.

Health Effects

Controlled human exposures were conducted to assess the effects of particulate substances (alone and in combination with O_3, NO_2, and SO_2) and SO_2 on lung function, immunology, and biochemical parameters after brief (acute) exposures of healthy normal adults. Interactions of pollutant effects with exercise, increased temperature, and dosage with bronchoconstrictor drugs were completed. Results of combination exposures to pollutant gases and the following particles were being finalized for publication: sulfuric acid, ammonium bisulfate, ammonium sulfate, and ammonium nitrate. Results of the SO_2 study were published and included in the criteria document.

The first phase of a problem definition study for epidemiological investigations was completed. In conjunction with a panel of experts, this project identified problem areas in current knowledge, and the types of studies which offer a high probability of success if conducted.

Community health studies supported in part or planned in 1980-81 included portions of a six-city study sponsored by the National Institute of Health, a Denver asthmatic study, a study in a western community with high smelter emissions, and an examination of neurotoxic effects in children with high lead exposures.

Animal studies were conducted which focused on a variety of fine mode particles (mostly sulfates and nitrates) and some coarse particles. In addition, animal models for human diseases were developed, and development of improved bases for extrapolation of animal work to humans is underway.

Environmental Processes and Effects

Research in the gases and particles environmental processes and effects area in 1980-81 focused on the transport and fate of SO_2 and particles, model development, and the effects of particles and SO_2 on visibility, agricultural crops, and materials. A major field study was conducted to examine the conversion of gases to particles in air pollution episodes. This work supported the development of regional and urban scale particle models as well as source apportionment methods. Work was begun on developing an improved consensus on complex terrain models. Data was gathered to validate three visibility models, and the results of western and eastern studies of fine particle effects on visibility were submitted for journal publication. The national crop loss assessment network examined dose response functions for SO_2 alone and in combination with NO_2 and O_3 on several agronomic crops.

Monitoring

In 1980-81, new stations were added to the inhalable particle network for a total of about 140 stations. Additional instruments were sited at all stations to allow for increased analysis of mass size and chemical composition. This information is useful in considering revisions of the air quality standards for particulate matter. Finally, a network of visibility and fine particle monitoring stations provided information needed to determine current levels of visibility in Federal Class I areas and sources of visibility-impairing aerosols.

A precision and accuracy progam for ambient and source monitoring succeeded in substantially increasing the amount of data received with complete accompanying precision and accuracy information. In addition, quality assurance for NAMS and SLAMS sites continued, and work was continued on the development of monitoring methods in support of revised air quality standards for particulate matter.

Scientific Assessment

The three-year task to revise and reissue an Air Quality Criteria Document for Sulfur Oxides and Particulate Matter proceeded through final stages of completion during 1981. A second external review draft of the document was released for CASAC and public comment early in 1981. In November 1981 the CASAC provided final advisory comments on the scientific issues. Final editing and preprinting of the document will be carried out in 1982.

D. HAZARDOUS AIR POLLUTANTS

The pollutants covered by the hazardous air pollutant (HAP) research program are those air pollutants that are either currently regulated or are potential candidates for being regulated under Section 112 or Section 111(d) of the Clean Air Act.

Health Effects

Development and application of microbial and mammalian cell bioassays for detection of mutagenic/carcinogenic activity in ambient air continued to be used in the identification of gaseous or particle-associated organics that may be of public health concern. Additional efforts were devoted to the evaluation of selected HAP substances for tumorigenic and mutagenic effects in mammalian animal species.

During 1980-81 testing methods were developed, validated, and applied to the detection of adverse effects in the following areas: (1) teratogenic, reproductive, and related endocrine effects; (2) neurotoxic and behavioral effects; and (3) pulmonary, immune system, and respiratory disease effects.

Two studies were completed in which selected reproductive parameters were observed in male laboratory rats after exposure to a toxic compound. Results from these studies indicated that the age of the animal at the time of exposure is related to the degree of damage found in the reproductive system.

An animal infectivity model using intratracheal exposures also was verified for use as a rapid and inexpensive method for screening hazardous air pollutants prior to more intensive toxicological evaluation.

Environmental Processes and Effects

Work in this area included field measurements in Houston, St. Louis, and Denver for 44 potentially hazardous air pollutants. A separate study reported on the atmospheric half-life of the same 44 pollutants. An effort was begun in 1980-81 to bring together the significant body of information currently available to characterize the burden of hazardous air pollutants in the ambient environment. The major purposes of the study are to (1) uncover published and unpublished data, (2) assess the quality of the data, (3) compile and process the data, and (4) determine data gaps.

Monitoring

Materials for quality assurance were tested for stability and produced for distribution to various laboratories. Long-term stability tests are underway on standard reference materials for toluene, chloroform, chlorobenzene, carbon tetrachloride, and vinyl chloride.

During 1980-81, work was completed on several source and ambient measurement methods for hazardous air pollutants.

As part of an ongoing monitoring program, glass fiber filters are routinely analyzed for hazardous elements and compounds such as arsenic and benzo(a)pyrene (BaP). The glass fiber filters are sent to EPA for analyses by State and local control agency personnel.

Scientific Assessments

A comprehensive health assessment document on cadmium was compiled, issued, and is being used to support decisionmaking on whether to list cadmium as a hazardous air pollutant. Draft reports on carcinogenic and noncarcinogenic health effects associated with arsenic were submitted for Science Advisory Board (SAB) review. Evaluation of the carcinogenic effects of arsenic and SAB comments on the subject were the principal scientific bases used to support the listing by EPA of inorganic arsenic as a hazardous air pollutant. In addition, draft comprehensive health assessment documents were prepared on the following air pollutants: methylene chloride, methyl chloroform, fluorocarbons 113, trichloroethylene, toluene, perchloroethylene, vinylidene clhloride, and acrylonitrile.

E. ACID DEPOSITION

The potential environmental problems posed by acid deposition have received much attention over the past few years. In order to help clarify the scientific issues involved, the interagency acid deposition research budget has grown from $11 million in FY 1980 to $13 million in FY 1981.

Research sponsored by EPA already has contributed significantly to a better understanding of the acid deposition problem. Important accomplishments in acid deposition research in 1980-81 include:

- Surveys to evaluate the extent of the acidification of lakes by acid precipitation in the mid-Atlantic, New England, and upper midwest States were initiated. These data are needed to establish the magnitude of the acid precipitation problem.

- Results from rainfall simulation studies indicated, under certain conditions, that the growth of certain cultivars (soybeans and pinto beans) were inhibited by simulated acid precipitation, but other cultivars were unaffected.

- Comprehensive statistical analyses were performed on three years of acid precipitation monitoring data. There was a pronounced seasonal variation of key pollutant species, e.g., sulfate, acidity, dissolved SO_2, and ammonia. Also, there was a pronounced spatial dependence of these pollutants within the network.

- Several linearized long-range transport models to predict atmospheric concentrations and deposition of acidic materials, with particular emphasis on SO_2 and sulfates, were developed and evaluated with data from field experiments and precipitation chemistry networks. The evaluations showed that these models cannot be used for source-receptor predictions. Refinement of these models and the development of more sophisticated models, which include sulfur, nitrogen, and hydrocarbon/oxidant chemical cycles, were continuing in order to provide the necessary tools for decision-making and assessments.

- An expanded acid deposition monitoring network (Australia, Venezuela, Alaska, Colorado, Bermuda, and Amsterdam Island) was established.

- A national acid precipitation data system was established and is entering data from several networks, including the Canadian Network for Sampling Precipitation (CANSAP), the MAP3S/RAINE, and the National Acid Deposition Program (NADP). The system will allow EPA and others to better understand and analyze acid deposition problems.

- A survey and investigation of the effects of acid precipitation on marble, using tombstones in the National Cemetery system as exposure samples, was initiated.

- A study of past and current pH and chemistry of surface and ground water supplies of drinking water in New England and New York was initiated. This project was designed to help provide a better understanding of a potential human health concern--the effect of acid precipitation on drinking water.

IV. DEVELOPMENT OF NATIONAL AMBIENT AIR QUALITY STANDARDS

The 1977 Clean Air Act amendments required EPA to review and revise, if necessary, all of the national ambient air quality standards (NAAQS). Reviews of five of the seven NAAQS were in progress during the 1980-81 period.

In 1980-81, there were significant changes and improvements in the procedures for reviewing the NAAQS as a result of the new and expanded role of the Clean Air Scientific Advisory Committee (CASAC). The CASAC is a panel of independent scientists established by the 1977 Clean Act amendments to advise the EPA Administrator on the adequacy of the scientific basis for the NAAQS. In addition to reviewing the criteria document which assembles and assesses all the relevant studies on the health and welfare effects of a pollutant for which a NAAQS will be established, the CASAC also reviews an EPA staff paper which interprets the critical studies in the criteria document for use in the standard-setting process. The staff paper has evolved to present a range of values which the staff and the CASAC feel are most appropriate for selecting the level of the standard based on the scientific evidence available. The expanded CASAC role in the NAAQS process has improved the inputs of the scientific community and provided better guidance to the Administrator in selecting a final standard level.

In 1980, a revised carbon monoxide (CO) criteria document was published. The staff paper evaluating the critical studies in the CO criteria document was reviewed and was concurred on by CASAC, and revised standards were proposed on August 18, 1980. EPA proposed to retain the current 8-hour standard at 9 ppm and make adjustments to the 1-hour standard and to the statistical form of the standard. Hearings were held on the proposal in 1980, and further analyses of alternative levels and forms of the standard were conducted in 1981. Final promulgation of revised CO standards is expected in 1983.

In 1980 and 1981, CASAC reviewed the nitrogen oxides (NO_x) criteria document and concurred on the scientific adequacy of the document. In late 1980, CASAC also reviewed an initial draft of the staff paper interpreting the evidence in the criteria document for use in revising the NAAQS. Two additional meetings were held by CASAC in 1981 to review revised drafts of the staff paper. CASAC has concurred on the adequacy of the NO_x staff paper, and the agency is proceeding with preparation of the regulatory impact analyses. Proposal is expected in 1983.

In 1980, CASAC reviewed the initial draft of a combined criteria document for sulfur oxides (SO_x) and particulate matter (PM). The revised criteria document was reviewed by CASAC in July 1981 and found to be generally adequate as the basis for rulemaking on the standards. An initial draft of the PM staff paper was reviewed by CASC in July 1981, and a revised

draft was reviewed November 1981. Extensive analyses of cost and economic impacts as well as the benefits of alternative PM standards were conducted in 1980 and 1981. CASAC has concurred on the PM staff paper, and proposal of revised NAAQS for PM is expected in 1983. Staff paper review for SO_2 will be completed in 1982, and proposal of revised SO_x standards, if necessary, will occur in 1983.

A staff review document on vapor phase hydrocarbons was reviewed and received CASAC concurrence in early 1981, including concurrence with the main conclusion that no significant health or ecological effects are associated with such hydrocarbons, as a chemical class, at existing U.S. ambient air levels. In June 1981, EPA proposed to revoke the current NAAQS for hydrocarbons (which was originally established as a guide for attaining the NAAQS for photochemical oxidants) on the basis that it is no longer appropriate and that there are now much more sophisticated techniques available for designing control strategies for photochemical oxidants (ozone).

Also in 1980 and 1981, the agency continued its efforts to develop methodologies for using risk assessment in setting NAAQS, as has been suggested by a number of groups, including the National Commission on Air Quality. The risk assessment program has been reviewed on several occasions by a subcommittee of EPA's Science Advisory Board.

V. STATUS OF STATE IMPLEMENTATION PLAN (SIP's)

A. STATE IMPLEMENTATION PLANS

In the 1970 amendments to the Clean Air Act, Congress directed EPA to establish primary national ambient air quality standards (NAAQS) to protect the public health and secondary NAAQS to protect the public welfare and directed the States to develop and adopt State Implementation Plans (SIP's) to attain and maintain the standards. EPA was given responsibility for reviewing SIP's and either approving them or disapproving them and, if necessary, promulgating substitutes.

In 1971, EPA promulgated NAAQS for sulfur oxides, particulate matter, carbon monoxide, ozone (originally called photochemical oxidants), and nitrogen oxides. SIP's were developed and placed into effect. Under statutory deadlines, the NAAQS were to have been attained in most areas of the country by 1975, with some extensions until 1977.

By 1976 it became apparent that, despite significant progress, SIP's were inadequate to achieve the NAAQS in many areas of the country. EPA therefore issued numerous calls for States to revise their SIP's to provide for attainment. Questions also arose as to whether and under what circumstances new stationary sources might legally be permitted to construct in areas where the NAAQS were not being met. In response to these questions, EPA published its emissions offset interpretive ruling, which allowed new construction in areas where NAAQS were violated, as long as stringent conditions were met that would assure further progress toward attainment of the standards.

In August 1977, Congress amended the Act to (among other things) establish a statutory approach to permit growth in polluted areas while requiring attainment of the NAAQS by specific deadlines. Congress first instructed each State to list those areas where NAAQS were still not attained as of August 7, 1977 (nonattainment areas), and instructed EPA to promulgate the list of nonattainment areas with any necessary changes. Each State with nonattainment areas then had to submit a SIP revision by January 1, 1979, providing for attainment of NAAQS as expeditiously as practicable and for primary standards no later than the end of 1982 (or the end of 1987 for areas with particularly difficult ozone or carbon monoxide problems and which met certain other requirements). Congress also provided that EPA's offset ruling would govern new source construction until July 1, 1979, after which date proposed major sources were to be reviewed under the provisions of a revised SIP that meets the requirements of Part D of the Act.

A list of nonattainment areas was promulgated on March 3, 1978, with some subsequent modification. For these areas, States were to submit adopted SIP revisions to EPA for approval by January 1, 1979.

Through December 1981, all 52 States and Territories whose plans were due January 1, 1979, have officially submitted partial or complete plans. Thirty-eight States have complete submittals. Thirteen States and one Territory have submitted partial plans: Alabama, Kansas, Pennsylvania, Indiana, Minnesota, Idaho, Tennessee, Arizona, Guam, California, Maryland, Iowa, Nebraska, and Hawaii. Plans were not required for North Dakota, American Samoa, the Virgin Islands, and Northern Mariana Islands.

Notices of proposed rulemaking for 50 States had been published through December 1981. A notice of proposed rulemaking had not been submitted either for Hawaii or for Guam as of that date.

Final action has been taken by EPA on 31 complete nonattainment plans. Twelve--Wyoming, Mississippi, Arkansas, Vermont, Puerto Rico, New Jersey, Georgia, North Carolina, Oregon, Virginia, South Dakota, and the District of Columbia--were approved. Sixteen plans have been approved with certain conditions: Colorado, South Carolina, Louisiana, Maine, Delaware, Florida, New Hampshire, Connecticut, West Virginia, Rhode Island, Massachusetts, Michigan, New Mexico, Texas, Washington, and Nevada. Three States--Montana, Kentucky, and Utah--had most of their plans approved with portions disapproved.

Seven more States have made complete submittals, and EPA has taken final action on portions of their plans. These States are Wisconsin, New York, Illinois, Oklahoma, Alaska, Missouri, and Ohio.

The SIP's address the nonattainment areas for all of the criteria pollutants, but particular attention is given to total suspended particulate (TSP), ozone (O_3), and sulfur dioxide (SO_2). For TSP, the fugitive dust problem has received particular attention in a number of States.

Fugitive dust is a problem because of its pervasiveness and the difficulty in quantifying and identifying the problem. Fugitive dust includes windblown particulate from agricultural land, unpaved roads, and exposed areas at construction sites, as well as particulate matter re-entrained into the air by automotive disturbance of street dust and by tilling of crop land. Where fugitive dust causes or contributes to particulate matter violations, SIP's must include sufficient controls to demonstrate reasonable further progress and attainment of the standard by the required date. SIP's from these areas must contain adopted reasonably available control technology (RACT) requirements for traditional sources and either adopted requirements or schedules for study and subsequent adoption of requirements for nontraditional sources.

For ozone and CO plans, the major issues that emerged from analysis of the SIP's were the control of volatile organic compounds from stationary sources, inspection/maintenance (I/M) of automobiles, and transportation controls. I/M, in particular, generated a great deal of discussion in certain parts of the country. A discussion of the status of I/M programs at the Federal, State, and local levels will be found in Chapter VII of this report.

In October 1978, EPA promulgated a national ambient air quality standard for lead. After promulgation, the States had nine months to prepare and submit to EPA plans for attainment of the standard by October 1982 or, if an extension was granted, October 1984. Through December 1981, 30 lead SIP's have been formally submitted to EPA. Of these, EPA has published final rulemaking notices approving 15 and has proposed approval of six. In addition, six lead SIP's have been forwarded to EPA in draft form. Lead SIP's from 20 other States are in various stages of completion.

In a significant number of cases, attainment of various national ambient air quality standards by the deadlines prescribed in the 1977 Clean Air Act Amendments has not been possible, even though the States have made good-faith efforts to do so. EPA has attempted to be as flexible as possible while at the same time aggressively pursuing the attainment of standards in these areas. Even so, certain nonattainment areas are expected to exist for some time in the future, and these areas will be subject to various sanctions under the current Act.

B. PROCESSING OF SIP REVISIONS

The time needed to review and process SIP revisions received a considerable amount of attention in 1981. It was found that the typical review and processing procedure for a SIP revision took approximately 220 workdays and involved 24 steps. Because of the time and administrative complexity involved, an inventory taken in 1981 found almost 650 revisions waiting to be processed. Additional delays can, and do, occur during the review process. These delays may last anywhere from one day to more than one year, depending upon the relative complexity and controversial nature of the SIP revision.

As an initial response to these problems, three improved SIP processing procedures were implemented in three EPA Regional Offices in the spring of 1981. These procedures were designed to be compatible with the Clean Air Act, while at the same time eliminating unnecessary Federal involvement in the SIP process. The first procedure is an internal EPA approach to the elimination of duplicative agency review. It involves 22 steps and takes approximately 203 workdays. This processing procedure saves 2 steps and 17 workdays compared to the typical review and it reduces the potential for friction between the State and EPA by eliminating a final Headquarters review on actions that do not receive comments or change significantly during the proposed rulemaking.

The second procedure affects the immediate final rulemaking process. It involves 13 steps and takes approximately 90 days, a saving of 11 steps and 130 workdays. This procedure avoids duplicative EPA reviews by going directly to final rulemaking with noncontroversial SIP revisions. A noncontroversial SIP revision is one that is determined to be of limited impact, and no adverse or critical public comments are anticipated because of it. The Federal Register notice promulgating the action does not become effective for 60 days, which provides opportunity for comments in the unlikely event there should be any.

The third procedure is parallel processing. This procedure is most promising for major SIP revisions and couples early EPA commitments with minimal processing frictions. Using this procedure, EPA works more closely with the State as it develops a major regulation and proceeds through the State rulemaking process. EPA rulemaking is carried on simultaneously with the State's process. Ideally, the State and EPA propose the regulation at the same time, announce concurrent comment periods, and jointly review the comments. Thus, the time between State submittal and final Federal promulgation is decreased considerably.

Experience with these improved SIP review procedures in a limited number of Regions showed that resource and time savings were possible. Therefore, the application of the three procedures was expanded to include all EPA Regional Offices on July 22, 1981. This decision was announced to the public in the Federal Register on September 4, 1981 (page 44477). Since the expansion of the program to all Regional Offices in July 1981, approximately 38 percent of the SIP revisions processed used these improved procedures.

C. EMISSIONS TRADING

One of EPA's major activities during 1980-81 has been to develop and implement the bubble policy, the offset policy, and emissions banking and trading. These concepts are generally referred to as emissions trading. Implementation of these concepts by industry has the potential to result in significant economic savings and promises to reduce substantially the cost of attaining and maintaining the NAAQS.

The emissions offset policy has been available to industry for several years and continues to provide access for new industry into nonattainment areas. To date, there have been over 1,000 offset trades with 95 percent of the trades being within-firm transactions.

The bubble policy, originally published December 11, 1979, has become a capstone for much of EPA's regulatory reform initiatives. During the past two years, nearly 100 firms applied to EPA to use the bubble policy. By the end of 1981, 20 applications had been approved and 3 others had been proposed for approval. Average savings for each bubble has been estimated to exceed two million dollars.

During 1980, bubble policy implementation efforts focused on developing EPA Regional expertise, assisting States and localities in learning about the policy, and working with industry and environmental groups to understand the policy and how it could be used to achieve environmental and cost-cutting objectives. Also, certain impediments in the policy were identified and changes were considered in order to facilitate its use by industries and State programs.

During 1981, full implementation of the bubble policy was underway. Also, several problem areas in the policy noted in 1980 were resolved through changes in the bubble policy. The most notable was the approval of New Jersey's volatile organic compound (VOC) generic bubble regulation. This regulation allows New Jersey to review and approve a source's alternative VOC emissions control plans without submittal to EPA as a case-by-case SIP revision. Since EPA's approval of this generic regulation, approximately 18 sources have completed New Jersey's review process. Several other States are considering regulations similar to New Jersey's and some are considering generic regulations for other pollutants.

EPA's banking program credits firms for surplus emissions reductions and establishes the legal and administrative basis for certifying and using these emissions reduction credits (ERC's). ERC's can be "banked" (stored), used in bubble applications to cut the cost of meeting current or future control requirements, used as offsets to promote economic growth in areas not meeting national air quality standards, or used in "netting" to avoid new source review. ERC's can ease trades between firms, provide the basis for a functioning market, and cut compliance costs because they encourage cheap ERC's to be produced at optimal times. Banking systems also provide the certainty needed for firms to invest in ERC's--creating a pool of readily available credits that makes trading easier while assuring progress toward clean air.

D. OZONE AND CO NONATTAINMENT POLICY

Congress, in Section 172(a)(2) of the Clean Air Act, provided for extensions of the attainment date to December 31, 1987, for areas unable to demonstrate attainment of either the carbon monoxide or ozone national ambient air quality standards by December 31, 1982. The statutory provisions accompanying these extensions require that any area granted such an extension must submit to EPA for approval by July 1, 1982, a SIP revision which demonstrates attainment of these standards. In order to assure consistency of these submissions and to ensure all areas granted extensions were aware of the statutory requirements, EPA published on September 30, 1980, a draft policy for the submission of implementation plan revisions to meet the requirements of the Act. Public comment was solicited for a period of 60 days. Responses were received from a total of 58 organizations including State and local air pollution control agencies and private industry. EPA evaluated all comments received and, based upon the concerns addressed and the statutory requirements, published on January 22, 1981, the final policy on the submission of implementation plan revisions to attain the NAAQS for carbon monoxide and ozone.

This policy specifies the basic procedures to be used in preparing the SIP revision and the basic elements to be incorporated in the SIP, including discussion of control strategies and attainment demonstrations, the SIP development process, air quality and emissions data bases, and air

quality modeling. To assist States in understanding the policy, EPA held workshops in October 1980 and in March and April 1981 on data collection, emphasizing the basic SIP requirements and the modeling analyses to be performed. The workshops were attended by nearly all affected State agencies and many affected local planning and air pollution control agencies.

E. PREVENTION OF SIGNIFICANT AIR QUALITY DETERIORATION

Part C of the Clean Air Act requires the prevention of significant air quality deterioration (PSD) in those areas of the country which have air quality better than the national ambient air quality standards. Under the PSD requirements, such clean air areas are classified into three categories. Allowable degradations in air quality above baseline levels are called increments. Increments exist only for SO_2 and particulate matter. For these pollutants, the Clean Air Act established specific allowable increments of pollution that vary according to the classification of the area.

The PSD review process, which began in June 1975, focuses on major new sources and major modifications. Construction of major new sources, although few in number, comprises most of the emissions attributed to new construction each year.

Under the current PSD program, major new sources and modifications are reviewed to ensure that best available control technology (BACT) (determined on a case-by-case basis) will be employed. An air quality review is also necessary for such sources. These air quality reviews typically require an analysis of the source's impact on the applicable NAAQS, on soils, vegetation, and visibility (termed air quality related values), and, for particulate and SO_2 sources, on the respective PSD air quality increments.

During 1979, EPA's then existing PSD regulations were upheld in part and overturned in part by the U. S. Court of Appeals for the District of Columbia Circuit. Alabama Power vs. Costle, 636 F.2d 323. This led to the August 7, 1980, amendments to the PSD regulations. These include changes in determining applicability and in requirements for air quality monitoring, BACT applicability, and calculation of increment consumption.

F. TALL STACK REGULATIONS

Section 123 of the Clean Air Act requires that an emissions limitation not be affected by so much of the stack height as exceeds good engineering practice or by any other dispersion technique. That section also requires the Administrator to promulgate regulations to implement this requirement. Those regulations were originally proposed January 12, 1979. Based on public comments and pursuant to actions of the U. S. District Court for the District of Columbia [see Sierra Club vs. Gorsuch, Civil Action 81-0094 (August 1981)], the agency reproposed the regulations in 1981. The reproposal concentrated on the setting of a good engineering practice (GEP) stack height for use in setting emissions limitations.

The proposed regulations included three steps to determine GEP stack height. First is the de minimis height of 65 meters (213 feet). This height assures that typical ground-level meteorology found at all locations will not cause excessive concentrations of pollutants due to downwash. Second, for sources with large nearby structures, a formula was derived to account for downwash caused by these structures. The formula is based on traditional engineering practices, with the GEP stack height determined using the dimensions of nearby structures. Third, if stack exit gases are influenced by downwash created by terrain features or by unusually shaped structures, a fluid modeling analysis or field study of the source can be used to determine GEP stack height. The GEP stack height is used in a mathematical model to determine the source's emissions limitations. Final stack height regulations were promulgated in February 1982.

G. VISIBILITY

Section 169 A of the Clean Air Act establishes as a national goal "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." On December 2, 1980, EPA promulgated regulations for the protection of mandatory Class I Federal areas to revise their State Implementation Plans to meet requirements for the protection of visibility. These States would have to (1) develop a program to assure reasonable progress toward the national visibility goal; (2) determine whether certain existing stationary facilities should install the best available retrofit technology (BART) controlling those pollutants which impair visibility; (3) develop, adopt, implement, and evaluate long-term strategies for making reasonable progress toward the national goal; and (4) adopt certain measures regarding visibility impacts on Federal Class I areas which will supplement the State's new source review program.

The phased approach of these regulations will limit the amount of resources States will have to expend on revising their SIP's to meet the requirements for visibility protection. Preliminary indications are that few, if any, existing stationary facilities will be required to install BART under Phase I of the program. An acceptable long-term strategy, which is the one major requirement applicable to all 36 States, already exists within the framework of other ongoing air programs for most States, and the new source review requirement of these regulations builds upon new source review programs the State is required to implement under the PSD and nonattainment provisions of the Act. To assist States in understanding these regulations, EPA held three workshops in March 1981.

A total of 36 States were required to submit SIP revisions for visibility by September 2, 1981. EPA had not received any visibility SIP revisions by the end of 1981.

In 1981, subsequent to the promulgation of the visibility regulation, ten organizations filed for judicial review of the visibility regulations. In addition, six organizations filed petitions for administrative reconsideration of the rules. Judicial review has been delayed pending the agency's evaluation of the administrative petitions.

H. PERMIT FEE GUIDELINE

In September 1981, EPA published and distributed a permit fee guideline. The guideline was developed in response to the amendments of 1977 which set forth a requirement that States collect fees for permits granted to major stationary sources. The guideline is especially designed for agencies that have no functioning fee system--about half of the States. Agencies currently implementing fee systems also may find the document useful for evaluating and upgrading their existing systems.

The guideline includes a review of the Clean Air Act requirement for permit fees, legislative history and relevant court cases, costs to be considered, basic program implementation considerations, and examples of fee systems currently in effect around the country.

I. TRANSPORTATION CONTROL MEASURES

During 1980 and 1981, EPA continued to provide technical assistance to State and local agencies preparing the transportation elements of their 1982 SIP's. Handbooks on analytical techniques were distributed, and workshops on transportation air quality analysis and mobile source emissions inventory preparation were held. Local agencies completed their emissions inventory work during 1981 and were in the process of analyzing alternative transportation measures for inclusion in their 1982 SIP submittals.

VI. CONTROL OF STATIONARY SOURCE EMISSIONS

A. NEW SOURCE PERFORMANCE STANDARDS (NSPS)

The Administrator is required by the Clean Air Act to establish national standards of performance for source categories that may cause or contribute "significantly to air pollution which may reasonably be anticipated to endanger public health or welfare." Such standards apply to new and substantially modified sources and are generally referred to as new source performance standards (NSPS).

The 1977 Clean Air Act Amendments required that the remaining major sources for which NSPS had not been published be identified within one year, and that NSPS for these sources be established over the next four years. EPA has not found it possible to meet this rigid schedule but expects to have standards in place for more than half the identified sources by 1984.

The list of remaining candidate sources was published in August 1979. It included 64 categories and subcategories for which NSPS had not yet been published. Preparation of the list required an investigation of many more potential sources. Criteria for prioritization on the published list were: (1) magnitude of source emissions; (2) ability of the industry to move to areas with less stringent control regulations; and (3) growth in new facilities within the industry. Since the list was published, work has begun on all source categories. More intensive analyses of some source categories indicated that standards development should not be pursued, because few or no new plants are expected to be constructed. In January 1982, twelve such source categories were to be removed from the list. Other source categories are under review and may be removed at a later date.

During 1980 and 1981, standards were promulgated for four categories: (1) auto assembly plants; (2) glass manufacture; (3) ammonium sulfate production; and (4) storage tanks for petroleum liquids. Standards were proposed for 12 categories. Six existing standards were reviewed and decisions to revise four were announced. Of the 12 recently proposed standards, nine will limit emissions of volatile organic compounds (VOC) which are precursors to the formation of photochemical oxidants in the atmosphere. Most of the standards proposed prior to 1980 were designed to control emissions of particulates, sulfur dioxide, and nitrogen oxides. A large fraction of the standards scheduled for future promulgation will limit VOC emissions.

B. NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

In 1980, the agency listed inorganic arsenic and radionuclides as hazardous air pollutants under Section 112 of the Clean Air Act. These are the sixth and seventh pollutants to be so listed since Section 112 was enacted in 1970.

Standards development work continued for coke oven emissions sources in the iron and steel industry and for major benzene emissions sources in the chemical and petroleum industries. Regulations were proposed in 1980 for four source categories of benzene emissions: maleic anhydride manufacturing, ethylbenzene/styrene manufacturing, and benzene storage and fugitive leaks of benzene in petroleum and chemical plants. A public hearing was held and public comment received.

In 1980, the Science Advisory Board (SAB) reviewed carcinogen assessments for acrylonitrile, methyl chloroform, methylene chloride, perchloroethylene, trichloroethylene, and toluene. The SAB requested considerable expansion of those documents. In late 1981, the agency was nearing completion on revised health assessment documents for these and several other substances for SAB review in 1982.

C. RESEARCH AND DEVELOPMENT OF AIR POLLUTION CONTROL TECHNOLOGIES FOR STATIONARY SOURCES

The overall purpose of the stationary source air pollution control research and development program is to assure that cost-effective pollution control technologies are available for stationary sources. Outputs of the program support regulatory standard-setting activities and provide information to industry for solving air pollution problems.

In the oxidants area, 1980-81 research activities were directed at nitrogen oxides (NO_x) and VOC emissions from various sources. The NO_x program focused upon combustion modification as the most cost-effective means of reducing NO_x emissions. A smaller program in flue gas treatment maintains an awareness of Japanese dry NO_x control methods and the private sector developments in the United States. A new element in this program is the limestone injection/low NO_x burner which provides simultaneous SO_x/NO_x control. This system could reduce the cost of SO_x control by 50 percent while removing 50-70 percent of the SO_x and 50-70 percent of the NO_x if the development efforts are successful.

Accomplishments in the NO_x research program include:

- Installation of a low NO_x burner in an industrial coal-fired boiler. The program goal is to reduce NO_x emissions from pulverized coal-fired industrial boilers to 0.2-0.3 lbs of NO_x per million Btu heat input (a 70-80 percent reduction from uncontrolled emissions).

- Completion of a pilot scale evaluation of a new heavy oil burner for use in oil field steamers. This burner is capable of reducing NO_x emissions to less than 100 ppm.

- Continuation of a bench scale evaluation of the effectiveness of combined SO_x/NO_x control based upon the addition of limestone to the coal prior to combustion in low NO_x burners. Initial results are promising, and plans are being made to move one process toward pilot scale evaluation.

- Initiation of long-term testing of the rich fireball-low NO_x concept on a tangentially fired boiler.

- Initiation of long-term testing of a low NO_x burner on a wall-fired boiler.

A number of research programs directed at control of VOC sources were undertaken in 1980-81. Accomplishments in this area include:

- An evaluation of control techniques such as activated carbon for reducing hydrocarbon emissions from textile finishing plants.

- An evaluation of the use of supercritical fluid carbon dioxide to regenerate activated carbon used to control volatile organic compound emissions.

- A study of catalytic incineration of organic vapors from industrial sources.

- Determination of the frequency of hydrocarbon fugitive emissions in the synthetic organic chemical manufacturing industry.

- An evaluation of techniques to minimize volatile organic chemical emissions from solvent degreasing operations.

- Design, fabrication, and operation of a pilot wet scrubber utilizing surfactant chemicals to evaluate the control of solvents from painting operations. The results were positive and an industrial demonstration is planned.

- A study of the effectiveness of flares for VOC control. Means of improving this technique were determined.

- A study of the capture efficiency of hoods in industrial applications such as painting and solvent degreasing.

- Refining of sampling methods to enable a better evaluation of fugitive emissions from petrochemical plants.

- Emissions studies to determine the fugitive emissions of volatile organic compounds from synthetic organic chemical manufacturing plants.

- A study of thermal incineration processes to determine their effectiveness in burning vapor phase organic chemicals.

Research efforts were also directed in 1980-81 at various point sources of sulfur dioxide (SO_2) and particulates. Accomplishments in this area include:

- Completion of a full-scale, adipic acid testing program. Preliminary data indicate performance improvement from 70-93 percent SO_2 reduction by the addition of relatively small amounts of adipic acid. Adipic acid-enhanced technology for wet FGD-limestone systems was successfully demonstrated at both an industrial and a utility scale site.

- Completion of the long-term evaluation of the dual alkali scrubbing process.

- Completion of a state-of-the-art review of dry SO_2 control processes. These systems appear to offer significant economic and energy advantages over conventional wet scrubbing processes.

- Completion of a preliminary evaluation of a pilot scale electrostatic precipitator precharger. The data demonstrated enhanced particulate removal at reduced capital cost.

- Successful pilot demonstration of the reverse air mode of electrostatic enhancement of fabric filters (ESFF technology) on an industrial coal-fired boiler.

- Verification of the tri-electrode, two-stage pilot electrostatic precipitator (ESP). The 30,000 acfm pilot plant at a TVA power plant shows that an emissions level of 0.03 lbs of particulate per million Btu can be met with about 40 percent less ESP plate area than is required using a conventional precipitator.

- Publication of a report on the feasibility of smelter weak SO_2 stream control. The report analyzed all technologies currently available for SO_2 control.

- Completion of a study of foreign technology to control emissions at a secondary lead smelter.

- Demonstration of particulate controls for open sources in steel plants. A charged fogger was evaluated at two steel plants, and a test report and users manual were published for each demonstration.

Research efforts in 1980-81 also were directed at point sources of hazardous air pollutants. Accomplishments in this area include:

- Completion of an assessment of atmospheric emissions from petrochemical production processes with emphasis on fugitive emissions.

- Publication of an evaluation of innovative seals for benzene storage tanks.

- Determination of the frequency of fugitive emissions such as benzene in the organic chemical manufacturing industry.

- Completion of an environmental assessment for coal preheaters for steel manufacturing.

- An assessment of the ferroalloy industry.

Research efforts in 1980-81 also were undertaken in the synfuels area. Accomplishments in this area include:

- Completion of overall evaluations of air emissions from commercial coal gasifiers.

- Development of emissions factors for fugitive organic emissions from a Lurgi gasifier.

- Determination that significant quantities of aliphatic hydrocarbons are emitted from Lurgi gasifiers.

- Verification that methanol can remove a significant amount of trace quantities of reduced sulfur compounds from gasifiers.

- Identification of lock hopper vent gas from Lurgi systems as a significant source of sulfur compounds and polycyclic organic materials (POM's).

- Determination that wet scrubbers are able to remove significant quantities of POM's from gaseous streams, such as synthetic product gas.

VII. CONTROL OF MOBILE SOURCE EMISSIONS

Control of motor vehicle emissions has been required by the Federal government since 1968. The requirements of the Clean Air Act relating to mobile sources have been subsequently refined several times, most recently in 1977. The Clean Air Act amendments of 1977 addressed the problems identified in the motor vehicle emissions control programs at that time, and provided for adjustments in the programs for attaining and maintaining the national ambient air quality standards (NAAQS) for carbon monoxide (CO) and ozone (O_3). The mobile source-related requirements of the 1977 Act are:

- Emissions reductions of 90 percent for CO and hydrocarbons (HC) and 75 percent for oxides of nitrogen (NO_x) emissions from heavy-duty engines, for model years 1983 and 1985, respectively.

- Implementation of inspection and maintenance (I/M) programs for areas with severe CO and O_3 air pollution problems, and which were allowed until 1987 to meet air quality standards.

- Additional control of evaporative HC emissions from heavy-duty vehicles through the adoption of a more realistic compliance test procedure.

- Reiteration of the light-duty vehicle emissions standards of 0.41 grams per mile (gpm) for HC and 3.4 gpm for CO, and the need to provide for control at higher altitudes.

- Setting of the NO_x standard for cars at 1.0 gpm due to the technological difficulties associated with meeting a level of 0.4 gpm, which was the standard set by the 1970 amendments.

- Prevention of future problems or amelioration of existing ones through the control of particulate emissions from vehicles; the requirement that emissions control systems not "cause or contribute to an unreasonable risk to public health, welfare, or safety"; and the requirement that manufacturers conduct research programs aimed at meeting an NO_x emissions level of 0.4 gpm.

EPA undertook a number of actions in 1980-81 aimed at complying with the requirements of the 1977 amendments to the Clean Air Act. These actions are described below. At the same time, EPA recognized that certain requirements of the Act were technologically infeasible to meet or could result in excessive costs while achieving little in terms of environmental improvement. Consequently, after reassessing existing legal requirements, EPA has proceeded with a series of regulatory relief measures consistent with the law, as well as with the continued movement toward cleaner air, and also has recommended needed changes in the Act itself. The relief measures were summarized in the Auto Task Force Report, released by the White House on April 6, 1981. Recommendations for changes to the Act were given to the Congress in the course of hearings conducted by appropriate committees of the House and the Senate.

A. STANDARD SETTING

Effective with the 1981 model year, the applicable standards for automotive exhaust emissions are 0.41 gpm HC, 3.4 gpm CO, and 1.0 gpm NO_x. This was the first year in which the standards mandated by the 1977 Clean Air Act (and, except for NO_x, stipulated by the 1970 Clean Air Act) took effect. Achievement of these standards was made possible by the development of sophisticated technology (most notably the three-way catalyst) capable of controlling emissions of HC, CO, and NO_x simultaneously. However, the Act recognized that the achievement of the CO standard was not assured, and provided for waivers of this standard to a level of 7.0 gpm. Approximately 70 percent of the 1982 model year production was granted this waiver of the CO standard.

Actions undertaken during 1980-81 with respect to light-duty vehicle emissions standards include:

- Particulate emisisons from light-duty diesel vehicles were controlled by the establishment of a 0.6 gpm standard to take effect in model year 1982. This standard is scheduled to be strengthened in model year 1985 to 0.2 gpm for passenger cars and 0.26 gpm for light trucks.

- EPA prepared an alternative plan to regulate light-duty vehicle diesel particulate emissions through averaging (i.e., control of emissions from a manufacturer's fleet on the average rather than from each individual vehicle). This rulemaking was proposed in late 1981 and will be finalized in early 1983.

- Interim standards for light-duty vehicles sold at high altitudes were promulgated for model years 1982 and 1983. These standards are 0.57 gpm HC, 7.8 gpm CO, and 1.0 gpm NO_x. These standards represent the least burdensome interpretation of the current requirements of the Clean Air Act. The Act currently requires that all cars sold in the country for the 1984 model year and later be able to meet emission standards at all altitudes. This means that all new cars have to have high-altitude emissions control equipment installed regardless of the altitude at which they are operated. Because only about three percent of new vehicles are purchased in high-altitude areas, and most vehicles never operate at high altitudes, unnecessary hardware would be required to be installed on new cars each year.

- A related rulemaking set guidelines for the issuance by manufacturers of instructions on performance adjustments for vehicles currently in use in high-altitude areas. These performance adjustment instructions are designed to allow mechanics to enhance the efficiency of vehicles at high altitude without risking violation of anti-tampering laws.

- Exhaust standards taking effect in model year 1984 were set for light-duty trucks (those less than 8500 pounds gross weight). These standards are 0.8 gpm for HC and 10.0 gpm for CO. (NO_x exhaust standards for light-duty trucks will be established in conjunction with those for heavy-duty vehicles.)

- EPA has proposed optional HC standards designed to exclude the measurement of methane (which is not harmful to the environment). This rule, which pertains to all classes of vehicles, was proposed in late 1981.

- A rule requiring the establishment of manufacturers' research programs for the attainment of a 0.4 gpm NO_x standard was promulgated. The 0.4 gpm NO_x emissions level was the original goal of the 1970 Clean Air Act, and it remained as a research goal in the 1977 legislation.

- In 1980, a final rule was promulgated setting a 90 percent reduction in HC and CO emissions for heavy-duty trucks (those over 8500 pounds gross weight). The promulgated standards, which were scheduled to take effect in the 1984 model year, are 1.3 grams per brake horsepower-hour (g/BHP-hr) for HC and 15.5 g/BHP-hr for CO. Other significant features of this regulation were the establishment of a new transient test procedure and new assembly-line testing requirements for heavy-duty engines. This level of standards requires the use of catalysts on heavy-duty gasoline engines. Questions have been raised as to the feasibility of using catalysts on heavy-duty trucks and the actual cost of such an application if feasible. To address these serious technological questions, EPA, through the Auto Task Force, committed to a revision of these standards. EPA has also initiated re-examinations of the transient test and useful life provisions of these regulations, because questions have been raised as to their technical soundness and feasibility. These questions along with the final level of the post-1985 standards will be decided in a final rule in late 1983.

- A standard for evaporative HC emissions from heavy-duty trucks was proposed during 1980.

- An advanced notice of proposed rulemaking for a heavy-duty engine NO_x standard was published in early 1981. A proposal is expected early in 1984 with a final rule later that year. This notice acknowledged that the statutory requirement for a 75 percent emissions reduction for NO_x was technically not feasible for diesel engines, and that adoption of such a standard would ban the use of diesel engines in trucks. EPA promised in the Auto Task Force report to propose a standard achievable by diesel vehicles, and further promised to introduce an averaging scheme for regulation of heavy-duty NO_x emissions.

- Heavy-duty diesel particulate standards were proposed in 1981. A re-proposal and final action are expected to follow the same schedule as the NO_x regulations discussed above.

B. COMPLIANCE PROCEDURES

A long-standing EPA technique of compliance assurance for mobile sources is the preproduction compliance review program. Initiated in 1968, the program entails engineering review by EPA staff of engine families representing new vehicles to be sold in the United States. Steps in the process include submission by manufacturers of technical data about respective vehicles, emissions testing of prototypes by manufacturers, review of engineering data and test results by EPA, and, in certain cases, confirmatory testing of prototypes at EPA's laboratory facility in Ann Arbor, Michigan.

During 1980-81, EPA developed and proceeded with a series of major changes in the certification program. These changes, which were directed toward reducing the complexity and cost of this program, were made possible by a thorough review of all procedures, and concentration on those that were judged to be most directly relevant to assuring that manufacturers were following sound engineering practices in demonstrating their ability to meet emissions standards. As a result, a large number of procedures and paperwork that were not directly related to achieving emissions control were streamlined or eliminated.

Specific reforms which EPA has announced include:

- Reduction in the number of emissions data vehicles per engine family to be tested, and consolidation of engine families.

- Elimination of durability testing for small-scale engine families.

- Institution of a voluntary alternative durability program, allowing in certain cases for the generation of deterioration rates based on historical data rather than current testing.

- Relaxation of certification procedures for small-volume manufacturers.

- Initiation of self-certification for high-altitude vehicles.

- Reduction in the stringency of EPA's parameter adjustment regulations. (These rules compel manufacturers to limit the in-use adjustability of those vehicle parameters which most sensitively affect emissions.)

As a long-term reform, EPA is considering whether to recommend to the Congress that certification be replaced with a program designed to control in-use emissions performance directly. Such an in-use compliance program could be based on an averaging concept, and could include the payment of emissions fees by manufacturers whose vehicles do not meet in-use requirements. EPA plans to undertake a pilot in-use compliance program in order to assess its feasibility.

C. INSPECTION AND MAINTENANCE

Another strategy for dealing directly with in-use emissions problems is the encouragement of motor vehicle inspection and maintenance (I/M) programs. EPA's basic approach in this area was determined by the 1977 amendments to the Clean Air Act. All urban areas of the country which will not attain ambient air quality standards for automotive-related pollutants by 1982 are required by the Act to implement a mandatory I/M program. Affected States must include a commitment to I/M, an implementation schedule, and a demonstration of adequate legal authority in their 1979 State Implementation Plans.

As of the end of 1981, approximately 44 metropolitan areas in 29 States were obligated to implement I/M programs. All but two States have demonstrated legal authority, and most States have taken at least preliminary steps leading to the implementation of I/M. Areas in nine States had begun operating programs. Section 176(a) of the Clean Air Act prohibits grants to areas not in attainment with standards for transportation-related pollutants where there is a finding that the State failed to make reasonable efforts to submit an approvable State Implementation Plan. That finding was made in 1980 in California and two counties in Kentucky because of lack of I/M legislation.

EPA has provided continuous technical support to those States and localities that are implementing I/M. In addition to this local support, EPA has undertaken a number of national efforts to assess the effectiveness of I/M. Through analysis of local testing programs in Portland, Oregon, and Houston, Texas, EPA has been able to determine the effectiveness and benefits of different I/M techniques. The promulgation, under Section 207 of the Act, of short I/M tests which correlate with the elaborate Federal Test Procedure has laid the groundwork for implementation of the Clean Air Act's warranty provisions through local I/M programs. Ongoing training activities have promoted essential public knowledge and official expertise in I/M areas.

D. HAZARDOUS POLLUTANTS

In recent years, there has been increasing concern about the potential for the emission of hazardous levels of unregulated pollutants from mobile sources. One result of this concern was Section 202(a)(4) of the 1977 Clean Air Act amendments, which requires manufacturers to demonstrate that their vehicles do not pose an unreasonable risk to public health.

During 1980-81, EPA's research program on motor vehicle pollutants of potential public health concern has focused on exhaust products from diesel-powered vehicles. The diesel issue is particularly urgent because several manufacturers plan to increase substantially the production of diesel-powered automobiles during the coming decade.

VIII. ENFORCEMENT

A. STATIONARY SOURCE ENFORCEMENT

In the late 1970's EPA embarked upon a program to bring sources which had never installed pollution control equipment into initial compliance with applicable air quality regulations. Among the sources targeted for this effort were some of the largest contributors to the nation's air pollution problems. Many of the sources had been in violation for several years.

Through the combined efforts of industry, States, and the Federal government, the goals of this effort were largely achieved by the end of 1981, when over 93 percent of the sources in the country were reported as achieving initial compliance or were on a schedule to achieve compliance. As an indication of EPA's commitment to this program, during 1980 and 1981 EPA conducted 6,115 inspections, issued 772 notices of violation, issued 96 administrative orders, and initiated 130 civil actions.

While efforts to bring the few remaining sources into initial compliance continue to be a top priority, as is the tracking of existing consent decrees, the focus of the stationary source enforcement program has necessarily shifted from achievement of initial compliance to ensuring continuing compliance. Recent studies indicate that maximum environmental benefits from the efforts of industry, States, and the Federal government are not being realized. The recent study by the National Commission on Air Quality (NCAQ) found that 71 percent of 180 sources reported as being in compliance had documented incidents of excess emissions 25 percent over the allowed emissions level, with the primary cause being improper operation and maintenance practices.

In order to assist the States to exercise primary responsibility for ensuring continuing compliance by sources, EPA is working with the States to develop new and more cost-effective methods to determine and ensure compliance. In addition, EPA will be providing an increasing level of technical support to strengthen State programs, as well as direct technical assistance when requested. Where State efforts are not successful, EPA will ensure compliance by bringing a Federal administrative or judicial enforcement action.

B. MOBILE SOURCE ENFORCEMENT

The EPA mobile source enforcement program is directed primarily toward achieving compliance with motor vehicle emissions standards and fuel regulations as required by the Clean Air Act. The major goals and objectives are to (1) assure that new vehicles meet emissions standards, (2) assure that vehicles meet emissions standards in use, (3) assure that emissions control systems are not removed or rendered inoperative, (4) assure control of hydrocarbon emissions during gasoline transfer operations, (5) assure that harmful additives are not present in gasoline, (6) administer statutory and California emissions standard waivers and (7) administer the statutory emissions warranties.

Recall Program

Section 207(c) of the Clean Air Act authorizes EPA to order the recall of vehicles if a substantial number of any class of vehicles do not conform to emissions standards. For the fiscal year beginning October 1, 1979, and ending September 30, 1980 (FY 1980), 1.0 million vehicles were recalled either by direct order of EPA or as a result of an EPA investigation. During that same period, manufacturers voluntarily recalled 233,000 vehicles to correct emissions problems. For the fiscal year beginning October 1, 1980, and ending September 30, 1981 (FY 1981), an additional 1.3 million vehicles were recalled either by direct order of EPA or as a result of an EPA investigation. During this same period, manufacturers voluntarily recalled 477,000 vehicles to correct emissions problems.

In FY 1981, Volkswagen of America, Inc., agreed to recall approximately 450,000 1977 through 1979 model year Volkswagen automobiles to correct an air pollutant emissions problem. The models affected by this recall were gasoline-powered 1977 through 1979 VW Rabbits and Sciroccos with fuel injection systems. The vehicles included those covered by both Federal and California emissions control standards. The 1977 Rabbits and Sciroccos were the subject of an EPA recall order issued in October 1980 for vehicles covered by Federal standards. Volkswagen's agreement to recall the 1977 vehicles resolved an EPA Administrative hearing requested by VW to contest the 1980 recall order.

The agency's vehicle testing for recall purposes is now conducted by a contractor in Springfield, Virginia, and at the EPA emissions testing facility in Ann Arbor, Michigan.

Emissions Standards Waivers

EPA issued several decisions on requests from automobile manufacturers for waiver of the 1981 and 1982 model year carbon monoxide (CO) emissions standard for certain automobile models. The agency has granted temporary relaxations of the CO standard covering about 36 percent of projected 1981 model year U. S. car sales, and about 69 percent of projected 1982 model year sales.

EPA also has issued decisions on requests for waiver of the 1981-1984 model year oxides of nitrogen (NO_x) standard for certain automobile models using diesel technology. The agency has granted temporary relaxation of the NO_x standard for virtually all diesel models for model years 1981 and 1982 and a substantial portion of 1983 and 1984 diesel models. The U. S. Court of Appeals for the District of Columbia circuit has upheld EPA's approach in granting NO_x waivers.

EPA has granted California waivers of Federal preemption to permit California to enforce certain changes to its own motor vehicle emissions control program. EPA has granted California waivers to enforce certain changes in primary and optional emissions standards, and changes to accompanying enforcement procedures covering all vehicle classes.

Selective Enforcement Auditing

Thirty-eight selective enforcement audits of light-duty vehicle and light-duty truck manufacturers were conducted in FY 1980. One manufacturer, Ford Motor Company, failed an audit in March 1980. As a result of this audit failure, EPA revoked the certificate of conformity applicable to the Bronco truck configuration. In addition, Ford was ordered to recall and bring into compliance all of the Bronco trucks of the audit configuration (7,000) built since the beginning of the model year.

In FY 1981, EPA conducted twenty-seven selective enforcement audits of light-duty vehicles and light-duty trucks. No audits were failed in FY 1981.

Manufacturers tested about 20,000 production cars annually during the 1980 and 1981 model years as a part of their own quality control emissions testing programs. Domestic manufacturers made 72 engineering changes to production vehicles during the 1980 model year to improve emissions performance. Most of these changes were made as a result of emissions problems identified by manufacturers in their own assembly line emissions testing programs.

Imports Program

Sections 203(a)(1) and 203(b)(2) of the Clean Air Act authorize EPA to enforce compliance of imported motor vehicles and motor vehicle engines with Federal emissions requirements. Under joint regulations with the U. S. Customs Service (Customs), EPA monitored the importation of all vehicles that entered the United States. Of these, approximately 2,000 annually were imported in 1980-1981 under bond pending a demonstration of conformity. Over 300 administrative sanctions were imposed against importers for noncompliance with the regulations.

EPA conducted 59 investigations of alleged imports violations in 1980-81. One case was referred to the Department of Justice by Customs and resulted in 8 felony indictments each against a foreign sports car manufacturer and its American representative.

As a result of the burdensome impact currently imposed upon individual importers importing noncomplying vehicles for their own personal use, and the substantial burden on EPA and Customs resources in administering and enforcing the present procedures, EPA is developing revisions to the vehicle importation regulations.

Production Compliance Inspections

Under Sections 206 and 208 of the Clean Air Act, EPA performs Production Compliance Inspections of new motor vehicles and engines. These inspections are conducted on new light-duty vehicles and new heavy-duty engines at assembly plants and ports of entry. Such inspections typically include detailed examinations of vehicles, engines, and labels

to determine if vehicles or engines are being built to configurations covered by EPA certificates of conformity. During FY 1980, 17 of these inspections were conducted, 14 at domestic automobile assembly plants and 3 inspections of imported vehicles at ports of entry. Three inspections were conducted in FY 1981.

Tampering And Unleaded Gasoline Enforcement Program

EPA has responsibility for enforcing Section 211 of the Clean Air Act, relating to the regulation of fuels and fuel additives. This effort is intended to protect the catalytic converters on 1975 and later model year cars.

EPA also has responsibility for enforcing Section 203(a)(3) of the Clean Air Act, which prohibits tampering with mobile source emissions control equipment. EPA has established a nationwide fuels enforcement program to ensure that affected retail outlets comply with these regulations. This program includes sampling of the fuel at retail outlets by EPA field inspectors and private and State inspectors under EPA contract, and the analysis of the samples for lead content. It also includes inspections through contracts and agreements with State, county, and local government agencies.

In FY 1980, EPA conducted approximately 26,000 inspections of service stations, retail outlets, dealers, and fleet owners to ensure compliance with the unleaded fuel regulations and tampering provisions. EPA issued 237 complaints, referred 19 cases to the Department of Justice, and proposed $6.8 million in penalties during this period.

In FY 1981, EPA conducted approximately 28,000 inspections of service stations, retail outlets, dealers, and fleet owners to ensure compliance with unleaded fuel and tampering provisions. EPA issued 471 complaints, referred 14 cases to the Department of Justice, and proposed $7.5 million in penalties during this period.

Fuel Switching

EPA has continued to investigate the extent and causes of fuel switching (use of leaded gasoline in vehicles requiring unleaded). In 1980-81, there was no evidence to indicate that the fuel switching rate declined from the approximate eight percent rate observed earlier, despite a disappearance of severe shortage conditions. Some motivational research studies point to a combination of performance/octane questions and the price difference between leaded and unleaded fuel as incentives to switch. Recent price data indicate a continuing rise in the price penalty for the use of unleaded gasoline, even though gasoline prices have stabilized somewhat. There are major geographic differences in the rate of fuel switching and a definite indication that the rate is lower where inspection and maintenance programs are operating.

Lead Phasedown Program

On October 1, 1980, EPA implemented regulations under Section 211 of the Clean Air Act to control the amount of lead additives used in gasoline. These regulations require large refiners to meet a standard of 0.5 g/gal of lead in gasoline, and require small refiners to meet a less stringent standard to a maximum of 2.65 g/gal of gasoline depending on production volume. The small refiners were scheduled to meet the 0.5 g/gal standard in October 1982. However, in accordance with certain of the Auto Task Force recommendations, EPA undertook an evaluation of the need to amend these standards. That evaluation subsequently resulted in uniform, more stringent standards for lead in leaded gasoline for all refiners.

In FY 1980, 244 refineries reported lead usage, and 20 of these reported violations of the standards. During FY 1981, 271 refineries reported their lead usage to EPA. Of these 21 reported violations. In most instances the violations were minor one-time violations with the refineries back in compliance the next period.

Regulation Development

In 1980 EPA promulgated two sets of regulations under Section 207 of the Act. One set established the emissions performance warranty. This warranty requires a vehicle manufacturer to repair, at no charge to the owner, the emissions control device or system of each vehicle which fails an emissions inspection and maintenance test that has been approved by EPA, provided the owner has maintained and operated the vehicle in accordance with tne manufacturer's written instructions.

The second set of regulations establishes a program under which manufacturers of automotive aftermarket parts, such as spark plugs, air filters, and catalytic converters, can certify that use of their parts will not cause a vehicle to exceed emissions standards. Vehicle manufacturers will not legally be allowed to deny emissions warranty claims on the basis of the use of a certified part. EPA and the manufacturers have been involved in litigation on these regulations and are awaiting a decision from the court.

EPA also is required by Sections 203 and 207 of the Act to enforce a second emissions warranty which has been in effect since the 1972 model year. This warranty requires that every vehicle be free from defects that could cause it to exceed Federal emissions requirements for five years or 50,000 miles. EPA has investigated approximately 15 warranty claims in 1980 and 45 in 1981.

C. COMPLIANCE BY FEDERAL FACILITIES

During 1980-81, Federal facilities classified as major sources of air pollutants made continuous progress toward coming into compliance with applicable regulations. Through 1981, 322 (91 percent) of these facilities met applicable emissions limitations. Of the 33 noncomplying facilities, 19 have agreed to compliance schedules that will eventually bring them into compliance.

D. LIST OF VIOLATING FACILITIES

The List of Violating Facilities, under Section 306 of the Clean Air Act, is designed to prevent the Federal government from subsidizing Clean Air Act violators with contract, grant, or loan monies.

No Clean Air Act violators were listed in 1980-81.

IX. LITIGATION

The U. S. Court of Appeals for the District of Columbia Circuit has upheld EPA's national primary and secondary ambient air quality standards for lead and for ozone. Lead Industries Association v. EPA, 647 F.2d 1130 (D. C. Cir. 1980), cert. denied 449 U. S. 1042 (1980); American Petroleum Institute v. Costle, 665 F.2d 1176 (D. C. Cir. 1981), cert. denied 102 S. Ct. 1737 (1982). In each case, the Court held that the costs and feasibility of attaining ambient air standards are not to be considered in setting them, and that a primary standard must protect against uncertain as well as certain harms. The U. S. Supreme Court denied industry petitions for review in both cases, and thus let stand the lower court decisions.

Three Courts of Appeals ruled during 1980 on the validity of area designations issued by EPA under Section 107(d) of the Act. One upheld EPA's actions, finding that good cause existed to waive prior notice and opportunity for comment, and that EPA had properly used modeling to set the designations. Republic Steel Corp. v. Costle, 621 F.2d 797 (6th Cir. 1980). However, the D. C. Circuit and the Ninth Circuit found that EPA had violated the Administrative Procedure Act by not providing prior notice and opportunity for public comment. State of New Jersey v. EPA, 626 F.2d 1038 (D.C. Cir. 1980); Western Oil and Gas Association v. EPA, 633 F.2d 803 (9th Cir. 1980). The Eighth Circuit ruled against EPA on the same issue in 1981. U. S. Steel Corp. v. EPA, 649 F.2d 572 (8th Cir. 1981).

On August 12, 1980, the United States Court of Appeals for the Ninth Circuit upheld a lower court denial of the Pacific Legal Foundation's (PLF) request for a preliminary injunction enjoining EPA from imposing against California the construction moratorium and funding limitations provided for under the Clean Air Act. PLF v. Costle, 627 F.2d. 917 (9th Cir. 1980), cert. denied 101 S. Ct. 1354 (1981). The Court ruled that the PLF lacked jurisdiction in a Section 304 citizen suit to challenge EPA's July 2, 1979, promulgation of the construction moratorium. The Ninth Circuit also affirmed that PLF had little likelihood of success in pursuing its constitutional challenges to EPA's authority to impose the funding limitations. The practical importance of this decision is its support of the Agency's statutory and constitutional authority to withhold Federal funds when a State has failed to meet the requirements of Part D of the Clean Air Act, including the vehicle inspection and maintenance (I/M) requirement. EPA imposed these funding restrictions on California in December 1980.

On August 29, 1980, the United States Court of Appeals for the Tenth Circuit rejected a similar attempt to challenge EPA's actions in imposing a construction moratorium and Federal funding restrictions in Colorado. EPA had acted because the State had failed to enact I/M legislation. Mountain States Legal Foundation v. Costle, 630 F.2d 754 (10th Cir. 1980), cert. denied 101 S. Ct. 1754 (1981). The Court found that the petitioners lacked standing to raise their constitutional objections.

In National Lime Association v. EPA, 627 F.2d 416 (D. C. Cir. 1980), the Court held that the achievability of EPA's new source performance standards for lime plants was not adequately supported by the record. The importance of the case is its indication that the court will look very closely at whether EPA has adequately examined the achievability of new source performance standards under all circumstances.

In Sierra Club v. Costle, 657 F.2d 298 (D. C. Cir. 1981), the Court upheld the 1979 new source performance standards (NSPS) for fossil fuel (principally coal-fired utility) boilers. The NSPS requires all such boilers built since September 1978 to meet emissions limits for sulfur dioxide (SO_2), particulate matter (PM), and nitrogen oxides (NO_x) which reflect the best demonstrated technologies for those pollutants: SO_2 scrubbers together with coal washing for SO_2; baghouses for PM; and combustion modification for NO_x. The Court upheld EPA's determination that these are the best demonstrated technologies, and that the emissions limits reflect, and are achievable by, their use. The Court also found no legal error in EPA's meeting with persons interested in the rulemaking, members of Congress, and officials of the executive branch after the close of the formal comment period, because significant oral communications were reduced to writing, communications were placed in the docket for public review and comment, and the rule was based solely on information in the docket. In The Group Against Smog and Pollution, Inc. v. EPA, 665 F.2d 1284 (D.C. Cir. 1981), the same Court upheld EPA's procedures for reviewing and revising the NSPS for basic oxygen process furnaces in steel mills.

In PEPCO v. EPA, 650 F.2d 509 (4th Cir. 1981), the court upheld EPA's finding that under the Agency's regulations and Section 111 of the Act, "commencement of construction" had not occurred before the applicability date of the NSPS at issue where the source had neither begun fabrication or installation of the emitting facility regulated by the standard nor entered into a contract for fabrication that, if cancelled, would have subjected the company to significant liability. A similar result was reached in Sierra Pacific Power Co. v. EPA, 647 F.2d 60 (9th Cir. 1981), where the Court upheld EPA's interpretation that design and planning of a source do not constitute construction, and that construction of related facilities is irrelevant to the status of the boiler. The same result was also reached in United States v. City of Painesville, 644 F.2d 1186 (6th Cir. 1981), where the Court also held that the fact that the record of the NSPS had been remanded to the agency by the Court reviewing it does not alter the applicability date.

In PPG Industries, Inc. v. Costle, 659 F.2d 1239 (D. C. Cir. 1981), the Court invalidated, and remanded the record for, the portion of EPA's national ambient air quality monitoring and reporting regulations requiring States to report running averages, because the rulemaking did not give adequate notice that such a requirement was being imposed.

In PPG Industries, Inc. v. Harrison, 660 F.2d 628 (5th Cir. 1981), the Court overturned EPA's determination that PPG's boilers are subject to the 1971 NSPS for fossil fuel-fired boilers. The decision is based on the Court's view that the SO_2 emissions limit in the NSPS improperly fails to account for waste heat supplied to the boiler. In EPA's judgment, the decision therefore amounts to review of the merits of the NSPS, which the Court lacks jurisdiction to do, since jurisdiction to review the NSPS lies solely with the D. C. Circuit.

In the continuation of contractor inspection cases under Section 114 of the Act, the Ninth and Tenth Circuits split on the issue of whether contractors could be designated "authorized representatives" to provide technical assistance in conducting enforcement inspections. In Stauffer Chemical Co. v. EPA 647 F.2d 1075 10th Cir. 1980), the Tenth Circuit held that Section 114 did not permit such designations, and invalidated a warrant allowing an EPA contractor to participate in an inspection. In Bunker Hill Co. v. EPA 658 F.2d 1280 (9th Cir. 1981), the Ninth Circuit came to the opposite conclusion, holding that designation of contractors was proper, and that the use of warrants to enforce that right was authorized.

Litigation over many mobile source regulations has continued. In Natural Resources Defense Council, Inc. v. EPA, 655 F.2d 318 (D. C. Cir. 1981), the U. S. Court of Appeals for the District of Columbia Circuit upheld EPA's 1985 particulate standards for diesel-powered light-duty vehicles and light-duty trucks. The case set forth the criteria for judicial review of agency regulations based on predictions of future technology. The Supreme Court denied certiorari on November 2, 1981.

A number of other mobile source cases have been held in abeyance pending the outcome of settlement negotiations or rulemaking. These include challenges to the carbon monoxide and hydrocarbon standards for light-duty trucks and heavy-duty engines, regulations implementing the Section 207(b) performance warranty, and an interpretive rule defining manufacturers' responsibilities for emissions recalls. Also pending is a challenge to a waiver under Section 211(f) allowing distribution of a blend of unleaded gasoline and methanol.

On August 7, 1981, the United States Court for the Eastern District of California granted EPA's motion for summary judgment in PLF v. Gorsuch, No. 5-79-925 LKK. The Court found that EPA did not have a mandatory duty to promulgate a vehicle inspection maintenance (I/M) program for California, notwithstanding the fact that California failed to adopt such a program by Janury 1, 1979, the statutory deadline.

The United States Court of Appeals for the Fifth Circuit upheld EPA's conditional approval of the Texas Part D nonattainment State Implementation Plan in City of Seabrook v. EPA, 659 F.2d 1349 (5th Cir. 1981). The Court held that EPA's conditional approval was authorized under Sections 110(a)(2)(H) and 110(c)(1)(C) of the Clean Air Act, that legal authority for an I/M program is not required until July 1, 1982 (rather than January 1, 1979, as EPA had argued), and that EPA has no mandatory duty under Section 113 to commence an enforcement action.

The United States Court of Appeals for the Second Circuit upheld EPA's conditional approval of Connecticut's Part D nonattainment State Implementation Plan in Connecticut Fund for the Environment v. EPA, 672 F.2d 998(2nd Cir. 1982). The Court held that the authority to approve plans conditionally is inherent in EPA's general rulemaking authority under Section 301(a), and in EPA's specific authority to approve and disapprove plans under Section 110(a)(2). The Second Circuit also found, however, that a conditional approval could not lift the moratorium on new source construction imposed by Section 110(a)(2)(I), because Section 110(a)(2)(I) requires that the moratorium remain in effect until a State's plan fully complies with Part D. Finally, the court upheld EPA's approval of Connecticut's withdrawal of an indirect source review program under Section 110(a) (5).

The United States Court of Appeals for the Seventh Circuit upheld EPA's approval of Illinois' program for controlling fugitive dust from such sources as conveyor belts and materials storage piles. Citizens for a Better Environment v. U. S. EPA, 649 F.2d 522 (7th Cir. 1981). The Court found that the program, which required sources to develop and follow operating plans to install particulate controls but did not require Illinois or EPA to approve the individual plans, was Federally enforceable. However, the Court vacated EPA's approval of Illinois' new source review program on the grounds that the State lacked legal authority for that program.

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16. ABSTRACT

The report addresses the progress made in the prevention and control of air pollution in 1980 and 1981. It covers the areas of air quality trends and monitoring, development of air quality criteria and standards, the status of State Implementation Plans, the control of stationary and mobile source emissions, enforcement, and litigation. The report is the annual report of the Administrator of EPA to the Congress in compliance with Sections 313, 202(b)(4), and 306 of the Clean Air Act, as amended.

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