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BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Clean Air Act: Summary Of GAO Reports (October 1977 Through January 1981) And Ongoing Reviews

GAO has issued several reports concerning the Clean Air Act and its implementation and is currently reviewing various issues relating to the act. These reports and reviews have been summarized and updated to assist the Congress in its deliberations on the Clean Air Act.



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report summarizes and updates our reports and ongoing reviews relating to the Clean Air Act. It was prepared to provide the Congress with information for considering the act's renewal and possible modification.

We selected the major reports relating to the Clean Air Act issued from October 1, 1977, to January 31, 1981, and the major ongoing reviews. Previously issued reports, which are listed chronologically from the most recently issued, are summarized and updated; and ongoing reviews are described according to their current status.

This report is also being sent to the Director, Office of Management and Budget; the Acting Administrator, Environmental Protection Agency; and the Secretary, Department of Energy.

A handwritten signature in black ink that reads "Melton J. Fowler".

Acting Comptroller General
of the United States

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MAJOR REPORTS PERTAINING TO
THE CLEAN AIR ACT

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MAJOR REPORTS PERTAINING TO

THE CLEAN AIR ACT

INDOOR AIR POLLUTION: AN EMERGING
HEALTH PROBLEM (CED-80-111, 9-24-80)

Summary

While government and industry have concentrated on cleaning up the Nation's outdoor air, they have paid little attention to the quality of indoor air in the nonworkplace. Harmful pollutants have been found in various indoor environments in greater concentrations than the surrounding outdoor air. In some cases, indoor pollution exceeds the national standards set for exposure outdoors. Harmful pollutants which have been found in indoor air environments include higher than average levels of radioactive radon; unhealthy levels of carbon monoxide; formaldehyde from foam insulation; nitrogen dioxide from poorly ventilated gas stoves; and smoking, a major indoor source of respirable particles. Some measures intended to reduce energy use in buildings contribute to the buildup of indoor air pollution. One material qualifying for a Federal tax credit for home insulation (urea formaldehyde foam) is a source of potentially harmful indoor air pollution.

While Federal officials agree that indoor air pollution poses a potentially serious health problem, they have been reluctant to study it because they lack a clear responsibility for doing so. The lack of clear responsibility and authority has caused a duplication of some efforts. Agencies also find themselves assuming adversarial roles when assessing Federal actions on indoor air quality. Environmentalists and those concerned with energy conservation disagree about programs. Some European countries have recognized the significance of the indoor air quality standards for certain pollutants and have taken measures to control the problem. There are low-cost ways to minimize indoor air pollution, including proper ventilation and use of ventilating equipment and filtering devices. A massive new Federal program is not necessary now, but the Environmental Protection Agency (EPA) could develop a comprehensive, coordinated program using existing resources in both the public and private sectors.

Recommendations

The Congress should amend the Clean Air Act to provide EPA with the authority and responsibility for the quality of air in the nonworkplace. The Administrator of EPA should establish a task force which will identify research activities of other Federal agencies and private institutions relating to indoor air pollution so that the EPA activities can be coordinated with them. It should compile available data on indoor air pollution and use

this data to inform the public and other governmental organizations of the problem and available actions. The task force should provide advice to the Administrator on what EPA research and development efforts are needed to deal with the indoor air pollution problem.)

Update

As of January 31, 1981, the Congress had not revised the Clean Air Act to provide EPA the responsibility and authority for the quality of air in the nonworkplace, indoor environment. EPA agreed with our recommendations and has established both an in-house coordinating group and, working with the Department of Energy, an interagency research group on indoor air quality.

FEDERAL-STATE ENVIRONMENTAL PROGRAMS--THE STATE PERSPECTIVE (CED-80-106 and 106A, 8-22-80)

Summary

The Congress intended that the Environmental Protection Agency (EPA) and the States should act in partnership to implement federally mandated environmental programs. Generally, the States have implemented these programs, enacted enabling legislation, and provided part of the funding. However, the States believe many obstacles impede their implementation of those programs and are beginning to consider these obstacles when deciding whether to assume more program responsibilities. Because the Congress expressed concern about the Federal-State relationships in this area, a review was undertaken to determine the managerial problems the States face implementing environmental programs. In confirming that these obstacles actually exist, GAO tried to determine the impact they have on the Federal-State partnership. (Questionnaire data used as the basis for CED-80-106 is summarized in CED-80-106A.)

According to State environmental officials, late issuance of regulations has resulted in erratic, confused, and slow implementation of State programs. Lack of flexibility to adapt State programs or unique characteristics to national regulations has wasted State resources, stifled initiative, and unnecessarily increased costs for environmental control. Other more subtle EPA control mechanisms which State officials believe also impede program implementation included detailed grant conditions and mandatory policy guidance. The root cause of staffing problems across all environmental programs was low State salaries. Consistently late annual program grants resulted in termination or threatened termination of State employees or delays in filling badly needed positions. Moreover, paperwork requirements taxed already limited staff by diverting employees from program operations. Poor communication has strained the EPA-State relationship. Because a majority of the State officials believed that the EPA headquarters staff did not understand the obstacles States face in implementing

EPA directives, hostility permeated much of the relationship between the States and EPA. However, States generally had good relationships with EPA regional staffs.

Recommendations

The Administrator of EPA should establish, as a high priority and in conjunction with State representatives, a formal program to improve the EPA-State partnership. This should include establishing procedures to ensure that early State agency input is solicited before any action is taken having a direct bearing on State program implementation and establishing joint EPA-State committees for each program to review its various aspects, identify implementation problems, and advise the EPA Administrator.

Update

EPA agreed that the State and local governments need to participate more in EPA policy and program development, but believed a joint advisory committee for each program would isolate the programs. EPA is now considering the establishment and structure of an advisory committee to address State and local government-related policies and procedures.

ENERGY HEALTH AND SAFETY ISSUES NEED A COORDINATED APPROACH (EMD-80-52, 7-24-80)

Summary

Several energy-related accidents have heightened public concern about the effectiveness of the Government's role in energy health and safety. Numerous agencies are involved in regulating energy health and safety; and, for the most part, they regulate independently of each other. The Federal Government has not developed a coordinated approach to examine broad conceptual issues, such as the energy health and safety, economic, and environmental trade-offs of the various energy decisions. The potential for duplication of effort, lack of coordination, and gaps in regulatory coverage increases. Interagency groups and individual agency efforts are working to alleviate some of the problems, but no mechanism has been formulated to coordinate the overall energy health and safety issues and programs.

Broad policy issues which should be addressed involve the definition and focus of energy health and safety, the relationship among energy health and safety regulations, economic energy regulations and environmental concerns, and the identification of activities and policies in place at the various levels of government and the intergovernmental relationships. Further study of the issues is warranted. A centralized focus on all energy health and safety regulatory activities would be the best way to evaluate these issues. It would increase coordination, communication, and cooperation among agencies; identify and correct gaps in energy health and safety regulatory coverage; institutionalize

energy health and safety; and provide a means by which to evaluate and analyze energy use trade-offs. Four options which could have all or most of the advantages discussed above are establishing a new agency, creating an interagency forum, instituting a lead agency concept, or establishing an independent commission.

A GAO analysis of the options indicates that at this time an independent commission would be the best means to provide a centralized focus on energy health and safety issues. An independent commission would be relatively inexpensive and easy to establish, reorganize, and abolish. In addition, the disadvantages of establishing an independent commission appear to be less severe than those of the other three options.

Recommendations

ck [The Congress should establish a President's commission on energy health and safety. It should mandate that the commission be established as an independent body free from agency influence; consist of a small number of members appointed by the President; have an executive directorate, a relatively small staff, and an appropriate number of support staff; expire at the end of 5 years if not renewed by the Congress; conduct high-level assessments and syntheses of energy health and safety issues inherent in the research, development, and regulation of energy at the Federal level; report to the President and the Congress on its findings, conclusions, and recommendations concerning Federal energy health and safety affairs and on actions that were taken by the appropriate agencies, based on the recommendations that the commission made, to ensure that significant energy health and safety issues are brought to the attention of officials at the highest level of Government; and make recommendations for actions to the President, the Congress, and appropriate Federal agencies.

Update

As of January 31, 1981, the Congress had not acted on the report recommendations.

POLICY CONFLICT--ENERGY, ENVIRONMENTAL,
AND MATERIALS: AUTOMOTIVE FUEL-ECONOMY
STANDARDS' IMPLICATIONS FOR MATERIALS
(EMD-80-22, 2-5-80)

Summary

This review focused on the fuel-economy standards for new cars and light trucks and how these regulations indirectly affect future price and availability of aluminum, iron and steel, plastics, and rhodium used by American industry. While other evaluations of standards, enacted to reduce oil imports, were concerned with increasing fuel efficiency, the complex and competitive relationship between energy and material availability was never explicitly evaluated.

The net result of these competing demands suggests that: (1) the U.S. balance-of-trade deficit may suffer rather than benefit, (2) the automobile pollution control devices may require more rhodium than will be available and force the price drastically higher, and (3) the automobile industry's strategy of weight reduction to meet the fuel-economy standards will change significantly the quantity and availability of materials and how they are used in automobiles and light trucks. Therefore, the report pointed out that a means for resolving policy conflicts, which may be brought to light through coordinated economic and policy analyses, is needed.

No recommendations were made.

TVA'S CLEAN AIR SETTLEMENT
WITH EPA (EMD-80-49, 1-14-80)

Summary

Information presented pertained to the Tennessee Valley Authority's (TVA's) clean air settlement with the Environmental Protection Agency (EPA). The total estimated cost of all consent decree compliance was \$6.063 billion in 1982 present value dollars. These costs resulted from the clean air initiatives that TVA agreed to undertake in order to comply with the EPA clean air standards. They represent the total costs of compliance for 10 individual steamplants through their life expectancy computed from 1982 on.

Capital costs were computed using the latest TVA estimate of total capital outlay for scrubbers, electrostatic precipitators, and coal-washing facilities as of 1982; they represent approximately 14 percent of the total. About 56 percent of the total represents the additional money TVA will spend for the higher quality coal needed to reduce pollutants in the emissions at the individual steamplants. Operating and maintenance costs, about 30 percent of the total, were computed by multiplying the individual estimated costs for 1982 by the remaining years of life for each plant. When errors were discovered in the air quality dispersion model which formed the basis for the decision to install scrubbers at the Cumberland steamplant, the project was canceled.

A TVA reanalysis of the Cumberland precipitator project revealed that almost \$19 million had been invested. While this capital outlay is currently unrecoverable, TVA anticipates installing scrubbers at the Cumberland plant to accommodate future industrial growth. Although final agreement had not yet been reached, TVA believed it had to continue with actions to comply with the agreement or face penalties and fines. Therefore, TVA had obligated 58 percent of the capital cost estimates for the clean air agreement. This represented the amount of the contracts entered into on the projects plus the overhead for design and construction experienced by the TVA Office of Engineering Design and Construction.

No recommendations were made.

Update

The final consent decree on TVA's clean air settlement was approved December 22, 1980, with a change in the compliance strategy at the Johnsonville steamplant from scrubbers to low sulfur coal. According to TVA, of the 10 plants included in the review, 5 have met the sulfur-dioxide standards, 3 are scheduled to meet them in 1981, and 2 are scheduled to meet them in 1982.

HOW TO BURN COAL EFFICIENTLY AND ECONOMICALLY, AND MEET AIR POLLUTION REQUIREMENTS--THE FLUIDIZED-BED COMBUSTION PROCESS (EMD-80-12, 11-9-79)

Summary

The Nation has the potential to reduce its dependence on imported oil through a process known as fluidized-bed combustion. This is the process of burning coal in a mixture of air and limestone, generating heat and electricity more efficiently and economically than conventional coal-fired boilers with pollution control equipment. In this combustion process, the limestone captures the sulfur, preventing its emission into the air, and creates a dry, usable substance. The concept is sound, but its reliability under industrial and utility loads must be demonstrated.

The Department of Energy (DOE) could improve its program for demonstrating the reliability of the fluidized-bed combustion plants by pursuing some complementary strategies to private industry participation. Industrial-size demonstration units could be placed in Department of Defense industrial plants where replacement units for old fossil fuel boilers are needed. DOE could also enter into an interagency agreement with the Tennessee Valley Authority for a demonstration plant, taking advantage of the past and ongoing research activities and skilled, experienced personnel at that organization. The merits of continuing the construction of a component test and integration unit should be reevaluated. Several other test facilities already exist. The data received may not be generated in time to affect designs of the utility projects. Finally, the boiler manufacturers, whose participation is essential, may not use the unit.

Recommendations

The Secretary, DOE, should enter into an interagency agreement with the Department of Defense to place industrial demonstration plants in Defense's facilities and enter into an interagency agreement with the Tennessee Valley Authority for hosting a utility demonstration plant. In addition, the Secretary should reevaluate the costs and benefits of continuing its plans for

the test facility, including options for terminating the contracts and selling or modifying the facility for other uses.

Update

Since DOE did not agree with the recommendation to enter into an interagency agreement with the Department of Defense, Defense is now using its funds to construct plants without DOE financial assistance. DOE is also not providing any financial assistance to the Tennessee Valley Authority, but it is providing technical assistance through periodic meetings to discuss problems and designs. In addition, DOE is redesigning the test facility at a reduction of \$52.4 million.

THE U.S. MINING AND MINERAL-PROCESSING INDUSTRY: AN ANALYSIS OF TRENDS AND IMPLICATIONS (ID-80-4, 10-31-79)

Summary

Although the United States is rich in minerals, the future of several segments of its mining and mineral-processing industry is dim, and U.S. manufacturers are relying more and more on imported mineral products. The decline of the industry has resulted in: (1) an increased concern about U.S. vulnerability to supply interruptions, (2) lost jobs and job opportunities in the mineral industry, and (3) pressure on the U.S. balance of trade. In an analysis of trends in the U.S. mineral industry, GAO studied the U.S. and foreign government actions that involve economic access to minerals, development and financing costs, labor costs, energy availability and price, and public policy conflicts related to these matters.

GAO compared U.S. and foreign government actions influencing the trend toward increased reliance on imported mineral products and found that the U.S. Government: (1) limits the use of Federal lands for mineral exploration, (2) imposes strict environmental requirements which add significant costs to the development of domestic mineral projects (while some countries are either more lenient in their enforcement or provide assistance to defray costs), (3) restricts the use of joint ventures to pool resources and share risks, and (4) adds to the cost of labor by imposing worker health and safety requirements. There is much uncertainty regarding the future price and availability of energy supplies needed for the mineral industry due to the absence of a clear U.S. Government energy policy.

Air quality matters referred to in this report include: (1) early estimates of Clean Air Act compliance costs were significantly underestimated, (2) foreign governments pursue a more flexible approach to environmental regulation, (3) Clean Air Act compliance problems have a negative effect on the willingness of banks to lend for minerals processing projects, and (4)

environmental regulation may contribute to a shift to foreign countries of minerals sector investment.

Recommendation

In order to assure that the overall national interest is served, congressional committees should focus on developing a mechanism for objectively considering the consequences of Government actions and for resolving conflicts among policies.

Update

The Congress enacted Public Law 96-479, the National Materials and Minerals Policy, Research and Development Act of 1980, which directs that the Executive Office of the President assess the conflicting policies and make recommendations for resolving the conflicts.

THE REVIEW PROCESS FOR PRIORITY ENERGY PROJECTS SHOULD BE EXPEDITED (EMD-80-6, 10-15-79)

Summary

The proposed crude oil pipeline from Long Beach, California, to Midland, Texas (PACTEX), considered to be in the national interest because it would distribute the west coast surplus of Alaska north slope crude oil, was abandoned by its sponsor after almost 5 years of work. Increased project costs and adverse effects from delays in obtaining permits and litigation were cited as reasons for abandoning the project. PACTEX was examined as a case study to identify the problems and issues associated with obtaining the necessary permits for a major energy transportation system. Various Federal and State agencies were contacted; and reports, studies, laws, regulations, proposed legislation, and procedures related to the permit process were reviewed.

The most serious problem the sponsor encountered was in obtaining State and local air quality permits for the terminal in California. Although the Environmental Protection Agency (EPA) and the States are responsible for implementing the Clean Air Act and its amendments, neither EPA nor California has established clear requirements to be met by companies desiring to install facilities that will contribute to air pollution. Such guidance is not only needed, but should be expected, if all levels of government are to fulfill the leadership responsibilities essential for effective air pollution control.

Recommendations

The Congress should enact a program for expediting energy projects considered to be in the national interest and establish an energy mobilization board to assure its effective administration. The authorizing legislation needs to be carefully drawn to embody those characteristics essential to the proper functioning

of the board, including independence, objectivity, and strong authority, as well as safeguards and balancing features to preserve the integrity of the permit process itself and to avoid abuses of power. In addition, the enabling legislation should specify an expiration date, thus requiring periodic congressional oversight. Because of EPA reluctance to apply the recommendations contained in the 1978 GAO report (CED-78-148A; see p. 15) the cognizant congressional committees should make sure the recommendations GAO made are completed expeditiously by the Administrator of EPA.)

The Administrator of EPA not only should act on the recommendations made in the 1978 GAO report, but also should establish guidelines for implementation of the offset policy which provide clear, specific guidance on measurement and quantity of project emissions required to be offset; types and quantity of offsets to be provided; and acceptability of a demonstration project, rather than proven technology, as an offset. Further, the Administrator should urge State or local governments wishing to use more stringent requirements to establish clear guidelines and include them in the State implementation plan before enforcing the more stringent requirements for a project.)

Update

The House and Senate passed similar bills (S. 1308 and H.R. 4985) to establish an energy mobilization board. One significant difference was whether the President would be given the power to override substantive provisions of other Federal, State, or local laws. A compromise worked out by the conference members was rejected by the House because it contained such authority. No further action was taken before the last session of the 96th Congress ended. EPA had not responded to the recommendations in this report as of January 31, 1981.

IMPROVING THE SCIENTIFIC AND TECHNICAL INFORMATION AVAILABLE TO THE ENVIRONMENTAL PROTECTION AGENCY IN ITS DECISIONMAKING PROCESS (CED-79-115, 9-21-79)

Summary

The Environmental Protection Agency's (EPA's) statutes proclaim national goals of rapid improvement and protection of the environment and the public against health hazards. Trying to meet these demands places EPA between two groups with divergent views and competing interests. Environmental groups urge EPA to promulgate and enforce strict controls, while industry stresses the economic consequences and technological difficulties in implementing the controls. One byproduct of this confrontation is litigation against EPA as a result of its decisions. Even though such suits are commonplace, most of them do not involve substantive issues, but rather procedural or statutory interpretation. The regulations and standards deal with scientific

and technical issues where supporting data and research are not yet available or conclusive. In 1977 the National Academy of Sciences made a study of the EPA decisionmaking process, particularly for acquiring and using scientific and technical information.

The National Academy of Sciences' study found no major flaws, but GAO believes some improvements are needed. Official procedures need to be finalized and published to make sure that the process is carried out properly and consistently throughout EPA. EPA also needs to recognize more formally its Science Advisory Board, which contributes to the decisionmaking process. Another way scientific and technical information could be considered would be to have a science court in which an administrative law judge and a panel of scientists would decide the scientific facts to be considered in a decision. Because of the limited number of major cases involving scientific and technical information, the creation of a permanent science court is not justified now, but further consideration of the concept is warranted. Mediation is another way which can be used to ventilate scientific disputes, which would lay out the alternatives rather than reach a conclusion like the science court. A fourth potential mechanism is to develop a number of commissions on the long-term controversial issues which could organize debates, seek clarification, explore alternatives, and create panels of experts to advise congressional committees. The argument that, because judges lack sufficient expertise to make technical determinations, a separate judicial environmental court should be established has little merit. The Federal courts' primary role is to evaluate whether EPA followed a reasonable decisionmaking process, not to determine scientific validity or to decide technical disputes.

Recommendations

The Administrator of EPA should finalize and issue EPA operating procedures on regulatory decisionmaking. He should also require that the Science Advisory Board become an integral part of the EPA decisionmaking process for all major actions that involve scientific and technical information. The Director of the National Science Foundation should issue a program announcement soliciting proposals to develop and test further the science court concept.

Update

EPA generally agreed with the recommendations and (1) has developed and is revising for agency distribution a draft of its regulation development handbook as well as setting up training sessions and workshops and (2) is continuing to expand the role of the Science Advisory Board in major research and regulatory actions. The National Science Foundation disagreed with the recommendation to solicit proposals for the science court concept.

AIR QUALITY: DO WE REALLY KNOW
WHAT IT IS? (CED-79-84, 5-31-79)

Summary

Reliable and comparable air quality data is critical to Environmental Protection Agency (EPA) regulation and enforcement efforts. Through 1986, an estimated \$248 billion will be expended for air pollution abatement programs.

Although progress has been made in improving air quality, EPA efforts to develop a standardized, comprehensive air monitoring system have been slow and often ineffective. Because of a delay in the promulgation of recent regulations, implementation of such a system will probably not be achieved until the mid-1980s. The reliability of some of the air quality data currently used to assess national progress toward standards, develop trends, and establish control strategies is questionable. Of 243 monitoring stations reviewed, 81 percent had one or more problems, such as incorrect siting of the monitors or equipment in use which was not EPA certified, which could adversely affect the reliability of data. These problems stem from the fact that monitoring is being carried out by State and local agencies, using systems originally designed to meet their individual needs.

Recommendations

The appropriate congressional committees or subcommittees should hold oversight hearings to explore the progress being made in implementing the air monitoring regulation issued by EPA in May 1979 and to identify the additional actions needed to assure successful completion of the goals of clean air legislation.

The Administrator of EPA should conduct a thorough evaluation of current air monitoring systems; provide technical assistance to State and local agencies in preparing their implementation plans; and concentrate efforts and resources in areas most adversely affected by air quality designations, taking necessary precautions in decisionmaking until sufficient, accurate data is available.

Update

As of January 31, 1981, no specific oversight hearings have been held by the Congress concerning EPA's air monitoring program. EPA agreed, overall, with the report's analysis of the problems which plague the air monitoring sites and also agreed that implementation of the actions recommended would resolve these problems. In addition, EPA has a multimillion dollar program currently underway to correct deficiencies in the air monitoring program.

EPA'S TAMPERING AND FUEL SWITCHING
PROGRAMS (CED-79-47, 3-1-79)

Summary

Efforts of the Environmental Protection Agency (EPA) were reviewed to determine the effectiveness of the program to decrease tampering with automobile emission control devices and fuel switching. The practice of using leaded gasoline in vehicles equipped with catalytic converters and designed for unleaded gasoline, if widespread, will substantially increase pollutant emissions.

The problems associated with tampering and fuel switching primarily occur after the vehicle is put into service rather than as the vehicle comes off the assembly line. An active enforcement program against tampering practices would require large personnel resources and would probably be impractical at the Federal level. An effective public awareness campaign is the key factor in an antitampering program.

Recommendations

The Administrator of EPA should consider the use of State and local inspection and maintenance programs as a potential deterrent to tampering. He should also evaluate existing inspection and maintenance programs to determine their effectiveness in detecting and deterring tampering; work with States which have tampering laws to encourage more vigorous enforcement; and examine the feasibility of using States' periodic safety inspection programs to check for readily observable items, such as tampered gasoline tank filler inlets. In addition, he should continue recent actions involving tampering and fuel switching with an emphasis on controlling emissions, develop public awareness programs emphasizing the consequences of switching and tampering on air quality and public health, and publicize enforcement actions taken against violators.

Update

EPA generally agreed with the recommendations and was implementing ongoing or planned program initiatives, such as publicizing enforcement actions, evaluating existing programs, and encouraging State enforcement.

BETTER ENFORCEMENT OF CAR EMISSION
STANDARDS--A WAY TO IMPROVE AIR
QUALITY (CED-78-180, 1-23-79)

Summary

GAO examined the operation of the Environmental Protection Agency's (EPA's) automotive emission control standards. EPA

estimates that about 80 percent of the 100 million registered motor vehicles exceed Federal emission standards.

About half the cars pass beyond acceptable emission limits within a year of manufacture, with the rate steadily increasing thereafter. Poor owner maintenance and infrequent inspections account for most of this figure. According to EPA, these failures are due to maladjusted engine settings, premature parts failure, use of leaded fuels, improper car use, tampering with emission control systems, and poor design or production practices. Mandatory annual inspection and maintenance programs can identify and correct many of these problems, but a short test is needed to check compliance. EPA claims to have such a test available, but manufacturers question its applicability. The Clean Air Act requires inspection and maintenance programs in areas where car emissions contribute significantly to air pollution. EPA has identified 110 of these areas, but only 6 currently have such programs. Other enforcement efforts are also below par, including assessment of emissions performance at all stages of vehicle life--design, production, and use. EPA's prototype certification program overlooks the deterioration of engine system components, among other factors.

Recommendations

The Administrator of EPA should expand the durability testing for prototype certification to include weathering, extreme temperatures, repeated cold starts, and road vibrations. Selective enforcement audits should provide for more frequent tests for higher volume car model configurations. Federal emission standard compliance rates ought to be graduated more than the current pass/fail standard. To encourage cooperation by owners whose cars have been recalled for corrective maintenance, the Administrator of EPA should also initiate followup to the notice letters sent by manufacturers and encourage State and local governments to participate in these efforts.

Update

EPA generally agreed with the report's conclusions and recommendations and has initiated several actions, including improvements in the certification program's reflection of "real world" conditions and in EPA's selection criteria for selective enforcement audits.

U.S. REFINING CAPACITY: HOW MUCH IS ENOUGH? (EMD-78-77, 1-15-79)

Summary

Between 83 and 92 percent of the Nation's petroleum products are provided by U.S.-based refineries, and the U.S. refining industry is planning capacity additions in order to maintain this position. The Department of Energy must define refining capacity

needs after evaluating the domestic and international trade-offs involved. The following domestic factors reviewed by GAO include concern for air quality and related air quality regulations, multiple use of the coastal zone under the Coastal Zone Management Act, pricing and allocation regulations, gasoline lead content restrictions, environmental and technological requirements for desulfurization equipment, and the Crude Oil Entitlements Program.

After reviewing domestic programs and policies and international considerations, GAO believes that the Department of Energy has not evaluated the trade-offs necessary to establish a definitive U.S. refining policy. In response to this need, the Department of Energy recently initiated a study to identify future U.S. refining capacity needs.

Recommendations

As part of the study to identify future U.S. refining capacity needs, the Secretary of Energy should analyze the international and domestic implications of alternative levels of U.S. refining capacity and determine the criteria for Government involvement in effecting any desired levels. This analysis should include an evaluation of the environmental, economic, national security, and technical trade-offs necessary to meet various domestic capacity levels. The future U.S. refining capacity needs should be determined after consideration of such factors as the optimum mix of refinery sizes necessary to insure desired levels of U.S. petroleum products and the optimum relationship with U.S. petroleum product consumption. Possible policies and actions should be analyzed and submitted to the appropriate congressional energy committees. The submission should include an analysis of the advantages and disadvantages of using incentive versus disincentive alternatives to meet desired capacity needs and should include an analysis of the probable marketplace reactions to Government regulations. The submission should also include any needed legislative proposals in the event that progress is not being made.

Update

The Department of Energy prepared a draft study on refinery policy issues, entitled "Refinery Policy Study Summary of Analysis," on June 10, 1980. However, as of January 31, 1981, no formal decision has resulted from the study.

IMPROVEMENTS NEEDED IN CONTROLLING MAJOR AIR POLLUTION SOURCES (CED-78-165, 1-2-79)

Summary

Compliance with the Clean Air Act Amendments of 1970 by major air pollution sources cannot be adequately determined due

to ineffective oversight and inadequate recordkeeping by the Environmental Protection Agency (EPA).

GAO found that: (1) in the two States visited (New York and Illinois) almost 70 percent of the sources subject to enforcement action since 1973 were not in compliance with emission limitations and (2) in Illinois 321 major sources were not in final compliance at the end of fiscal year 1977. An enforcement action had never been taken against about one-half of these sources. EPA's data systems, designed to track the amount of pollutants released into the air, are inaccurate and rarely compatible with the States' systems. As a result, incorrect progress and status reports have been issued to the Congress and the public. EPA's efforts to monitor and control air pollution have been ineffective because: (1) progress is measured by determining the number of sources both complying with the standards and on compliance schedules, rather than considering emissions from all sources, (2) a source's compliance status is usually based on unverified information submitted by the source, rather than by more reliable methods, such as onsite testing or inspecting, and (3) EPA's Compliance Monitoring Program has shown that 22 percent of the sources the States classified as "in compliance" are actually not.

Recommendations

The Administrator of EPA should make sure that accurate, reliable, and complete data concerning both air pollutants and polluters is reported by taking certain actions, such as substantially increasing the number of agency compliance monitoring inspections, strengthening agency enforcement activities to reflect changes brought about by the Clean Air Act Amendments of 1977, and initiating enforcement actions against all sources not now in compliance and not on a cleanup schedule.

Update

EPA said it found the report useful in identifying areas that need management's attention to improve the overall effectiveness of its enforcement program. Some changes include improving its data systems, increasing inspections and enforcement actions, and establishing a civil penalty policy.

16 AIR AND WATER POLLUTION ISSUES
FACING THE NATION (CED-78-148A,
148B, AND 148C, 10-11-78)

Summary

This report was presented in three parts. CED-78-148A is the executive summary; 148B is the basic report, containing the scope and detailed results of the full work; and 148C is the appendix, which contains case examples, technical papers, and other supporting material.

The following legislation was enacted in order to deal with air and water pollution nationwide: the Clean Air Act Amendments of 1970 and 1977 and the Federal Water Pollution Control Act Amendments of 1972 and 1977 (Clean Water Act). Air quality legislation is intended to protect the public health and welfare from air pollution, and water quality legislation is meant to eliminate the discharge of pollutants and to have swimmable and fishable waters. Programs for achieving these goals have resulted in a cleaner environment, but billions have been spent to date on pollution controls.

In order to set priorities in achieving environmental goals, some basic questions must be answered, including how much environmental protection is needed; when is it needed; what is the best way of obtaining it; and what price is the Nation willing to pay. The goals of pollution control legislation are basically sound, except for the goal to eliminate the discharge of pollutants into waterways. However, regulatory adjustments are needed to resolve certain major issues. Amendments to the legislation have addressed many of the issues. Among major issues to be considered are energy development, conservation, and independence; environmental protection and improvement; economic growth and stability; economic efficiency and equity; public health and welfare; and inflation. Policies should be coordinated, and issues should be considered as a whole rather than separately. Solutions should be sought for the total pollution problem rather than for some parts at the expense of others, but present pollution laws and programs do not usually allow for such trade-offs. Several major air pollution control issues identified by GAO dealt with air quality goals and standards necessary to achieve these goals, requirements for States to include in preparing their implementation plans to achieve air quality goals, and automobile emission standards and their enforcement. Additionally, cost-benefit analysis and alternative control strategies were discussed.

Recommendations

This report made several broad recommendations to the Administrator of the Environmental Protection Agency concerning such air pollution issues as revision of goals and timetables, control measures needed for long-range transport of harmful pollutants, siting of new energy facilities, feasibility of cost-benefit analysis, and alternative strategies for controlling air pollution.

Update

The Environmental Protection Agency generally agreed with most of the recommendations and has taken action to implement some and has ongoing programs for others.

ONGOING REVIEWS PERTAINING
TO THE CLEAN AIR ACT

REVIEW OF CONSTRAINTS IN
IMPLEMENTING THE CLEAN AIR ACT
FOR STATIONARY SOURCES (089139)

Summary

This review concentrates on three areas:

- The status of the Clean Air Act Amendments of 1977.
- Interstate transport of sulfur dioxide and suspended particulates.
- Interstate transport of ozone.

The status of the Clean Air Act Amendments of 1977 portion of the review is concerned with whether the amendments have been implemented in a timely manner; the reasons for delays; and, if not implemented, the projected implementation date.

The second area concerning interstate transport of sulfur dioxide and suspended particulates highlights the problems in petitioning the Environmental Protection Agency (EPA) under provisions in the amendments for resolving problems with air quality sources and the resulting inequity among States. The review encompasses the six administrative petitions filed under the act to date and the two lawsuits against EPA because of its inaction on the petitions.

The last area, interstate transport of ozone, is concerned with the problems resulting from the failure of the Clean Air Act to adequately address transportable pollutants and management decisions EPA made in implementing the ozone program. This has resulted in not requiring some areas of the Country to establish adequate control standards which would help alleviate the ozone problem.

ASSESSING THE POTENTIAL OF DEVELOPING
A MARKET FOR AIR POLLUTION RIGHTS
IN THE UNITED STATES (971463)

Summary

The principal objective of this review is to identify those obstacles which impede the development of a market for air pollution rights, determine their causes, and recommend ways to reduce these costs. For that purpose, this review is organized into three major tasks. In the first task, the salient features of the command and control system, the standard bearer of current

air pollution control, will be analyzed. This analysis will include an examination of transaction costs in this system and of regulatory reforms which sanction trading in emission, or air pollution, rights. The first task will conclude with a comparison of the command and control system and the theoretical market for air pollution rights. Such a comparison will be aimed at revealing what types of transaction costs are generic to a market scheme.

In the second task, a generalized model of today's emerging market for air pollution rights will be constructed, which is not specific to any one locale or institution. Accordingly, an analysis of the major "trades" in emission rights which have occurred in the United States will be made. In addition, GAO will describe Environmental Protection Agency (EPA) regulatory initiatives aimed expressly at eliminating or reducing some of the transaction costs. The most important of these reforms is the so-called banking rule which enables a prospective supplier of emission rights to create an emission right, store the right, and then either sell it or use it. By comparing the transaction costs incurred in the analyzed trades, most of which occurred before the aforementioned EPA initiatives, with our assessment of such costs after being affected by the banking rule and other reforms, GAO anticipates knowing what outstanding transaction costs still impede the market.

In the third task, a model of the emerging market which is specific to a locale will be constructed. A case study of the San Francisco Bay area's fledgling market will be made. The bay area is the one region with a working banking and offset system and the greatest amount of current trading in this Country. Any outstanding transaction costs are more likely to be revealed in the bay area than elsewhere, simply because the market is more developed there.

ACID PRECIPITATION: TIME TO ACT?
(001694)

Summary

There is growing concern about the conflict between national energy policy, which would be best served by maximizing coal use, and national environmental policy, which apparently sees worsening impacts on the environment from greater coal use--particularly in the newly recognized form of acid precipitation. GAO is examining the state of knowledge on the acid precipitation issue and considering the trade-offs between waiting for more knowledge versus taking regulatory action at an early date.

GAO objectives are to:

- Examine the current state of knowledge on acid precipitation and its relation to the combustion of fossil fuels, particularly coal.

--Ascertain what efforts are underway and planned to obtain a better understanding of this issue and what further knowledge can be expected at what time.

--Consider, and try to reach an evaluation of, the relative benefits and costs, both to energy and environmental goals, of awaiting further knowledge versus initiating regulatory actions to reduce the fossil-fuel-derived contributions to the sources of acid precipitation.

THE EFFECTS OF REGULATION ON THE
ELECTRIC UTILITY INDUSTRY (309320)

Summary 1/

Over the past decade electric utility companies have been subjected to an increasing number of regulatory requirements by Federal and State agencies. Compliance with these requirements has been and continues to be costly. Among other things, utilities have had to add new pollution control equipment, pay premium prices for low-sulfur-content fuel, incur additional administrative costs to get licenses and permits, and pay increased construction costs due to delays caused by the regulatory process.

There has been a growing concern that regulations are putting too great a burden on the economy. In response to those concerns, some initial attempts have been made by the Carter administration to examine more closely the regulatory process.

GAO reviewed the regulatory process as it has been applied to electric utility operations. Its review led to the following overall observations.

--Electric power projects and operations have been more costly as a result of changing regulatory requirements and delays and uncertainties associated with the regulatory process. These costs have been passed on to consumers in the form of higher rates.

--The utilities' ability to provide adequate supplies of power to their service area has not been adversely affected.

--Tangible benefits to ratepayers have not always been visible, although some social benefits may have been realized.

--Regulators often did not know how to best achieve their objectives or assess the results of a requirement.

1/This summary was taken from a digest of the report, which has since been issued as EMD-81-35 on March 2, 1981.

--It is imperative that Government provide a balanced approach in regulating the industry so that the cost and reliability of future power services are considered along with the environmental, health, and safety concerns of the public.

--The Carter administration and the Congress appeared to have been much more concerned with the economic effects of regulatory actions and with evaluating the costs and benefits of achieving a desired goal. Few of these efforts, however, were directed toward alleviating the more routine regulatory problems, and they will continue unless cognizant regulatory agencies recognize them and become more aggressive in redirecting their regulatory emphasis and incorporating greater precision in their efforts.

Several regulatory reform initiatives designed to provide greater regulatory flexibility were proposed in the last Congress. Some portions of these proposals were incorporated into the Regulatory Flexibility Act (P.L. 96-354) which was signed by the President on September 19, 1980. The act, which became effective January 1, 1981, and applies primarily to small businesses and local governments, directs Federal agencies to better match the regulatory and informational requirements with the scale of the entity.

GAO has generally supported the major elements of these initiatives and believes that the momentum for these actions should be maintained and expanded in scope. Greater flexibility should be incorporated into congressional legislative efforts which would allow agencies to consider the costs of their regulations in developing regulatory programs. The Congress should also require the agencies to justify their actions early in the development of regulatory programs so that the financial impact of their requirements are no longer ignored as in past programs. Once increased awareness of regulatory impact is incorporated into future legislation, the regulatory emphasis and precision that GAO found to be lacking should become evident.

EVALUATION OF FEDERAL EFFORTS TO
CONVERT OIL- AND GAS-FIRED BOILERS
TO COAL (004527)

Summary

The Department of Energy (DOE) and its predecessor, the Federal Energy Administration (FEA), have tried to increase the use of coal by utilities and industry through regulatory procedures since passage of the Energy Supply and Environmental Coordination Act (ESECA) of 1974. Under ESECA, FEA could issue orders prohibiting powerplants and major industrial fuel-burning institutions from continuing to burn oil or gas. It could also order companies to install coal-firing equipment in new powerplants and industrial facilities.

In an earlier letter report (EMD-77-66, Sept. 16, 1977), we found that the ESECA program had very little impact on increasing the use of coal, in part because the Government had to first go through the extremely burdensome and time-consuming administrative task of identifying installations subject to its provisions and then demonstrate in each case that it was both economically feasible and environmentally acceptable for these installations to burn coal.

On November 9, 1978, the President signed, as part of the National Energy Act of 1978, the Powerplant and Industrial Fuel Use Act (P.L. 95-620) which replaces ESECA. The new act requires utilities and major industries to convert from oil and gas to coal. It relieves some of the administrative problems experienced under ESECA by putting the burden of reporting and requesting exemptions on the private sector. DOE estimates that compliance with the law will result in saving the equivalent of 300,000 barrels of oil per day by 1985 and has issued regulations to implement its provisions.

The objective of this review is to evaluate the effectiveness of the Federal coal conversion program. The review will address such issues as

- the status and likely achievements of the conversion program,
- the adequacy of the regulations implementing the program and their consistency with congressional intent,
- the effects of the 1990 prohibitions on the use of natural gas as a boiler fuel, and
- the cost of meeting existing air pollution regulations as a major reason for utilities and industries applying and receiving exemptions from the conversion requirement.

EVALUATION OF THE DESIRABILITY OF EARLY
PUBLIC INVOLVEMENT IN IDENTIFYING
LOCATIONS FOR ENERGY FACILITIES (001687)

Summary

This review concerns early public and government involvement in identifying locations for energy facilities. This concept has been discussed in various forms and forums for several years. The concept appears to have widespread support but remains controversial, primarily because it is perceived as difficult to implement effectively.

This review focuses on early planning-site selection for energy facilities as opposed to the permit process (which generally occurs after the site is chosen and costly design commitments are made). The proposed site is a key factor, along with the

characteristics of the proposed facility, in determining energy project licensability--especially its compatibility with Clean Air Act regulations. Many analyses have concluded that when serious confrontations occur in the licensing processes, inadequate early planning and siting processes/decisions are often considered major causes. Therefore, it appears that improvements in energy facility planning and site selection can facilitate environmentally acceptable energy development, independent of current efforts to rationalize the permitting processes.

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