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Report to the Ranking Minority Member, Committee on Government Reform and Oversight, House of Representatives

August 1995

AIR POLLUTION

EPA Data Gathering Efforts Would Have Imposed a Burden on States

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GAO

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The Honorable Cardiss Collins
Ranking Minority Member
Committee on Government Reform
and Oversight
House of Representatives

Dear Ms. Collins:

This report conveys the results of our evaluation of selected data collection and reporting requirements of the Clean Air Act Amendments of 1990. The 1990 amendments require the states to collect, analyze, and report information to the Environmental Protection Agency (EPA). After the amendments were passed, the Chairman of the former Environment, Energy, and Natural Resources Subcommittee expressed concern that EPA and the states could be overwhelmed by the collection and reporting requirements of the law and might not be able to make appropriate use of the information.

Our objectives were to determine whether (1) EPA's planned state emissions reporting requirements exceed the agency's program needs and (2) states use EPA's Aerometric Information Retrieval System (AIRS) to monitor emissions data.

Results in Brief

An EPA draft regulation implementing the 1990 amendments would have required states to begin submitting more detailed emissions data to AIRS that would have exceeded EPA's minimum air pollution program needs. EPA has since suspended the development of the draft regulation and is considering alternative reporting options.

Most heavy emission states do not use AIRS to track air pollution, even though EPA designed the system for them to do so. For example, of the 10 states that are the source of almost half of the critical pollutants emitted in this country, only one state uses the AIRS Facility Subsystem to monitor air pollution emissions from factories and plants. Instead, these heavy emission states use systems they have independently developed.

Background

The Clean Air Act gives EPA authority to set national standards to protect human health and the environment from emissions that pollute ambient

(outdoor) air. The act assigns primary responsibility for ensuring adequate air quality to the states.

The pollutants regulated under the act can be grouped into two categories—"criteria" pollutants and "hazardous air" pollutants. While small in number, criteria pollutants are discharged in relatively large quantities by a variety of sources across broad regions of the country.[1] Because of their widespread dispersion, the act requires EPA to determine national standards for these pollutants. These national standards are commonly referred to as the National Ambient Air Quality Standards (NAAQS). The NAAQS specify acceptable air pollution concentrations that should not be exceeded within a geographic area.[2] States are required to meet these standards to control pollution and to ensure that all Americans have the same basic health and environmental protection. NAAQS are currently in place for six air pollutants: ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, lead, and particulate matter.

The second category, referred to as "hazardous air pollutants" or "air toxics," includes chemicals that cause serious health and environmental hazards. For the most part, these pollutants emanate from specific sources, such as auto paint shops, chemical factories, or incinerators. Prior to its amendment in 1990, the act required EPA to list each hazardous air pollutant that was likely to cause an increase in deaths or in serious illnesses and establish emission standards applicable to sources of the listed pollutant. By 1990, EPA had listed seven pollutants as hazardous: asbestos, beryllium, mercury, vinyl chloride, arsenic, radionuclides, and benzene. However, the agency was not able to establish emissions standards for other pollutants because EPA, industry, and environmental groups disagreed widely on the safe level of exposure to these substances.

The Clean Air Act Amendments of 1990 Require a Large Amount of Data

The 1990 amendments established new information gathering, storage, and reporting demands on EPA and the states. Required information ranged from that on ground-level to atmospheric pollutants. For example, states with ozone nonattainment areas must require owners or operators of

[1]These pollutants are called "criteria air pollutants" because the agency sets permissible levels for them based on "criteria" or information on the effects on public health or welfare that may be expected from the presence of such pollutants.

[2]A geographic area that meets or does better than the standard is called an "attainment area." Areas that do not meet the standard are called "nonattainment areas."

stationary sources of nitrogen oxides or volatile organic compounds[3] to submit to the state annual statements showing actual emissions of these pollutants. Also, the amendments expanded the air toxics category to include a total of 189 hazardous air pollutants that are to be controlled through technology-based emission standards,[4] rather than health-based standards as the previous law had required. To establish technology-based standards, EPA believes that it needs to collect information on emissions of these hazardous air pollutants.

In addition, the amendments initiated a national operating permit program that requires new information to be collected from sources that release large amounts of pollutants into the air. Further, the amendments require new information about acid rain,[5] stratospheric ozone-depleting chemicals,[6] and ecological and health problems attributed to air pollutants. Appendix I identifies titles of the act and selected additional data collection requirements imposed by the new law.[7]

AIRS Designed to Help EPA and States Monitor Air Pollution

EPA designed AIRS in stages during the 1980s to be a national repository of air pollution data. EPA believed that having this information would help it and the states monitor, track, and improve air quality. The system is managed by EPA's Information Transfer and Program Integration Division in the Office of Air Quality Planning and Standards. The Office of Air Quality Planning and Standards, under the Assistant Administrator of Air and Radiation, manages the air quality program.

AIRS was enhanced in response to the 1990 amendments, when additional gathering, calculating, monitoring, storing, and reporting demands were placed on the system. AIRS currently consists of four modules or subsystems:

[3]Volatile organic compounds are a group of chemicals that in the presence of heat and sunlight react with nitrogen oxides in the atmosphere to form ozone, a primary constituent of smog.

[4]Public Law 102-187, enacted on December 4, 1991, deleted hydrogen sulfide from this list.

[5]Acid rain air pollution is produced when acid chemicals are incorporated into rain, snow, fog, or mist. The "acid" in acid rain comes from sulfur oxides and nitrogen oxides (products of burning coal and other fuels) and from certain industrial processes. Wind carries these pollutants far from their sources.

[6]High concentrations of ozone gas are found in a layer of the atmosphere—the stratosphere—high above the Earth. Stratospheric ozone shields the Earth against harmful rays from the sun. Stratospheric ozone thinning has been linked to destruction of this protective layer by chlorofluorocarbons (CFCs) and related chemicals.

[7]Implementation of many of the programs required by the 1990 amendments was staggered so that they began at different times. Some of the requirements have yet to be fully implemented.

- Facility Subsystem: This database, which became operational in 1990, contains emission, compliance, enforcement, and permit data on air pollution point sources[8] that are monitored by EPA, state, and local regulatory agencies.
- Air Quality Subsystem: This database, which became operational in 1987, contains data on ambient air quality for criteria, air toxic, and other pollutants, as well as descriptions of each monitoring station.
- Area and Mobile Source Subsystem: This is a database for storing emission estimates and tracking regulatory activities for mobile air pollution sources, such as motor vehicles; small stationary pollutant emitters, such as dry cleaners; and natural sources, such as forest fires. The subsystem became operational in 1992 and is scheduled to be phased out by September 1995 due to budget cuts and low utilization.
- Geo-Common Subsystem: This database, which became operational in 1987, contains identification data such as code descriptions used to identify places, pollutants, and processes; populations of cities and/or counties; and numerical values that pertain to air quality standards and emission factors that are used by all the other subsystems.

Information provided by EPA, which we did not independently verify, indicates that the total cost to develop and operate the system from 1984 through 1995 will be at least $52.6 million. Budgeted operating and maintenance costs for fiscal year 1996 are projected to be $2.7 million. Neither of these estimates include states' personnel costs. The Facility Subsystem accounted for the largest portion of subsystem costs. Appendix II provides a more detailed breakdown of estimated subsystem costs for fiscal years 1984 through 1995. Budgeted subsystem costs were not available for fiscal year 1996.

Scope and Methodology

To determine whether EPA's planned state emissions reporting requirements exceeded the agency's actual program needs, we reviewed the Clean Air Act, and we analyzed various information reporting requirements of the 1990 amendments and EPA documents interpreting requirements of the amendments. We also analyzed a draft EPA emissions reporting regulation and compared its reporting requirements with an EPA emissions reporting options paper examining several alternative reporting levels. Further, we evaluated state and state air pollution association comments on the draft regulation. Finally, we reviewed other EPA emission reporting guidance documents and interviewed EPA, state, and local air

[8]A point is a physical piece of equipment or a process within a facility, such as an industrial plant, that produces emissions.

pollution officials to obtain their comments on the draft regulation. EPA officials interviewed were from the Information Transfer and Program Integration Division and the Emissions, Monitoring, and Analysis Division in the Office of Air Quality Planning and Standards. State representatives interviewed were from Arizona, California, Michigan, New Hampshire, Tennessee, and Wisconsin. Local officials interviewed were from Ventura County, California, and the South Coast Air Quality District, Diamond Bar, California.

To determine whether states use AIRS to monitor emissions data, we reviewed early AIRS design and development documents and examined EPA documents evaluating AIRS Facility Subsystem use by all the states. Further, we examined comments and/or analyses provided to EPA by seven states on their use of AIRS. We also evaluated original user requirements and other AIRS documents to determine the original purpose and anticipated users of AIRS. In addition, we interviewed EPA, state, and vendor information system officials on states' use of AIRS and state information systems. Vendor representatives interviewed were from Martin Marietta Technical Services, Inc., and TRC Environmental Corporation.

We performed our work at the EPA AIRS program offices in Research Triangle Park and Durham, North Carolina, and at the AIRS 7th Annual Conference in Boston, Massachusetts. Our work was performed from October 1994 through May 1995, in accordance with generally accepted government auditing standards. We requested comments on a draft of this report from the Administrator of the Environmental Protection Agency. In response, on June 29, 1995, we received comments from the Acting Director for the Office of Air Quality Planning and Standards.

Proposed Reporting Requirements Exceeded EPA Minimum Program Needs

EPA's draft regulation on states' reporting of air pollution emissions exceeded what was needed by EPA to meet minimum agency air pollution program needs. EPA has suspended its promulgation of the regulation and has recently begun studying alternative reporting options.

EPA began work on the now suspended emissions regulation in order to consolidate and standardize several state emissions reporting requirements (i.e., emission statements, periodic emission inventories, and annual statewide point source reporting) and to align these requirements with the mandates in the 1990 amendments. Draft versions of the regulation were circulated in late 1993 and early 1994 to obtain preliminary comments from several states.

Three states commented to EPA on the draft regulation and one provided written comments. This state concluded that the level of detail required by the proposed regulation was not necessary. The state also noted that the draft regulation required data on each emission point within a plant, rather than aggregate data for each facility, and on items related to a factory's process and equipment, such as process rate units, annual process throughput, and typical daily seasonal throughput. Further, this state also asserted that annual reporting of hazardous air pollution emissions, as required by the draft regulation, is not required by the amendments. The state said that because of the additional complexity of toxic air pollutant data compared to criteria pollutant data, annual reporting to AIRS would not be feasible.

In addition, in a letter to EPA addressing several AIRS issues, seven states also mentioned the draft regulation. These states said that the draft regulation would require them to submit more highly detailed data items into AIRS than called for under the amendments and other EPA mandated programs. Further, these states noted that providing the additional data sought in the draft regulation concerning hazardous air pollutant emissions would require developing more complicated toxic chemical databases, which are very costly to develop. The states noted that additional resources to develop these databases were not available.

EPA acknowledged these concerns and has suspended the regulation. In December 1994, EPA issued a study that stated that minimum program needs could be met with a fraction of the data that would have been required by the suspended regulation. Our analysis of the study revealed that, in one case, EPA only needed to collect about 20 percent of the volatile organic compounds data requested in the suspended regulation to meet minimum program needs. The study showed that, in this case, an estimated 1,323,540 of these data items would have to be reported by California under the draft regulation, while only 241,574 data items would be reported under the minimum program needs option.

According to representatives in EPA's Emissions, Monitoring, and Analysis Division, most other states could reduce the amount of data submitted to EPA by a similar proportion and still meet minimum program needs. (See appendix III for additional state examples). However, officials in EPA's Office of Air Quality and Standards noted that while the reduced level of data would meet minimum program needs, other important data that the agency believes could contribute to a more effective program would not be collected. Nevertheless, collection of these additional data would place

an extra burden on the states. EPA has now begun reevaluating the information it needs from states and is considering various reporting alternatives.

Use of AIRS Subsystem by Heavy Emission States Is Limited

The use of the AIRS Facility Subsystem by heavy emission states for tracking air pollution emissions is limited. When AIRS was originally designed, states were expected to be one of its primary users; however, most heavy emission states now use their own systems because these systems are more efficient and easier to use than AIRS.

The Facility Subsystem is the official repository for emission inventory, regulatory compliance, and permit data.[9] It contains annual emissions estimates for criteria pollutants and daily emissions estimates. The subsystem was developed by EPA to track, monitor, and assess state progress in achieving and maintaining national ambient air quality standards and is also used to report the status of these efforts to the Congress. It was also developed to allow state and local air pollution control agencies to monitor and track emissions and make midcourse adjustments, as necessary, to achieve air quality standards.

EPA requires that states submit data to the subsystem either in an AIRS compatible format or directly to the subsystem. The states receive these data from thousands of sources around the country. For the 1990 base year inventory, over 52,000 sources reported data through the states to the AIRS Facility Subsystem. Each state is to use these data to help prepare a plan detailing what it will do to improve the air quality in areas that do not meet national standards.[10]

While all the states must input emission and other data into the Facility Subsystem, most heavy emission states do not use the subsystem internally to monitor and analyze emissions and compliance data. In many cases, these states already had their own systems to perform these functions. Each state's system is customized to that particular state's program data and reporting needs.

[9]The permit portion of the Facility Subsystem is still being developed.

[10]The act refers to this plan as the "State Implementation Plan."

Of the 10 states[11] that account for almost half of the combined emissions of the criteria pollutants,[12] only one (Indiana) is a direct user[13] of the emissions portion of the subsystem. Further, of these same 10 states, only 4 (California, Georgia, Indiana, and Pennsylvania) are direct users of the compliance portion of the subsystem. By contrast, a greater proportion of the smaller emission source states use the Facility Subsystem to manage and analyze air pollution data.[14] These states do not have their own air pollution information systems.

Agency Comments and Our Evaluation

In his comments, the Acting Director for the Office of Air Quality Planning and Standards expressed concern that the primary evidence supporting our assertion that the proposed reporting requirements exceeded EPA minimum program needs is based primarily on the written comments provided by one state. This is incorrect. Our finding is based primarily on our analysis of EPA's December 1994 study, which also concluded that minimum program needs could be met with a fraction of the data that would have been required by the suspended regulation.

The Acting Director also commented that the report did not adequately reflect EPA's efforts to respond to the states' concerns. We believe that the report makes clear that EPA took action and suspended the draft regulation based on state concerns.

Finally, the Acting Director stated that the draft report did not reflect the success of EPA's regulatory review process and only focused on an interim finding that EPA addressed by suspending the regulation. We believe the report adequately reflects EPA's process and states' concern with the additional burden that would have been imposed on them if the draft regulation had been promulgated. For example, we note in the report that EPA has recently begun studying alternative reporting options.

[11]The 10 states are California, Florida, Georgia, Illinois, Indiana, Michigan, New York, Ohio, Pennsylvania, and Texas.

[12]Comparable data on a state-by-state basis are not available for lead as they are for the other pollutants because, according to EPA, the methodology for making such estimates would have been too resource-intensive to perform. Since lead emissions constitute a very small part of total criteria pollutant emissions, their absence would not affect the analysis.

[13]Direct users employ AIRS to monitor, track, and manage air pollution data.

[14]Of the 43 states (the District of Columbia, Puerto Rico, and the Virgin Islands are included in this analysis) accounting for the other half of the emissions, 16 are direct users of the emission portion and 33 are direct users of the compliance portion of the subsystem.

We are sending copies of this report to the Administrator, EPA; interested congressional committees; and the Director, Office of Management and Budget. Copies will also be made available to others upon request.

Please call me at (202) 512-6253 if you or your staff have any questions concerning this report. Major contributors are listed in appendix IV.

Sincerely yours,

Joel C. Willemssen
Director, Information Resources
Management/Resources, Community,
and Economic Development

Contents

Abbreviations

AIRS	Aerometric Information Retrieval System
CFC	Chlorofluorocarbon
EPA	Environmental Protection Agency
GAO	General Accounting Office
NAAQS	National Ambient Air Quality Standards

Selected Additional Data Collection Mandated by the Clean Air Act Amendments of 1990

1990 Amendment Title	New data requirements
Title I (Nonattainment)	Expands several existing information collection, storage, and reporting requirements currently being met by the Aerometric Information Retrieval System (AIRS). Thousands of additional facilities in ozone nonattainment areas will be defined as "major sources" and will thus be subject to enhanced monitoring, recordkeeping, reporting, and emissions control requirements.
Title II (Mobile Sources)	Expands and revises emission limitations for mobile sources (automobiles and trucks) of air pollutants. New standards are established for motor vehicle engines, fuel content, alternative fueled vehicles, and other mobile sources. AIRS was not affected by these requirements.
Title III (Hazardous Air Pollutants)	Creates a program to monitor and control the 189 hazardous air pollutants. AIRS is being enhanced to provide a tool for EPA to develop technology-based standards and, when standards have not been developed, for state pollution control agencies to make case-by-case decisions on the best demonstrated control technologies for hazardous air pollutants within an industry.
Title IV (Acid Deposition Control)	Establishes a new federal program to control acid deposition. AIRS was not affected by these requirements. The separate Acid Rain Data System/Emissions Tracking System provides for recording and validating emissions data from sources emitting sulfur dioxide and nitrogen oxides, ingredients of acid rain.
Title V (Permits)	Establishes a new permit program that, in large part, is to be implemented by the states. AIRS is being enhanced to accommodate additional permit program data elements and to merge emissions and enforcement data.
Title VI (Stratospheric Ozone Protection)	Creates a new federal program for the protection of stratospheric ozone. Each person producing, importing, or exporting certain substances that cause or contribute significantly to harmful effects on the ozone layer must report to EPA quarterly the amount of each substance produced. AIRS was not affected by this requirement.
Title VII (Federal Enforcement)	Enhances federal enforcement authority, including authority for EPA to issue field citations for minor violations. AIRS was enhanced to collect and report new data concerning administrative, field citation, and other actions.

Title VIII (Miscellaneous)	Includes various miscellaneous provisions, including provisions addressing emissions from sources on the outer continental shelf and visibility issues. AIRS was not affected by these provisions.
Title IX (Research)	Requires several national or regional research programs. Most of the research programs require air data that can be integrated with data from other media or from other systems. This may require system modification.

AIRS Estimated Combined Development and Operational Costs

Dollars in millions

	AIRS Subsystem Costs[a]				
Fiscal year	Air quality	Air facility	Area and mobile source	Other[b]	Total
1984	$ 0.8	n/a	n/a	$ 1.4	$ 2.2
1985	0.8	$ 0.3	n/a	1.4	2.5
1986	0.8	0.3	n/a	1.4	2.5
1987	0.8	0.5	n/a	1.4	2.7
1988	0.8	1.0	n/a	1.4	3.2
1989	0.8	1.3	$ 0.9	1.4	4.4
1990	0.8	3.4	0.9	1.4	6.5
1991	0.8	1.6	1.3	1.7	5.4
1992	0.9	2.3	1.3	1.9	6.3
1993	0.9	2.1	1.2	1.8	6.0
1994	0.8	2.4	0.8	2.0	5.9
1995	0.6	2.4	0.1	2.0	5.1
Total	**$ 9.4**	**$17.5**	**$6.5**	**$19.3**	**$52.6**

Legend: n/a = not applicable.

Notes: We did not verify the accuracy of these figures.

Columns and rows may not total precisely due to rounding.

[a]Costs include software development and maintenance, EPA computer time, and EPA personnel costs.

[b]For fiscal years 1991 through 1995, other costs include the Geo-Common Subsystem, a graphics program; new technology; and miscellaneous items, such as a bulletin board and conferences. These costs, where applicable, were allocated to the subsystems for fiscal years 1984 through 1990. For all fiscal years, other costs also include charges for telecommunications, state computer time, and on-line disk storage.

Comparison of Estimated Data Items to Be Reported

State	Number of data items for volatile organic compounds		
	Draft regulation	Minimum required	Draft regulation as percentage of minimum program
California	1,323,540	241,574	547.9
Delaware	100,796	22,541	447.2
Missouri	442,892	97,982	452.0
Total	**1,867,228**	**362,097**	**515.7**

Source: GAO analysis of EPA's Emission Data Reporting Options, December 1994.

Major Contributors to This Report

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