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TOXIC CHEMICALS

EPA's Toxic Release Inventory Is Useful but Can Be Improved



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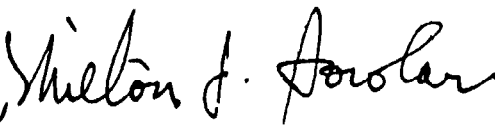
To the President of the Senate and the
Speaker of the House of Representatives

Title III, section 313, of the Superfund Amendments and Reauthorization Act of 1986 requires manufacturers to report annually on their toxic chemical emissions to the Environmental Protection Agency (EPA) and the states. Section 313(k) of the act requires the U.S. General Accounting Office to review EPA's and the states' implementation of the Toxic Release Inventory Program. Accordingly, this report discusses

- the purposes for which and the extent to which EPA, other federal agencies, states, and the public have used the emissions data;
- the steps taken to make the inventory available and accessible to the public; and
- legislative and administrative options to improve the usefulness of the inventory.

We are sending copies of this report to the appropriate House and Senate committees; the Administrator, EPA; the Director, Office of Management and Budget; and other interested parties. We will make copies available to others upon request.

This work was performed under the direction of Richard L. Hembra, Director, Environmental Protection Issues, who may be reached at (202) 275-6111. Other major contributors are listed in appendix VII.

for 

Charles A. Bowsher
Comptroller General
of the United States

Executive Summary

Purpose

Chemical disasters—such as the accidental release of a deadly gas in Bhopal, India, in 1984 that killed and injured thousands of people—have increased demand for better information about toxic chemical emissions. In response, the Congress passed the Emergency Planning and Community Right-to-Know Act of 1986, requiring manufacturers to report each year on their toxic chemical emissions to the Environmental Protection Agency (EPA) and the states. EPA compiles these reports into an annual inventory. In 1990, EPA reported that over 19,000 facilities reported for the 1988 inventory and had emitted about 6.2 billion pounds of toxic chemicals.

As required by the act, GAO assessed how EPA and the states have implemented the Toxic Release Inventory Program. GAO reviewed (1) the purposes for which and the extent to which EPA, other federal agencies, states, and the public have used the data; (2) the efforts to make the inventory available and accessible to the public; and (3) ways to make the inventory more useful.

Background

The Congress envisioned that the Toxic Release Inventory would give the public unprecedented access to environmental data that it could use to prompt industry to control emissions. The data were also to serve as a tool for government regulators to better measure the success of environmental programs and to help them work with industry to identify ways to reduce pollution.

The act requires manufacturers that produce, import, process, or use specified amounts of 1 or more of over 300 chemicals to report their emissions to EPA and the states. Facilities must estimate the quantity of chemicals emitted directly into the air, land, and water or sent to locations that treat, store, or dispose of toxic waste. Additionally, the act requires that EPA make the inventory available and accessible to the public through an on-line computerized data base and by other means.

Results in Brief

Although the inventory has been available only since 1989, it has become a valuable source of environmental information. For example, federal and state governments have used the data to enact laws designed to control and reduce toxic emissions. Also, the public availability of the data has prompted some companies to set emissions reduction goals.

Segments of the public—predominantly environmental and public interest groups—use the data extensively. EPA, states, and manufacturers reported, however, that they have received fewer requests for the data from individual citizens. A GAO poll disclosed that more than half of the residents in three counties with high levels of emissions were unaware that the data were available to the public. EPA's public outreach efforts have been limited because of other program priorities.

The inventory would be more useful to regulators and the public if it were comprehensive. At present, it does not include data on many toxic chemicals or on emissions from nonmanufacturers—including federal facilities—which are not required to report. The inventory also does not include data from at least 10,000 facilities that have not met their reporting obligation. The quantity of toxic emissions not reflected in the inventory is unknown but could be substantial—as much as 95 percent of total emissions, according to estimates by the Office of Technology Assessment. Finally, because most of the data are not verified, their reliability is questionable.

Principal Findings

Use of the Inventory Is Extensive

Within a short time, the inventory has become an important source of environmental data. Sponsors of the 1990 Clean Air Act Amendments, for example, used the data on air emissions to show the need to regulate more air pollutants. EPA is working with industry to halve the emission of 17 inventory chemicals by 1995. States, such as Massachusetts and Oregon, have used the data to pass more stringent laws to reduce the use and the emission of toxic chemicals. Moreover, publicity concerning the inventory has prompted some major companies to set pollution reduction goals. For example, one large nationwide chemical firm plans to reduce its emissions by almost 90 percent by 1992.

Individual Citizens' Demand for Inventory Data Is Limited

The inventory data are available to the public through an on-line data base, a national report, a computer diskette, and other formats. Certain groups—chiefly environmental and public interest groups—use the data extensively. However, EPA, state, and industry representatives have received fewer requests for this information from individual citizens. A GAO poll found that more than 50 percent of the residents in three counties that reported high levels of emissions were unaware that

the data were publicly available, although many expressed interest in learning about toxic emissions in their communities.

EPA has worked with several groups of professionals, such as librarians and journalists, to publicize the availability of the data and to educate these groups about the inventory. However, other program demands have limited EPA's public outreach efforts. In addition, program officials have disagreed about whether EPA should be engaged in interpreting the significance of the data for the public.

Inventory Could Be Improved in Several Ways

Include More Emissions Sources and Chemicals

The inventory would be more useful if it were more comprehensive. At present, it omits data from many sources of toxic emissions. Nonmanufacturers and facilities with fewer than 10 employees are not required to report. Nor are federal facilities required to report, although EPA has identified about 850 federal facilities subject to other federal environmental laws. The inventory also omits data on many toxic chemicals, including some known or possible human carcinogens, and data are limited on pesticides used by the agricultural sector. Although EPA has the authority to expand the reporting requirements, it has not comprehensively identified and prioritized which sources and chemicals should be added. EPA would need legislative authority before it could require federal facilities and facilities with few employees to report.

Increase Compliance With Reporting Requirement

The inventory would also be more comprehensive if more facilities met their reporting requirements. EPA and states estimate that at least 10,000 facilities are not complying with their legal obligation to report. On the basis of data from 39 states, GAO estimates that nationwide at least 36 percent of facilities required to report did not do so for the 1988 inventory. In GAO's view, problems with EPA's enforcement efforts are partly responsible. For example, several EPA regions are using inefficient strategies to identify nonreporters, and as of March 1990, EPA had resolved only 68 of 209 civil complaints issued against nonreporters. Moreover, the absence of explicit authority under the Emergency Planning and Community Right-to-Know Act to inspect facilities for compliance may make it difficult for EPA to enforce the program. At present, EPA has to rely on inspection authorities granted under other environmental laws.

Verify More Emissions Data

Users would have greater confidence in the inventory if EPA verified more of the emissions data. EPA has limited knowledge of the data's quality, having reviewed the data from only a few of the more than 19,000 facilities that submitted reports. Problems identified included the failure to submit required reports for all chemicals and the under- or overestimation of emissions. To date, EPA has used its resources to identify facilities that have not reported rather than to evaluate the quality of the reported data.

Recommendations to the Congress

GAO recommends that the Congress amend the act to (1) require federal facilities to submit emissions reports, taking into account the national security implications of having to report on some toxic chemicals, and (2) provide EPA with explicit authority to inspect facilities.

Recommendations to EPA

GAO recommends that the Administrator of EPA, among other things, (1) identify which sources of toxic emissions, including nonmanufacturers and facilities with fewer than 10 employees, should be required to report and which toxic chemicals should be added to the inventory; (2) develop a public outreach strategy that more effectively publicizes the availability of the data; (3) develop an effective regional inspection strategy to better identify nonreporters and issue national guidance for implementing this strategy; and (4) place greater emphasis on verifying the data, especially the emissions estimates.

Agency Comments

EPA generally agreed with GAO's findings and recommendations, stating that the report presents a fair and balanced evaluation of the program. EPA recognized the desirability of expanding the reporting requirements but had several concerns, including the potential burden on small businesses and the national security implications for federal facilities. In GAO's view, these are legitimate concerns that EPA and the Congress should consider in modifying the program. However, GAO believes that these concerns should not override efforts to expand the inventory. Policymakers and the public need more comprehensive data to set environmental priorities and measure progress in reducing pollution.

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Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
CD-ROM	Compact disk-read only memory
CFC	Chlorofluorocarbons
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
GAO	General Accounting Office
GPO	Government Printing Office
IMD	Information Management Division
NLM	National Library of Medicine
NOAA	National Oceanic and Atmospheric Administration
NRDC	Natural Resources Defense Council
NTIS	National Technical Information Service
OCM	Office of Compliance Monitoring
OTS	Office of Toxic Substances
SIC	Standard Industry Classification
TOXNET	Toxicology Data Network

Introduction

Chemical disasters—such as the accidental release of a deadly gas in Bhopal, India, in 1984 that killed and injured thousands of people—along with a host of environmental problems—polluted air and water, toxic waste sites, ozone depletion—have increased demand for better information about toxic chemical emissions. Policymakers and the public need adequate information on industrial pollution to determine where the need for action is greatest and to better measure the results of current environmental policies and programs so that limited resources can be used effectively.

In 1986, the Congress responded to these information needs by enacting the Emergency Planning and Community Right-to-Know Act (EPCRA) (P.L. 99-499), which required thousands of industrial facilities to report on their use and release of hundreds of chemicals. A key provision of EPCRA required manufacturers, starting in 1988, to report annually to the Environmental Protection Agency (EPA) and states the estimated quantities of toxic chemicals emitted directly into the environment or transported to waste treatment, storage, or disposal locations.¹ EPA is required to collect this information, compile it into a Toxic Release Inventory, and make it available to the public through various formats, including a computerized data base.

The Toxic Release Inventory: What It Is and How It Works

The Toxic Release Inventory contains nationwide information on toxic chemicals emitted by manufacturing facilities.² The inventory provides information on routine releases to the air, ground, and water; on accidental spills and leaks; and on toxic waste sent to treatment, storage, or disposal facilities.³

Reporting Requirements

Under EPCRA, all facilities in the manufacturing sector—Standard Industry Classification (SIC) codes 20 through 39—that have 10 or more full-time employees must report if, during a calendar year, they (1) produce, import, or process 25,000 pounds or more of 1 or more of over 300

¹The act, sometimes referred to as title III of the Superfund Amendments and Reauthorization Act of 1986, also required the creation of state and local planning organizations to prepare for chemical accidents and required industrial facilities to report their hazardous chemical inventories annually to local planning organizations. Our report does not examine these aspects of the legislation.

²EPCRA covers facilities in the manufacturing sector in the 50 states, the District of Columbia, Puerto Rico, American Samoa, Guam, and the Northern Mariana Islands. Appendix II lists the industries.

³Appendix III lists the reportable chemicals for the 1988 inventory.

chemicals, or (2) use 10,000 pounds or more of a listed chemical. Reports are due no later than July 1 of the following calendar year.

Facilities that meet the reporting criteria must submit a report for each chemical to EPA and to the state where each facility is located. Since reporting is based on chemical production or use, reports must be submitted even if no releases are estimated or the emissions levels comply with all environmental laws and permits. Facilities may develop their estimates by using readily available data or by using standard chemical engineering formulas; no additional monitoring of the facility's equipment is required. They must indicate whether the toxic chemical was emitted into the air, discharged into rivers and streams, disposed of in on-site landfills, transported in wastewater to public sewage treatment plants, or injected into underground wells. Information that facilities must report includes the (1) maximum amount of the chemical onsite during the year, (2) purposes for which the chemical was used, and (3) steps taken to treat the waste. Under the Pollution Prevention Act of 1990, beginning with reporting year 1991, facilities will also be required to report the steps taken to prevent pollution, including those designed to minimize the generation of toxic waste.

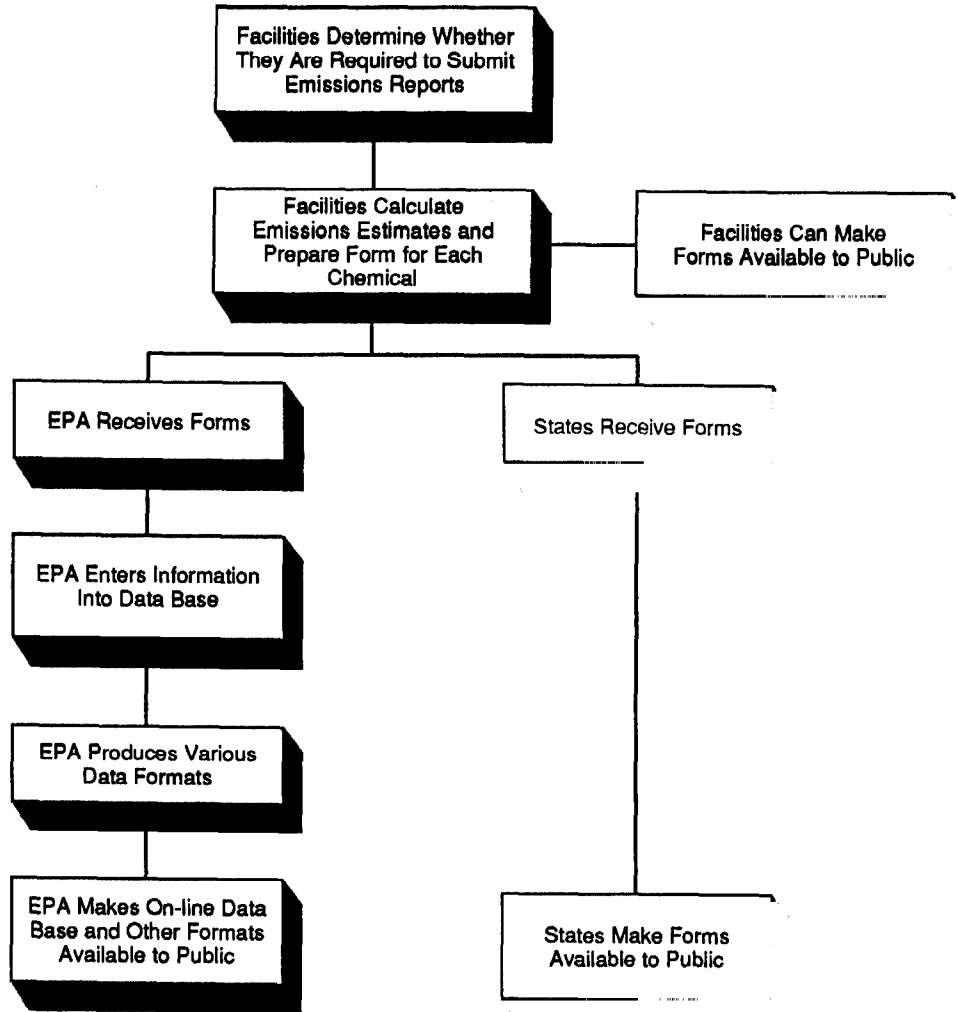
Public Availability of Emissions Inventory

The process by which EPA develops an annual inventory and makes it publicly available consists of several steps. (See fig. 1.1.) A facility determines its need to report, completes the applicable report(s), and sends its reports to EPA and to the state where it is located. EPA transcribes each report into an internal computerized data base. The resulting master tape is used to create various products, including a data file available to the public through the Toxicology Data Network (TOXNET) (maintained by the National Library of Medicine at the National Institutes of Health), a national report, magnetic tapes, microfiche, computer diskettes, and CD-ROMS.⁴ All these formats are available for sale.⁵ In addition, EPA distributes, on request, free copies of individual reports.

⁴CD-ROM, which stands for "compact disk-read only memory" is an electronic data format that can be used with special computer technology.

⁵Appendix IV describes these various formats, their cost, and ways to obtain them.

Figure 1.1: Steps in Making Inventory Available



Anticipated Benefits of Inventory

In establishing the toxic emissions reporting requirement, the Congress envisioned that the inventory would serve as an analytic tool to be used widely in government and the private sector. Legislators and other supporters believed that the inventory would enable government regulators to better gauge the efficacy of existing environmental programs and more effectively set future regulatory priorities by providing a more comprehensive picture of the quantity of toxic pollutants entering the air, ground, and water from year to year. The inventory was similarly seen as a mechanism that would help industry better control pollution

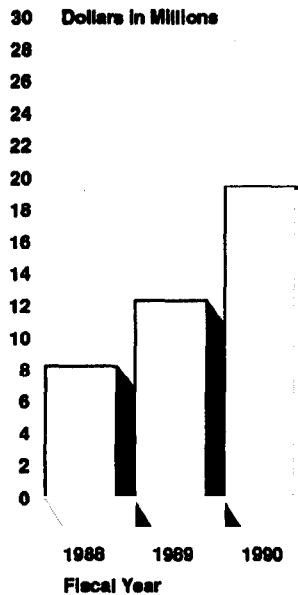
because the information could be used to identify useful operational changes. Furthermore, legislators and others, including environmental advocates, believed that the inventory would give individuals and community leaders unprecedented access to data needed to work with facilities to develop effective strategies for reducing the environmental and health risks posed by toxic releases.

Program Administration

EPA's Economics and Technology Division, Office of Toxic Substances (OTS), is responsible for overall implementation of the Toxic Release Inventory Program. A small core staff oversees the program's day-to-day operations, assisted by staff from other OTS divisions, including the Information Management Division, the Economic Assistance Division, the Existing Chemicals Assessment Division, the Exposure Evaluation Division, and the Health and Environmental Effects Division. Further assistance is provided by the Office of Pesticides and Toxic Substances' Office of Compliance Monitoring (OCM), the Office of Enforcement, and EPA's 10 regional offices. In fiscal year 1990, about 52 full-time-equivalent staff administered the program. Key activities include not only compiling the inventory and making it available to the public but also making facilities aware of reporting requirements, promoting their compliance, and taking enforcement action against those failing to comply.

Between fiscal years 1988 and 1990, EPA spent approximately \$40 million to implement the program, increasing annual expenditures from \$8 million to about \$19 million. (See fig. 1.2.) About half of the program's resources have been used to collect and process the data submitted by facilities.

Figure 1.2: Program Expenditures



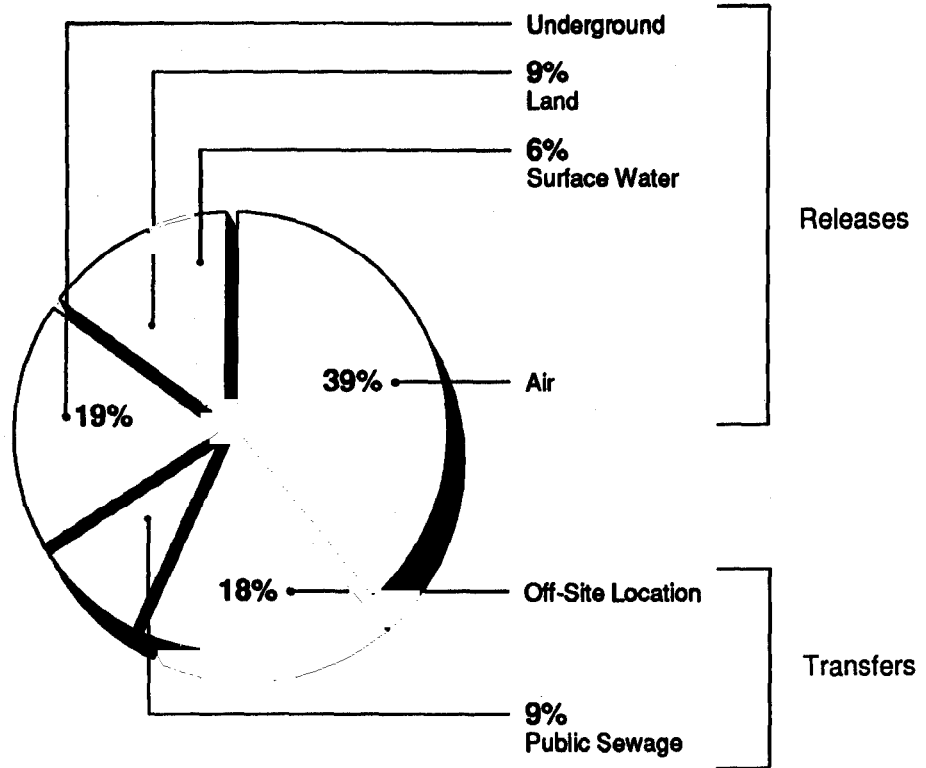
Source: GAO's analysis of EPA data.

Toxic Releases Nationwide: An Overview

According to the more than 130,000 individual chemical emissions reports submitted in the program's first 2 years, roughly 19,000 facilities emitted more than 13 billion pounds of toxic chemicals.⁶ In 1988 alone, approximately 6.24 billion pounds of toxic chemicals were reportedly emitted into the air, land, and water or transferred to waste treatment, storage, or disposal locations. Overall, 73 percent of the chemicals were emitted directly to the environment and 27 percent transported to other locations. (See fig. 1.3.)

⁶Data are based on the April 6, 1990, version of the data base described in Toxics in the Community: National and Local Perspectives, EPA (Sept. 1990).

Figure 1.3: Percentages of Total Releases and Transfers of Toxic Chemicals



Source: EPA.

Most facilities that submitted information for the 1988 inventory were located in the industrial Mid-Atlantic, the Midwest, the Gulf Coast states, and California. Relatively few of the reporting facilities were from the Rocky Mountain area, southwestern states, and northern New England. (See fig. 1.4.)

Objectives, Scope, and Methodology

This is the last of five reports we were mandated to prepare under the Superfund Amendments and Reauthorization Act of 1986.⁷ As required by title III, section 313(k), of the act, we reviewed EPA's and the states' implementation of the Toxic Release Inventory Program, including

- the steps taken to make the inventory available and accessible to the public;
- the purposes for which and the extent to which EPA, other federal agencies, states, and the public have used the data; and
- the legislative and administrative options to improve the usefulness of the inventory.

To examine EPA's and the states' implementation of the program, we focused on the efforts to (1) make the inventory available and accessible to the public, (2) ensure that facilities submit reliable information, (3) accurately and efficiently process the data, and (4) enforce program requirements to increase the number of facilities reporting. To assess the progress in making the inventory available and accessible to the public, we interviewed officials in EPA and the National Library of Medicine (NLM). We surveyed state environmental officials,⁸ reviewed EPA's various data format studies, and obtained information from the Government Printing Office (GPO) and the National Technical Information Service (NTIS) on the distribution and sales of the data formats. Additionally, we surveyed users of the public data base to determine whether they were satisfied with the system and whether they desired changes to make it more useful for their purposes. We contracted with a private research firm to poll residents in three counties. Furthermore, we obtained the perspectives of state officials and representatives of public libraries in Illinois, Pennsylvania, and Texas—the three states that we selected for detailed review. Finally, we convened a panel with

⁷The other mandated reports we issued were Hazardous Waste: Issues Surrounding Insurance Availability (GAO/RCED-88-2, Oct. 16, 1987); Superfund: Improvements Needed in Workforce Management (GAO/RCED-88-1, Oct. 26, 1987); Superfund: Insuring Underground Petroleum Tanks (GAO/RCED-88-39, Jan. 15, 1988); Superfund: Contractors Are Being Too Liberally Indemnified by the Government (GAO/RCED-89-160, Sept. 26, 1989).

⁸We did not send our state questionnaires to officials in American Samoa, Guam, and the Northern Mariana Islands. The Alaska Department of Environmental Conservation did not respond to our questionnaire.

representatives of seven environmental and public interest organizations to obtain their views on the program, including their experiences using various data formats.⁹

To assess EPA's efforts to obtain quality data from facilities, we obtained information from EPA and states on their strategies for helping facilities prepare their reports. We also sent questionnaires to facilities that had submitted reports to obtain their perspectives on program implementation, including their degree of satisfaction with the technical assistance they had received. In addition, we also reviewed the results of EPA's data quality reviews and data quality studies prepared by contractors and obtained the views of EPA and state officials on the accuracy of facilities' release estimates.

To assess EPA's efforts to accurately transcribe the information in emissions reports, we tested whether all the reports submitted were contained in the 1988 data base and whether key information was correctly transcribed. We observed the entry of data, interviewed EPA and contractor officials, and reviewed various system documents, including guidance on data entry.

In focusing on EPA's compliance and enforcement efforts to ensure that all required facilities submit emissions reports, we interviewed and/or corresponded with officials in EPA headquarters and 10 regional offices. We also reviewed a sample of inspection and enforcement case files in the three regions visited and obtained summary statistics from the seven other regional offices not selected for detailed review. Furthermore, we obtained information from EPA and states on the strategies they used to increase industry's awareness of the program. Through our nationwide survey and field visits, we obtained the views of facilities on various topics germane to compliance.

To examine how the public, states, EPA, and other federal agencies have used the inventory data and the extent to which they have done so, we sent questionnaires to states, individuals, and organizations that accessed the public data base, and a random sample of facilities that submitted release reports. We supplemented these efforts with letters of inquiry to EPA regional offices and 13 other federal agencies that we

⁹The organizations were the Clean Water Action Project, the Environmental Action Foundation, the Environmental Law Institute, the Environmental Policy Institute, Greenpeace International, the Natural Resources Defense Council, and the Working Group on Community Right-to-Know.

believed could probably use the information contained in the inventory.¹⁰ We contracted with a private research firm to conduct seven focus group sessions composed of industry, local community, and state government representatives to obtain their views on program implementation and to learn how they used the data. Furthermore, we interviewed EPA headquarters and regional officials, state environmental and public health officials, and staff at selected local libraries. We also reviewed the relevant literature.

To identify options for improving the usefulness of the inventory, we reviewed its comprehensiveness, completeness, and accuracy—all factors we believed would influence how useful the inventory is to diverse users. We reviewed these factors in the course of addressing the other two objectives.

Appendix I contains details on our survey methods and our methodology for testing the data base's reliability.

Our review was conducted at EPA headquarters in Washington, D.C.; the National Library of Medicine in Bethesda, Maryland; a private contractor's telephone polling facility in Frederick, Maryland; EPA regional offices in Chicago, Philadelphia, and Dallas; state environmental and public health agencies and nine judgmentally selected facilities in Illinois, Pennsylvania, and Texas. Localities were selected on the basis of various factors, including geographic diversity, types, and numbers of reporting facilities. We visited facilities that varied in manufacturing category, size, and number of reports submitted. We also contacted staff affiliated with three randomly selected public libraries in each of the three states.

EPA's comments on a draft of this report are included in appendix VI. We have incorporated the comments and our evaluation, where appropriate, in the final report. Our review was conducted between August 1989 and May 1991 in accordance with generally accepted government auditing standards.

¹⁰The agencies were the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Housing and Urban Development, Interior, Labor, State, Transportation, and Veterans Affairs; the Council on Environmental Quality; and the National Science Foundation. The Department of Defense did not respond to our inquiry.

Inventory Is Useful, but More Comprehensive Information Is Needed

Since the Toxic Release Inventory was made publicly available in 1989, it has become a useful source of environmental information for federal and state agencies and for various nongovernmental groups. Air emissions data from the inventory contributed to the Congress' decision to regulate more toxic chemicals under the 1990 Clean Air Act Amendments. Within EPA, where "pollution prevention" is now the watchword, this new environmental data base has become a useful analytic tool. Some states have used the data to enact stricter pollution control laws. Environmental and public interest groups have publicized the names of manufacturers that the inventory showed emitted large quantities of toxic chemicals. The publicity has spurred some companies to commit themselves publicly to pollution reduction goals.

Although the inventory has been useful, it does not provide a comprehensive picture of toxic pollution nationwide. It does not include information on emissions from many sources of pollution outside of the manufacturing sector—including federal facilities—or from manufacturing facilities with fewer than 10 employees. Furthermore, the inventory does not include data on many widely used toxic chemicals. Thus, although the total quantity of toxic substances that is emitted but not reflected in the inventory is unknown, it could be substantial—perhaps as high as 95 percent, according to the Office of Technology Assessment (OTA).

EPCRA authorizes EPA to revise the chemical list and to require nonmanufacturers to report their emissions. Requiring federal facilities or facilities with fewer than 10 employees to report their emissions, however, would require legislative changes. To date, EPA has not acted swiftly to expand the reporting requirements significantly.

Inventory Helps Federal Agencies Manage Environmental Programs

The success of federal environmental programs has been difficult to measure, in part, because environmental managers have lacked complete, long-term data on toxic pollutants in the air, land, and water.¹ For EPA, the Toxic Release Inventory helps fill this information gap, especially with respect to toxic air emissions. Other federal agencies with environmental and public health missions are not yet using the inventory data extensively, but several agencies reported that they expect to use it in the future.

¹Environmental Protection Agency: Protecting Human Health and the Environment Through Improved Management (GAO/RCED-88-101, Aug. 16, 1988).

EPA Uses Inventory for New Approaches to Environmental Management

EPA has made significant use of the inventory to support the enactment of new clean air legislation, develop pollution prevention and reduction strategies, and adopt a new approach to enforcement encompassing all environmental media—air, land, and water. EPA, working with the Congress, used the inventory data on toxic air emissions as evidence of the need to regulate more air pollutants under the 1990 Clean Air Act Amendments. The agency plans to use the inventory's air emission data to support various agency projects required by the act. For example, EPA's Office of Air Quality Planning and Standards intends to use annual emissions data to assess the incidence of cancer and other long-term health problems in areas near facilities that report emissions.

EPA is using the inventory in its Industrial Toxics Project, a major component of the agency's pollution prevention strategy. The project involves developing prevention strategies for 17 of the inventory chemicals that are believed to present significant risks to human health and the environment. The goal of the project is to reduce aggregate nationwide emissions of the selected chemicals by 33 percent by 1992 and by at least 50 percent by 1995. EPA hopes to use the annual emissions inventory to gauge the progress being made to reduce the emissions of these chemicals.

EPA has also used the inventory to target specific facilities, industries, and geographic areas for studies on pollution prevention. For example, Region II's Air and Waste Management Division contacted 19 companies in New York and New Jersey to seek reductions in their facilities' toxic air emissions. At the time of our review, the region was working with five of the companies to identify reduction strategies. According to regional officials, one facility had installed a vapor recovery system, and another had agreed to use less chlorine, an inventory chemical, in its manufacturing process.

Finally, the inventory has enabled EPA to adopt an innovative cross-environmental media approach for enforcing its programs. In fiscal year 1990, EPA's Office of Enforcement and EPA's regional offices initiated pilot projects to target reporting facilities for cross-media compliance inspections. For instance, Region I planned to use the inventory in conjunction with other environmental data bases to identify facilities for these inspections. EPA would then inspect selected facilities for compliance with various federal environmental statutes. According to EPA officials, the agency may assess reduced penalties for facilities found in violation if the facilities agree to undertake pollution prevention activities.

**Inventory Is Used by
Several Other Federal
Agencies**

Of the 12 federal agencies that responded to our survey, five have used the inventory for various environmental and public health projects. These five agencies, plus one additional agency, plan to use the information in the future.

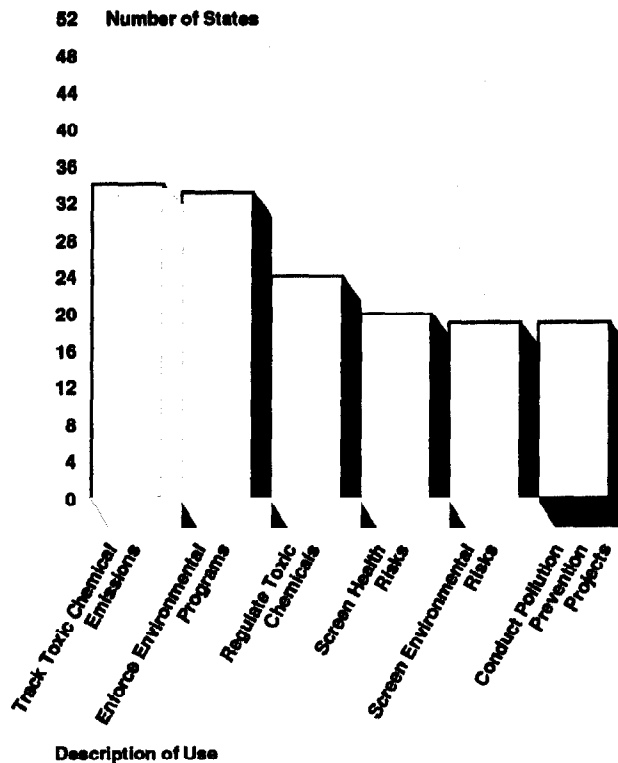
The federal agencies outside of EPA that are using or plan to use the inventory most extensively are the Agency for Toxic Substances and Disease Registry (ATSDR) and the National Oceanic and Atmospheric Administration (NOAA). ATSDR, whose mission is to prevent or mitigate adverse human health effects resulting from exposure to hazardous substances in the environment, uses the emissions data to assess the present and future impact of these substances. It also uses the data to prepare toxicological profiles of hazardous chemicals.

NOAA is working with EPA's Office of Chemical Emergency Preparedness and Prevention to incorporate the data into a computer program that fire fighters and other emergency workers use to deal more safely and effectively with accidental releases of hazardous substances. According to NOAA, the data will help the agency identify high-risk geographic areas—for example, localities where toxic chemicals could be released close to high-density residential areas, schools, and hospitals.

**States Use Data to
Regulate Toxic
Chemicals**

Like the federal government, state agencies are using the inventory to help manage environmental programs. As shown in figure 2.1, many states have used it in various ways, including tracking toxic chemical emissions, enforcing environmental programs, and regulating toxic chemicals.

Figure 2.1: Uses of Inventory by the States



Description of Use

Note: All 50 states were surveyed, as well as Puerto Rico and the District of Columbia. Alaska did not respond.

Source: GAO's analysis of questionnaires from states.

Various EPA, state, and environmental organizations we contacted have credited the inventory with having stimulated the enactment of more stringent pollution control laws in some states. In 1989, for example, Oregon and Massachusetts enacted the first laws in the nation requiring reductions in the use of toxic chemicals. The legislation was largely brought about by the efforts of public interest research groups. In Oregon, all companies that submit reports, as well as hazardous waste generators, must set goals to reduce pollution by 1991 or, for small-quantity generators, by 1992. The Massachusetts legislature established a goal of reducing the amount of toxic waste generated statewide by 50 percent by 1997. Massachusetts facilities that use large quantities of toxic chemicals must develop plans for reducing chemical use. In addition, Illinois environmental officials said that they are using the inventory data from facilities in their state to develop a list of toxic air

contaminants, as required by the Illinois Environmental Protection Act. The act requires the development of regulations for these air pollutants.

Some states have found that the inventory is an important source of information for environmental enforcement. For example, EPA Region I officials told us that Massachusetts environmental agencies had used the data to select 26 facilities that emit large quantities of toxic chemicals in the state's Blackstone River area. These facilities were selected to test the feasibility of inspecting industrial facilities for compliance with various state and federal environmental regulations. This project resembles EPA's new cross-environmental-media enforcement approach.

Inventory Motivates Industry to Establish Pollution Reduction Goals

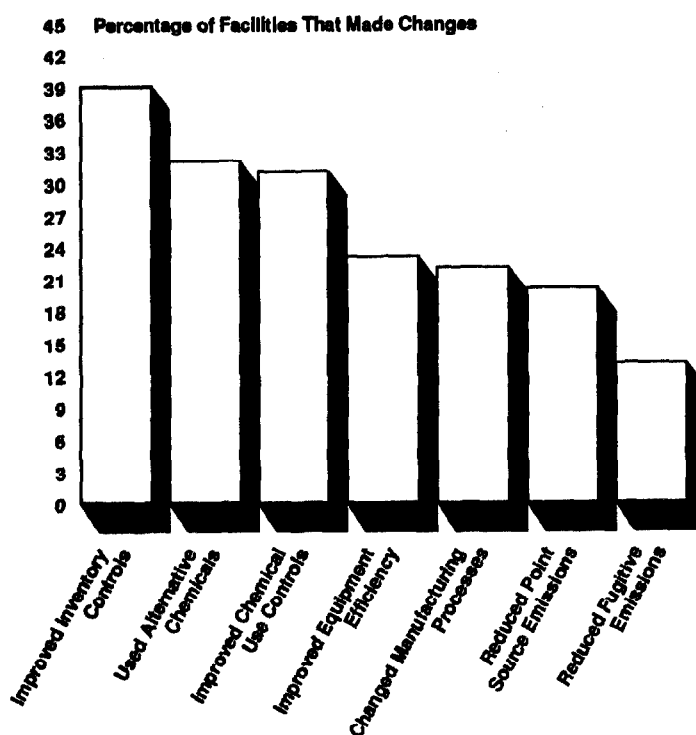
According to EPA officials and select environmental groups and industry representatives, the public availability of the inventory data has prompted the senior management of some companies to make public commitments to meeting corporate pollution reduction goals. Those we contacted noted, for example, that some large manufacturers have established significant pollution reduction goals partly because the inventory is available to the public. One large chemical corporation listed in the 1987 inventory as a top air polluter pledged to cut its release of inventory chemicals to 90 percent of their 1987 levels by 1992. Similarly, a representative of another large chemical corporation said that, using 1987 as a benchmark year, the company had established a corporate goal of reducing its toxic air releases by 70 percent by 1993.

On the basis of our nationwide survey, we estimate that over half of all reporting facilities made one or more operational changes as a consequence of the inventory program.² Representatives of the Chemical Manufacturers Association, which represents many of the nation's largest chemical companies, viewed the inventory as a tool to help facilities identify equipment leaks and other inefficiencies that increase their emissions. Representatives of several facilities we visited stated that because they had to estimate their emissions levels, plant managers made changes to reduce emissions. A fiberglass company in Texas installed vapor recovery equipment that reportedly cut total releases of one of its two inventory chemicals by 90 percent. Similarly, a representative of a large Texas petroleum company stated that a new pollution control system reduced emissions by 50 percent. Figure 2.2 shows the

²Approximately 71 percent of the survey's respondents made operational changes. Our lower bound estimate, assuming no changes were made among nonrespondents, was 61 percent. The sampling error was 3 percent.

types of changes facilities responding to our national survey reported that they had made.

Figure 2.2: Operational and Administrative Changes by Industry



Description of Change

Note: Sampling error for all estimates is ± 3 percent.
 Source: GAO's analysis of questionnaires from facilities.

Environmental and Public Interest Groups Use Inventory Extensively

Environmental and public interest groups—entities that function as proxies for the environmental concerns of the public—are some of the more extensive users of the inventory. These groups, as well as the mass media, have publicized the names of top polluting facilities and industries. This publicity has helped motivate some companies to work toward reducing toxic releases.³

Using the inventory data, national and grassroots organizations have prepared national, state, and local reports listing top polluters. Several

³Appendix V contains a list of selected publications prepared by environmental and public interest groups, and federal and state agencies.

representatives of environmental and public interest groups whom we interviewed commented that these reports had spurred some corporations to commit themselves publicly to reducing their toxic releases. California's Silicon Valley Toxics Coalition, for example, found that facilities in Santa Clara County had discharged the largest quantities of chlorofluorocarbons (CFC) in the state. The coalition's list of the "Dirty Dozen"—facilities emitting the largest quantities of inventory chemicals in the state—received widespread news coverage and may have motivated one of the companies to agree to stop using CFC Freon 113 by the end of 1993.

The mass media have also carried reports about the status and trends of toxic pollution nationwide and locally. In 1989, for example, the national newspaper USA Today used the 1987 inventory data to publish a special 3-day series of articles on toxic pollution that reached 2 million daily readers.⁴ The series described the air, ground, and water emissions in each state and the 500 counties where the release of toxic chemicals was greatest and named the top polluters in the nation. The inventory has also received national television coverage. In March and June 1989, for example, ABC-TV's World News Tonight made the inventory the focus of news stories highlighting the nation's toxic pollution problems.

Comprehensive Data Would Make the Inventory More Useful

Although we found that the Toxic Release Inventory is useful, it does not include information from nonmanufacturers, federal facilities, and manufacturing facilities with fewer than 10 employees. The inventory also does not include information on many widely used toxic chemicals. Therefore, while the quantity of toxic chemicals emitted annually but not included in the inventory is not specifically known, the amount could be substantially higher than the roughly 6.2 billion pounds of emissions reported in the 1988 inventory. According to OTA, the inventory reflects only a small portion of the total toxic releases nationwide. Although the 1987 inventory showed 20 billion pounds of emissions, OTA has estimated emissions levels closer to 400 billion pounds, given that many source categories and toxic chemicals are not included in the inventory.⁵ While EPA recognizes the importance of expanding the inventory to make it more useful, the agency has not yet comprehensively reviewed what information needs to be added and what action needs to be taken.

⁴"Special Report: Tracking Toxics," USA Today (July 31- Aug. 2, 1989).

⁵Statement by OTA before the Subcommittee on Superfund, Ocean and Water Protection, Committee on Environment and Public Works, United States Senate, May 10, 1989.

**Nonmanufacturers,
Federal Facilities, and
Small Facilities Not
Required to Report**

Many industries outside the manufacturing sector that use substantial quantities of toxic chemicals annually are not currently required to report their emissions. According to EPA, source categories not currently required to report include mineral mining and processing, oil and gas extraction, and agricultural operations. The agricultural sector alone used about 850,000 pounds of pesticides in 1988. In a May 1991 report, the Natural Resources Defense Council (NRDC) also highlighted what it believes are critical information gaps in the inventory, noting that facilities that are not part of the manufacturing sector use substantial quantities of toxic chemicals that are not reflected in the inventory.⁶ NRDC cited industries exempted from the reporting requirements other than those mentioned above, including chemical storage and transfer facilities, industrial dry cleaners, electric utility plants, and photo-processing plants.

Because of these reporting exemptions, many persons whom we contacted during our review believed that the inventory's reporting requirements should be revised. We found strong support among government officials, states, reporting facilities, and environmental and public interest groups for expanding the program's reporting requirements to cover industries outside the manufacturing sector. Moreover, we found that 28 states and about half of all reporting facilities favored, for example, requiring reporting by hazardous waste treatment, storage, and disposal facilities. In its 1991 report, NRDC also favored the inclusion of these sources, noting that such waste management facilities receive large quantities of toxic chemicals for disposal or treatment and therefore are among the important sources of environmental contamination. We also found support within EPA, where officials in several program offices told us that expanding the inventory to cover large users of toxic chemicals outside the manufacturing sector would make the inventory more useful to their programs.

EPA has the authority to require facilities outside the manufacturing sector to report their emissions. While it has studied the possibility of expanding the reporting requirements to include several nonmanufacturing industries, the agency has not yet decided which, if any, should report their toxic releases. In fiscal year 1989, for example, EPA studied the waste treatment and disposal industry, as well as petroleum and chemical distributors and trade-related industries, and planned to examine other industries, such as those involved in mining and extraction. These studies estimate the quantities and types of chemicals such

⁶The Right to Know More: Toxic Releases Into the Environment, NRDC (Washington, D.C.: May 1991).

industries process or use but do not recommend which industries should be required to report.

Forty states, 67 percent (± 3 percent) of reporting facilities, and other data users strongly supported requiring federal facilities to report their releases. In its 1991 report, NRDC also supported the inclusion of federal facilities, stating that the disclosure of information on the environmental releases from these facilities was important to fulfill the public's right to know and provide comprehensive environmental information to government regulators.

EPA has not estimated the level of toxic emissions from federal facilities. However, in March 1990, the agency issued a study concluding that about 850 federal facilities are subject to other environmental statutes and therefore probably would be obligated to report their emissions if EPCRA were revised to make federal reporting mandatory. Currently, government-owned and contractor-operated facilities are required to report. However, other federal facilities that use large quantities of toxic chemicals are not, such as army maintenance depots that use large quantities of paints and chemical solvents.

Currently, facilities owned and operated by the federal government cannot be required to report their releases without a legislative change because, unlike other environmental laws, EPCRA does not include federal facilities under the definition of "person." The act's legislative history does not explain why federal facilities are exempt. In 1988, EPA requested that federal facilities voluntarily report their releases, but few facilities have done so, according to EPA. Although EPA favors making federal facilities subject to EPCRA, it has not taken any action yet because revision of the law is not a high priority, according to an OTS official. In addition, EPA also believes that federal facilities present a special concern because of the potential national security implications of their emissions data. While we recognize that this is a legitimate concern, in our view, not all the facilities would pose national security concerns, and for those that may, exemptions could be provided.

The states and data base users in our survey familiar with the inventory program generally favored requiring facilities with fewer than 10 employees to report their toxic emissions. In addition, 41.7 percent (± 3 percent) of facilities also favored this change. In commenting on the need to expand the scope of the Toxic Release Inventory, NRDC pointed out that although citizens have the right to know what toxic chemicals are being emitted by facilities in their communities, their information is

limited because small businesses are not required to report their emissions. Although EPA is sensitive that reporting might impose a burden on small businesses, several OTS officials stated that, in their view, such facilities could be responsible for releases at least equal to those from larger facilities.

In its 1988 regulatory impact analysis for the inventory program, EPA estimated that there were about 164,500 manufacturing facilities nationwide with fewer than 10 employees. How many of these facilities would actually be obligated to report is, however, unknown because information is not available on how many use inventory chemicals in quantities greater than the designated thresholds.

EPA has not examined whether the reporting requirements should be legislatively changed to cover facilities with fewer than 10 employees. OTS officials believe that EPA will assign lower priority to this issue than to determining whether certain nonmanufacturers and federal facilities should report their emissions.

EPA Has Authority to Expand Inventory Chemicals

The inventory program's present list of over 300 chemicals omits many toxic chemicals used and released nationwide. The Congress derived the original chemical list from lists of toxic chemicals developed for New Jersey's and Maryland's community right-to-know programs—both implemented before the federal inventory program. Maryland's list included chemicals subject to other federal environmental programs and chemicals known or likely to be carcinogens. New Jersey listed chemicals that were used or imported into the state and the United States in excess of 10,000 pounds per year and those known to cause cancer and other adverse health effects.

The inventory also does not include many chemicals regulated under other federal environmental statutes. For example, officials in EPA's Office of Water told us that the inventory omits 32 of the 126 chemicals listed in the Clean Water Act's Priority Pollutant List—chemicals that are considered when guidance for water quality standards is developed. According to an official in EPA's Office of Air, the inventory also omits 16 of 189 hazardous air pollutants regulated by the 1990 Clean Air Act Amendments, although information on these chemicals would be useful for projects the agency is obligated to carry out under this new legislation. NRDC has also identified many chemicals regulated under other statutes that are not covered by the inventory. For example, NRDC found that the inventory does not include information on 41 of 129 chemicals

cited by EPA's Cancer Assessment Group as known or probable human carcinogens. Additionally, NRDC found that 69 pesticides that have undergone or are undergoing examination through EPA's Special Review process also are not reportable chemicals.

EPA has the statutory authority to add or delete chemicals from the inventory list. The agency has added nine chemicals to the list on its own initiative, but most changes have resulted from petitions from industry, environmental and public interest groups, and states. EPA has also added seven ozone-depleting chemicals to the list in response to a petition from NRDC and the governors of New York, New Jersey, and Vermont, and has deleted six chemicals as a result of industry petitions. In May 1991 EPA stated that work was under way to establish criteria and priorities for expanding the list. The agency is also planning to add chemicals regulated under the Clean Air Act Amendments of 1990.

An OTS official responsible for processing these petitions told us that it would be beneficial for EPA to comprehensively compare the chemicals on the list with the toxic chemicals regulated by other EPA programs to determine whether any of these chemicals should be added. At the time of our review, however, EPA had no plans for a comprehensive assessment and was focusing its resources on responding to additional petitions for revising the chemical list.

Conclusions

In the 3 years since the Toxic Release Inventory first became available, it has become an important tool for government regulators, various non-governmental groups, and industry to use in gauging the extent of the nation's toxic pollution problems and to setting national and state environmental regulatory agendas. The inventory would be still more useful if it included information from nonmanufacturing facilities, federal facilities, and facilities with fewer than 10 employees and if it included data on additional toxic chemicals. Although EPA has the authority to change some of the reporting requirements, it has taken little action. Such changes have not been a priority in the program's first 3 years and thus have not been pursued. We believe that EPA needs to comprehensively review which other industrial facilities should report their emissions and which other toxic chemicals should be added to the inventory to make it more comprehensive. In its analysis, EPA needs to estimate the potential magnitude of the pollution from these sources and chemicals and the potential health and environmental effects. Moreover, it would be prudent for EPA to establish goals, objectives, and time frames and determine the resources needed to complete this review.

Recommendation to the Congress

To make the Toxic Release Inventory a more comprehensive and useful picture of the level of toxic chemical emissions nationwide, we recommend that the Congress amend EPCRA to require that federal facilities meeting the reporting criteria submit annual reports on their toxic emissions, taking into consideration the national security implications of having facilities report on the emission of some toxic chemicals.

Recommendation to the Administrator, EPA

To make the Toxic Release Inventory more comprehensive and useful, we recommend that the Administrator, EPA, review which additional sources of toxic emissions should report and which additional toxic chemicals should be added to the inventory. This review should consider (1) the volume and type of toxic emissions from nonmanufacturers and from facilities with fewer than 10 employees, (2) emissions of widely used toxic chemicals not currently reported, and (3) the health and environmental effects of these emissions. EPA should establish goals, objectives, and time frames and determine the resources needed to complete this review.

Agency Comments and Our Evaluation

EPA agreed that an expanded Toxic Release Inventory would be a more useful source of environmental information. However, the agency did not specifically state whether it planned to implement our recommendation that it comprehensively review additional emissions sources that might be required to report and additional toxic chemicals that might be included in the inventory. EPA pointed out, however, that several issues regarding the inventory's expansion present special concerns, including the potential reporting burden placed on smaller facilities and the limited benefits likely to be gained by requiring the agricultural sector to report on its use of pesticides.

We believe that to maximize the inventory's usefulness to policymakers and the public, the inventory data must be as comprehensive as possible, with the data from additional emissions sources and on additional toxic chemicals. The concerns EPA expressed should be carefully considered. However, these concerns should not override efforts to make the inventory more comprehensive—especially since policymakers and the public need the data to establish environmental priorities and to better measure progress in reducing pollution.

Inventory Is Produced in Multiple Formats, but Individual Citizens' Demand for Data Is Limited

The underlying premise of EPCRA is that the public has a right to know about the toxic chemicals released by facilities in their communities. As discussed in chapter 2, segments of the general public, especially environmental and public interest groups, are widely using the data. Individual citizens, however, have submitted fewer requests for the inventory data, according to EPA, states, and manufacturing facilities. EPA and state officials attributed this level of demand to citizens' limited awareness of the inventory and its potential significance. In three counties with high levels of toxic releases, we found that more than half of the residents were unaware that the data were available to the public, although many individuals expressed interest in learning more about the inventory data from the government.

EPCRA does not require that EPA publicize the inventory's availability or teach the general public how to interpret the data. However, given the Toxic Release Inventory Program's aim of reaching the public, EPA officials recognize the importance of these activities. Accordingly, EPA has been working with states, journalists, environmental groups, and libraries to bring the inventory to the public's attention. Nevertheless, EPA has not assessed the various strategies it has used to determine which ones have been effective and thus should be continued.

EPCRA is innovative in that, for the first time, a statute mandates a federal agency to make data directly available to the public through an on-line computerized data base and other formats. Users of the public data base are generally satisfied with the system's usefulness, features, and cost. The merits of some formats developed by EPA remain questionable, however, especially in light of development problems and resulting delays in their availability.

Citizens' Demand for Inventory Data Is Limited

Most EPA regional officials, states, and manufacturing facilities that responded to our surveys reported mild or weak demand from individual citizens for the inventory data, although environmental and public interest groups are using the data extensively. EPA and state officials speculated that individual citizens may not be aware of the inventory and may have a limited understanding of its relevance. Our telephone poll of the residents in three counties that have some of the highest levels of emissions nationwide tended to confirm this view.

**Response to Availability of
Inventory**

Officials in most EPA regions, 31 states, and about 83 percent (± 3 percent) of reporting facilities reported a "mild or weak" public response to the availability of the inventory data. We estimate that about 77 percent (± 3 percent) of all reporting facilities nationwide had not received any direct inquiries for information on their toxic emissions.

EPA and state officials speculated that several factors may explain the limited response to the inventory data. Officials in EPA Regions I, IV, and IX attributed it to the newness of the inventory program and individuals' lack of awareness about the data's public availability. Program officials in Regions I, II, and VIII believed that unless the data directly affected individual citizens—either because the inventory reported information on releases in their neighborhoods or on the health risks of these releases—then they probably would not be very interested in the inventory. State officials in Texas and Pennsylvania believed that the public did not fully understand the hazards the inventory chemicals could pose.

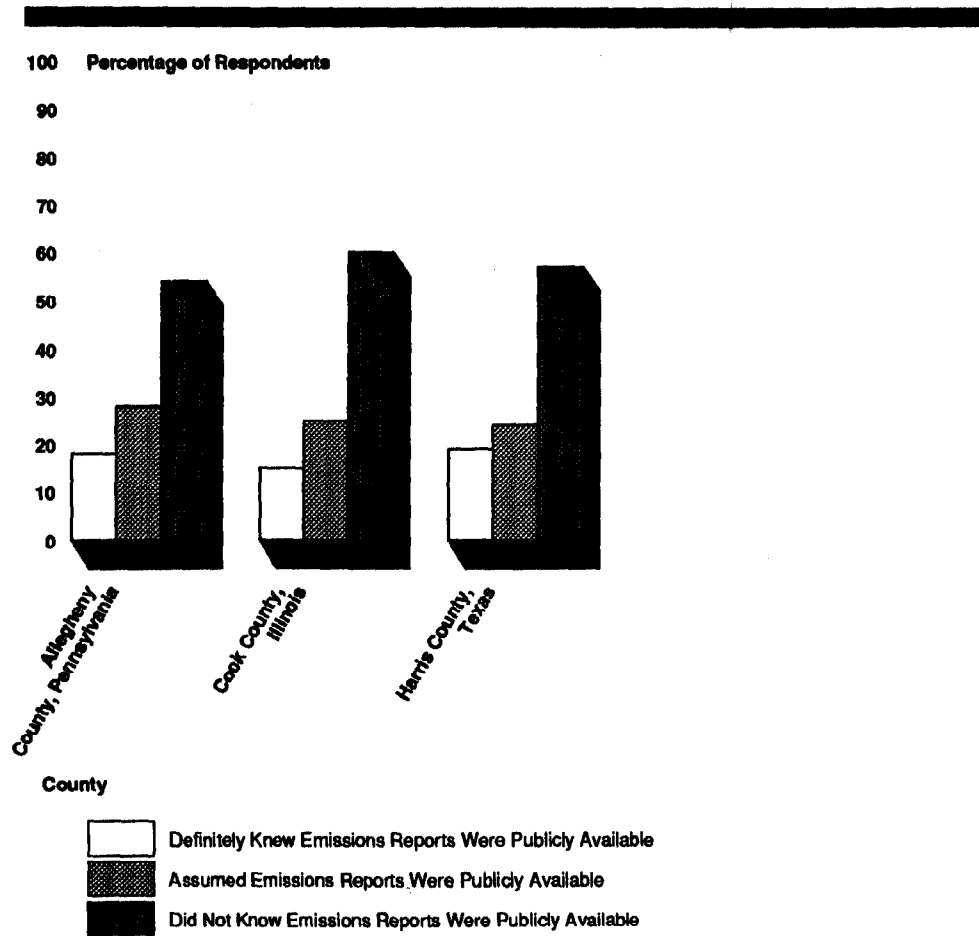
**GAO Poll of Public
Awareness of Inventory**

In a telephone poll of residents in three counties with high levels of reported emissions, we attempted to gauge the public's awareness of the Toxic Release Inventory.¹ About half of the residents in these three counties—ranging from 47 to 58 percent—had read or heard reports about local toxic chemical emissions, primarily from television, radio, or newspapers. We estimate that most people—ranging from 69 to 83 percent in each county—knew or assumed that the federal government required industries to report their toxic emissions. However, about half or more of the residents in these counties—ranging from about 54 to 60 percent—did not know that emissions reports were publicly available. (See fig. 3.1.)

¹Appendix I describes our polling methodology. Sampling errors for all estimates are ≤ 5 percent.

Chapter 3
Inventory Is Produced in Multiple Formats,
but Individual Citizens' Demand for Data
Is Limited

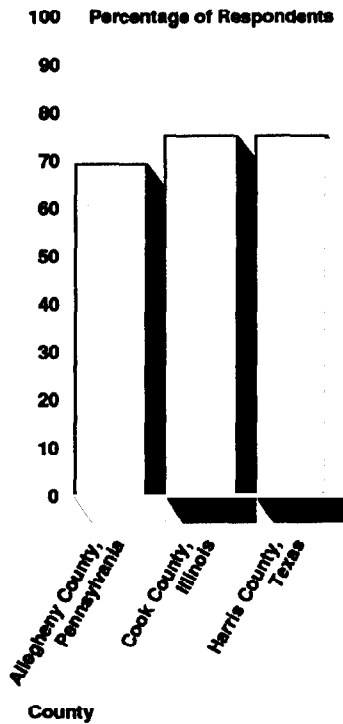
Figure 3.1: County Residents' Awareness That Reports Are Publicly Available



Note: Sampling errors for all estimates were ≤ 5 percent.
 Source: GAO's telephone poll.

Despite this limited awareness, our survey disclosed that most people in these counties—69 to 75 percent—would be interested in learning about toxic chemical releases from the government. (See fig. 3.2.)

Figure 3.2: County Residents' Interest in Learning About Toxic Releases



Note: Sampling errors for all estimates are \leq 5 percent.
Source: GAO's telephone poll.

EPA and States Are Using Various Public Outreach Strategies

Although EPCRA did not require EPA to implement a public outreach campaign, program officials recognize that a successful Toxic Release Inventory Program demands such an effort since its aim is to inform the public about toxic pollution. EPA is working with librarians, journalists, and others, to bring the inventory to the public. Although EPA has initiated several public outreach projects, the agency has not thus far emphasized these activities or assessed their effectiveness. Instead, according to program officials, the agency has concentrated on its statutory obligations, such as establishing the public data base. We also found that EPA program officials disagree about the agency's role in interpreting the data for the public. Some states have also sponsored public outreach activities, but have been constrained by a lack of funding.

EPA's Public Outreach Activities

EPA's primary public outreach strategy is to inform public intermediaries—librarians, journalists, and officials from trade associations, environmental and public interest groups, and states—about the

program. For example, the agency has started to work with the American Library Association to familiarize librarians with the program. In fiscal year 1990, EPA sponsored several seminars for journalists and published a guide to help journalists prepare reports using the inventory data.² The agency also developed a videotape to inform the public about the Toxic Release Inventory.³ At the time of our review, the agency was distributing the videotape to federal agencies, libraries, and a video rental chain. EPA has offered several risk-screening sessions to help regions and states interpret the data's meaning and limitations.

Although EPA has sponsored various public outreach activities, a program official told us that the agency has, to date, placed less emphasis on public outreach than on other activities. EPA has also not assessed which of these strategies has been the most effective in reaching citizens. OTS officials told us that they recognize the importance of outreach and intend to devote more resources to outreach in the future.

We found, however, that OTS officials disagree about whether EPA is responsible for interpreting the inventory data for the public. Several OTS officials told us that interpreting the data is the responsibility of public intermediaries, such as environmental and public interest groups, not EPA. Other officials said that it was indeed EPA's role, given the agency's environmental protection mission and the public nature of the inventory program.

Nonetheless, we found strong support among 36 states and almost half of all reporting facilities surveyed for EPA to place greater emphasis on data interpretation to help improve the usefulness of the program. Some industry representatives surveyed were concerned that stories in the press focusing on the high levels of emissions reported by facilities may mislead the public about the potential risks. Others we contacted during our review, including several state officials, expressed uncertainty about the meaning of the data; consequently, they felt uncomfortable responding to public inquiries.

States' Public Outreach Activities

Like EPA, states are not required to implement a public outreach campaign, although some states have done so. However, 42 of the states we surveyed indicated that funding had a "great to very great" effect on

²Chemicals, the Press and the Public, Environmental Health Center, National Safety Council (Washington, D.C.: Oct. 1989).

³"What It Means to You," EPA (Washington, D.C.: Oct. 1989).

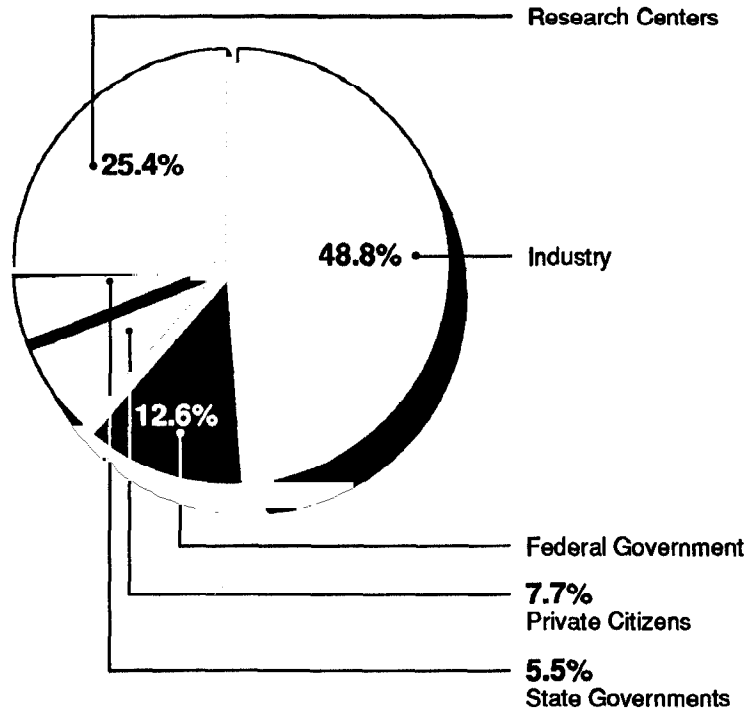
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the extent of their efforts. Despite these funding constraints, 24 states had sponsored public meetings, workshops, or other training to publicize the availability of the data. Also, 22 states had sponsored or planned to sponsor lectures, and 23 states responded that they had distributed or planned to distribute EPA information on inventory chemicals. States that undertook multiple public outreach strategies tended to report (1) more outside requests for data, (2) requests from a broader range of people, and (3) a greater variety of data uses.

Industry Is Primary
User of Public Data
Base

According to statistics from NLM, industry representatives constituted the largest group of users of the public data base during the first 15 months of operation. (See fig. 3.3.)

Figure 3.3: Users of Public Data Base



Note: Percentages are based on the total number of user codes that accessed the public data base from June 1989 to September 1990.

Source: GAO's analysis of NLM data.

Users Are Generally Satisfied With the Public Data Base

Users of the public data base we surveyed were generally satisfied with its features and found its cost to be reasonable.⁴ A majority considered the data base "moderately to extremely useful." However, they indicated that their continued use of the data base would depend greatly on the quality and timeliness of the data. Because some early data base users voiced concerns that the inventory file on TOXNET was not "user friendly," EPA has continued to make system improvements.

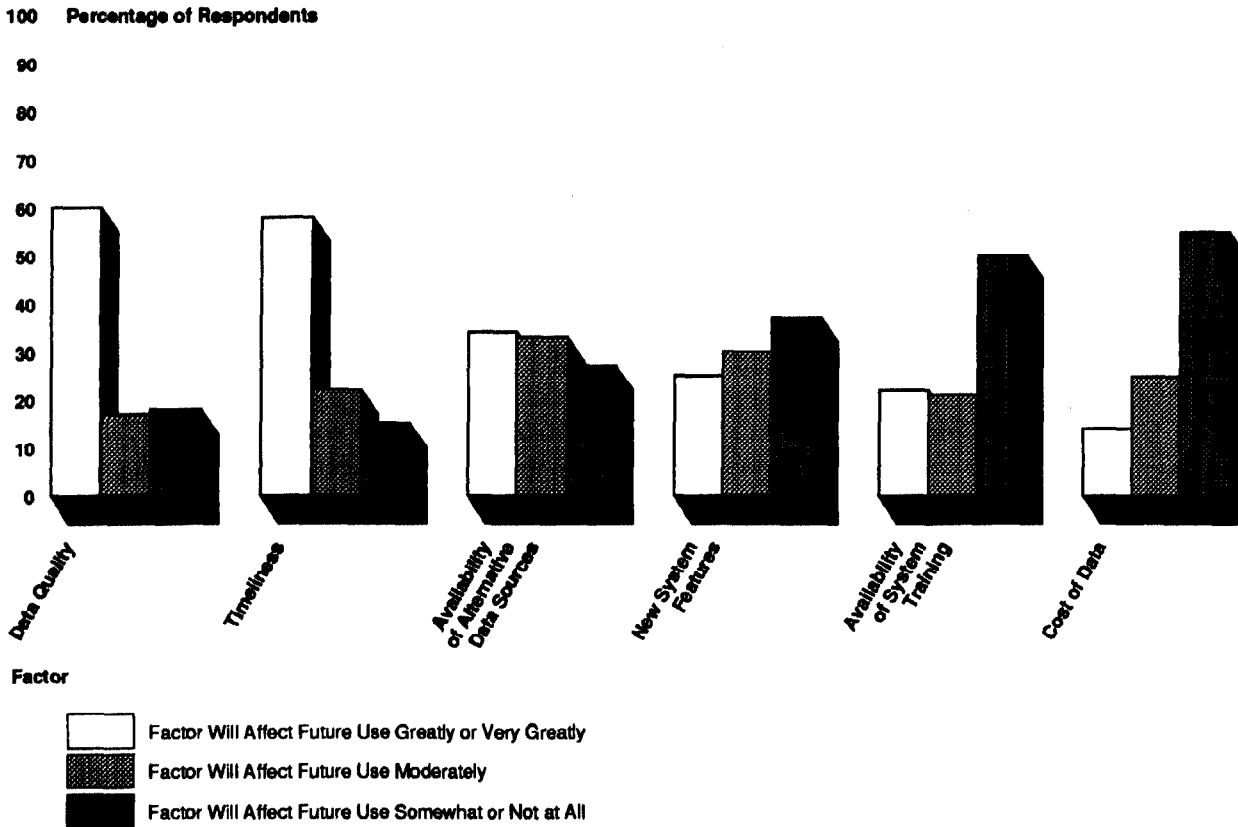
Experiences With the Data Base

Sixty-seven percent of the data base users responding to our survey found the system "moderately to extremely useful"; 54 percent reported that they would likely increase their use of the data base. Most respondents—about 65 percent—also found the system's direct access to other toxicological files on TOXNET to be "moderately to extremely useful." Those respondents who rated system features were, on average, generally satisfied with, for example, (1) the on-line "help" function, (2) the "calculate" function, which can be used to calculate such things as the total quantity of a specific toxic chemical emitted by facilities in a particular geographic area, and (3) the "ranging" function, which can be used to determine, for example, whether a specific chemical was emitted in certain locations in amounts ranging between specific numerical values—for example, from 1 million to 3 million pounds.

Additionally, respondents, on average, indicated that two factors would greatly affect their decisions to continue using the system: the quality and the timeliness of the data. As shown in figure 3.4, other factors included the availability of alternatives, new system features, the availability of system training, and the cost of obtaining the data.

⁴Survey was based on user code accounts that accessed the data base from June 1989 to November 1989.

Figure 3.4: Factors Affecting Future Use of Data Base



Note: The ratings for each factor sum to less than 100 percent because 5 to 8 percent of the respondents did not rate individual items.
Source: GAO's analysis of questionnaires from users of the public data base.

EPA's Efforts to Improve the Data Base

Since the public data base became available in June 1989, EPA has incrementally added new software features. According to EPA officials, these changes were implemented primarily because some early system users voiced concerns that the data base was not "user-friendly." For example, some individuals said the system was cumbersome, time-consuming to use, and lacked some features that would enable them to do some useful types of data manipulation.⁵ As a result, the system now contains a "cross file" feature designed to enable users to compare several years of release data. The "sorting" feature was also added to

⁵Public Access: Two Case Studies of Federal Electronic Dissemination (GAO/IMTEC-90-44BR, May 14, 1990).

enable users to, among other things, generate alphabetized lists of facilities' names. A software program developed by EPA called "TOXIC DUMP" now enables users to transfer data more easily from the system onto their own computer diskettes. This capability is beneficial because it reduces charges for time and therefore helps minimize the costs of obtaining desired data, according to EPA and some system users. All of these features were added incrementally to the system's capabilities, according to responsible OTS officials, because of cost considerations, the short time that EPA had to develop the system, and EPA's desire to obtain a better sense of users' experiences with the system before making changes that might result in only marginal benefits.

EPA officials recognize the need to provide system users with better reference materials and more system training. In fiscal year 1990, EPA developed a demonstration computer diskette and a reference manual designed to instruct users how to search and retrieve data and perform various analyses. However, EPA and NLM have offered limited training to date, primarily to EPA and state officials and representatives of a few environmental groups. An OTS official told us that OTS intended to offer more data base training because of growing demand from regional and state officials.

EPA Has Not Assessed the Value of Various Data Formats

As required, EPA publishes the inventory data in several formats other than the computerized data base—including a national report, magnetic tape, computer diskette, microfiche, and CD-ROM—in an effort to reach as many different types of users as possible. Although the agency selected these formats on the basis of certain criteria, it has not yet assessed the merits of producing all these data formats to determine whether the criteria have been met. Development problems, both budgetary and technological, have also led to notable delays in the availability of some formats.

Although each of the formats will probably satisfy the needs of some users, program officials believe that they need to assess (1) whether these formats, in fact, meet users' needs, (2) whether they are being effectively distributed, and (3) whether the costs to users and to EPA are reasonable. EPA officials responsible for developing the formats told us that although they recognized the need for this assessment, they had not done one primarily because users have had limited experience with some of the formats and because funds were lacking.

At the time of our review, development problems had significantly delayed the release of two formats, the CD-ROM and the microfiche. While the magnetic tape containing 1988 emissions data was made available to the public in May 1990, as of March 1991—about 10 months later—the CD-ROM and microfiche formats were not yet available. In May 1991, EPA stated that, subsequent to our review, the agency had resolved the various budgetary and contractual problems associated with producing these two data formats and therefore expected to make these formats available more quickly in the future. EPA also stated that it had recently initiated a pilot service for assisting users. The service enables the public to contact EPA and, for example, have the agency search the data base for specific information.

Conclusions

While certain groups representing the public, such as environmental and public interest groups, are widely using the Toxic Release Inventory, there has been less demand for the data from individual citizens. Our telephone poll demonstrated, however, that many residents living in counties with high levels of reported emissions would be interested in learning about toxic emissions from the government.

EPA has sponsored various types of public outreach activities, mostly through public intermediaries, such as journalists and librarians. We agree with this strategy of targeting intermediaries, since it would be unrealistic and inefficient for EPA to try to reach every individual. However, before the agency devotes greater resources to such activities, as it intends to do, we believe that it needs to develop an effective public outreach strategy. We also believe that EPA should clarify its role in interpreting the emissions data for the public.

We recognize that EPA's decision to develop numerous data formats in addition to the public on-line data base was based on the agency's desire to meet the information needs of a broad cross-section of potential users. However, it is unclear whether the benefits of this approach outweigh the costs, particularly given the agency's limited program resources. Development problems, which have notably delayed the public availability of some formats, also signal the need for EPA to review its strategies for making the inventory widely accessible.

Recommendations to the Administrator, EPA

To make the general public more aware and knowledgeable of the Toxic Release Inventory, we recommend that the Administrator, EPA, develop a public outreach strategy that more effectively publicizes the availability of the data. In addition, EPA should clarify its role in interpreting the inventory data for the public. We also recommend that EPA assess the costs and benefits, to both EPA and the public, of making the various data formats available.

Agency Comments and Our Evaluation

EPA did not specifically address our recommendation concerning its public outreach efforts. We support EPA's use of intermediaries to implement various public outreach activities. However, to fulfill the intent of this right-to-know program and reach a broad cross-section of the public, we believe that it is imperative for EPA to develop outreach strategies to more effectively and efficiently communicate information about the inventory to the public. We also want to reiterate our belief that EPA should weigh the costs and benefits of the various formats to both the agency and the public so that the agency can focus its resources on producing only those that most efficiently and effectively meet the needs of data users.

Inventory Data Need to Be Verified

Relatively little is known about the quality of the data that facilities have submitted—including the accuracy of the release estimates. In the program's first years, EPA has focused more of its limited inspection resources on identifying facilities that have failed to report and on taking action against them than on reviewing the data's quality. EPA has reviewed the information submitted by a few facilities and found that some did not submit reports for all the chemicals they were obligated to report on, and some facilities over- and/or underestimated their emissions. To obtain a better understanding of the quality of facilities' data, EPA recently awarded grants to 15 states to investigate reporting accuracy. Even though the quality of the information submitted by facilities is uncertain, EPA is correctly transcribing the information that it received into the data base.

Little Is Known About Data Quality

In the inventory program's early years, EPA has used its limited inspection resources to identify facilities that failed to report data (nonreporters) rather than to examine the quality of data already submitted. As a result, EPA, states, and other users of the data are not assured of the inventory data's quality. EPA recognizes that accurate data are necessary for the inventory to be useful; the agency is therefore working with several states to develop their capacity to evaluate the data. To obtain accurate information, EPA and many states provide facilities with information to help them complete their reports.

EPA Has Conducted Few Data Quality Reviews

At the time of our review, EPA regions had visited only 27 of the more than 19,000 facilities that have submitted emissions reports to assess the quality of the data. As shown in table 4.1, data accuracy and/or completeness problems were found in about one-third of the reviews. The most common problem was the failure to submit reports for all required chemicals.

According to regional officials, complicated regulations make it difficult for some facilities to determine which chemicals and/or chemical processes would require them to submit a report(s). Region V and VI officials explained that because the trade names of chemicals can vary and differ from their generic names, facilities sometimes mistakenly conclude that the chemicals they use are not covered by the reporting requirements when, in fact, they are. Some facilities also have problems obtaining accurate information from their suppliers on the chemical composition of their purchases, according to agency officials. Facilities need to know the proportion of a reportable chemical contained in a

chemical mixture so that they can determine how much of the chemical they use and consequently properly determine their reporting obligation. EPA is currently evaluating how well EPCRA's supplier notification provisions are working, according to an agency official.

Table 4.1: Results of Regions' Data Quality Reviews

Region	Number of data quality reviews	Number of reviews that identified problems	Types of problems	
			Inaccurate estimate	Failure to submit reports for all chemicals
I	0	a	a	a
II	4	2	0	2
III	0	a	a	a
IV	0	a	a	a
V	3	1	1	1
VI	0	a	a	a
VII	0	a	a	a
VIII	3	0	a	a
IX	9	1	1	a
X	8	4	1	4
Total	27	8	3	7

Note: Data are for reviews completed as of March 1990.

^aNot applicable.

Source: EPA.

Compliance and enforcement officials at EPA headquarters told us that they intend to give greater attention to data quality reviews. However, they did not expect the number of reviews to increase dramatically in the near future. An OTS official explained that because the program is still new, EPA currently prefers to identify facilities that have failed to report rather than to divert limited inspection resources to assessing the quality of the information already submitted.¹

EPA has also contracted with a consulting firm to study the quality of data submitted by 156 facilities that volunteered to participate.² The study concluded that the data contained in the 1987 inventory were generally accurate and reasonable. However, in our view, the study's conclusions are questionable for several reasons. First, 44 percent of the 280 facilities chosen for the study did not participate. If the quality of

¹EPA's efforts to identify nonreporting facilities are discussed in chapter 5.

²"TRI Site-Visit Program," Radian Corporation (Herndon, Va.: July 1990). A random sample was initially drawn of 280 facilities that had submitted reports for reporting year 1987, but ultimately Radian visited 156 of the 188 facilities that had agreed to participate in the study.

their data differed from that of those who volunteered, then the study's conclusions would not generalize to the entire universe of facilities that submitted data. Second, the data from these facilities were not always accurate. Half of the facilities had made at least one major error in estimating their releases, and some erred by a factor of 10 or more.

EPA Is Working With States to Increase Knowledge of Data's Quality

Although EPCRA does not require states to review the quality of reported information, EPA is working with states to develop their capabilities to perform such reviews. Thirty-four state officials who responded to our survey agreed that EPA needs to place more emphasis on improving the quality of facilities' release data to improve the usefulness of the inventory.

To enhance EPA's and states' knowledge of the inventory data's quality, EPA, in conjunction with the National Governors' Association, awarded grants in 1989 to four states for projects that included site visits to determine the accuracy and completeness of facilities' information.³ In 1990, EPA awarded grants to 11 states totaling approximately \$1 million to develop quality assurance programs to, among other things, verify the accuracy of emissions data.⁴ Ohio's Environmental Protection Agency, for example, planned to visit 267 of the state's 1,458 facilities that reported for 1988. As part of this effort, the agency intended to visit facilities in selected industries emitting large quantities of chemicals and eventually to develop technical guidance on ways facilities in each of the industrial categories reviewed should calculate emissions. Because the projects were either still under way or just getting started, information was not available on the final results of these 15 projects at the time of our review.

According to EPA officials, the agency has undertaken this joint federal-state initiative for two reasons. First, states are generally more familiar with the facilities within their jurisdiction than EPA and are therefore better able to assess the quality of the information provided—including the relative accuracy of the release estimates. Second, maximum use of the inventory cannot be achieved until government and the public are assured of its accuracy and completeness. According to the EPA official responsible for overseeing the project, the agency plans to formally

³Grant recipients were Illinois, Massachusetts, Rhode Island, and Utah.

⁴Grant recipients were California, Colorado, Connecticut, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Missouri, North Carolina and Ohio.

assess the projects and subsequently inform its regional offices and the states about strategies worth replicating.

EPA and States Are Helping Facilities Prepare Reports

Although they have done little to check the accuracy of the inventory data, EPA and states have educated facilities about the inventory program's complex reporting requirements. EPA disseminates program regulations and guidance on techniques for estimating chemical releases and runs a telephone hotline for facilities to call for information. Additionally, EPA sends facilities various types of notices to help them improve the quality of their reports in the future. To various degrees, the agency's regional offices have also sponsored and/or co-sponsored seminars and workshops informing facility representatives of program regulations and methods for estimating emissions and preparing emissions reports. For example, Region III, V, and VI officials sponsored sessions with such groups as chambers of commerce and trade associations. According to our survey, 39 states have, to various degrees, sponsored seminars and workshops for industry. Additionally, 46 states distribute technical instruction guides and copies of forms and pamphlets on EPA regulations.

Facilities have availed themselves of other sources of assistance—including consulting firms and trade associations. According to our industry survey, between 14 and 33 percent of reporting facilities nationwide have hired outside consultants.

On balance, facilities found these various resources generally helpful, although a small percentage found some resources—including EPA's hotline—"hardly or not at all helpful." Some facility representatives we surveyed—along with several we visited—said that they had problems getting through to the hotline or had received unclear or contradictory information. Representatives of some facilities said that industry associations were more helpful than EPA's hotline.

EPA Is Correctly Transcribing Information Into the Data Base

Some of the data users we contacted expressed concern that the data base has inaccuracies because of data processing errors. Incorrect facility names, chemical identification numbers, and other errors can hinder the retrieval of data that users need for various analyses. We found, however, that the data submitted by facilities in key fields in the 1988 data base were generally completely and correctly transcribed.⁵

Our test of the 1988 data base showed that it was virtually complete, missing only 2.9 percent (± 2.3 percent) of all forms submitted. Furthermore, about 99.7 percent (± 1 percent) of the information contained in 11 key fields was transcribed correctly into the 1988 data base.⁶ As shown in table 4.2, we estimate that, in the 11 data fields we reviewed, a higher error rate—1.5 percent (± 1 percent)—occurred in the critical release/transfer amount field. An estimated 75 percent (± 22 percent) of these errors reflected omissions or understatements of emissions levels.

Table 4.2: Results of Transcription Accuracy Test

Data field	Estimated percentage in error	95-Percent confidence level	
		Lower bound of percentage in error	Upper bound of percentage in error
Facility name	1.5	0.6	3.2
City	0.3	0	1.4
County	^a	0	0.7
State	^a	0	0.7
Zip code	0.5	0.1	1.8
Parent company	1.0	0.3	2.5
Chemical name	^a	0	0.7
Chemical identification number	^a	0	0.7
SIC code	0.5	0.1	1.5
Release/transfer type	^a	0	0.5
Release/transfer amounts (>0)	1.5	0.5	2.5

^aSince we found no errors, we present only the upper and lower bounds using the hypergeometric distribution. In the case of release/transfer type, which could occur more than once on each submission, the bounds may be somewhat misstated. Estimates based on the hypergeometric distribution assume that the values in the fields reviewed represent a simple random sample of all of the data base values for the field.

⁵Our test used the April 7, 1990, edition of the data base tape. This tape was used to produce the initial version of the 1988 public data base.

⁶We selected data fields that were critical for users to conduct comprehensive searches and analyses.

Conclusions

If the Toxic Release Inventory is to be used extensively, government regulators and others must be assured that its data are sound and have been transcribed accurately. We agree with EPA that it was prudent during the first years of the program to focus on identifying nonreporters rather than on assessing the quality of the information already submitted. We also support EPA's recent initiative to involve states in ensuring the quality of the inventory data. Nevertheless, we believe that the agency should now initiate a more systematic and comprehensive data quality review effort to help instill greater confidence in the data and the inventory program overall.

Finally, despite users' concerns that the data base was fraught with errors stemming from EPA's data processing, we found that EPA has ensured that the data base completely and accurately reflects the emissions reports submitted. In our view, the importance the agency attaches to this critical program area is clearly reflected in the high degree of processing completeness and accuracy it has achieved.

Recommendations to the Administrator, EPA

To better ensure the technical quality of the information in the inventory is sound, we recommend that the Administrator, EPA place greater emphasis on verifying the information submitted by facilities, particularly the emissions estimates. As part of this effort, the agency should expand assistance to states to help them develop their capacities to verify the data.

Agency Comments and Our Evaluation

EPA did not specifically state whether it planned to implement our recommendation that the agency place greater emphasis on verifying the data in the inventory. However, the agency noted that the program would benefit from more resources to examine the quality of emissions estimates. Although we acknowledge in chapters 4 and 5 that the agency has limited regional inspection resources, we did not specifically recommend that the agency receive more resources for this effort. In fact, as we point out in chapter 5, EPA may be able to use its inspection resources more efficiently and effectively. We also believe that EPA may be able to further leverage its resources by helping more states develop their capacity to assess the inventory data's quality.

Improved Enforcement Would Help Ensure a More Complete Inventory

EPA's efforts to make industries comply with the reporting requirement have resulted in over 19,000 facilities reporting toxic emissions for 1988. However, EPA and states estimate that thousands of facilities have not submitted emissions reports, primarily because they are unaware of the reporting requirement. Through more targeted outreach, EPA is trying to increase industry's awareness of the reporting requirement.

We believe, however, that enforcement problems may be contributing to the level of noncompliance. For example, several EPA regions use inefficient strategies to identify nonreporters: they do not screen facilities before doing inspections. Also, EPA has been slow to take action against nonreporters. It has identified 403 nonreporters but, as of March 1990, had closed only 68 of 209 civil complaints issued. EPA has not taken action against thousands of facilities that submitted late reports, primarily because its enforcement resources are limited and it does not want to discourage facilities from reporting. EPA's enforcement efforts may be hampered by the absence of explicit authority in the enabling legislation for the agency to inspect facilities.

Many Facilities Are Not Reporting Their Releases

At least 10,000 facilities have not, according to EPA and state estimates, submitted emissions reports. Some EPA and state officials told us that despite their efforts to publicize the inventory program, many small to medium-sized facilities remain unaware that it exists or are uncertain whether their manufacturing activities or the chemicals they use obligate them to report.

EPA and States Estimate Substantial Noncompliance

EPA and state officials do not know precisely how many facilities should be reporting emissions data because reporting requirements are complex. Determining the number would require an examination of every facility's operations. However, EPA and states have estimated the proportion of facilities that have not submitted reports. According to an EPA study published in 1990, which examined the 1987 reporting year, about 34 percent of the facilities that probably met the requirements did not report their 1987 emissions.¹ However, as EPA noted in May 1991, the proportion of toxic emissions omitted from the inventory because of noncompliance is unknown. (See table 5.1.)

¹ Analysis of Non-Respondents to Section 313 of the Emergency Planning and Community Right-to-Know Act, EPA (Washington, D.C.: Mar. 1990).

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Table 5.1: EPA's Estimates of Nonreporting

Industry (code)	Estimate of nonreporters	
	Number	Percent
Apparel (23)	311	87.4
Print and publishing (27)	700	68.0
Stone, clay, and/or glass (32)	1,013	59.6
Miscellaneous manufacturing (39)	346	48.6
Textiles (22)	367	42.3
Food (20)	1,164	40.9
Furniture (25)	232	37.1
Transportation equipment (37)	612	36.9
Rubber (30)	753	36.7
Machinery (35)	529	36.3
Lumber and wood (24)	368	34.8
Primary metals (33)	832	34.8
Paper (26)	389	34.6
Fabricated metals (34)	1,290	32.0
Leather (31)	52	29.8
Petroleum refining (29)	111	22.6
Electrical equipment (36)	455	22.0
Instruments (38)	78	18.8
Chemicals (28)	568	12.2
Tobacco (21)	0	0
Total	10,170	34.2

Note: Data are for reporting year 1987.

Source: EPA.

Officials of 39 state environmental agencies we surveyed estimated the percentage of nonreporters within their jurisdictions. Estimates ranged from 0 percent in North Dakota to 83 percent in Pennsylvania. Using these data, we estimated that nationally for 1988, at least 35.7 percent, or more than one of every three facilities likely subject to the reporting requirement did not report.²

²This estimate is based on the optimistic assumption that there was full reporting in the 13 states that did not provide estimates. Our analysis, based on states' noncompliance estimates provided in their responses to our mail-in questionnaires, is detailed in appendix I.

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Table 5.2: Estimates of Nonreporting, by State

State	Estimate of nonreporters		State	Estimate of nonreporters	
	Number	Percent		Number	Percent
Alabama	127	25	Montana	1	5
Alaska		^a	Nebraska		^b
Arizona		^b	Nevada	34	50
Arkansas	54	15	New Hampshire	1	1
California		^b	New Jersey	275	25
Colorado	9	5	New Mexico	34	50
Connecticut		^b	New York	204	20
Delaware	6	10	North Carolina		^b
District of Columbia		^b	North Dakota	0	0
Florida	431	48	Ohio	151	10
Georgia	150	20	Oklahoma	812	50
Hawaii	4	15	Oregon	83	30
Idaho	48	50	Pennsylvania	5,029	83
Illinois	307	20	Puerto Rico	5	3
Indiana	133	15	Rhode Island	47	20
Iowa	142	30	South Carolina		^b
Kansas	92	33	South Dakota	10	20
Kentucky		^b	Tennessee	1,206	70
Louisiana	95	25	Texas		^b
Maine	42	30	Utah	28	20
Maryland	84	30	Vermont		^b
Massachusetts	587	50	Virginia		^b
Michigan	790	50	Washington	102	25
Minnesota	141	30	West Virginia	11	10
Mississippi	62	20	Wisconsin	166	20
Missouri	87	15	Wyoming		^b

^aDid not respond to our survey.

^bDid not respond to our question.

Source: GAO's analysis of data from states' and EPA's 1988 national report.

According to the 1990 EPA study, only a small percentage of facilities did not report intentionally. Rather, the study concluded, many nonreporters simply were unaware of the program. Additionally, some nonreporters believed that (1) the chemicals they used did not obligate them to report or (2) their chemical use levels did not meet the threshold criteria. The study further speculated that many small and medium-sized facilities were probably unaware of the reporting requirement because

they did not employ environmental compliance staff or join trade associations, which disseminate information on regulatory requirements. State officials in Illinois and Texas, along with several industry representatives we contacted, concurred with EPA's assessment.

EPA's Compliance and Enforcement Actions Against Nonreporters

To improve compliance, EPA has worked to increase facilities' awareness of the Toxic Release Inventory Program and to take enforcement action against nonreporters. However, the various inspection strategies used by EPA regions to identify nonreporters are not uniformly effective. In addition, the agency has been slow to resolve enforcement cases.

Various Outreach Strategies Used to Increase Compliance

To increase facilities' awareness of the program and help them determine whether they must report, EPA has taken several measures, including mailing information pamphlets to thousands of facilities, issuing press releases, conducting seminars and workshops, and establishing a hotline that facilities can call for assistance, according to EPA officials. The agency's regional offices have also worked, to various degrees, with the states and business and trade associations to reach as many facilities as possible. As a result of its noncompliance study, EPA also has begun targeting certain geographic areas and industries for informational campaigns.

States have also attempted to increase reporting. Like EPA, 39 of the states in our survey indicated that, to various degrees, they had sponsored seminars and workshops for industry. States had also (1) worked with trade associations to help them increase awareness of the program, (2) notified facilities that they may need to submit information, and (3) distributed materials describing the program and outlining the steps facilities must take to comply.

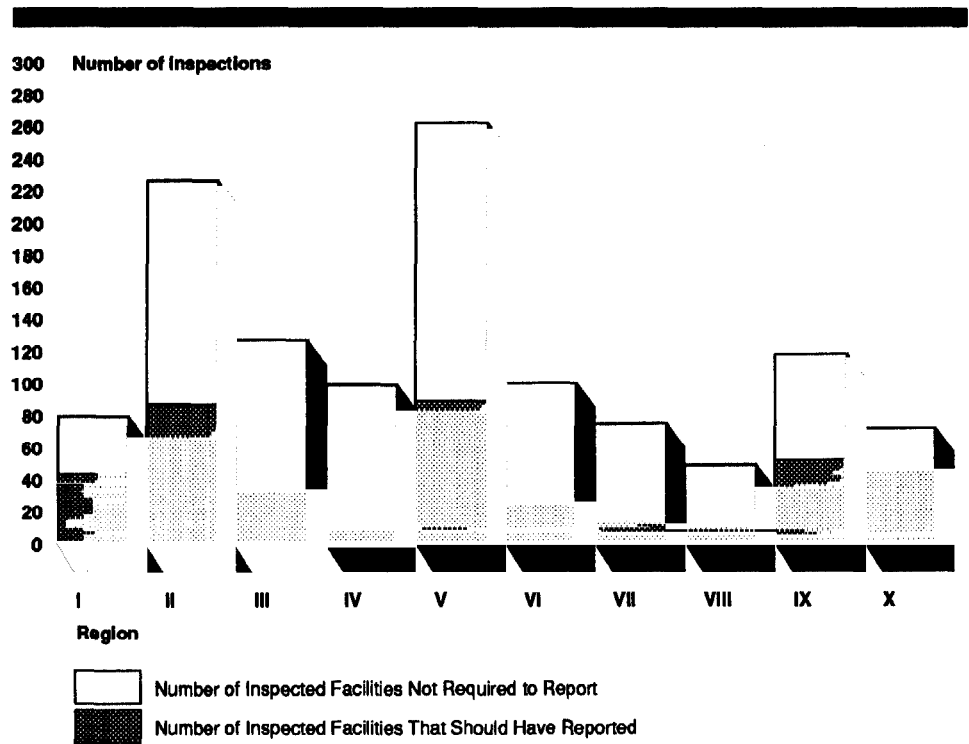
Some Regions' Strategies for Targeting Inspections Are Inefficient

Rather than implementing a unified national strategy for targeting inspections—site visits to determine whether a facility is required to report—EPA headquarters has delegated responsibility for program enforcement to regional offices and allowed them to devise their own strategies. EPA regions have small inspection work forces for the inventory program, which are supplemented by technically qualified volunteers working under a cooperative agreement between EPA and the American Association of Retired Persons. Given these constrained resources, the agency must use efficient and effective enforcement methods. Regions use two basic methods to target nonreporters for

inspections. One method is to develop a list of potential nonreporters, screen them by telephone to decide which might be nonreporters, and then notify them of an inspection. The second method is to develop a list of potential nonreporters and then conduct inspections without notifying them in advance.

Nationwide, through March 1990, EPA regions conducted 1,199 inspections and identified 403 facilities that had not submitted required reports. (See fig. 5.1.) The number of inspections ranged from 48 in Region VIII to 261 in Region V.

Figure 5.1: Inspections to Identify Nonreporters

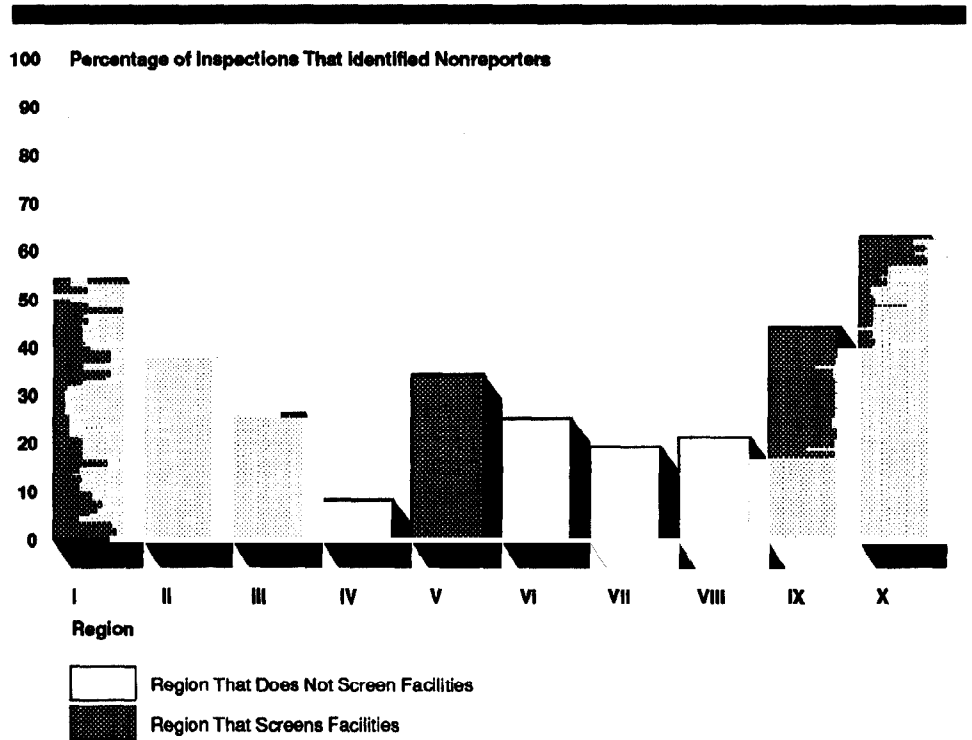


Note: Data as of March 1990.
 Source: GAO's analysis of EPA regions' statistics.

We found a direct correlation between the procedures used to target inspections and regions' success in identifying facilities that did not report. The likelihood of finding a nonreporter was more than three times as great when regions screened facilities and gave them advance notice of inspections. Thus, Regions IV, VI, VII, and VIII, which do not

contact facilities before inspections, were less successful in identifying nonreporters than the other regions. (See fig. 5.2.)

Figure 5.2: Success of EPA Regions' Targeting Strategies in Identifying Nonreporters



Note: Data as of March 1990.
 Source: GAO's analysis of EPA regions' statistics.

In May 1991, EPA said that several efforts were under way to help the regions more efficiently and effectively target nonreporting facilities for inspection. For example, a new computerized targeting data base is currently being piloted in four regions and will be used by the remaining six regions by June 1991. Several other compliance-related projects are scheduled for completion by the end of fiscal year 1991. For example, one project is developing guidance for regions on how to work with states to identify facilities that may have reported to the state but not to the federal government and vice versa.

**EPA Lacks Explicit
Inspection Authority**

EPCRA gives EPA responsibility for enforcing reporting requirements. However, unlike many other environmental statutes, it does not explicitly authorize EPA to inspect facilities for compliance.³ EPCRA's legislative history does not explain why EPA was not granted this authority.

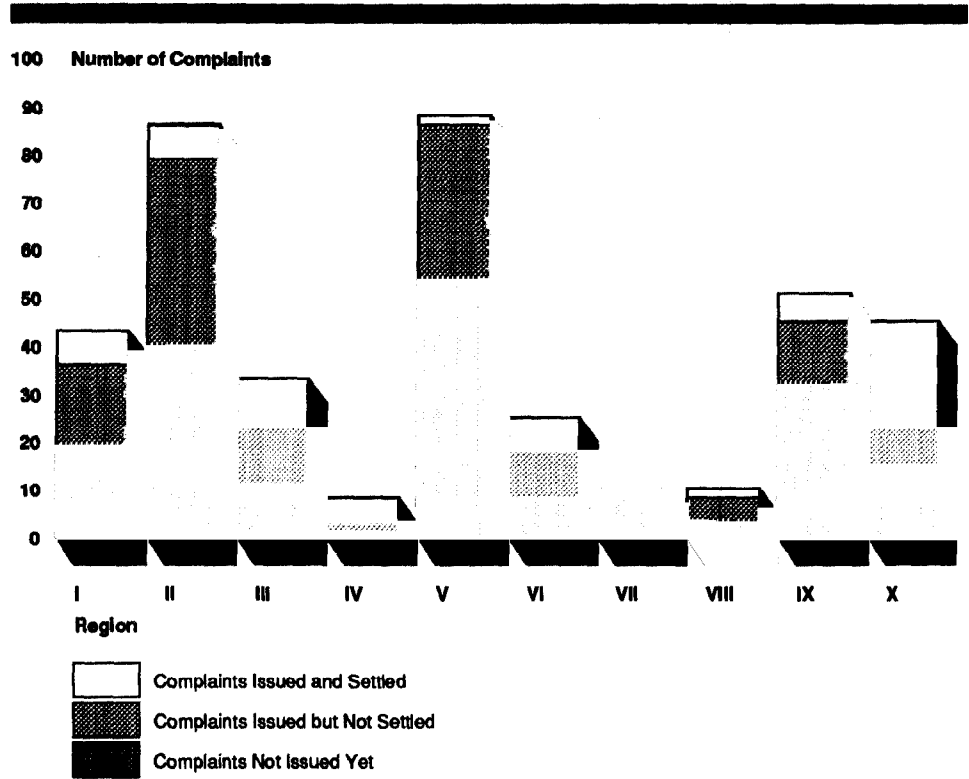
According to officials in EPA's Office of General Counsel, Office of Enforcement, and Office of Compliance Monitoring in OTS, representatives at some manufacturing facilities have challenged EPA's authority to enter and inspect their premises under EPCRA. In these situations, inspectors have relied on inspection authorities under other environmental statutes, such as the Toxic Substances Control Act and the Comprehensive Environmental Response, Compensation, and Liability Act, to gain entrance to facilities. Officials told us that they are concerned, however, that as more facilities become aware that EPA does not have explicit authority, it may hamper the agency's future enforcement efforts to identify facilities that should report their toxic releases and to verify the accuracy of information already submitted. Consequently, in May 1991 EPA stated that it fully supported amending EPCRA to provide it the authority.

**Slow Resolution of
Enforcement Cases**

EPA has been slow to take enforcement action against facilities that, upon inspection, have been found not to have submitted required reports. As of March 1990, EPA regions had identified 403 nonreporters but had issued only 209 civil complaints. Only 68 of these 209 complaints had been resolved (about 33 percent). (See fig. 5.3.)

³See, for example, the Toxic Substances Control Act, section 11, 15 U.S.C. section 2610; the Comprehensive Environmental Response, Compensation, and Liability Act, section 104(e), 42 U.S.C. section 9604(e); and the Clean Air Act, section 114, 42 U.S.C. section 7414.

Figure 5.3: Complaints Issued and Settled by EPA Regions



Note: Data as of March 1990.
 Source: GAO's analysis of EPA regions' statistics.

Issuance of Complaints Has Been Untimely

Delays in issuing complaints are a key reason why so few enforcement cases have been resolved. According to EPA's Enforcement Response Policy for the program, civil complaints against nonreporters should be issued within 180 days of an inspection. However, our review of agency records showed that Regions III, V, and VI frequently failed to meet this requirement. (See table 5.3.)

Table 5.3: Length of Time Taken to Issue Complaints

Region	Number of complaints issued	Number that met 180-day goal	Average number of days to issue complaint
III	22	12	172
V	34	1	270
VI	17	7	234
Total	73	20	

Source: GAO's analysis of EPA data.

EPA headquarters and regional enforcement officials attributed delays in issuing complaints to various factors, including (1) the time required to prepare final inspection reports, often prolonged because officials must wait for additional documents from facilities, and (2) the limits that regional counsels place on the number of cases they will accept, given resource limitations and competing case priorities. Region VI, for example, is generating more cases against nonreporters than its regional counsel will accept. A regional counsel said that no matter how many inspections identified nonreporters, his office would handle no more than 12 Toxic Release Inventory enforcement cases each year. Region V's regional counsel has not been able to expeditiously handle all cases referred for action, largely because the region has lost staff. According to an inspection official, the backlog there has contributed to the region's decision, in consultation with EPA headquarters, to conduct fewer inspections.

Settlement Process Is Lengthy

Delays in the settlement process have also contributed to the backlog of enforcement cases. As of March 1990, only 68 of 209 complaints had been settled. The settlement process is lengthy primarily because delays occur in obtaining required documents from facilities and in negotiating fines and penalties, according to regional officials. For example, according to Region V's regional counsel, negotiations to reduce a facility's penalties in exchange for its making environmentally beneficial expenditures can be protracted if EPA and a facility cannot agree on an acceptable project that would qualify for a penalty reduction.⁴ A Region VI enforcement official told us that delays also occur because EPA wants to ensure that a facility has complied with other title III requirements before agreeing to a settlement. Thus, the region waits for evidence from local emergency planning committees and/or fire departments that they have received other required title III forms, such as those on facilities' hazardous chemical inventories.

Actions to Address Enforcement Backlog

Although EPA does not have a national strategy for dealing with the backlog of enforcement cases, some regions are working to reduce the backlog. For example, Regions II, V, and VI gave their inspection staffs responsibility to prepare civil complaints against facilities whose fines and penalties amounted to \$35,000 or less. Region I is referring cases to EPA headquarters for action. Because it has a large backlog, Region V has

⁴An environmentally beneficial expenditure may involve, for example, a facility's agreeing to reduce toxic releases by a specified amount within an agreed-upon time.

dismissed complaints against facilities that failed to submit reports for chemicals no longer on the chemical list. As noted earlier, it has also decided to conduct fewer inspections. Some of these techniques for reducing the backlog may be worth replicating in other regions; however, our review disclosed that regions' awareness of strategies being used was limited. For example, officials in Region V, which has the largest backlog, said that they were not aware that they could refer cases to headquarters.

EPA Is Not Taking Enforcement Action Against Late Reporters

The program's enforcement policy provides for fines and penalties against facilities that submit late emissions reports. EPA is taking enforcement action against nonreporters that submit the required report after an inspection. However, at the time of our review, EPA had not determined what enforcement action, if any, to take against facilities that submit late reports without having been inspected by EPA.

According to EPA data, more than 4,200 facilities have submitted over 11,000 reports for their 1988 releases after the July 1, 1989, deadline. Moreover, at least 3,400 reports were submitted 90 or more days after the deadline, and 2,268 forms from 941 facilities were submitted 181 days or more after the deadline. (See fig. 5.4.)

Figure 5.4: Late Emission Reports for the 1988 Inventory



Note: A total of 11,625 emissions reports for the 1988 inventory were submitted late, as of October 3, 1990.

Source: GAO's analysis of EPA data.

At the time of our review, program officials were discussing what actions, if any, to take against the thousands of facilities that had submitted late reports. It is a difficult issue for the agency to resolve. On the one hand, EPA wants to collect accurate and complete information from as many manufacturing facilities as possible and therefore does not want to discourage facilities from submitting their reports, even if these reports are for previous reporting years. On the other hand, the agency recognizes that enforcement actions can encourage facilities to submit their reports. According to a headquarters enforcement official, the agency also has not focused its limited enforcement resources on late reporters because the program is relatively new and its reporting requirements are complex. These factors could partially explain why facilities might submit their reports late.

In May 1991, EPA noted that while the number of facilities reporting late is a concern, this concern must be weighed against the more serious problems of facilities' failing to report or submitting inaccurate data. Nonetheless, the agency said that it is planning to undertake a multiyear enforcement initiative for late reporters beginning in fiscal year 1991.

Conclusions

A vigorous and efficient enforcement program is necessary to encourage industry to comply with reporting requirements. With greater compliance, the inventory would be more complete and therefore more useful to government regulators and others. We believe that EPA's compliance and enforcement efforts would be improved if EPA's regions used more effective and efficient strategies in identifying nonreporters. Moreover, by acting expeditiously against nonreporters, EPA will send a strong signal to industry that the program will indeed be enforced. Finally, we agree with EPA that without explicit inspection authority, access to facilities to determine compliance could become a problem. While EPA has generally been able to gain access to facilities under other statutory authorities, in our view, it may not necessarily be able to obtain under these other laws all of the information it needs to determine whether facilities are in compliance. Moreover, we believe that EPA's need to rely on other legal authorities weakens its enforcement program. Therefore, we believe that future enforcement efforts would be strengthened if the Congress were to revise EPCRA to give EPA explicit authority to inspect facilities.

Recommendations to the Administrator, EPA

Because strong, efficient enforcement is critical to ensure industry's compliance with the inventory program's reporting requirements, we recommend that the Administrator, EPA, develop an effective regional inspection strategy to better identify nonreporters and issue national guidance for implementing this strategy. In addition, EPA should develop procedures to reduce the backlog of enforcement cases and clarify EPA headquarters' role in handling such cases.

Recommendation to the Congress

To strengthen EPA's enforcement of the Toxic Release Inventory Program, we recommend that the Congress amend the Emergency Planning and Community Right-to-Know Act to provide EPA with explicit authority to inspect facilities.

Agency Comments and Our Evaluation

EPA generally agreed with our recommendation that the agency assess the various targeting strategies regional offices use to identify nonreporters. The agency commented that it would be valuable to distribute national guidance to its regional offices outlining recommended targeting strategies. EPA also stated that it had several projects under way designed to improve how targeting for facility inspections is done. Because of the magnitude of nonreporting and the agency's limited inspection resources for addressing the problem, we continue to believe

that the agency should issue national guidance to ensure that its regional offices are using the most efficient and effective strategies to target facilities for inspection.

EPA concurred with our recommendation that it issue national guidance to its regions to help them reduce the backlog of enforcement cases, stating that it had initiated a project to improve the management of these cases. The agency explained that direction will be provided on case prioritization, ways to effectively use limited resources, and communication strategies. The project is slated for completion by October 1, 1991. We support EPA's initiative in this critical aspect of the enforcement program and urge the agency to take whatever action is necessary to help the regions implement effective techniques for dealing with the enforcement backlog.

Technical Methodology

Survey Methods

We used a variety of methods to collect data, including mail-in questionnaires and a telephone poll of residents in three counties. Copies of the surveys, with aggregated responses, are available upon request.

Mail-In Questionnaires

States

We sent a mail-in questionnaire to designated Toxic Release Inventory Program coordinators in each of the 50 states, Puerto Rico, and the District of Columbia. We received responses from all states surveyed except Alaska.

Users of Public Data Base

To obtain information from those individuals who had accessed the public data base, we obtained from NLM a list of 740 user code accounts that had accessed the file between June 16, 1989,¹ and November 30, 1989. After we excluded EPA user codes, we sent confidential questionnaires to the designated recipient of technical materials for each of the remaining 710 codes.

We received back 512 usable questionnaires, for an overall response rate of 72.1 percent. Another 14 responded after our deadline or returned partially completed questionnaires. Only four users refused to participate. Among the nonrespondents were 62 users who did not recall having accessed the data file.

Facilities That Submitted Emissions Reports

To obtain information from the regulated community, we sent a confidential questionnaire to a simple random sample of 1,000 facilities that had submitted reports for 1987 and/or 1988. The sample was drawn from inventory data tapes provided by EPA. The tapes, dated January 15, 1990, listed 26,394 facilities that had submitted reports for 1 or both years.

We received back 867 usable questionnaires. Another 10 facilities returned questionnaires too late for us to use in our analysis. Only five facilities refused to participate. Among the nonrespondents, 40 facilities told us that their facility was closed or did not recall having submitted emissions reports. Except where noted, our results generalize to the 22,884 facilities we estimate would have responded if we had surveyed all facilities that reported. However, our estimates may over- or understate the views of all facilities to the extent that nonrespondents hold

¹This is the date the public data base first became available.

different views than respondents. The precision of our estimates is indicated with a confidence interval at the 95-percent level.²

To encourage response in all three of our mail surveys, we sent follow-up questionnaires to those who did not respond to our initial mailings. These surveys were conducted concurrently from March through July 1990.

Telephone Poll of Residents in Three Counties

To assess public awareness of, interest in, and use of toxic chemical release data, we contracted with Westat, Inc., a private research firm, to design and conduct a telephone survey in three counties located in the states we selected for detailed review. These counties were Allegheny County, Pennsylvania; Cook County, Illinois; and Harris County, Texas.

The survey was conducted using a stratified random digit dialing procedure³ to identify adults 18 years of age or older residing in the three counties. For each county, a random digit dialing sample of approximately 1,500 telephone numbers was generated. Telephone exchanges used primarily for business were screened from the sample. Calls yielding busy tones, answering machines, no answer, or other intermediate results were retried up to three times before the telephone number was abandoned so that the number of responses to our survey exceeded our criterion of 500 per county. As with the estimates for the survey of facilities, the estimates we present from this survey have a measurable precision and are stated at the 95-percent confidence level.

As table I.3 shows, we obtained responses from 44 to 52 percent of the eligible samples in each county. Final data were weighted by age and gender to more closely approximate each county's population characteristics and to help generate county-level estimates.

²Since we used a probability sample to develop our estimates, each estimate has a measurable precision, or sampling error, which may be expressed as a plus/minus figure. A sampling error indicates how closely we can reproduce from a sample the results that we would obtain if we were to take a complete count of the universe using the same measurement methods. By adding the sampling error to and subtracting it from the estimate, we can develop upper and lower bounds for each estimate. This range is called a confidence level. Sampling errors and confidence intervals are stated at a certain confidence level—in this case, 95 percent. For example, a confidence interval at the 95-percent confidence level means that in 95 out of 100 instances, the sampling procedure we used would produce a confidence interval containing the universe value we are estimating.

³Random digit dialing is a method of obtaining a random sample of households with telephones and is designed to minimize problems of access to unlisted telephones and telephones not yet listed.

Table I.3: Final Status of Random Digit Dialing Sample

	Allegheny County		Cook County		Harris County	
	Number	Response rate (percent)	Number	Response rate (percent)	Number	Response rate (percent)
Respondents	556	50	515	44	503	52
Nonrespondents	564	50	646	56	459	48
Total eligible	1,120	100	1,161	100	962	100

The county estimates we present could over- or underestimate the county population's knowledge of, opinions about, and interest in the emissions inventory if the sampled adults who did not participate in the study or those without telephones have knowledge, opinions, or interest in toxic release data that differs from that of respondents.

Nationwide Reporting and Nonreporting Estimates

To estimate the percentages of facilities nationwide that have and have not submitted one or more emissions reports, we asked the 52 state coordinators we surveyed to estimate reporting rates in their states. A state-by-state breakdown of the nonreporting estimates provided by 39 coordinators is contained in chapter 5.

We used the states' responses to estimate the universe of facilities obligated to report nationwide. To do this, we first had to make assumptions about reporting rates for the 13 states that did not provide us an estimate. We developed an optimistic assumption that the estimated reporting rate for these states was 100 percent. We did not use a lower-bound estimate because reporting rates were clearly above zero for all states, and we knew of no meaningful minimum rate assumption to use.

Second, we divided the actual number of facilities that submitted reports for 1988 in each state by the state's estimated reporting rate to yield an estimated universe of eligible facilities for each state. We then pooled these estimated universes across states to yield an estimated national universe of facilities that should have submitted reports. Finally, we divided the number of facilities that submitted reports nationwide in 1988 (excluding the Virgin Islands, American Samoa, Guam, and the Northern Mariana Islands, which were not in our survey) by the estimated national universe of facilities that should have reported to estimate the national reporting rate of 64.3 percent.

Reliability Assessment of EPA's Automated Inventory Data

To assess the reliability of EPA's automated toxic release inventory data base, known as the Toxic Release Inventory System (TRIS), we used probability samples to determine whether the information in emissions reports was completely and accurately transcribed into TRIS. The precision of our estimates is indicated by confidence intervals or sampling errors at the 95-percent level of confidence.

Completeness Test

To determine whether EPA's data base contained all the reports submitted, we used cluster sampling to compare original documents submitted to EPA to TRIS.⁴ From 591 boxes of reports submitted for the 1988 inventory, we selected a random sample of 125 boxes to review. Within each box of reports, we randomly selected one report between the first and thirtieth report and then every thirtieth report after the first report selected. Using this methodology, we pulled 578 reports. We then checked to see whether these reports were present in, or absent from, the data base.

Accuracy Test

The computer files EPA provided for our use contained 80,230 submissions for the 1988 inventory. From these files, we drew a simple random sample of 400 reports. We compared 11 fields from each submission on the data base with the documents submitted. (See ch. 4 for the names of the fields selected.)

All of the fields we reviewed occur once per submission except the SIC code, the release/transfer type, and the release/transfer amount, which can occur multiple times per submission. The release/transfer type describes the types of toxic chemical releases and transfers that facilities can report. The release types are nonpoint air, point air, water, underground, and land. The transfer types are publicly owned treatment works and off-site.

⁴Our test did not include 1,704 emissions reports that were submitted electronically by facilities.

Standard Industrial Classification Codes Covered by Reporting Requirements

Code	Industry
20	Food and kindred products
21	Tobacco products
22	Textile mill products
23	Apparel and other finished products made from fabrics and other similar materials
24	Lumber and wood products, except furniture
25	Furniture and fixtures
26	Paper and allied products
27	Printing, publishing, and allied industries
28	Chemicals and allied products
29	Petroleum refining and related industries
30	Rubber and miscellaneous plastics products
31	Leather and leather products
32	Stone, clay, glass, and concrete products
33	Primary metal industries
34	Fabricated metal products, except machinery and transportation equipment
35	Industrial and commercial machinery and computer equipment
36	Electronic and other electrical equipment and components, except computer equipment
37	Transportation equipment
38	Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks
39	Miscellaneous manufacturing industries

Inventory Chemicals for Reporting Year 1988

Acetaldehyde	Bis(chloromethyl) ether
Acetamide	Bis(2-chloro-1-methylethyl) ether
Acetone	Bis(2-ethylhexyl) adipate
Acetonitrile	Bromoform (tribromomethane)
2-Acetylaminofluorene	Bromomethane (methyl bromide)
Acrolein	1,3-Butadiene
Acrylamide	Butyl acrylate
Acrylic acid	n-Butyl alcohol
Acrylonitrile	sec-Butyl alcohol
Aldrin [1,4:5,8-dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a- hexahydro (1.alpha.,4.alpha.,4a.beta.- .5.alpha.,8.alpha.,8a.beta.)-]	tert-Butyl alcohol
Allyl alcohol	Butyl benzyl phthalate
Allyl chloride	Butyraldehyde
Aluminum (fume or dust)	1,2-Butylene oxide
Aluminum oxide (fibrous form)	C.I. Acid green 3
2-Aminoanthraquinone	C.I. Basic green 4
4-Aminoazobenzene	C.I. Basic red 1
4-Aminobiphenyl	C.I. Direct black 38
1-Amino-2-methylantraquinone	C.I. Direct blue 6
1-Ammonia	C.I. Direct brown 95
Ammonium nitrate (solution)	C.I. Disperse Yellow 3
Ammonium sulfate (solution)	C.I. Food red 5
Aniline	C.I. Food red 15
o-Anisidine	C.I. Solvent orange 7
p-Anisidine	C.I. Solvent yellow 3
o-Anisidine hydrochloride	C.I. Solvent yellow 14
Anthracene	C.I. Solvent yellow 34 (auramine)
Antimony	C.I. Vat yellow 4
Arsenic	Cadmium
Asbestos (friable)	Calcium cyanamide
Barium	Captan [1H-isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2- [trichloromethyl]thio]
Benzal chloride	Carbaryl [1-naphthalenol, methylcarbamate]
Benzamide	Carbon disulfide
Benzene	Carbon tetrachloride
Benzidine	Carbonyl sulfide
Benzoic trichloride (benzotrichloride)	Catechol
Benzoyl chloride	Chloramben [benzoic acid, 3-amino-2, 5-dichloro-]
Benzoyl peroxide	

(continued)

**Appendix III
Inventory Chemicals for Reporting Year 1988**

Benzyl chloride	Chlordane [4,7-methanoindan,
Beryllium	1,2,4,5,6,7,8,8-octachloro-
Biphenyl	2,3,3a,4,7,7a-hexahydro-]
Bis(2-chloroethyl) ether	Chlorine
Chloroacetic acid	Dichlorobromomethane
2-Chloroacetophenone	1,2 Dichloroethane (ethylene dichloride)
Chlorobenzene	1,2-Dichloroethylene
Chlorobenzilate [benzeneacetic acid, 4-	Dichloromethane (methylene chloride)
chloro-.alpha.-(4-chlorophenyl).alpha.	2,4-Dichlorophenol
-hydroxy-.ethyl ester]	1,2-Dichloropropane
Chlorethane (ethyl chloride)	2,3-Dichloropropene
Chloroform	1,3-Dichloropropylene
Chloromethane (methyl chloride)	Dichlorvos [phosphoric acid, 2
Chloromethyl methyl ether	dichloroethenyl dimethyl ester]
Chloroprene	Dicofol [benzenemethanol, [4-chloro-
Chlorothalonil [1,3-	a.alpha.-4-chlorophenyl)-.alpha.-
Benzenedicarbonitrile, 2,4,5,6-	(trichloromethyl)-]
tetrachloro-]	Diepoxybutane
Chromium	Diethanolamine
Cobalt	Di-(2-ethylhexyl) phthalate (DEHP)
Creosote	Diethyl phthalate
Copper	Diethyl sulfate
p-Cresidine	3,3' Dimethoxybenzidine
Cresol (mixed isomers)	4-Dimethylaminoazobenzene
m-Cresol	3,3' Dimethylbenzidine (o-tolidine)
o-Cresol	Dimethylcarbanyl chloride
p-Cresol	1,1-Dimethyl hydrazine
Cumene	2,4 Dimethylphenol
Cumene hydroperoxide	Dimethyl phthalate
Cupferron [benzeneamine, N-hydroxy-N-	Dimethyl sulfate
nitroso, ammonium salt]	m-Dinitrobenzene
Cyclohexane 2,4-D [Acetic acid,	o-Dinitrobenzene
(2,4-dichloro-phenoxy)-]	p-Dinitrobenzene
Decabromodiphenyl oxide	4,6-Dinitro-o-cresol
Diallate [carbamoithioic acid,bis (1-	2,4-Dinitrophenol
methylethyl)-,S-(2,3-dichloro-2-	2,4-Dinitrotoluene
propenyl) ester]	2,6 Dinitrotoluene
2,4-Diaminoanisole	Dinitrotoluene (mixed isomers)
2,4-Diaminoanisole sulfate	n-Dioctyl phthalate
4,4'-Diaminodiphenyl ether	1,4-Dioxane
Diaminotoluene (mixed isomers)	1,2-Diphenylhydrazine (hydrazobenzene)
2,4-Diaminotoluene	Epichlorohydrin

(continued)

**Appendix III
Inventory Chemicals for Reporting Year 1988**

Diazomethane	2-Ethoxyethanol
Dibenzofuran	Ethyl acrylate
1,2-Dibromo-3-chloropropane (DBCP)	Ethylbenzene
1,2-Dibromoethane (ethylene dibromide)	Ethyl chloroformate
Dibutyl phthalate	Ethylene
Dichlorobenzene (mixed isomers)	Ethylene glycol
1,2-Dichlorobenzene	Ethyleneimine (aziridine)
1,3-Dichlorobenzene	Ethylene oxide
1,4-Dichlorobenzene	Ethylene thiourea
3,3'-Dichlorobenzidine	Fluometuron [urea, N,N-dimethyl-N'-[3-
trifluoromethyl)phenyl]-]	Methyl iodide
Formaldehyde	Methyl isobutyl ketone
Freon 113 [ethane, 1,1,2-trichloro-1,2,2-	Methyl isocyanate
trifluoro-]	Methyl methacrylate
Heptachlor [1,4,5,6,7,8,8-Heptachloro-	Michler's ketone
3a,4,7,7a-tetrahydro-4,7-methano-1H-	Molybdenum trioxide
indene]	Mustard gas [ethane, 1,1''-thiobis [2-
Hexachlorobenzene	chloro-]
Hexachloro-1,3-butadiene	Naphthalene
Hexachlorocyclopentadiene	alpha-Naphthylamine
Hexachloroethane	beta-Naphthylamine
Hexachloronaphthalene	Nickel
Hexamethylphosphoramide	Nitric acid
Hydrazine	Nitrioltriacetic acid
Hydrazine sulfate	5-Nitro-o-anisidine
Hydrochloric acid	Nitrobenzene
Hydrogen cyanide	4-Nitrobiphenyl
Hydrogen fluoride	Nitrofen [benzene, 2,4-dichloro-1-(4-
Hydroquinone	nitrophenoxy)]
Isobutyraldehyde	Nitrogen mustard [2-chloro-N-(2-
Isopropyl alcohol (manufacturing-strong	chloroethyl)-N-methylethanamine]
acid process, no supplier notification)	Nitroglycerin
4,4'-Isopropylidenediphenol	2-Nitrophenol
Isosafrole	4-Nitrophenol
Lead	2-Nitropropane
Lindane [cyclohexane, 1,2,3,4,5,6-	p-Nitrosodiphenylamine
hexachloro-, (1.alpha.,2.alpha.,3.beta.,	N,N-dimethylaniline
4.alpha.,5.alpha.,6beta.)-]	N-Nitrosodi-n-butylamine
Maleic anhydride	N-Nitrosodiethylamine
Maneb (carbamodithioic acid, 1,2-	N-Nitrosodimethylamine
ethanedylbis, manganese complex]	N-Nitrosodiphenylamine
Manganese	N-Nitrosodi-n-propylamine

(continued)

**Appendix III
Inventory Chemicals for Reporting Year 1988**

Mercury	N-Nitrosomethylvinylamine
Methanol	N-Nitrosomorpholine
Methoxychlor [benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-methoxy-]	N-Nitroso-N-ethylurea
2-Methoxyethanol	N-Nitroso-N-methylurea
Methyl acrylate	N-Nitrosornicotine
Methyl tert-butyl ether	N-Nitrosopiperidine
4,4' Methylenebis(2-chloro aniline)	Octachloronaphthalene
(MBOCA)	Osimium tetroxide
4,4' Methylenebis (N,N-dimethyl) benzenamine	Parathion [phosphorothioic acid, o, o-diethyl-o-(4-nitrophenyl) ester]
Methylenebis(phenylisocyanate) (MBI)	Pentachlorophenol (PCP)
Methylene bromide	Peracetic acid
4,4' Methyleneedianiline	Phenol
Methyl ethyl ketone	p-Phenylenediamine
Methyl hydrazine	2-Phenylphenol
Phosphoric acid	Phosgene
Phosphorus (yellow or white)	Triazuone [2,5-cyclohexadiene-1,4-dione, 2,3,5-tris(1-aziridinyl)-]
Phthalic anhydride	Trichlorfon [phosphonic acid, (2,2,2-trichloro-1-hydroxyethyl)-, dimethyl ester]
Picric acid	
Polychlorinated biphenyls (PCBs)	
Propane sultone	1,2,4-Trichlorobenzene
beta-Propiolactone	1,1,1-Trichloroethane (methyl chloroform)
Propionaldehyde	1,1,2-Trichloroethane
Propoxur [phenol, 2-(1-methylethoxy)-, methylcarbamate]	Trichloroethylene
Propylene (propene)	2,4,5-Trichlorophenol
Propyleneimine	2,4,6-Trichlorophenol
Propylene oxide	Trifluralin [benzeneamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-]
Pyridine	1,2,4-Trichlorobenzene
Quinoline	1,1,2-Trichloroethane
Quinone	Trichloroethylene
Quintozene [pentachloronitrobenzene]	Trichlorofluoromethane
Saccharin (manufacturing, no supplier notification) [1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide]	2,4,5-Trichlorophenol
Safrole	2,4,6-Trichlorophenol
Selenium	Trifluralin [benzeneamine, 2,6-dinitro-N,N-dipropyl-4-(trifluoromethyl)-]
Silver	1,2,4-Trimethylbenzene
Styrene	Tris(2,3-dibromopropyl) phosphate
Styrene oxide	Urethane (ethyl carbamate)
Sulfuric acid	Vanadium (fume or dust)
	Vinyl acetate

(continued)

**Appendix III
Inventory Chemicals for Reporting Year 1988**

Terephthalic acid	Vinyl bromide
1,1,2,2-Tetrachloroethane	Vinyl chloride
Tetrachlorethylene (perchloroethylene)	Vinylidene chloride
Tetrachlorvinphos [phosphoric acid, 2-chloro-1-(2,3,5-trichlorophenyl) ethenyl dimethyl ester]	Xylene (mixed isomers)
	m-Xylene
	o-Xylene
Tetrachlorvinphos [phosphoric acid, 2-chloro-1-(2,3,5-trichlorophenyl) ethenyl dimethyl ester]	p-Xylene
	2,6-Xylidine
	Zinc (fume or dust)
Thallium	Zineb [carbamodithioic acid, 1,2-ethanediylbis-, zinc complex]
Thioacetamide	
4,4'-Thiodianiline	
Thiourea	
Titanium tetrachloride	
Thorium dioxide	
Toluene	
Toluene-2,4-diisocyanate	
Toluene-2,6-diisocyanate	
Toluenediisocyanate (mixed isomers)	
o-Toluidine	
o-Toluidine hydrochloride	
Toxaphene	

Description of Data Formats

To furnish the public with information on the emission of toxic chemicals nationwide and in their communities, EPA has developed an on-line public data base and other formats. In addition to producing the formats listed in table IV.1, EPA and state agencies will provide, upon request, copies of the individual release reports.

Table IV.1: Availability of Inventory Data Formats

Format	Data Coverage	Source	Price
Public data base	National	NLM ^a	\$18-25/hour
Magnetic tape	National	GPO ^b	\$500
		NTIS ^c	\$1,100-1,550
Compact disk	National	GPO	\$23
		NTIS	\$45
National report	National	GPO	\$21
Fiche	State	GPO	\$6-13
		NTIS	Not determined yet
		National	GPO
Computer diskette	State	NTIS	Not determined yet
		GPO	\$50-80
		NTIS	\$1,830 (DBase)
			\$1,980 (Lotus)
		GPO	\$900 (DBase)
		\$1,110 (Lotus)	

^aAddress: TRI Representative, National Library of Medicine, Specialized Information Services, 8600 Rockville Pike, Bethesda, MD 20894. Telephone: (301) 496-6531.

^bAddress: U.S. Government Printing Office, 710 North Capitol Street, N.W., Washington, DC 20401. Telephone: (202) 783-3238, (202) 275-0186 (for the magnetic tape format).

^cNTIS sells the 1600 density magnetic tape for \$1550. The 6250 density tape costs \$1,100. Address: National Technical Information Service, U.S. Dept. of Commerce, 5285 Port Royal Road, Springfield, VA 22161. Telephone: (703) 487-4650; (703) 487-4763 (for the magnetic tape and computer diskette formats).

List of Selected Publications by the Federal Government, State Governments, and Environmental and Public Interest Groups

Federal Government

Carney, Jon, C.J. Ludington, and U.S. EPA, Region VI. Use of Government Data to Identify Industrial Pollution in Fort Worth. Dallas, Texas: Feb. 1989.

Lautenberg, Senator Frank, and Congressman James Florio. Air Toxic Report; New York-New Jersey-Connecticut Metro Area. Washington, D.C: Apr. 1989.

Molinari, Congressman Guy. Toxic Chemical Inventory: Toxic Chemical Presence and Releases to the Environment in an Area of Northeastern New Jersey. Washington, D.C.: Apr. 1989.

Subcommittee on Health and the Environment, Committee on Energy and Commerce, U.S. House of Representatives, Henry A. Waxman, Chairman. The National Toxic Release Inventory: Preliminary Air Toxic Data. Washington, D.C.: Mar. 1989.

State Governments

Community Right-To-Know Annual Report. Trenton, N.J.: New Jersey Department of Environmental Protection, Division of Environmental Quality, Bureau of Hazardous Substances, Mar. 1989.

Comparison 1987 vs 1988 Data SARA Title III, Section 313 Toxic Chemical Release Inventory Report. Frankfort, Ky.: Kentucky Department for Environmental Protection, Feb. 1990.

Louisiana Toxics Release Inventory 1988. Baton Rouge, La: Louisiana Department of Environmental Quality, Apr. 1990.

More Than Fifty Eight Million Pounds of Chemicals Released Annually to the Connecticut Environment. Hartford, Conn.: Department of Environmental Protection, Apr. 1989.

New York State 1988 Toxic Release Inventory (TRI) Review. Albany, N.Y.: New York State Department of Environmental Conservation, Dec. 1989.

Second Annual Toxic Chemical Report. Springfield, Ill.: Illinois Environmental Protection Agency, Feb. 1990.

Virginia SARA Title III Section 313 Release Summary Report. Richmond, Va.: Virginia Emergency Response Council, Department of Waste Management, Nov. 1989.

Appendix V
List of Selected Publications by the Federal
Government, State Governments, and
Environmental and Public Interest Groups

1987 Section 313 "Toxic" Chemical Emission Report (draft). Salt Lake City, Utah: Utah Department of Health, Division of Environmental Health, Mar. 1988.

1988 Toxic Chemical Release Report. St. Paul, Minn.: Minnesota Department of Public Safety, Emergency Response Commission, Nov. 1989.

Environmental and
Public Interest Groups

Air Toxics in New York State: A Citizens' Guide to the Right-to-Know Law and Air Toxic Data. Albany, N.Y.: New York Environmental Institute with the American Lung Association of New York State, July 1989.

Community Right To Know: A New Tool for Pollution Prevention. Washington, D.C.: OMB Watch, Jan. 1989.

Dean Norman L., Jerry Poje, and Randall J. Burke. The Toxic 500: The 500 Largest Releases of Toxic Chemicals in the U.S., 1987. Washington, D.C.: National Wildlife Federation, Aug. 1989.

Entropy, Carl Reller. Environmental Compliance Audit of Four Oil and Gas Facilities in Kenai, Alaska. Anchorage, Alaska: Sept. 1990.

A Fragile Shield Above the Golden State: California's Contribution to the Chemical Destruction of Earth's Protective Ozone Layer. San Francisco, Calif.: Citizens for a Better Environment, Apr. 1989.

Frank, Debra Joy, and C. William Ryan. The Good, The Bad and The Toxic. Most of California's Largest Toxic Emitters Are Failing to Reduce Their Emissions and Use of Toxics. Los Angeles, Calif.: California Public Interest Research Group, Mar. 1990.

A Future Too Bright. College Park, Md.: Maryland Public Interest Research Group. Aug, 1989.

Gordon, Ben, Joe Thornton, and Jeff Howard (eds.). Wyandotte: A Chemically Dependent City. Ann Arbor, Mich.: Dec. 1989.

Haight, Laura, and Bridget Barclay. Toxic Tides: Your Right to Know. A Report on Toxic Discharges to the Hudson River Drainage Basin Using Information From the Federal Emergency Planning and Community Right-to-Know Act. Poughkeepsie, N.Y.: Hudson River Sloop Clearwater, Inc., Oct. 1989.

Appendix V
List of Selected Publications by the Federal
Government, State Governments, and
Environmental and Public Interest Groups

Klaus, Marshall, Kathy Aterno, Andrew Buchsbaum, Geoff Lomax, Hillel Klaus, and Charles Griffith. Danger: To the Ozone Layer in Michigan. Ann Arbor, Mich.: July 1989.

Lippeatt, David, and Andrew Buchsbaum, with Charles Griffith and Anne Woiwode. Out of Control: Air Pollution Controls and Toxic Air Emissions in Michigan. Ann Arbor, Mich.: Public Interest Research Group in Michigan, Nov. 1989.

Manufacturing Pollution: A Survey of the Nation's Toxic Polluters. Washington, D.C.: Citizen's Fund, May 1990.

Mulhern, Joan. Toxics Released: An Inventory of Toxic Chemicals Released in Vermont. Montpelier, Vt.: Vermont Public Interest Research Group, May 1989.

Pennsylvania Toxic Chemical Release Inventory Report. Philadelphia, Pa.: Delaware Valley Toxics Coalition, Jan. 1990.

Permit to Pollute: A Study of Connecticut's Industrial Dischargers. West Hartford, Conn.: Connecticut Public Interest Research Group, Oct. 1989.

Poisons in Our Neighborhoods: A Survey of Toxic Pollution [49 states] Manufacturers. Washington, D.C.: Citizen Action, Oct. 1989.

Poje, Jerry, Norman L. Dean, and Randall J. Burke. Danger Downwind: A Report on the Release of Billions of Pounds of Toxic Air Pollutants. Washington, D.C.: National Wildlife Federation, Mar. 1989.

Sheiman, Deborah. Memorandum Subject: Top Twenty Industrial Sources of Toxic Air Emissions. Washington, D.C.: Natural Resources Defense Council, June 1989.

Sugarman, Quincy. Toxics on the Rise: Oregon's Industrial Air Pollution. Portland, Org.: Oregon State Public Interest Research Group, Oct. 1989.

Title III Emissions Data for Silicon Valley Industry-by Company. San Francisco, Calif.: Silicon Valley Toxics Coalition, Aug. 1988.

Toxic Air Emissions in North Carolina: An Update for 1988. Raleigh, N.C.: North Carolina Environmental Defense Fund, Aug. 1989.

Appendix V
List of Selected Publications by the Federal
Government, State Governments, and
Environmental and Public Interest Groups

Toxic Air Pollution in Illinois: An Analysis of 1987 Toxic Release Inventory Reports. Chicago, Ill.: Citizens for a Better Environment and Chicago Lung Association, Feb. 1989.

Toxic Air Pollution in Maryland: An Analysis of Toxic Release Reports From Manufacturing Industries for 1987. Washington, D.C.: Natural Resources Defense Council; Sierra Club, Potomac Chapter; Maryland Waste Coalition; American Lung Association of Maryland, Aug. 1988.

Toxic Air Pollution in Ohio: Uncontrolled and Unregulated. Columbus, Ohio: Ohio Citizen Action, Feb. 1990.

Toxic Air Pollution in Virginia: An Analysis of Toxic Release Reports for 1988 Emissions Submitted by Manufacturing Industries to the Virginia Department of Waste Management in Compliance with the Emergency Planning and Community Right-to-Know Act. Annapolis, Md.: Sierra Club, Virginia Chapter, Jan. 1990.

Toxic Pollution in Massachusetts: An Industry by Industry Analysis of Chemical Releases and Opportunities for Toxics Use Reduction. Boston, Mass.: Massachusetts Public Interest Research Group, Apr. 1989.

Toxic Trends: New Jersey's Most Toxic Dischargers 1987-88 and Their Progress Toward Pollution Prevention. New Brunswick, N.J.: New Jersey Public Interest Research Group, Oct. 1989.

Toxics Unleashed: A Report on Toxic Chemical Releases in Lucas County. Columbus, Ohio: Industrial States Policy Center, Apr. 1989.

Toxic Waste and Mortality in Louisiana's Chemical Corridor. Washington, D.C.: Greenpeace U.S.A., Nov. 1988.

Waking a Sleeping Giant: A Citizens Guide to Toxic Chemical Releases Reported Under Section 313 of the Emergency Planning and Community Right-To-Know Act. Frankfort, Ky.: Kentucky Resources Council, May 1988, revised Aug. 1989.

A Who's Who of American Ozone Depleters: A Guide to 3,014 Factories Emitting Three Ozone-Depleting Chemicals. Washington, D.C.: Natural Resources Defense Council, Jan. 1990.

Comments From the Environmental Protection Agency

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 15 1991

OFFICE OF
POLICY, PLANNING AND EVALUATION

Mr. Richard Hembra
Director
Environmental Protection Issues
Resources, Community, and Economic Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Hembra:

The Environmental Protection Agency (EPA) reviewed the General Accounting Office (GAO) draft report entitled Toxic Chemicals: EPA's Toxic Release Inventory Useful, But Can be Improved (GAO/RCED-91-121). In accordance with Public Law 96-226, I am providing the formal Agency response to the draft report.

In general, the report presents a fair and balanced evaluation of the toxic release inventory (TRI). Some of the comments on the enclosure describe changes in program management which have been made since the GAO review was conducted and which are relevant to the findings. In other cases, EPA will need to make policy decisions regarding future program directions. Some of these will be affected by resource availability to carry out new initiatives.

The enclosure presents the Agency's reactions to the draft report. The paper is organized into two sections: (1) comments on GAO's findings related to organization and management of the Toxics Release Inventory (Sec. 313 of the Emergency Planning and Community Right-to-Know Act [EPCRA]) and (2) comments related to enforcement of the reporting provisions of EPCRA.

In addition to improving the management of the toxic release inventory program, the Office of Pesticides and Toxic Substances (OPTS) is actively working with foreign nations on environmental release data. At the Joint Meeting of the Chemicals Group and Management Committee of the Organization for Economic Cooperation and Development (OECD) this month, OPTS will lead a seminar to familiarize foreign member nations with the fundamentals of toxics release reporting and right-to-know-programs.

See comment 1.

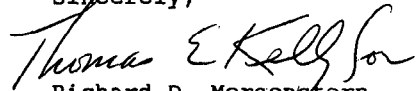
**Appendix VI
Comments From the Environmental
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OPTS will sponsor another TRI workshop for OECD member nations and Central and Eastern European nations in November. The workshop will provide practical information on the collection and use of environmental release data, industries that may be affected by the reporting; companies that provide environmental services; and environmental and public interest groups.

Thank you for the opportunity to review the report and the Agency looks forward to receiving the final GAO report.

Sincerely,



Richard D. Morgenstern
Acting Assistant Administrator

Enclosure

EPA COMMENTS ON GAO DRAFT REPORT--TOXIC CHEMICALS: EPA'S
TOXIC RELEASE INVENTORY USEFUL, BUT CAN BE IMPROVED

May 1991

Comments On General Program Management

See comment 2.

Public Access. In the Executive Summary and in Chapter 3, GAO implies that demand for toxic release inventory (TRI) data by the general public is limited. Our experience is to the contrary. In the period since public access to TRI data has been available, we have received in EPA headquarters alone over 5,000 requests for TRI data from a broad range of different groups. In contrast to our experience with other government information programs (e.g., FOIA), most requests for TRI data are not received from industry. On the contrary, less than 50 percent of TRI information requests are from industry. We have received thousands of information requests from individuals, non-profit organizations, research organizations, the media, etc. In summary, we believe the situation is much more positive in terms of public access than portrayed by GAO.

See comment 3.

With further regard to public access, GAO may want to mention that a pilot user assistance service (TRI US) began in 1990. This allows users to call and request assistance in accessing the database. A variety of requests can be filled, including the completion of reasonable searches for particular information. In Chapter 3 ("EPA Efforts to Improve the Data Base"), GAO may want to mention the availability of the Toxic Dump tool. This is computer software developed by EPA and available free of charge. It downloads the National Library of Medicine (NLM) data into a format that allows for easier manipulation. GAO should also be aware that EPA has begun an evaluation of the various public access means.

Availability of Data on compact disk-read only memory (CD-ROM) and Microfiche. At the time the GAO was conducting its survey, we were experiencing both contractual and technical problems with respect to producing the TRI data in these two media. We believe, however, that these problems have been substantially overcome. There were two contractual problems. EPA experienced a more than 9-month delay due to the fact that our funds were in the form of an extramural allocation, while the Government Printing Office (GPO), our publisher, accepted funds from intramural (i.e. printing) accounts. We have since resolved this difficulty through an Interagency Agreement that allows us to apply extramural funding to pay for these printing services. In addition, the contractual problem that GPO was experiencing with respect to microfiche production has been resolved.

Major technological problems affected the CD-ROM format and GPO's contractual ability to provide the sort of search and output software that we considered necessary and which existed. Subsequent to the GAO study, GPO completed a procurement process that allows them to tap the software of a number of different CD-ROM publication systems. We are in the process of testing one such package. Upon completion of this testing phase, we expect to move rapidly to publish a CD-ROM with TRI data from Reporting Years 1987, 1988, and 1989. Having resolved the contractual and technical issues, we would expect each year's publication of CD-ROM in the future to proceed much more smoothly and rapidly.

See comment 4.

Expansion of Facility Coverage. We agree with GAO that expansion of facility coverage would broaden the usefulness of TRI. EPA is already examining possibilities for expanding the standard industrial classification (SIC) codes subject to reporting requirements. Certain issues related to facility coverage were considered by Congress and by EPA at the time EPCRA was passed, and some of these present special problems.

With respect to agricultural chemicals, it should be noted that there are approximately 800,000 farms in the U.S. Each farm would need to go to the effort of determining whether they met the chemical, poundage, and size criteria for reporting. Our analysis led us to conclude that very few farms would actually be required to report due to the fact that the active ingredients of pesticides generally occupy only a very small percentage of the total quantity found in pesticide formulations. Thus, including farming would substantially increase the overall burden of reporting while not substantially achieving GAO's goal of obtaining more information on pesticide use.

GAO also raises the question of whether the present exemption from reporting for small businesses should be changed. Several issues need to be considered here. First, eliminating this particular exemption would substantially increase the burden on businesses, while not necessarily increasing the amount of information received due to the separate 10,000 pounds usage threshold. In addition, GAO already currently questions the quality of emissions estimates found in TRI reporting. Smaller businesses are less likely to have environmental engineers on staff and to have resources to hire consultants. Thus, were the coverage to be increased to include smaller businesses, there would be substantial questions concerning the accuracy of the data from such additional reporters.

See comment 5.

With regard to federal facilities, we believe such expansion is worthy of consideration. We note, however, that inclusion of such facilities would raise the issue of national security exemptions.

See comment 6.

Reportable Chemicals. In the Executive Summary under "Including More Emissions", we suggest changing the sentence on line 10 to read: "For example, the 1988 inventory reflected limited information on the agricultural sector and the 1 billion pounds of pesticides it used that year." The statement as it reads is not entirely accurate, since there are pesticides and herbicides on the TRI list of chemicals. Also, the last sentence on page 22 could be changed to read: "...pesticides are covered to only a limited extent by the inventory."

See comment 7.

Now on p. 30.

On page 34 of the report, GAO might note that EPA added nine chemicals to the TRI list. This was an action initiated by EPA and not the result of a petition. The Agency also has plans to add chemicals from the Clean Air Act Amendments of 1990 which are not already on the TRI list. In general, work is underway to establish criteria for expanding the TRI list of chemicals. EPA is looking at ways to set priorities for chemicals to be added.

Now deleted from the report.

Data Use. On page 24 there is discussion of an EPA Region VIII project which incorrectly describes the project. There is only one chloroflourocarbon (CFC) currently on the Section 313 list of chemicals. Starting with the 1991 reporting year seven CFCs and halons will be reportable.

See comment 8.

Data Interpretation. The question of the extent to which EPA should interpret data for the public is a difficult one. On the one hand is the need to provide data which the outside world can use without any biases which might be reflected in EPA's interpretation. On the other hand, the Agency feels a responsibility to assist users in understanding that data interpretation can be fraught with uncertainties. EPA has attempted to promote understanding of potential risks through its Risk Screening Guide, which is widely available and helps the public to interpret release numbers. EPA's interpretation of data for particular areas of the country can present very sensitive issues for local and state officials and other interests.

General Enhancements To/Outlook for TRI. The GAO briefly discusses last year's Pollution Prevention Act and its relevance to TRI. EPA is very enthusiastic about how the new information will further the Agency's own pollution prevention efforts. It should be stressed, nevertheless, that the impact of pollution

See comment 9.

prevention data will be significant and implementation difficult in terms of managing the Toxics Release Inventory at a time when federal resources are limited. This will be the case, in fact, with regard to any additions to TRI reporting or efforts to improve data quality and data use. In Chapter 4, the GAO recommends the need for a "comprehensive data quality review effort." EPA agrees that the program would benefit from more resources for quality of data estimations, and this will become even more important when we begin to receive the new Pollution Prevention Act data.

See comment 10.

Comments On Program Enforcement

Lack of Explicit Inspection Authority. The GAO report correctly states that EPCRA does not provide EPA with explicit statutory authority to conduct compliance inspections. It is important to note that EPCRA also does not provide EPA with other explicit and standard investigatory powers, such as subpoena and warrant authorities. As the report indicates, amending EPCRA to add explicit investigatory authorities is a matter for Congressional consideration. EPA would fully support an amendment to EPCRA that would add explicit investigatory powers.

See comment 10.

In the meantime, EPA has been successfully using the precedent set by the Supreme Court's decision in Marshall v. Barlow's Inc. 436 U.S. 307 (1978) to gain entry into a facility. This case presented a challenge to a warrantless OSHA search of a business. While the Supreme Court upheld the challenge, it also provided guidelines for conducting consensual inspections. The Agency has developed its policy to conform to this case.

Targeting of Facilities For Inspections. One of GAO's criticisms was that some regions were pre-screening facilities better than other regions. The regions are implementing a Neutral Administrative Inspection Scheme (NAIS) in accordance with the 1988 Compliance Monitoring Strategy. This NAIS does not require pre-screening by phone and advance notice of inspection, but rather permits each Region to select the mechanism best suited to its particular program and experiences. Some regions believe that pre-screening unfairly punishes facilities that volunteer incriminating information over the phone. Also, these regions believe that "no-knock" inspections contribute to compliance.

EPA is developing a pilot database -- EPCRA Targeting System -- that will facilitate automated, intelligent targeting. The system will assist in efficiently and effectively identifying facilities that have not met Section 313 reporting requirements. The system will create and prioritize inspection target lists, maintain historical records, evaluate past targeting efforts and modify future targeting strategies. Developed in 1989, the EPCRA

Targeting System is used in four regions now and will extend to the remaining regions by June 1991. If the system is successful in the field during an eight week evaluation phase, and is appropriate for other statutory programs, EPA will consider expanding the EPCRA Targeting System to other media programs.

Pre-screening of facilities and targeting capabilities will be further enhanced by three projects that EPA plans to complete by the end of Fiscal Year 1991. The first project is the development of SIC Code/Industry guidance. A contractor will develop generic fact sheets on SIC codes that are subject to Section 313 reporting and common industries within those codes. The fact sheets will explore the typical processes and common chemical substances that are associated with a particular SIC code/Industry. For targeting purposes, this information can be cross-referenced with Dun and Bradstreet and toxic release inventory system (TRIS) to see if a company reported the expected types or amounts of chemicals.

The second project is Data Quality targeting/inspection guidance. This guidance will build upon a project that EPA completed in which algorithms were developed to determine the accuracy of estimated releases by an industry. The information used to develop these algorithms was captured from Reporting Years 1987 and 1988. Generic fact sheets on processes, common types of equipment used in these processes and estimates for process releases will be developed for SIC code/Industry. This information and TRIS can then be cross-referenced for targeting purposes.

The preparation of guidance on state coordination with regions in targeting facilities is the third project. We plan to complete the guidance by October 1. EPA will provide guidance on how the states' Form R records can help regional inspectors identify companies which have reported to the state, but not the federal government. This project will also have the capacity to identify a "failures to report" (reporting to the state but not the federal government) violation which may result in the assessment of an administrative civil penalty.

Regarding the recommendation in Chapter 5, we believe it would be valuable to distribute national guidance outlining the recommended process/steps which the regions should complete in establishing their regional inspection targeting strategy for nonreporters. Examples of targeting strategies which have been effective for specific regions can be attached to the guidance.

See comment 11.

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The American Association of Retired Persons (AARP), through a cooperative agreement with the EPA to provide qualified older workers for Agencywide programs, provides workers for the EPCRA program. The AARP program provides assistance in conducting compliance inspections and in initiating and processing enforcement actions. The current workplan for AARP services calls for expanded responsibilities: provide assistance to the approximately 8 federal EPCRA enforcement staff and to the inventory program.

Actions Against Nonreporters. EPA's top priority in EPCRA Section 313 compliance monitoring and enforcement is nonreporters. This priority issue mandates that we focus our compliance and enforcement capabilities on achieving this goal. The EPCRA Section 313 enforcement program has been, and continues to be, a success. EPA has workable solutions for those elements of the program which can be improved. For example, as outlined above, EPA is developing tools to increase its ability to take action against nonreporters. Another solution is to aggressively pursue nonresponders. Regional EPA authorities have already conducted close to 1500 inspections over the last two years to identify nonresponders.

See comment 12.

GAO's reliance on a 1987 compliance survey and a State-by-State best estimate overstates the nonreporter problem. The 1987 compliance study is the only valid study conducted on this issue and was done to determine compliance for the first year of TRI reporting. The result was 66% compliance. No additional scientifically valid, compliance surveys have been conducted since that time. In addition, the results of the 1987 survey should be reviewed in light of the 1991 data for this reporting period. Since the study was conducted, thousands of 1987 reports have been collected by EPA.

GAO's reference to the 1987 compliance study as the "1989 EPA Study" could be misleading because it implies that at the end of three reporting years the compliance rate is 66%. Furthermore, it is not evident what effect a 34% noncompliance rate for 1987 has on the data. For instance, are the 66% reporting 95% of all emissions?

GAO's State-by-State survey appears to be based on best estimates. It is not clear who GAO investigators spoke with, the level of expertise of the individual questioned, and on what information or analysis the interviewees based their estimate of noncompliance. The basis of the survey should be explained since the survey does not appear to be based upon statistically significant data. Considering the universe of potentially subject facilities, EPA has far exceeded the 8% detection rate one would expect from random calling of these facilities. EPA's innovative nonreporter targeting techniques have enabled EPA to surpass the expected detection rate.

See comment 10.

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EPA has two projects that affect nonresponders. A project, scheduled for completion by October 1, will provide guidance on how headquarters and regions can manage the enforcement case backlog. We will provide direction on case prioritization, effective utilization of limited resources and better communication strategies. We have been successful at identifying nonreporters and taking enforcement action against them.

The second project provides information to headquarters on the Regions' enforcement actions against nonresponders. The Strategically Targeted Activities for Results System (STARS) is a national database system that senior Agency managers use as a diagnostic tool to monitor enforcement actions, among other things. Regions participate in this system by setting goals for inspection and compliance rates and enforcement actions. Headquarters compares actual inspection, compliance and enforcement figures against goals and monitors whether regions achieve and maintain a projected compliance levels. One of the "accomplishments" that we track quarterly is the EPCRA Significant Noncompliance which includes nonreporters.

Action Against Late Reporters. The number of facilities reporting late is a concern to EPA; however, it is a concern which had to be weighted against the more serious problems of nonreporting and data accuracy. Fortunately, for the time being, late reporting does not delay the release of the TRI data. Late reporters who report after the magnetic tape is cut for the National Library of Medicine have to be added later when the tape is updated -- so there is a period when the public does not have access to information from some late reporters. This past winter, EPA Headquarters and Regional offices coordinated the development of a multi-year enforcement initiative for late reporters which is scheduled to begin this Fiscal Year.

It is of interest to note that many late reporters are "generated" through enforcement actions. A major enforcement action, and the ensuing publicity, generally increase the number of facilities submitting reports once they realize they may be subject to an enforcement action.

Enforcement Successes. In less than 18 months, EPA's enforcement offices worked to design and implement three coast-to-coast enforcement initiatives under EPCRA. Two initiatives concentrated on the TRI reporting requirement. The results of all three initiatives tally more than 90 cases filed, more the 3 million dollars in proposed penalties, nationwide press regarding the reporting requirement, and attendant increases in TRI reporting. For instance, in the weeks following the first EPCRA enforcement initiative, EPA received more than 1600 additional TRI forms from an additional 400 facilities.

Appendix VI
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The EPCRA Section 313 enforcement program has also set other enforcement standards by which new enforcement programs will be measured. For instance, in FY 1990 the enforcement program produced one of the highest median penalties of all the administrative programs.

The final major success of the EPCRA enforcement program has been the environmentally beneficial expenditures (EBEs) generated through enforcement efforts. Although use of EBEs does lower the average penalty collected, the significance and importance of these expenditures has received much praise and recognition. Through the enforcement process, EPA has been able to change corporate behavior and reduce the use and the emissions of toxic chemicals well in advance of the regulatory process. Examples of EBEs collected through Section 313 enforcement are attached.

EBEs are tracked through STARS. The number of cases closed during the reporting period in which one or more settlement terms are EBEs are monitored and evaluated by senior Agency officials. Currently, EPA is studying EBE projects and will be developing information and guidance materials on pollution prevention and waste minimization technologies. These materials will assist the Regional offices which negotiate these unique settlements.

Attachment

The following are GAO's comments on EPA's letter.

GAO Comments

1. We have included a summary of this information in the executive summary of the report.
2. As discussed in chapters 2 and 3 of this report, we agree with EPA that since the inventory has been available, certain segments of the general public—most notably national and community-based environmental and public interest groups—have requested and extensively used the data. However, at the time we conducted our review, EPA, state, and industry representatives indicated that individual citizens had not requested data as frequently. In addition, industry representatives accessed the system most frequently during the public data base's first 15 months of operation. Finally, the 50-percent use rate for industry applies only to the public data base and does not refer to the types of organizations and individuals that may have requested information from EPA and states.
3. We have included a summary of this information in chapter 3 of the report.
4. We have included a summary of this information and our response in chapter 2 of the report.
5. We agree with EPA that certain national security exemptions may be necessary for federal facilities because of some of the toxic chemicals they emit. We have clarified our recommendation to the Congress in chapter 2 of the report to ensure that this factor is taken into account.
6. We have clarified our discussion in the executive summary and chapter 2 of the report.
7. We have clarified our discussion in chapter 2 of the report.
8. We agree with EPA that there are many difficulties associated with interpreting the inventory data and that caution must be exercised so that interpretative biases are not introduced. Nonetheless, EPA, as steward of our nation's environmental agenda charged with protecting human health and the environment, should take the lead in interpreting the data for the public. Reporting major polluters and the volumes of toxic chemicals they emit does increase the public's awareness of toxic emissions nationwide and in their communities. However, as EPA is aware, the level of emissions alone does not tell the complete story about

the potential health and environmental effects of these emissions. We therefore continue to believe that EPA should make a concerted effort to place the inventory data into meaningful perspective so that individual citizens and communities can work knowledgeably and effectively with government and industry to reduce pollution.

9. We have included a summary of this information and our response in chapter 4 of the report.

10. We have included a summary of this information in chapter 5 of the report.

11. We have included a summary of this information and our response in chapter 5 of the report.

12. We do not believe that the information we present in this report overstates the extent of nonreporting. The results of our mail survey are based on responses we received from state environmental coordinators who, on the basis of their knowledge of eligible and reporting facilities in their state, estimated what the nonreporting rate was in their state. Moreover, the 36-percent nonreporting estimate we present is likely a conservative estimate, since our methodology assumed that the 13 states that did not provide estimates had 100-percent reporting. Finally, the results of our survey are consistent with EPA's study of nonreporting for the 1987 inventory, which showed an estimated 34-percent nonreporting rate. Consequently, we believe that the information in this report demonstrates that nonreporting is a problem—a problem that, if not corrected, will seriously affect the completeness and usefulness of the inventory. For additional details on our survey methodology, see appendix I.

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