



Control Technology Center

FY91: A Fifth Year of Growth

control technology center



ANNUAL REPORT

CONTROL TECHNOLOGY CENTER

FY91: A FIFTH YEAR OF GROWTH

Control Technology Center

Sponsored by:

Air and Energy Engineering Research Laboratory
Office of Research and Development
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Emission Standards Division
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

EPA REVIEW NOTICE

This report has been reviewed by the U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policy of the Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.

ANNUAL REPORT
CONTROL TECHNOLOGY CENTER
FY91: A FIFTH YEAR OF GROWTH

Prepared by:

Beth Crabtree
Acurex Environmental Corporation
4915 Prospectus Drive
P.O. Box 13109
Research Triangle Park, NC 27709

EPA Contract No. 68-DO-0141
Technical Directive No. 92-043

Project Officer

Charles H. Darwin
Air and Energy Engineering Research Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Prepared for:

Control Technology Center
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711


PREFACE

The Control Technology Center (CTC) has produced this report to inform U.S. Environmental Protection Agency (EPA) management staff and other interested individuals of the status of the CTC's continued efforts to support the nation's air quality program. The CTC is a cooperative effort between EPA's Office of Air Quality Planning and Standards (OAQPS), Emission Standards Division, and the Office of Research and Development, Air and Energy Engineering Research Laboratory (AEERL).

The CTC provides technical assistance and technology transfer to state and local air pollution control agencies and to EPA's regional offices. It also provides technical information to other governmental agencies, both foreign and domestic. In fiscal year 1991 (FY91), the CTC began providing limited services to private organizations in response to the 1990 Clean Air Act Amendments (CAAA).

This report summarizes CTC projects and other program activities conducted between October 1990 and September 1991. It also presents and analyzes program statistics, which allows management staff to evaluate the Center's validity. Finally, the report documents the growing demand for CTC support from businesses and governmental agencies.

Co-Chair
Air and Energy Engineering
Research Laboratory


Charles H. Darwin

7/28/92
Date

Co-Chair
Office of Air Quality
Planning and Standards


Robert J. Blaszcak

7/28/92
Date

CONTENTS

<u>Section</u>	<u>Page</u>
PREFACE	ii
ACKNOWLEDGEMENTS	v
EXECUTIVE SUMMARY	vi
Introduction	vi
Changes in Program Scope	vi
Administrative Changes	vi
Use of CTC Program Services	vii
Outreach Activities	viii
Other CTC Activities	viii
CTC Resources	viii
Conclusion	ix
1 INTRODUCTION	1
2 PROGRAM STATUS AND ANALYSIS	2
2.1 Changes in Program Scope	2
2.2 Administrative Changes	3
2.3 Program Activity	4
2.3.1 The CTC HOTLINE	4
2.3.1.1 Topics of HOTLINE Calls	7
2.3.1.2 Origins of Governmental HOTLINE Calls	13
2.3.1.3 Geographical Analysis	21
2.3.2 Technical Assistance	21
2.3.3 The CTC Bulletin Board System	26
2.3.4 The RACT/BACT/LAER Clearinghouse	26
2.3.5 Federal Small Business Assistance Program	27
2.4 CTC Reports and Software	28
2.5 Outreach Activities	28
3 PROGRAM BUDGET EXPENDITURES	30
4 CONCLUSIONS	31
5 RECOMMENDATIONS	33
APPENDIX A. CTC Projects Initiated in FY91	34
APPENDIX B. CTC Projects Completed in FY91	36
APPENDIX C. CTC-Generated Reports and Software	40

FIGURES

<u>Figure</u>	<u>Page</u>
1. HOTLINE totals for past four fiscal years.	5
2. FY91 monthly non-governmental HOTLINE totals.	6
3. Percent increase in HOTLINE calls over previous fiscal years.	8
4. Percentage of calls from governmental agencies.	19
5. Comparison of calls from state and local agencies.	20
6. Number of governmental calls by EPA region.	22
7. Comparison of calls from EPA regions.	23
8. Distribution of governmental calls by state.	24
9. Distribution of non-governmental calls by state.	25

TABLES

<u>Table</u>	<u>Page</u>
1. Distribution of Governmental HOTLINE Calls by Process*	9
2. Distribution of Non-governmental HOTLINE Calls by Process*	11
3. Governmental HOTLINE Calls—Process* Analysis	14
4. Governmental HOTLINE Calls Unrelated to a Process	15
5. Distribution of Governmental HOTLINE Calls by Pollutant*	16
6. Distribution of Non-governmental HOTLINE Calls by Pollutant*	17
7. Governmental HOTLINE Calls—Pollutant Analysis	18
8. Expansion of CTC Program Utilization for FY91	32

ACKNOWLEDGEMENTS

The CTC acknowledges the efforts of many people who have contributed to the program's success. The Center especially recognizes staff members from OAQPS and AEERL, who have enthusiastically responded to requests for assistance. The CTC Steering Committee and Advisory Work Group also have provided crucial support and guidance for the program's development. Representatives from the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) and EPA's Region 3 comprise the Advisory Work Group. The CTC also acknowledges the support and confidence shown by its many governmental and non-governmental clients. These clients have used the program's services with increasing frequency, and have recommended the CTC to their colleagues in the air pollution control community.

EXECUTIVE SUMMARY

INTRODUCTION

This report summarizes the Control Technology Center's (CTC's) activities and accomplishments during FY91. It discusses changes in the Center's scope and growth resulting from the 1990 Clean Air Act Amendments (CAAA). Program activities and outreach efforts during FY91 are also documented. Finally, this report examines strategies to maintain the CTC's continued success in providing technical assistance to governmental air pollution control agencies and the private sector.

CHANGES IN PROGRAM SCOPE

The 1990 CAAA expanded the CTC's role of providing technical assistance to the private sector, thus increasing the CTC's clientele. Titles III and V of the CAAA require EPA to provide technical assistance to the new state small business technical assistance programs when they become operational, and to "others," which CTC sponsors have interpreted to mean the private sector. The CTC began providing limited technical support to non-governmental clients in January 1991 to comply with the mandate of the CAAA. The CTC has thus become the focal point of the Federal Small Business Assistance Program.

ADMINISTRATIVE CHANGES

In mid-FY91, the CTC added four technical staff members to respond to the growing number of requests for assistance. In addition, the CTC advisory organization, the State and Territorial Air Pollution Program Administrators and Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), appointed two non-voting members to the CTC Steering Committee (SC). The new members will advise the committee on the program's effectiveness in providing technical

assistance to state and local organizations. They will also offer suggestions for areas in which the CTC might initiate technical activities to support state and local air pollution agencies.

USE OF CTC PROGRAM SERVICES

The CTC operates a telephone HOTLINE service staffed by technical experts from the sponsoring organizations. The HOTLINE permits immediate response to most simple technical assistance requests. When a more detailed analysis or evaluation of a request is required, it is referred to an expert in the particular field. During FY91, the HOTLINE database recorded 1,296 calls from state and local agencies, EPA regional offices, and other foreign and domestic governmental agencies. Those calls represent an 18 percent increase over governmental calls recorded in FY90. As required by the CAAA, the CTC began providing limited technical assistance to private industry in December 1990. Technical assistance is provided to the private sector in the form of HOTLINE consultations and other activities requiring no CTC financial resources. An additional 772 calls were recorded from private sector clients between December 1990 and the end of the fiscal year, which resulted in a total number of FY91 HOTLINE calls (governmental plus private sector clients) of 2,068, or an 89 percent increase over FY90 calls.

An analysis of topics of FY91 HOTLINE calls shows that painting and coating, incineration, and boilers were the most common topics. The most frequent pollution categories of concern among HOTLINE callers were volatile organic compounds, air toxics, and particulate matter.

In addition to the HOTLINE, the CTC initiated an electronic bulletin board system (BBS) in August 1991. The BBS may be accessed 24-hours per day by anyone with a personal computer equipped with communication software and a modem. Users can make HOTLINE-type requests and access or download CTC-generated documents and software via the BBS. A CTC staff member monitors the BBS daily to ensure quick response to requests received via this service. During the first full month of operation in FY91, the BBS averaged 79 accesses per week.

The CTC initiated nine technical guidance and four engineering assistance projects. Many of these projects resulted from HOTLINE and written requests for technical assistance. Finally, as part of

its technology transfer effort, the Center distributed more than 4,000 reports documenting the results of CTC projects.

OUTREACH ACTIVITIES

The CTC conducted several outreach activities during FY91. More than 2,600 individuals received the CTC News, the CTC's quarterly bulletin. This publication informs readers of the assistance, expertise, and technical information available through the CTC. The CTC News also solicits input from its audience about their air pollution control needs.

Other FY91 outreach efforts included: promotional activities at the CAAA Title III workshop, an exhibit at the Air and Waste Management Association (AWMA) annual meeting, a presentation at the Annual OAQPS/EPA Regional Office Air Programs Workshop, a presentation and work group activities at the National New Source Review Workshop, and a program briefing at the Department of Defense Joint Depot Environmental Panel's VOC Workshop.

OTHER CTC ACTIVITIES

Also incorporated into the program was the Reasonably Available Control Technology/Best Available Control Technology/Lowest Achievable Emission Rate (RACT/BACT/LAER) Clearinghouse, formerly the BACT/LAER Clearinghouse, and its associated database. The Clearinghouse was accessed more than 1,400 times during FY91 by all categories of clientele. This total represents a 250 percent increase in accesses over the FY90 total.

In late FY91, the CTC was chosen to be the focal point of the Federal Small Business Assistance Program (SBAP). This program, required by Title V, Section 507 of the 1990 CAAA, is designed to assist the state small business assistance programs. The federal SBAP will draw on several of the existing EPA technical assistance centers and hotlines.

CTC RESOURCES

The CTC expended \$610,900 on technical assistance projects during FY91. This amount is a 9 percent increase over the \$562,400 the CTC spent in FY90 on technical assistance projects.

CONCLUSION

The CTC continues to grow. The 90 percent increase in HOTLINE calls resulted from an increase in calls from governmental agencies and the additional calls from the private sector.

In addition, each of the other CTC services experienced significant increases. The RACT/BACT/LAER Clearinghouse experienced a 250 percent increase in accesses for FY91. In its first months of operation, the BBS averaged 79 accesses per week. Finally, more than 4,000 CTC documents were mailed during FY91.

These increases are evidence that the CTC is providing a valuable service to the air pollution control community.

SECTION 1

INTRODUCTION

The Control Technology Center (CTC) has completed its fifth year of successful operation in providing technical assistance to state, local, and federal air pollution control agencies. In fiscal year 1991 (FY91), the Center also began providing limited technical assistance to the private sector in compliance with the mandates of the 1990 Clean Air Act Amendments (CAAA). This report summarizes the operation of the CTC during FY91. It documents the program's technical and administrative efforts during the period to respond to increased demands from the pollution control community for technical assistance.

SECTION 2

PROGRAM STATUS AND ANALYSIS

2.1 CHANGES IN PROGRAM SCOPE

The CTC began providing emission and control technology assistance in 1986 in response to EPA's strategy to reduce public exposure to toxic pollutants in the ambient air. Since its inception, the Center has expanded its scope to address changing emission source and control technology needs associated with air toxics, particulate matter (PM), oxides of sulfur and nitrogen, carbon monoxide, lead, PM₁₀, and volatile organic compounds (VOCs). During these expansions, the program maintained its ability to respond quickly to technical assistance requests.

Titles III and V of the 1990 CAAA precipitated CTC expansion in FY91 through requirements that EPA provide technical support not only to state and local pollution control agencies, but also to all state small business assistance programs and the private sector. OAQPS and AEERL management selected the CTC as the best vehicle to implement the mandate of the Amendments because of its established structure and reputation in the air pollution control community. Thus, in the second quarter of FY91, the CTC began providing limited technical information and assistance to private businesses. Limited assistance includes CTC HOTLINE service and activities that do not require CTC financial resources.

The CTC became the umbrella organization for the new Federal Small Business Assistance Program (SBAP). This program will draw resources from several existing EPA technical assistance service centers. To facilitate this effort, the CTC initiated the formation of guidelines for regulatory development groups to use in the preparation of Small Business Enabling documents. These

documents will explain new emission standards in layman's terms. The CTC/SBAP will review these documents, coordinate their review with the EPA Small Business ombudsman and other federal officials, and organize distribution of the final documents. The CTC will also consider requests for engineering assistance and technical guidance projects in support of state small business programs.

In FY91, the CTC incorporated one of its traditional information and data sources into its program—the Reasonably Available Control Technology/Best Available Control Technology/Lowest Achievable Emission Rate (RACT/BACT/LAER) Clearinghouse, formerly the BACT/LAER Clearinghouse. The CTC routinely refers to the Clearinghouse for emission and control technology and strategy data. Upon request, the CTC will provide information on accessing Clearinghouse data to any governmental or private sector client. More than 250 of the 1,296 CTC governmental HOTLINE calls requested Clearinghouse data. Both governmental and private CTC clients can access the RACT/BACT/LAER Clearinghouse database 24 hours per day.

2.2 ADMINISTRATIVE CHANGES

The 1990 CAAA added non-governmental clientele to the ever-expanding list of clients from governmental agencies. In response to the growing number of requests for technical assistance, the CTC expanded its staff and resources in FY91. The Center added technical and advisory staff and contracted additional administrative and technical support.

The CTC added four new members to its staff: a chemist, a chemical engineer, a meteorologist, and an environmental specialist. The additional expertise enabled the CTC to respond to requests more quickly, and respond to a broader range of questions than in the past. Previously, many calls were referred to specialists within OAQPS' Emission Standards Division and AEERL which frequently delayed immediate response to many requests. The new staff members also developed and incorporated into the CTC additional programs, such as the computerized bulletin board system (BBS), the RACT/BACT/LAER Clearinghouse, and the Federal SBAP.

In FY91, the State and Territorial Air Pollution Program Association/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) nominated two non-voting members to the CTC Steering

Committee (SC) to provide insight into the needs of state and local pollution agencies. The new members participate in each SC meeting via teleconference. Their additional perspectives help the SC adhere to its goal of directing projects toward clients' actual needs.

2.3 PROGRAM ACTIVITY

2.3.1 The CTC HOTLINE

The HOTLINE provides callers with quick access to EPA expertise during regular business hours. The CTC initiated its computer tracking system for HOTLINE calls in FY87. Computer data and other early CTC records show a continued growth over the program's 5-year history. In FY91, the number of requests received through the CTC HOTLINE continued to increase significantly over previous years, and dramatically after the CAAA were signed in November 1990. The CTC received 2,068 calls in FY91, compared with 1,097 in FY90. Of those calls, 1,296 were from governmental agencies, and 772 were from the private sector. Figure 1 shows the increase in HOTLINE calls over the past 4 fiscal years, and the impact of private calls on the totals.

The CTC began developing statistics on private sector requests during the last 10 months of FY91. There were 772 non-governmental calls in the first 10 months the CTC provided support to private industry. During that period, private calls increased by an average of 10 calls per month. Figure 2 shows the monthly totals for private calls over the 10-month period.

The 2,068 HOTLINE calls received in FY91 represent an 89 percent increase over the calls received in FY90. The 1,296 governmental agency calls represent an 18 percent increase over FY90 calls of the same category. A review of the yearly increase in governmental calls over the last 4 years indicates a leveling in the number of governmental requests for assistance. However, the increase is sharper—89 percent—when private calls are included in the statistical analysis. This can be attributed in large part to the impact of the CAAA and the addition of the private sector to the CTC client base. The impact of the CAAA on private sector HOTLINE activity cannot be assessed until FY92 statistics are analyzed. Additional significant impacts are expected once state SBAPs become

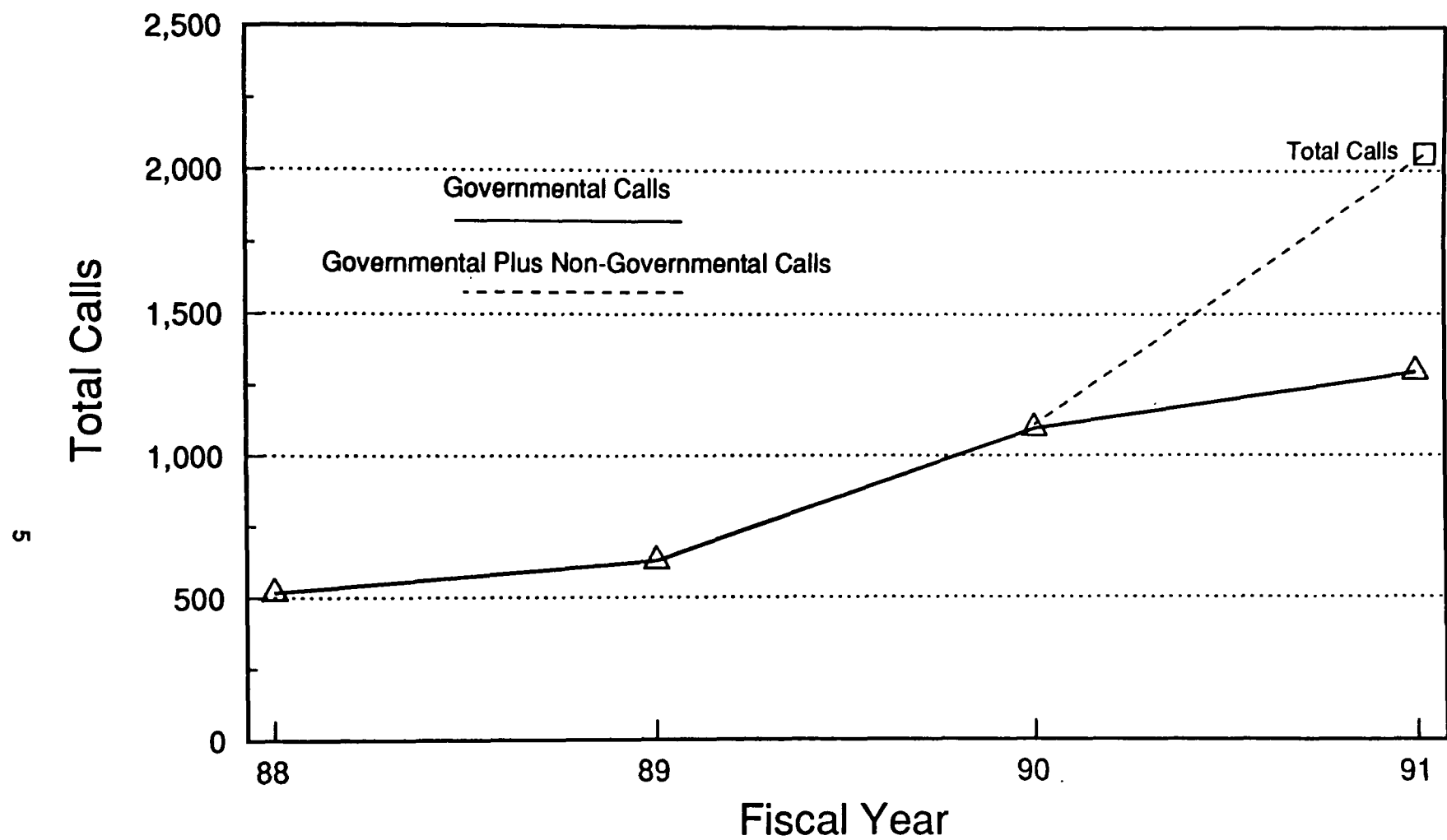


Figure 1. HOTLINE totals for past 4 fiscal years.

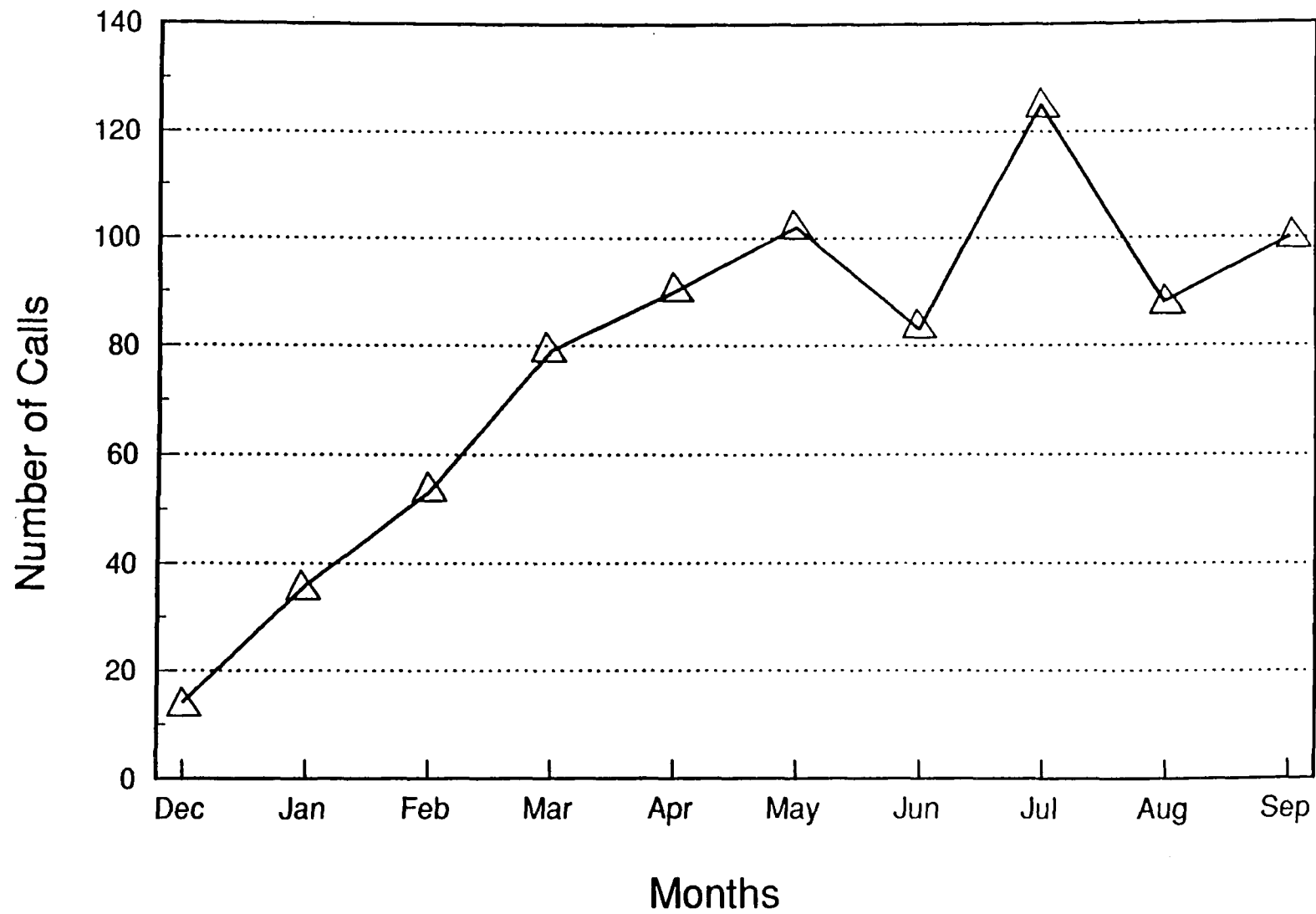


Figure 2. FY91 monthly non-governmental HOTLINE calls.

operational after November 1994. Figure 3 depicts the yearly increase in HOTLINE activity over the past 3 fiscal years.

The CTC reviewed the frequency of repeat HOTLINE callers to measure client acceptance of the CTC concept. Approximately half of the CTC's FY91 governmental clients and one-third of its private clients used the HOTLINE more than once in FY91. Of the 1,296 governmental callers, 115 clients called the HOTLINE at least three times. The frequency of repeat callers indicates that CTC clients are satisfied with the quality of service the Center provides. The leveling of the rate of increase in governmental calls may result from the significant amount of data and information that the CTC provides in its project reports, enabling CTC clients to find answers to many problems in these documents. They may not, therefore, need to call the HOTLINE as frequently as in the past. The leveling may also show that the CTC is typical of well-established programs, which show faster growth rates in their earlier years of operation. The CTC provided more than 4,000 reports to requestors in FY91, almost twice as many as it provided in FY90. Also, many document requests came from individuals who previously called the HOTLINE, but who were not included in the statistics on repeat callers.

The number of new HOTLINE callers also increased in FY91. The additional 539 private HOTLINE callers and approximately 500 requests for publications from new clients, resulted in a gain of more than 1,200 new clients in FY91.

2.3.1.1 Topics of HOTLINE Calls

A subject-oriented analysis of governmental and private CTC calls reveals that both sectors require technical assistance in the same general industrial and process areas. For both groups, 6 of the top 10 HOTLINE request topics were the same: boilers, municipal incineration, wastewater treatment, petroleum processing, tire burning, and asphalt. These similarities reflect the impact of state and federal regulations on these industries and processes. Table 1 lists the subjects or processes for which three or more government calls were received, and the percentage of the number of calls about each subject to the total number of calls received. Table 2 provides a subject analysis of private calls.

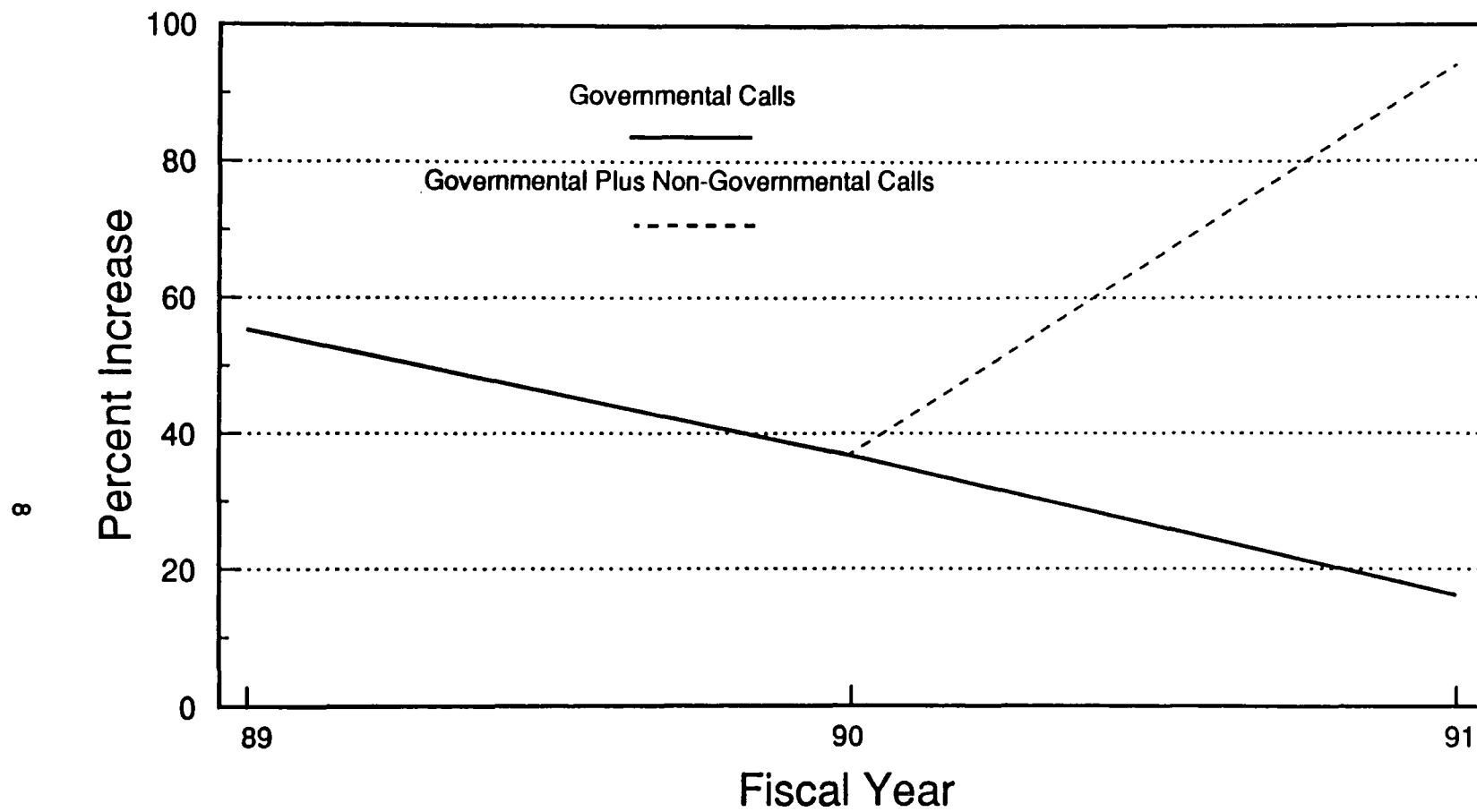


Figure 3. Percent increase in HOTLINE calls over previous fiscal years.

TABLE 1. DISTRIBUTION OF GOVERNMENTAL HOTLINE CALLS BY PROCESS*

Process	Number of Calls	Percent of Calls
Painting & Coating	88	6.79
Incineration, Miscellaneous	51	3.94
Boilers	47	3.63
Printing, Graphics	40	3.09
Petroleum Processing	36	2.78
Tire Burning	32	2.47
Wastewater Treatment	30	2.31
Asphalt	25	1.93
Incineration, Medical Waste	22	1.70
Incineration, Municipal Waste	21	1.62
Landfills	21	1.62
Turbines	21	1.62
Contaminated Soil Treatment	20	1.54
Chemical Manufacturing	19	1.47
Electroplating	18	1.39
Foam Blowing	18	1.39
Food & Beverages	18	1.39
Mining/Quarrying	18	1.39
Smelters	17	1.31
Iron and Steel	16	1.23
Foundries	15	1.16
Wood Products	14	1.08
Brick, Ceramic, Cement	13	1.00
Incineration, Hazardous	13	1.00
Coke Ovens	12	0.93
Incineration, Wood	12	0.93
Power Plants	12	0.93
Dry Cleaning	11	0.85
Gasoline Handling	11	0.85
Storage Tanks, Above Ground	11	0.85
Fiberglass	10	0.77
Glass Manufacturing	10	0.77
Hazardous Waste	10	0.77
Hospital Sterilizers	10	0.77
Paper/Pulp Mills	10	0.77
Agriculture	9	0.69
Lead-Acid Storage Batteries	9	0.69
Solvents	9	0.69
Abrasive Blasting	8	0.62
Degreasers	8	0.62
Explosives	8	0.62
Metal Fabrication	8	0.62
Sewage Treatment	8	0.62
Welding	8	0.62

(Continued)

TABLE 1. DISTRIBUTION OF GOVERNMENTAL HOTLINE CALLS BY PROCESS* (Concluded)

Process	Number of Calls	Percent of Calls
Engines, Internal Combustion	7	0.54
Plastics	7	0.54
Recycling, Metals	7	0.54
Coal Handling	6	0.46
Furniture Manufacturing	6	0.46
Grain Processing	6	0.46
Recycling, Miscellaneous	6	0.46
Stack Testing	6	0.46
Textiles	6	0.46
Engines, Gas	5	0.39
Pharmaceuticals	5	0.39
Aerospace	4	0.31
Carbon Adsorption	4	0.31
Co-Generation	4	0.31
Electronics	4	0.31
Engines, Diesel	4	0.31
Equipment Leaks	4	0.31
Pesticides	4	0.31
Refrigeration/Air Conditioning	4	0.31
Rubber Curing & Recycling	4	0.31
Waferboard	4	0.31
Woodstoves	4	0.31
Automobile Refinishing	3	0.23
Chemical Handling	3	0.23
Dust Control	3	0.23
Fertilizer	3	0.23
Scrubbers	3	0.23
Soldering	3	0.23
Solid Waste Disposal	3	0.23
Unrelated to a Process	254	19.60
Other Processes	83	6.40
Total	1,296	100.00

* Figures represent processes for which three or more calls were received and the percentage of the number of calls for each process to the total number of calls received in FY91.

TABLE 2. DISTRIBUTION OF NON-GOVERNMENTAL HOTLINE CALLS BY PROCESS*

Process	Number of Calls	Percent of Calls
Boilers	28	3.63
Painting & Coating	20	2.59
Chemical Manufacturing	18	2.33
Printing, Graphics	15	1.94
Turbines	15	1.94
Wastewater Treatment	15	1.94
Petroleum Processing	13	1.68
Tire Burning	12	1.55
Incineration, Municipal	10	1.30
Power Plants	10	1.30
Asphalt	9	1.17
Gasoline Handling	9	1.17
Landfills	9	1.17
Iron and Steel	7	0.91
Metal Fabrication	7	0.91
Foam Blowing	6	0.78
Incineration, Hazardous	6	0.78
Paper/Pulp Mills	6	0.78
Refrigeration/Air Conditioning	6	0.78
Smelters	6	0.78
Abrasive Blasting	5	0.65
Brick, Ceramic, Cement	5	0.65
Coke Ovens	5	0.65
Furniture Manufacturing	5	0.65
Incineration, Medical Waste	5	0.65
Pharmaceuticals	5	0.65
Plastics	5	0.65
Dust Control	4	0.52
Electronics	4	0.52
Food & Beverages	4	0.52
Foundries	4	0.52
Incineration, Miscellaneous	4	0.52
Indoor Air	4	0.52
Solid Waste Disposal	4	0.52
Wood Products	4	0.52
Adhesives	3	0.39
Automobile Manufacturing	3	0.39
Engines, Gas	3	0.39
Engines, Internal Combustion	3	0.39
Equipment Leaks	3	0.39
Fiberglass	3	0.39
Flares	3	0.39
Hazardous Waste	3	0.39

(Continued)

TABLE 2. DISTRIBUTION OF NON-GOVERNMENTAL HOTLINE CALLS BY PROCESS* (Concluded)

Process	Number of Calls	Percent of Calls
Rubber Curing & Recovery	3	0.39
Solvents	3	0.39
Storage Tanks, Above Ground	3	0.39
Other Processes	47	6.09
Unrelated to Processes	398	51.55
Total	772	100.00

* Figures represent processes for which three or more calls were received and the percentage of the number of calls for each process to the total number of calls received in FY91.

An analysis of HOTLINE data also determined specific concerns within each subject area.

Table 3 lists the most frequent areas of concern among the top five processes that were the subjects of governmental HOTLINE requests. For example, the "painting and coating" category includes questions about spray booths, metal coaters, solvents, and furniture coating.

A total of 254 governmental calls and 398 private calls were received under the non-applicable process category, which addresses topics non-related to specific processes or pollutants included in the database. Table 4 illustrates governmental calls in the non-applicable process category. Requests for RACT/BACT/LAER Clearinghouse information was the predominant topic of these calls. These requests were routinely transferred to the RACT/BACT/LAER coordinator for processing. A HOTLINE call subject review indicates pollutants of concern (based on percentage of governmental calls for pollutants) were related to the specific category of VOCs or to compounds which are defined as VOCs (30 percent of all calls), and air toxics (10 percent of all HOTLINE calls). Table 5 lists the pollutants for which the HOTLINE received three or more governmental HOTLINE calls. Table 6 presents a similar list for private clients. A closer look at the top five pollutant categories reveals the industries and processes for which HOTLINE callers show the greatest concern. Table 7 analyzes pollutants by source type that were the subjects of the governmental HOTLINE calls.

2.3.1.2 Origins of Governmental HOTLINE Calls

The 4 types of governmental agencies are state agencies, local agencies, EPA regional offices, and other governmental agencies. Figure 4 indicates that 61 percent of the governmental calls came from state agencies, 19 percent from local agencies, and 10 percent from EPA regional offices. The remaining 10 percent of HOTLINE calls included domestic federal agencies, academic institutions, and foreign governmental agencies. Local agencies showed a smaller increase in calls over previous fiscal years than did state agencies. The difference between totals of state and local calls, depicted in Figure 5, indicates a need for additional CTC outreach at the local level.

TABLE 3. GOVERNMENTAL HOTLINE CALLS—PROCESS ANALYSIS*

Process	Number of Calls	Percent of Calls
Painting and Coating	88	6.79
Spray Booths		
Metal Coaters		
Solvents		
Furniture		
UV Coating		
Transfer Efficiency		
Powder Coating		
Incineration, Miscellaneous	51	3.94
Plastic		
Open Burning		
Fuels		
Boilers	47	3.63
Gas Fired		
Coal Fired		
Wood Fired		
Oil Fired		
Fluidized Bed		
Utility		
Printing, Graphics	40	3.09
Cleanup Solvents		
Lithographic		
Flexographic		
Webb Offset		
Cold Set		
Petroleum Processing	36	2.78
Seals		
Storage		
Leaks		
Total	262	20.23

* Process, industry, or subject of call

TABLE 4. GOVERNMENTAL HOTLINE CALLS UNRELATED TO A PROCESS

Subject	Number of Calls	Percent of Calls
RACT/BACT/LAER	51	3.94
Copy of Non-CTC Report/Software	29	2.24
CTC Report/Software	22	1.70
Information on the CTC	18	1.39
Clean Air Act Amendments	15	1.16
Test Methods	12	0.93
NSPS* and NESHAP**	6	0.46
Total	153	11.82

* New Source Performance Standards

** National Emission Standard for Hazardous Air Pollutants

TABLE 5. DISTRIBUTION OF GOVERNMENTAL HOTLINE CALLS BY POLLUTANT*

Pollutant	Number of Calls	Percent of Calls
Volatile Organic Compounds	286	22.07
Various Pollutants**	182	14.04
Air Toxics	138	10.65
Particulates	91	7.02
Nitrogen Oxides	65	5.02
Sulfur Oxides	24	1.85
Carbon Monoxide	23	1.77
Odor	18	1.39
Lead	17	1.31
Chromium	16	1.23
Benzene	14	1.08
Chlorofluorocarbons	12	0.93
Formaldehyde	11	0.85
Ethylene Oxide	10	0.77
Mercury	9	0.69
Styrene	8	0.62
Dioxins	7	0.54
Hydrochloric Acid	7	0.54
Metals	7	0.54
Radioactive	7	0.54
Asbestos	6	0.46
Methylene Chloride	6	0.46
Ammonia	5	0.39
Arsenic	5	0.39
Isocyanates	5	0.39
Carbon Dioxide	4	0.31
Chlorine	4	0.31
Trichloroethylene	4	0.31
Beryllium	3	0.23
Criteria	3	0.23
Dust	3	0.23
Methane	3	0.23
Perchloroethylene	3	0.23
Sulfur	3	0.23
Visible Emissions	3	0.23
Hydrogen Sulfide	3	0.23
Other Pollutants†	233	17.98
Unrelated to a Pollutant††	48	3.70
Total	1,296	100.00

* Figures represent processes for which three or more calls were received and the percentage of the number of calls for each process to the total number of calls received in FY91.

** Calls relating to more than one pollutant which may or may not be included in this table.

† Calls relating to pollutants not on this table.

†† General questions not related to pollutants.

TABLE 6. DISTRIBUTION OF NON-GOVERNMENTAL HOTLINE CALLS BY POLLUTANT*

Pollutant	Number of Calls	Percent of Calls
Volatile Organic Compounds	131	16.97
Various Pollutants**	107	13.86
Air Toxics	54	6.99
Particulates	38	4.92
Nitrogen Oxides	33	4.27
Chlorofluorocarbons	10	1.30
Lead	9	1.17
Carbon Monoxide	8	1.04
Mercury	7	0.91
Sulfur Oxides	6	0.78
Formaldehyde	5	0.65
Benzene	4	0.52
Metals	3	0.39
Other Pollutants†	25	3.24
Unrelated to a Pollutant††	332	43.00
Total	772	100.00

* Figures represent processes for which three or more calls were received and the percentage of the number of calls for each process to the total number of calls received in FY91.

** Calls relating to more than one pollutant which may or may not be included in this table.

† Calls relating to pollutants not on this table.

†† General questions not related to pollutants.

TABLE 7. GOVERNMENTAL HOTLINE CALLS—POLLUTANT ANALYSIS

Pollutant	Number of Calls	Percent of Calls
VOCs	286	22.07
Graphics		
Painting and Coating		
Petroleum Processing		
Asphalt		
Foam Blowing		
Wastewater Treatment		
Degreasers		
Landfills		
Contaminated Soil		
Dry Cleaning		
Solvents		
Air Toxics	138	10.65
Contaminated Soil		
Asphalt Plants		
Miscellaneous Incineration		
Solvents		
Dry Cleaning		
Welding		
Polystyrene Manufacturing		
Particulates	91	7.02
Rock Crushing		
Corn Drying		
NO _x	65	5.02
Power Plants		
Turbines		
Utility Boilers		
Diesel Engines		
Grain Processing		
SO _x	24	1.85
Kilns		
Boilers		
Total	604	46.61

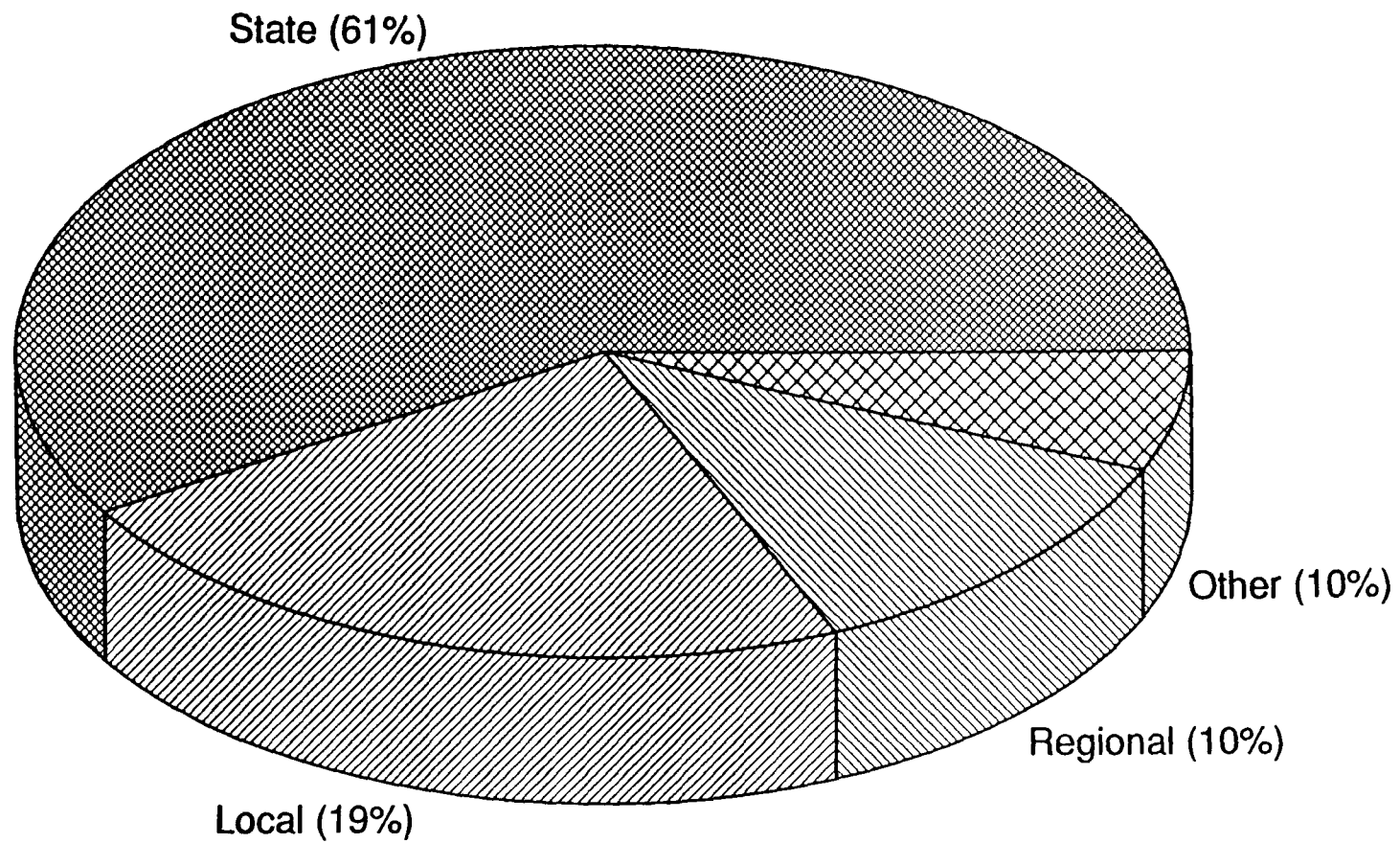


Figure 4. Percentage of calls from governmental agencies.

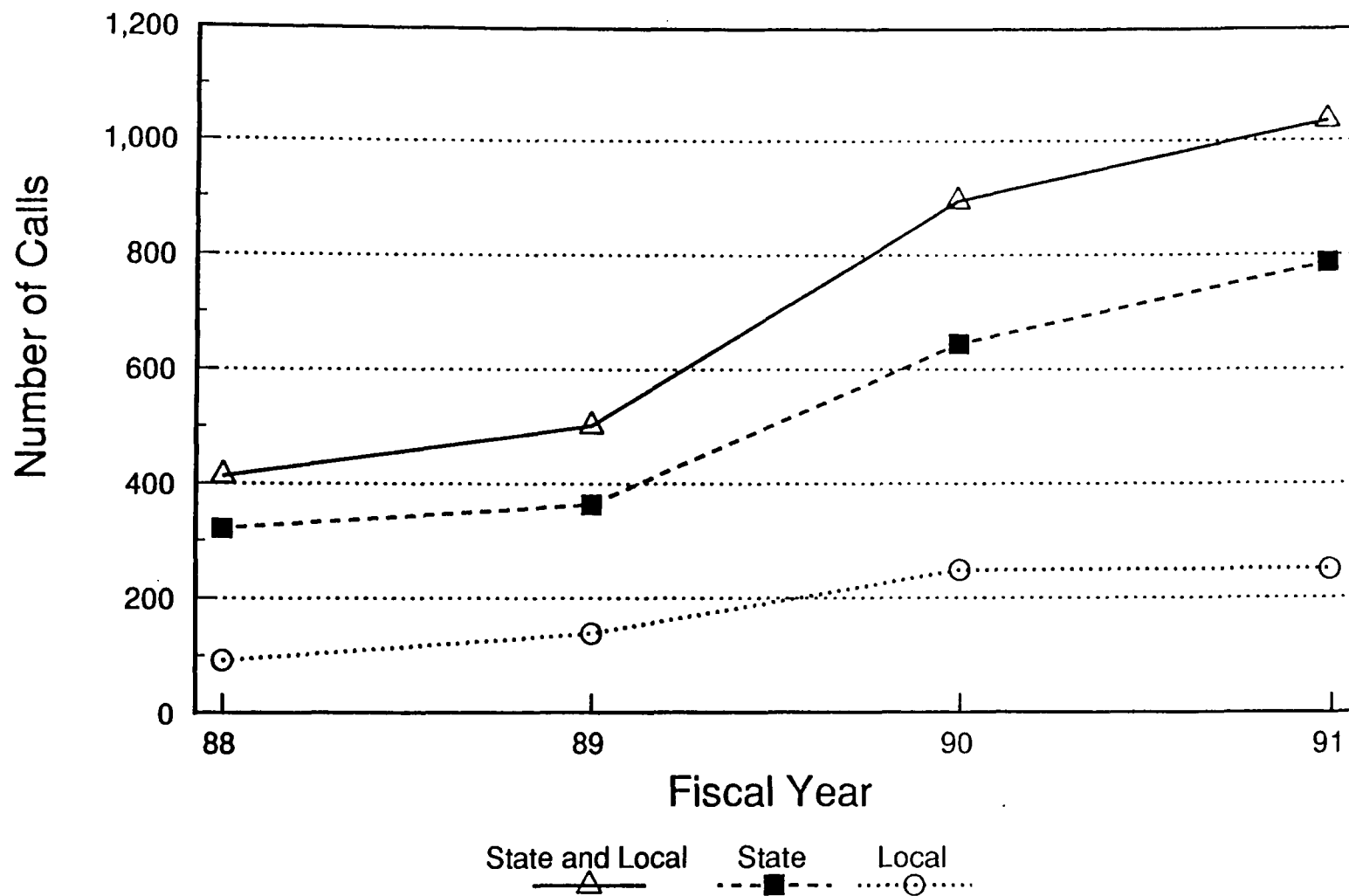


Figure 5. Comparison of calls from state and local agencies.

2.3.1.3 Geographical Analysis

An evaluation of the variation of HOTLINE call distribution among EPA regions and among the 50 states was also made. Figure 6 shows that the largest number of governmental agency calls came from Regions 3 and 5, but an analysis of regional figures over a 4-year period shows increased HOTLINE activity for all EPA regions. Figure 7 compares the number of calls from each region between FY88 and FY91.

The CTC also studied the geographical origin of HOTLINE calls across the 50 states. Figure 8 depicts the relative concentrations of governmental HOTLINE calls among the states, while Figure 9 shows the state distribution of private CTC calls. The uneven regional and state distribution of calls reflects differences in areas such as population density, public awareness of air pollution issues, industrial concentration, resources available to state and local air pollution control agencies, or possibly a lack of awareness of the availability of the CTC's services.

2.3.2 Technical Assistance

In addition to its HOTLINE support, the CTC conducted direct engineering assistance and technical guidance projects. Direct engineering assistance projects are initiated when one state or local agency requests (either through the HOTLINE or by written request) technical assistance in specific areas. Projects are usually short-term, taking about 3 months or less to complete, and involve the evaluation of emissions or controls for certain operations. Technical guidance projects result from multiple HOTLINE requests for technical assistance in certain areas. The projects are usually long-term (taking up to 1 year to complete) and are applicable to a broad client base.

The CTC develops reports and/or software tools as a result of both engineering assistance and technical guidance projects. The Center provides both types of resources to governmental clients free of charge, and provides free information to the private sector for ordering documents through the National Technical Information Service (NTIS). The CTC initiated 13 technical guidance and engineering assistance projects in FY91. Where possible, reports and software developed from these

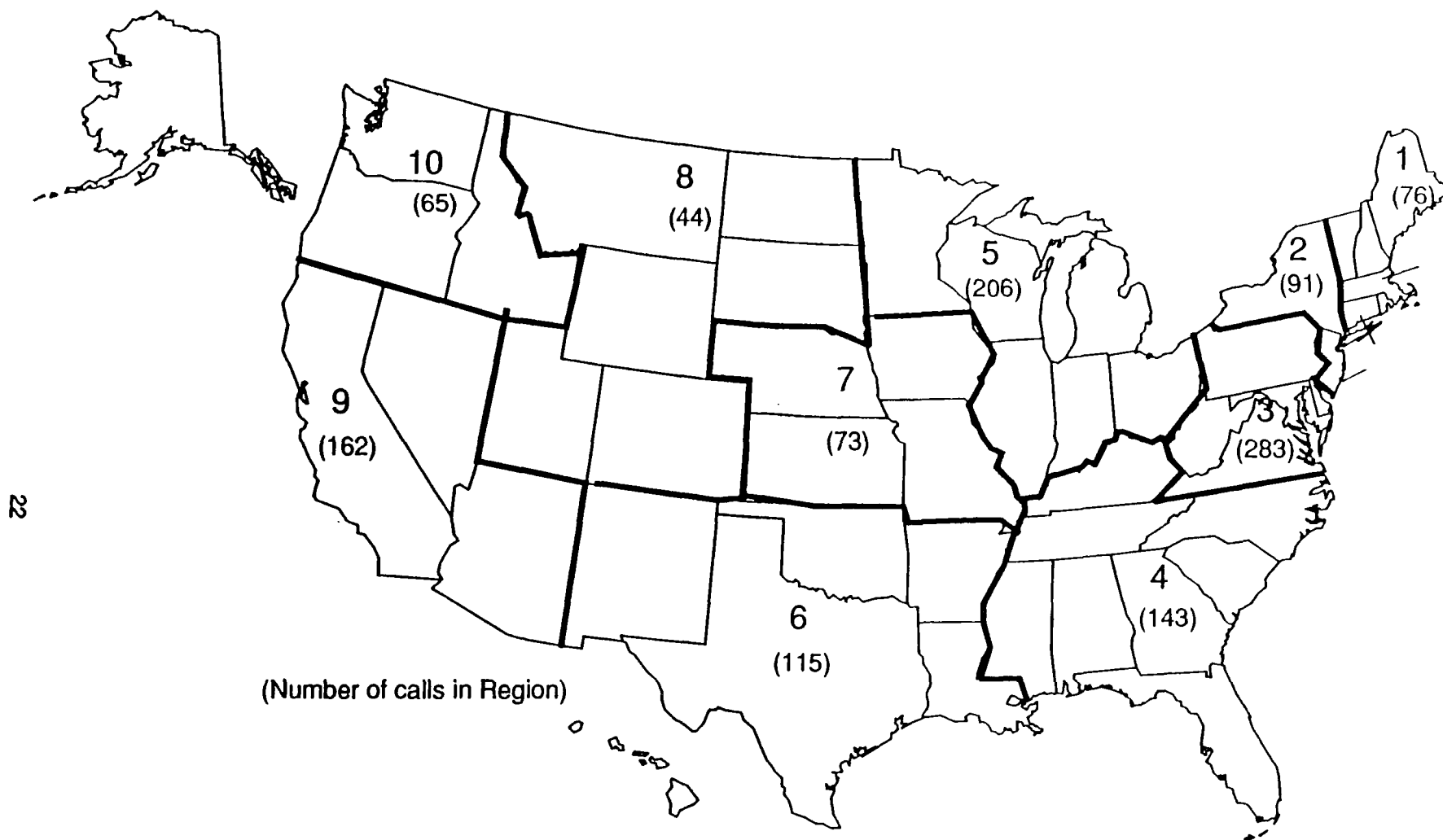


Figure 6. Number of governmental calls by EPA region.

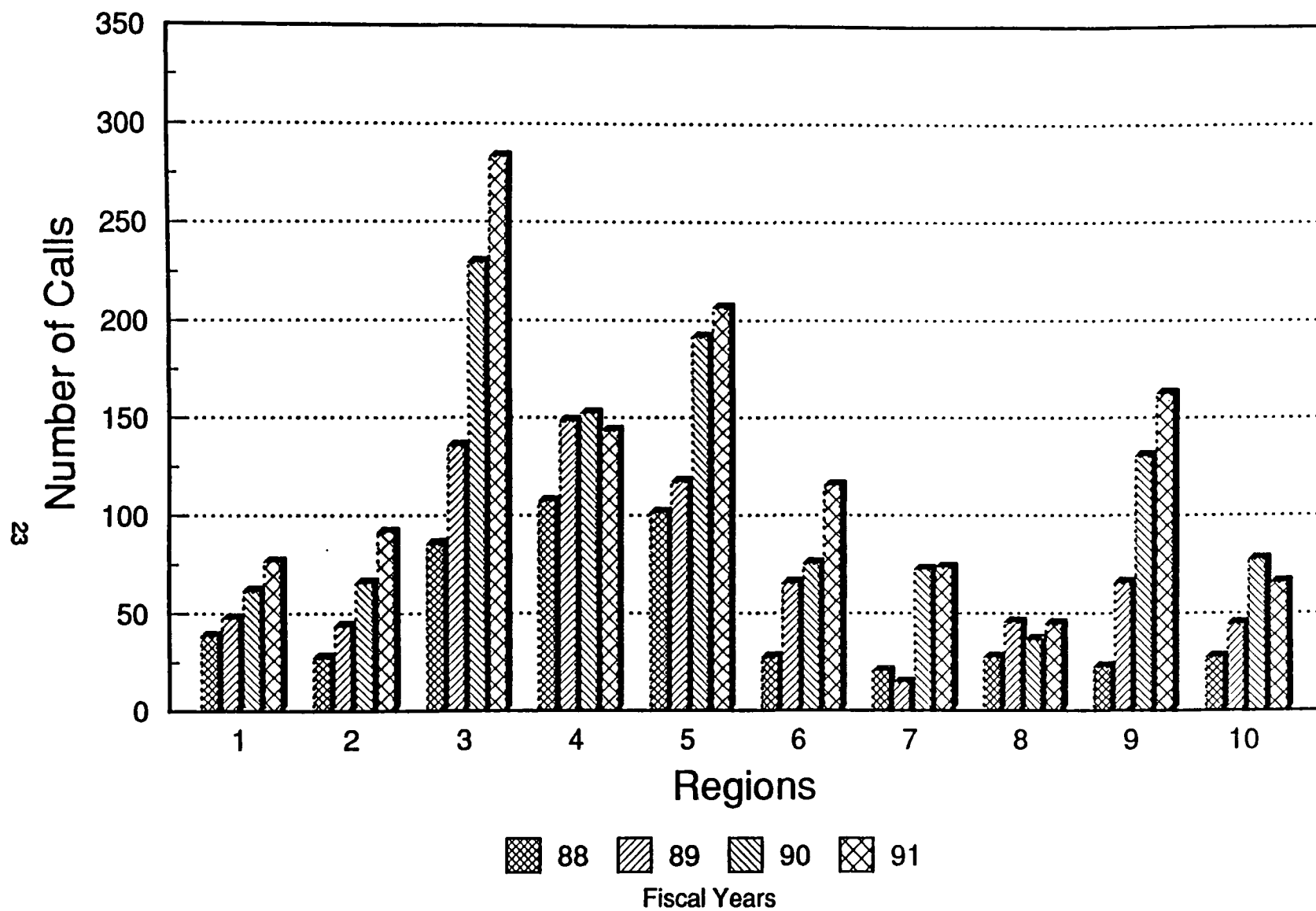


Figure 7. Comparison of calls from EPA regions.

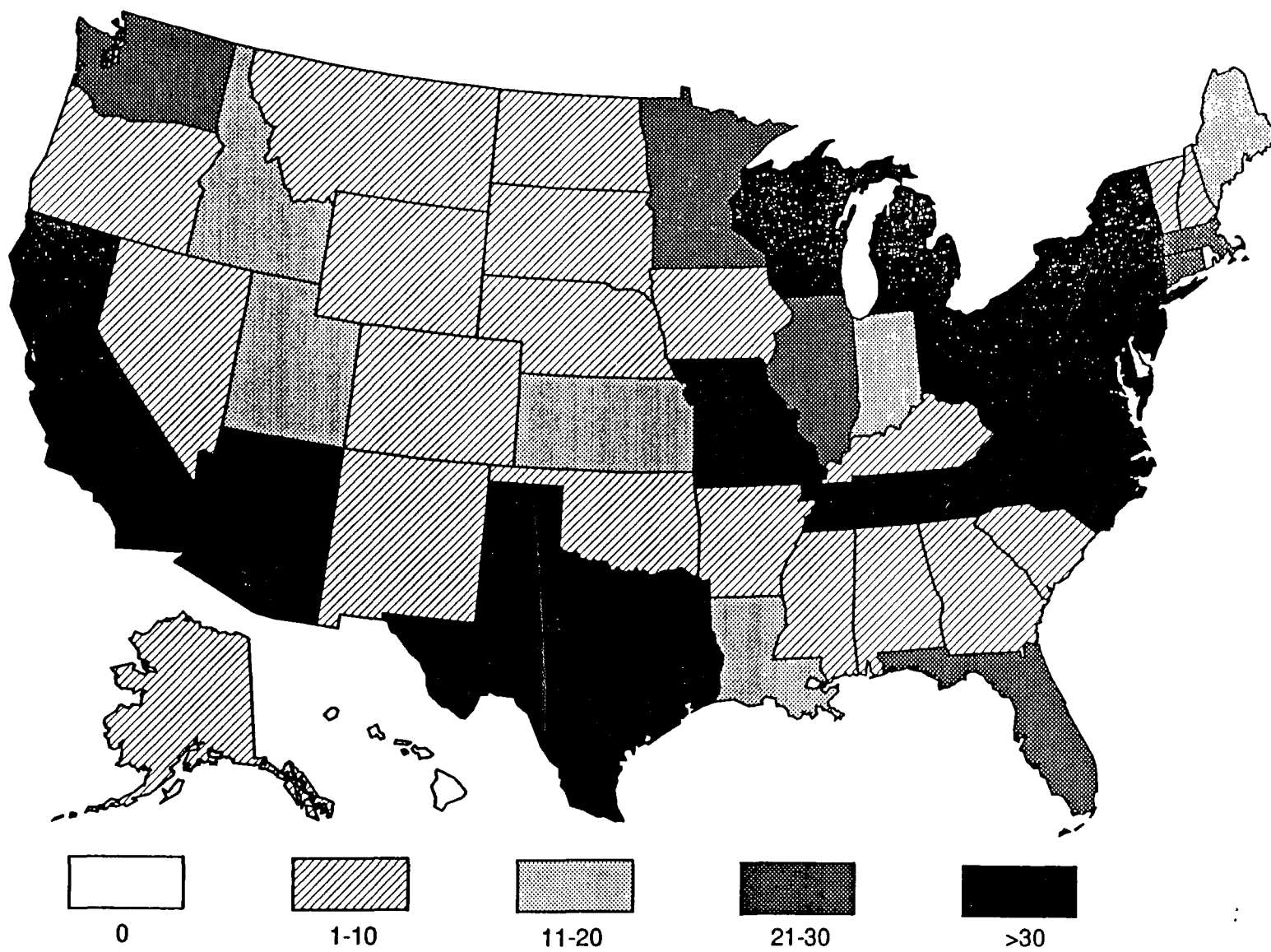


Figure 8. Distribution of governmental calls by state.

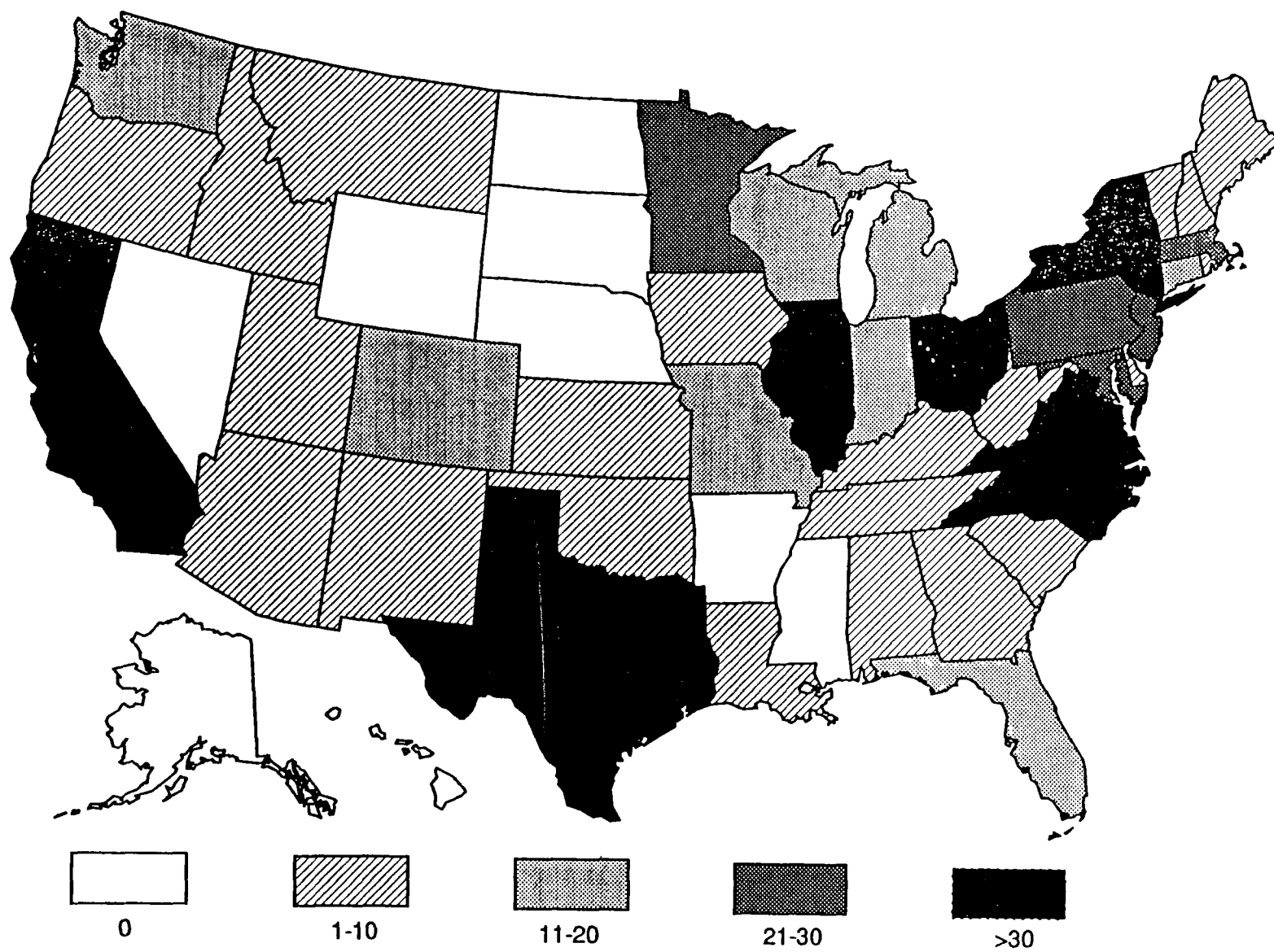


Figure 9. Distribution of non-governmental calls by state.

projects were made available on the CTC's BBS for downloading. Appendix A provides brief descriptions of these projects. Eleven of the 13 projects relate to the top five topics of government HOTLINE requests. The CTC completed nine projects in FY91, which are described in Appendix B.

2.3.3 The CTC Bulletin Board System (BBS)

The CTC initiated an electronic BBS in August 1991. The system supplements the HOTLINE service provided during normal business hours. The system can be accessed via a personal computer (PC) equipped with communication software and a modem. The BBS operates 24 hours per day, 7 days per week, except Mondays between 8:00 a.m. and noon. The BBS allows the user to access CTC-generated technical reports and software, which can be downloaded to the user's PC. The user can also solicit input from other users by posting questions and requests on the BBS.

During the first 2 months of operation in FY91, the BBS proved itself to a valuable asset to the CTC program. Users accessed the BBS 866 times. These accesses included 90 downloads of the 2 CTC software programs and several project documentation files available. The most popular items were the CTC project documentation files which were downloaded 50 times. The accesses and downloads to the BBS reduced the load on the CTC Hotline, freeing up CTC personnel to better serve its clients. In addition, the BBS provides an opportunity to expand the clientele base. The CTC projects that the rate of accesses and downloads will continue to increase as knowledge of the BBS grows.

2.3.4 The RACT/BACT/LAER Clearinghouse

The RACT/BACT/LAER Clearinghouse is a repository of state and local permits that allows anyone with a National Computer Center TSO account to review, browse, and print examples of the types of controls required or used on similar sources. However, the Clearinghouse also contains the name, agency, and telephone number of a contact to obtain additional in-depth information on those sources.

The Clearinghouse was accessed approximately 1,400 times during FY91 by local/regional, state, federal, and private sector personnel. A breakdown of the accesses follows:

Local/regional	4 percent
State	16 percent
Federal	7 percent
Private	73 percent

The rate of accesses per month increased during FY91 by over 250 percent, rising from an average of 70 accesses per month in September 1990 to more than 170 accesses per month in September 1991.

2.3.5 Federal Small Business Assistance Program (SBAP)

Under Title V, Section 507 of the 1990 CAAA, EPA is required to provide state assistance during implementation of the Small Business Stationary Source Technical and Environmental Compliance Assistance Program. The Federal SBAP will be a coordinated effort among several existing EPA technical service centers, with the CTC serving as the Agency's contact point for general small business assistance questions on the subject of air pollution control technology. The Agency's assistance centers associated with this program include: the Control Technology Center (CTC), the Emission Measurement Technical Information Center (EMTIC), the Chemical Emergency Preparedness and Prevention Office (Emergency Planning and Community Right-to-Know Information Hotline), the Pollution Prevention Information Center (PPIC), and the EPA Small Business Ombudsman Hotline. These centers are expanding their services to focus on providing support to state and local agencies as they develop small business assistance programs and as these programs get up and running. They will also be able to assist small businesses in understanding and complying with CAAA requirements in their respective program areas.

The addition of this service is expected to have further impact on the volume of CTC activity in the future. As the various state permit programs and technical assistance programs begin to form, the

federal assistance program is expected to fill the technical void in many state programs until the states develop a full range of expertise.

2.4 CTC REPORTS AND SOFTWARE

One of the CTC's major control technology efforts is the distribution of almost 60 documents and software tools developed from CTC technical assistance projects. Air pollution control personnel can request copies of CTC technical guidance tools through the HOTLINE or the BBS. The CTC also publishes annually a list of its most recent resource materials in the CTC News. The CTC provides these resources free to governmental clients and provides free information to others for ordering resources through NTIS. Many of these tools can be downloaded through the CTC BBS at the cost of a telephone call. The CTC mailed more than 4,000 copies of its technical assistance reports and software to clients in FY91, doubling the number it disseminated in FY90. The increasing number of publications and software distributed by the CTC each fiscal year is, again, evidence of the program's growth. Titles of CTC reports and software available through the end of FY91 are listed in Appendix C.

2.5 OUTREACH ACTIVITIES

The CTC publishes the CTC News quarterly to inform its audience of its available services, of the status of CTC projects, and of other activities related to air emissions and control technology. It identifies new projects and projects that are near completion. The CTC News also highlights EPA staff members who help respond to requests for assistance. The quarterly publication often solicits from its readers information related to ongoing projects or requests for CTC assistance, and suggestions of how the program may better serve their needs. In FY91, the CTC News reached a mailing list of more than 2,600, a 30 percent increase over FY90's mailing list.

In addition to the CTC News, the Center updates clients and informs potential users of its services by conducting briefings at EPA regional offices and other locations. In FY91, the CTC staff: demonstrated CTC software at a Title III workshop and provided recent reports; presented an exhibit at the Air and Waste Management Association annual meeting and distributed literature on its programs; made presentations on the Federal SBAP at the annual OAQPS/EPA Regional Office Air Programs

Workshop; presented information and led a discussion group at EPA's annual New Source Review Workshop; and made a presentation at the Joint Depot Environmental Panel's VOC Workshop. At the VOC workshop, the CTC addressed U.S. Department of Defense personnel from military repair and maintenance depots.

SECTION 3

PROGRAM BUDGET EXPENDITURES

The CTC's budget for FY91 program expenses was \$620,000. The Center spent \$610,900 in FY91, a 9 percent increase over its FY90 expenditures of \$562,400. The program used more than 85 percent of its budget to fund technical guidance and engineering assistance projects. The remaining funds covered CTC administrative costs, such as publishing the CTC News, maintaining the database, and mailing documents. The program's FY91 administrative costs increased by only 4 percent over the previous fiscal year's costs.

SECTION 4

CONCLUSIONS

The CTC continued its 5-year growing trend in FY91. Growth is evidenced by increased HOTLINE assistance requests, BBS and RACT/BACT/LAER Clearinghouse accesses, the Center's growing mailing list, and the increased requests for the CTC News. The CTC is receiving positive responses from its current audience, many of whom are informing their associates of CTC services.

The CTC examined data on the numbers, topics, and origins of HOTLINE calls received over FY91 and previous fiscal years. The Center also recorded increases in yearly and monthly totals of requests for assistance from its clients. Statistics indicate a slowing rate of increase in CTC governmental clients but a comparative increase in the number of private clients. Therefore, the CTC expects a continued increase in its total number of clients.

The CTC has responded to the growing demand for its services in FY91 by increasing its resources and accessibility. The CAAA and the ensuing SBAP broadened the scope of CTC clientele. The Center initiated the BBS, providing clients with a new access channel to its resources, and incorporated the RACT/BACT/LAER Clearinghouse into its program, which also increased CTC assistance capabilities. The CTC foresees an increasing demand for its services based on a 5-year trend. This anticipated increase is based not only on the normal HOTLINE usage increase experienced over the last 5 years, but also on the increase expected from the new CTC services. The latter includes the RACT/BACT/LAER Clearinghouse, the BBS, the Federal SBAP, and other CTC products and services. The total number of direct accesses to CTC services, including the HOTLINE, BBS, and RACT/BACT/LAER Clearinghouse, was more than 4,100. This total does not include the more than

4,000 document requests from CTC clients. Table 8 summarizes the expansion of CTC activity for FY91.

TABLE 8. EXPANSION OF CTC PROGRAM UTILIZATION FOR FY91

Service	FY Utilization		Percent Increase
	90	91	
HOTLINE Calls			
Governmental	1,097	1,296	18
Business ^(*)	N/A	772	N/A
Total Calls	N/A	2,068	89
RACT/BACT/LAER Clearinghouse ^(**)	N/A	1,400	N/A
BBS ⁽⁺⁾	N/A	866	N/A
Federal SBAP ⁽⁺⁺⁾	N/A	N/A	N/A
CTC News per Quarter	2,000	2,600	30
CTC Documents	1,500	4,000	167

(*) Statistics not collected prior to FY91

(**) Counter not installed until FY91

(+) Statistics collected beginning second quarter of FY91

(++) Service initiated in late FY91

SECTION 5

RECOMMENDATIONS

The CTC's changing scope and growth from the 1990 CAAA has caused it to contemplate its role for coming fiscal years. The CTC management staff recommends reassessment of program goals to determine if the program's pursuits will continue to meet the needs of the air pollution control community. Also for consideration is whether the CTC should redirect its outreach strategy to encourage participation by segments of the air pollution control community that have shown low participation. Center management seeks to discern a plan for further expansion of CTC services to correspond with its growth.

APPENDIX A

CTC PROJECTS INITIATED IN FY91

ENGINEERING ASSISTANCE

Minnesota's Reconstituted Panelboard Plants

The CTC is assisting the State of Minnesota in a comprehensive study of air emissions and control options for panelboard plants. The study's objectives are to characterize the plant's operations, identify air emission sources, and assess the probable species and quantities of air toxics emitted.

Reasonably Available Control Technology (RACT) for Utility Boilers

The CTC is assisting the Northeast States for Coordinated Air Use Management in developing a technical support document for use by the states in developing nitrous oxides RACT regulations.

Open Burning of Structural Fiberglass

The State of Alaska requested that the CTC evaluate and characterize emissions from the open burning of structural fiberglass. Fiberglass is a common material used in Alaska to build a variety of structures and make storage tanks and other industrial components. When discarded or replaced, structural fiberglass material is usually open burned.

TECHNICAL GUIDANCE

Waste Wood Combustion, Joint Effort

The CTC is co-funding a project with the Department of Energy, the states of Virginia and New York, and Canada. The project will identify combustion system operating parameters and air pollution control technologies for the combustion of waste wood.

Automobile Spray Booth Cleanup

The CTC is responding to a request by the State of Michigan for a CTC study on emissions from the cleanup of paint booths in automobile assembly plants.

Contaminated Soil Treatment

The CTC is responding to many requests on contaminated soil treatment by gathering information on the emissions and control technologies for several cleanup options. The Center will publish its findings in a technical guidance document for state and local regulatory agencies.

Carbon Disulfide Control Techniques

This study is examining techniques that have been successfully used, or could be used, to control carbon disulfide emissions. This project is in response to several HOTLINE calls, for which CTC expertise was not available.

Ink and Paint Manufacturing

This study will identify emission points, characterize emissions, and consider control options for ink and paint manufacturing operations. Processes include "vehicle" preparation (i.e., cooking of resins with solvents and additives, or with certain oils, fatty acids, or alcohols) and blending pigments with the "vehicle."

Nonferrous Metal Rolling

Nonferrous metal rolling operations (primarily aluminum and copper) use oil as a lubricant and coolant. VOC emissions result from evaporative fugitive losses caused by heat generated in rolling operations. This CTC project will evaluate the use of less volatile lubricants and coolants to reduce VOC emissions. It will also search for and evaluate other techniques that may reduce VOC emissions.

Small Business Enabling Document Guidelines

The CTC is developing guidelines for regulatory development groups to use in preparing documents that explain new emission standards in layman's terms. This project is in support of the CTC involvement with the Federal Small Business Assistance Program. The project is scheduled for completion in June 1992.

Controlling Odorous Emissions from Iron Foundries

The main sources of organic emissions at iron foundries examined in this report include mold and core making, casting, and sand shakeout. Odors from these processes are usually caused by chemicals that may be present as binders and other additives to the molding sand, or as the breakdown products when these chemicals are subjected to the molten iron as it is poured into the molds. The CTC will publish a report describing several removal techniques including wet chemical scrubbing, biofiltration, adsorption, and new emerging technologies such as photocatalysis.

Controlled Combustion of Scrap Tires

The CTC is funding a study to examine emission characteristics from burning tires under different controlled conditions in a rotary kiln simulator.

Burning Tires as Fuel

The CTC is responding to many requests for information on burning tires as fuel and tire pyrolysis. The study will include descriptions, emissions data, and control techniques.

APPENDIX B

CTC PROJECTS COMPLETED IN FY91

"Best Demonstrated Control Technology for Graphic Arts"⁽¹⁾

The CTC and other U.S. Environmental Protection Agency (EPA) components received reports that several graphic arts facilities were achieving volatile organic compound (VOC) efficiencies of 90 percent or greater. Reports also indicated that several facilities were using permanent total enclosures for printing operations. The CTC received requests for assistance in determining the best available control technology (BACT) and lowest achievable emissions rates (LAER) for the industry. It conducted a study to document the reported overall control efficiency for VOCs at a number of rotogravure and flexographic printing facilities.

The CTC sent experts to study several facilities and document their findings in a report. Conclusions from this study are: (1) the use of capture and control systems and the use of water-based ink systems have been demonstrated to be effective and reliable in achieving greater than 90 percent overall VOC reduction at rotogravure and flexographic printing facilities; (2) facilities can be retrofitted to achieve 90 percent VOC reductions; and (3) permanent total closures meeting EPA criteria have been successfully installed and operated at rotogravure and flexographic printing facilities.

"Evaluation of Air Toxic Emissions at Minnesota's Reconstituted Panelboard Plants"⁽²⁾

The CTC jointly sponsored a project with the Minnesota Pollution Control Agency (MPCA) to evaluate air toxic emissions and develop a test plan for reconstituted panelboard mills in Minnesota. The CTC prepared a report that discusses the reconstituted panelboard industry in Minnesota, the processes used, available literature on air toxic emissions from these mills, and the proposed air toxic test strategy.

The potential for emissions of formaldehyde and other toxic pollutants that may present a significant health risk has led the MPCA to investigate the toxic air emissions from pressed wood manufacturing facilities in the state. The plants are compared to identify those of similar design and operation and then group them together in a test plan to minimize the amount of testing required. Minnesota plants and sources recommended for air toxic screening and specific analysis for organic volatiles and semivolatiles include Superwood in Duluth and Bemidji, Louisiana-Pacific in Two Harbors, Potlatch in Bemidji and Grand Rapids, Northwood Panelboard in Bemidji, and MacMillan-Bloedel in Deerwood.

Evaluation of Methods to Control Emissions from Waferboard Press Vents

The CTC conducted a study to assist the State of Colorado and EPA Region 8 in evaluating BACT alternatives for controlling emissions from waferboard presses. Louisiana-Pacific had requested BACT analysis for two waferboard plants located in Kremmling and Montrose, Colorado. The plants wanted to increase their drying capacity by adding a second triple-pass rotary dryer to each plant. The plants emitted carbon monoxide (CO), oxides of nitrogen (NO_x), total particulate matter, and VOCs in excess of prevention of significant deterioration de minimus levels.

The CTC sent experts to the Montrose plant to observe first-hand the operation of the plant, which was identical to the Kremmling plant. The study also would assist the state and EPA Region 8 in evaluating BACT alternatives for the Kremmling plant. The CTC produced a memorandum to document its findings. The study found significant technical and economic obstacles regarding the use of control

devices and other in-plant sources for reducing emissions at the plant. However, the study concluded that the minimum acceptable ventilation rate at the plant was consistent with ventilation practices necessary to ensure worker safety and compliance with Occupational Safety and Health Administration (OSHA) indoor air quality standards.

"Evaluation of VOC Emissions from Heated Roofing Asphalt"⁽³⁾

The CTC responded to a request by EPA Region 7 to evaluate VOCs from heated roofing asphalt used as a sealing medium for buildings. The CTC published a report with results of a short-term, in-house project to characterize emissions from a simulated asphalt roofing kettle. Hot asphalt surfacing and resurfacing has been identified as a possible source of VOC emissions that may affect human health and contribute to ozone non-attainment. The purpose of the study was to collect, identify, and semi-quantitate as many compounds as possible that are discharged during open heating of roofing asphalt and relate them to the amount volatilized into the air.

Types 1, 2, and 3 mopping-grade asphalt were chosen for this study because they constitute more than 90 percent of roofing asphalt used. Samples of each type of asphalt were placed in a simulated roofing kettle, heated to predetermined temperatures, and sampled for volatile and semivolatile organic emissions. Because of the petroleum-type chemicals used in asphalt, the compounds for alkanes, aromatics, a ketone, and an aldehyde were identified during the study. The data also show how the asphalt types behave at their melting point, their equiviscous temperature, and an elevated temperature. The results show that, as the roofing asphalt is heated to higher temperatures, more compounds are emitted at higher concentrations.

"Hazardous Air Pollutant Program (HAP-PRO)"⁽⁴⁾

The CTC developed a software system called, "HAP-PRO," to assist permit engineers in reviewing applications for control of air toxics by calculating the capital and annual costs for six VOC and three particulate matter control devices, including selected engineering parameters. The software can be used to help pinpoint errors in the engineering design of control devices. Calculations used by the program mirror those presented in the revised EPA handbook, "Control Technologies for Hazardous Air Pollutants."⁽⁵⁾

HAP-PRO also was designed to generate lists of all facilities containing a specified pollutant in their emission streams, or a specified type of emission stream (organic or inorganic vapors and particulate matter). The features of HAP-PRO include context-sensitive help to assist in data input and a windowed environment to provide a referential trail of the user's actions. The software includes look-up tables containing the characteristics of many common pollutants. It allows the user to select air toxics either from an alphabetical list or by Standard Industrial Classification category. HAP-PRO runs on all IBM personal computers, or equivalent, and requires an MS-DOS Version 3.1 or greater, a hard disk with at least 1 megabyte free, and 512 free minimum RAM.

"Landfill Air Emissions Estimation Model"⁽⁶⁾

The CTC created a computer program that provides step-by-step guidance for estimating landfill air emissions. The purpose of this program is to aid local and state agencies in estimating landfill air emission rates for non-methane organic compounds and individual air toxics. This program will also be helpful to landfill owners and operators affected by the upcoming New Source Performance Standard (NSPS) and Emission Guidelines for Municipal Solid Waste Landfill Air Emissions.

The model is based on the Scholl Canyon Gas Generation Model, used in the development of the pending landfill air emissions regulations. The Scholl Canyon Model is the first-order decay

equation that uses site-specific characteristics for estimating the gas generation rate. In the absence of site-specific data, the program provides conservative default values from NSPS for new landfills and emission guidelines for existing landfills. These default values may be revised based on future information collected by the Agency.

"Radiation and Mixed Waste Incineration Background Information Document, Volume I: Technology" ⁽⁷⁾ and "Radiation and Mixed Waste Incineration Background Information Document, Volume II: Risk of Radiation Exposure" ⁽⁸⁾

The CTC produced a two-volume report that provides background information describing the major public health issues and current regulatory structure associated with radioactive materials. The background document provides a broad look at technology issues surrounding the incineration of radioactive and mixed wastes. The report is not a comprehensive text on incinerator design, use, or regulation. It highlights major considerations and provides direction to readers involved with incineration.

The information presented in Volume I was gathered by telephone contacts with operators of existing incinerators, site visits, agency contacts, and literature searches. The contents present a distillation of material deemed to be most relevant. It includes only a small fraction of the total amount of information collected. Wherever possible, actual operating data have been used to illustrate principles. However, inconsistencies in operational data acquisition have resulted in very limited availability of data that can be used for general assessment or comparison. The existing database on operation and resulting emissions and ash residues from radioactive waste incinerators is quite small. However, it has been demonstrated that incineration can achieve significant volume reductions for radioactive waste.

Volume II provides background information describing the major public health issues and current regulatory structure associated with radioactive materials. The document is organized into four sections. Section 1 describes the current understanding of public health risks associated with exposure to ionizing radiation. Section 2 describes methods acceptable to EPA for calculating the doses and risks from a given level of radioactive contamination in the environment. Section 3 presents a summary of radiation protection guidelines and standards, followed by a discussion of the degree of protection afforded to the general public under these standards. Section 4 discusses radiological and health impacts associated with waste management and presents a sample dose estimation problem.

The report concludes with appendices that provide formal definitions of key radiation protection terms and additional descriptive information on the types of radiation and their effects. References cited in the text and a comprehensive bibliography also are included.

"Radiation-Curable Coatings" ⁽⁹⁾

The Bay Area Air Quality Management District (BAAQMD) in San Francisco, California, requested CTC assistance in compiling information on radiation-curable coatings. BAAQMD wanted to evaluate this technology as a process to reduce VOC emissions. The information collected from the literature was used to evaluate the engineering and economic issues associated with radiation-curable systems. The data also were used to identify requirements for implementing the technology and any problems arising from its use.

The CTC produced a report that discusses coating characteristics, potential VOC reduction capability, potential health problems associated with the use of ultraviolet (UV) coatings, and the economic impacts of conversion to UV coatings. Radiation-curable coatings and inks are higher solids

formulations than conventional coatings and, consequently from an air pollution viewpoint, are considered to be well-suited substitutes for solvent-based, thermal-curable systems.

Depending on the operation and formulation, radiation-curable coatings and inks, using either a UV light or an accelerated electron beam as the radiation source, have shown the potential to provide at least an 80 percent reduction in VOC emissions over thermal-curable coatings and inks. However, the high viscosity of many radiation-curable compounds has tended to limit their use to application techniques such as roll coating, curtain coating, and screen printing, as opposed to spray applications. Radiation-curable systems are currently being used in metal-decorating, flatwood production, and paper-coating. The difficulty in de-inking radiation-cured paper may substantially increase the cost of recycling paper.

"Sourcebook: NO_x Control Technology Data"⁽¹⁰⁾

The CTC responded to a large number of requests from state, local, and federal regulatory agencies for assistance with the control of NO_x emissions. The CTC initiated a study to develop a NO_x controls reference book, which resulted in a report to assist new source-permitting activities by regulatory agencies.

The report covers combustion turbines, internal combustion engines, non-utility boilers and heaters, and waste incinerators. It discusses the background of NO_x formation in the combustion process and major NO_x sources, and describes processes for NO_x control. The report discusses the current status of NO_x control technology and applications to meet permitting requirements. Permitted NO_x emission levels are summarized by combustion source, fuel type, and control technology. The documentation includes references and contacts for further information.

APPENDIX C

CTC-GENERATED REPORTS AND SOFTWARE

1. Friedman, B., C. Vaught. Best Demonstrated Control Technology for Graphic Arts. EPA-450/3-91-008 (PB91-168427), February 1991.
2. Vaught, C. Evaluation of Air Toxic Emissions at Minnesota's Reconstituted Panelboard Plants. EPA-450/3-91-009, April 1991.
3. Kariher, P., M. Tufts, L. Hamel. Evaluation of VOC Emissions from Heated Roofing Asphalt. EPA-600/2-91-061 (PB92-115286), November 1991.
4. Moore, S. HAP-PRO User's Manual (For Use With Version 1.0). EPA-600/8-91-211a (PB92-135904), EPA-600/8-91-211b (diskette), October 1991.
5. Sink, M.K. Control Technologies for Hazardous Air Pollutants. EPA-625/6-91-014, June 1991.
6. Pelt, W.R., R.L. Bass, I.R. Kuo, A.L. Blackard. Landfill Air Emissions Estimation Model - Version 1.1, User's Manual. EPA-600/8-90-085a (PB91-167718), December 1990.
7. Nawar, M. Radiation and Mixed Waste Incineration: Background Information Document, Volume I: Technology. EPA-520/1-91-010-1 (PB91-222505), May 1991.
8. Nawar, M. Radiation and Mixed Waste Incineration: Background Information Document, Volume II: Risk of Radiation Exposure. EPA-520/1-91-010-2 (PB91-222513), May 1991.
9. Walata, S.A., C.R. Newman. Radiation-Curable Coatings. EPA-600/2-91-035 (PB91-219550), July 1991.
10. Campbell, L.M. D.K. Stone, G.S. Shareef. Sourcebook: NO_x Control Technology Data. EPA-600/2-91-029 (PB91-217364), July 1991.

CTC REPORTS AND SOFTWARE

1. Scherer, T.M., "Affordability Analysis of Lead Emission Controls for a Smelter-Refinery," EPA-450-3-90-001 (PB90-120122), October 1989.
2. Damle, A.S., T.N. Rogers, "Air Stripper Design Manual, Air/Superfund National Technical Guidance Study Series," EPA-450/1-90-003 (PB91-125997), May 1990.
3. Vancit, M.A., R.H. Howle, D.J. Herndon, S.A. Shareef, "Air Stripping of Contaminated Water Sources--Air Emissions and Controls," EPA-450/3-87-017 (PB88-106166), August 1987.
4. Rogers, T., A. Damie, "ASPEN Expert System for Steam Stripping Calculations," EPA-450/3-90-003, July 1990.
5. Shareef, G.S., J.T. Waddell, "Assessment of the Controllability of Condensable Emissions," EPA-600/8-90-075 (PB91-125807), October 1990.
6. Stockton, M.B., I.R. Kuo, "Assessment of VOC Emissions from Fiberglass Boat Manufacturing," EPA-600/2-90-019 (PB90-216532), May 1990.
7. Steigerwald, J., "BACT/LAER Clearinghouse: A Compilation of Control Technology Determinations," Volume I-- Report Summary and Appendices A-G, EPA-450/3-90-015a (NTIS PB90-259722), June 1990.
8. Steigerwald, J., "BACT/LAER Clearinghouse: A Compilation of Control Technology Determinations, Volume II-- Appendix H, Source Codes 1 to 3, EPA-450/3-90-015b (PB90-259730), June 1990.
9. Steigerwald, J., "BACT/LAER Clearinghouse: A Compilation of Control Technology Determinations, Volume III-- Appendix H, Source Codes 4-6," EPA-450/3-90-015c (PB90-259748), June 1990.
10. Steigerwald, J., "BACT/LAER Clearinghouse: A Compilation of Control Technology Determinations, Volume IV--Appendix H, Source Codes 7-12," EPA-450/3-90-015d (PB90-259755), June 1990.
11. "Benzene Enabling Document for Standards on Benzene Transfer and Waste Operations," EPA-450/3-90-009 (PB91-161737), March 1990.
12. Ryan, J.V., "Characterization of Emissions from the Simulated Open Burning of Scrap Tires," EPA-600/2-89-054 (PB90-126004), October 1989.
13. Linak, W.P., J.V. Ryan, E. Perry, R. W. Williams, D.M. DeMarini, "Chemical and Biological Characterization of Products of Incomplete Combustion from the Simulated Field Burning of Agricultural Plastic," Journal of the Air Pollution Control Association, Vol. 39; 6, 836-846, June 1989.*
14. Saunders, G.L., "Comparisons of Air Stripper Simulations and Field Performance Data, Air/Superfund National Technical Guidance Study Series," EPA-450/1-90-002 (PB90-207317), February 1990.

15. Harkins, S., A.S. Damle, "Control Technology Assessment Report for Air Emissions from Wastewater Treatment Operations," EPA-450/3-89-008 (PB89-207922), April 1989.
16. Control Technology Center Program Operating Manual.*
17. Bagley, C.J., J.S. McLean, M.B. Stockton, "Control of VOC Emissions from Polystyrene Foam Manufacturing," EPA-450/3-90-020 (PB91-102111), September 1990.
18. Determination of Perchloroethylene Content of Waste Materials from Filters and Still Bottoms--Conditional Test Method 010, March 1991.*
19. Barnard, W.R., "Emission Factors for Iron and Steel Sources--Criteria and Toxic Pollutants," EPA-600/2-90-024 (PB90-242314), June 1990.
20. Gschwandtner, G., S. Fairchild, "Emission Factors for Iron Foundries--Criteria and Toxic Pollutants," EPA-600/2-90-044 (PB90-266743), August 1990.
21. "Enabling Document for New Source Performance Standards for Air Oxidation Processes and Distillation Operations in the Synthetic Organic Chemical Manufacturing Industry," EPA-450/3-90-018 (NTIS PB 92-161967), July 1990.
22. Vaught, C.C., "Evaluation of Emission Control Devices at Waferboard Plants," EPA-450/3-90-002 (PB90-131442), October 1989.
23. Bolstad, J.N., "Evaluation of Emission Control Options at Leeds Architectural Products" (Spray Booth Controls), EPA-450/3-89-001 (PB90-120106), September 1989.
24. Burklin, C.E., T.S. White, "Evaluation of Emission Factors for Formaldehyde from Certain Wood Processing Operations," EPA-450/3-87-023 (PB88-118492), October 1987.
25. Vaught, C.C., R.L. Nicholson, "Evaluation of Emission Sources from Creosote Wood Treatment Operations," EPA-450/3-89-028 (PB89-224729), June 1989.
26. "Evaluation of Potential Emissions of TDI from Two Facilities," EPA-450/3-87-022 (PB88-120845), October 1987.
27. Haile, C.L., J.C. Harris, "Guidelines for Stack Testing of Municipal Waste Combustion Facilities," EPA-600/8-88-085 (PB88-234893), June 1988.
28. Neulicht, R.M., L.S. Chaput, D.D. Wallace, M.B., Turner, S.G. Smith, "Hospital Incinerator Operator Training Course: Volume I: Student Handbook," EPA-450/3-89-003 (PB89-189872), March 1989.
29. "Hospital Incinerator Operator Training Course: Volume II: Presentation Slides," EPA-450/3-89-004 (PB89-189880), March 1989.
30. "Hospital Incinerator Operator Training Course: Volume III: Instructors Handbook," EPA-450/3-89-010, March 1989.
31. Elliott, J., S. Watkins, "Industrial Wastewater VOC Emissions--Background Information for BACT/LAER Determinations," EPA-450/3-90-004 (PB90-194754), January 1990.

32. Neulicht, R.M., M.B., Turner, L.S. Chaput, D.D. Wallace, S.G. Smith, "Operation and Maintenance of Hospital Medical Waste Incinerators," EPA-450/3-89-002 (PB89-190615), March 1989.
33. "Polymer Manufacturing Industry-Enabling Document," EPA-450/3-90-019 (PB91-161745), December 1990.
34. Hester, C.I., R.L. Nicholson, M.A. Cassidy, "Powder Coatings Technology Update," EPA-450/3-89-033 (PB90-127341), October 1989.
35. DiMauro, D., C. Duffy, "RACT/BACT/LAER Clearinghouse: A Compilation of Control Technology Determinations, First Supplement to 1990 Edition," EPA-450/3-91-015 (PB91-231548), July 1991.
36. Aurand, G.A., M.B. Turner, C.J. Athey, R.M. Neulicht, "Reduction of Volatile Organic Compound Emissions from the Application of Traffic Markings," EPA-450/3-88-007 (PB89-148274), August 1988.
37. Athey, C., C. Hester, M. McLaughlin, R.M. Neulicht, M.B. Turner, "Reduction of Volatile Organic Compound Emissions from Automobile Refinishing," EPA-450/3-88-009 (PB89-148282), October 1988.
38. "Soil Vapor Extraction--VOC Control Technology Assessment," EPA-450/4-89-017 (PB90-216995), September 1989.
39. Walata, S.A., R.M. Rehm, "Source Characterization and Control Technology Assessment of Methylene Chloride Emissions from Eastman Kodak Company, Rochester, NY," EPA-600/2-89-043 (PB89-224471), July 1989.
40. Watkins, S.L., "Surface Impoundment Modeling Systems (SIMS) Version 2.0 Users' Manual," EPA-450/4-90-019a (PB91-156711), September 1990.
41. Watkins, S.L., "Background Document for the Surface Impoundment Modeling System (SIMS) Version 2.0 Documentation," EPA-450/4-90-019b (PB91-156729) September 1990; PB91-506911 (Manual); PB91-506998 (software, Manual and Background).
42. DeWees, W.G., K.C., Steinsberger, "Test Report: Method Development and Evaluation of Draft Protocol for Measurement of Condensable Particulate Emissions," EPA-450/4-90-012 (PB90-240805), May 1990.
43. Barnett, K.W., C.E. Most, "Ultrasonic Cleaning of Rotogravure Cylinders," EPA-450/3-89-024 (PB89-216360), June 1989.

* CTC Project documentation not published as a formal EPA report

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/R-92-169		2.		3. RECIPIENT'S ACCESSION NO.	
4. TITLE AND SUBTITLE Annual Report: Control Technology Center, FY91: A Fifth Year of Growth				5. REPORT DATE September 1992	
				6. PERFORMING ORGANIZATION CODE	
7. AUTHOR(S) Beth Crabtree				8. PERFORMING ORGANIZATION REPORT NO.	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Acurex Corporation P. C. Box 13109 Research Triangle Park, North Carolina 27709				10. PROGRAM ELEMENT NO.	
				11. CONTRACT/GRANT NO. 68-DO-0141, Task 92-043	
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Air and Energy Engineering Research Laboratory Research Triangle Park, North Carolina 27711				13. TYPE OF REPORT AND PERIOD COVERED Task Final; 10/91-4/92	
				14. SPONSORING AGENCY CODE EPA/600/13	
15. SUPPLEMENTARY NOTES AEERL project officer is Charles H. Darwin, Mail Drop 61, 919/541-7633. Previous CTC annual reports include EPA-600/9-91-023 and EPA-600/9-90-017.					
16. ABSTRACT The report documents activities of EPA's Control Technology Center (CTC) during its fifth year of successful operation in providing technical assistance to state, local, and federal air pollution control agencies. In fiscal year 1991 (FY91), the Center also began providing limited technical assistance to the private sector in compliance with mandates of the 1990 Clean Air Act Amendments. The report documents technical and administrative efforts during the period to respond to increased demands from the pollution control community for technical assistance. The 90% increase in HOTLINE calls resulted from an increase in calls from governmental agencies and the additional calls from the private sector. In addition, each of the other CTC services experienced significant increases. The RACT/BACT/LAER Clearinghouse experienced a 250% increase in accesses for FY91. In its first months of operation, the CTC's Bulletin Board System averaged 79 accesses a week. Finally, more than 4000 CTC documents were mailed during FY91. These increases are evidence that the CTC is providing a valuable service to the air pollution control community.					
17. KEY WORDS AND DOCUMENT ANALYSIS					
a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS		c. COSATI Field/Group	
Pollution Reporting		Pollution Control Stationary Sources Control Technology Center (CTC)		13B 05A	
18. DISTRIBUTION STATEMENT Release to Public		19. SECURITY CLASS (This Report) Unclassified		21. NO. OF PAGES 53	
		20. SECURITY CLASS (This page) Unclassified		22. PRICE	