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ANNUAL REPORT
Control Technology Center
FY93: Summary of Program Accomplishments

control technology center

EPA-453/R-94-035

CONTROL TECHNOLOGY CENTER

FY93: SUMMARY OF PROGRAM ACCOMPLISHMENTS

Sponsored by:

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

and

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

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PREFACE

The Control Technology Center (CTC) is a cooperative effort between the U.S. Environmental Protection Agency's (EPA's) Office of Air Quality Planning and Standards (OAQPS), Emission Standards Division (ESD), and the Office of Research and Development (ORD), 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 on air pollution control technology and pollution prevention applications. It also provides technical information to other governmental agencies, both foreign and domestic, and to private entities on a limited basis. CTC activities include the Federal Small Business Assistance Program (SBAP) and the RACT/BACT/LAER Clearinghouse (RBLC).

The CTC produced this report to inform EPA management, staff and other interested individuals of the status and activities of the CTC in supporting the nation's air quality program. This report summarizes CTC projects and other program activities conducted between October 1, 1992, and September 30, 1993. Also, program statistics are presented and analyzed to allow management staff to evaluate the CTC's progress and effectiveness. Finally, the report documents the demand for CTC support activities from businesses and governmental agencies.

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LIST OF ABBREVIATIONS

ACT	Alternative Control Techniques
AEERL	Air and Energy Engineering Research Laboratory
ALAPCO	Association of Local Air Pollution Control Officials
BACT	Best Achievable Control Technology
BBS	Bulletin Board System
BLIS	RACT/BACT/LAER Clearinghouse Information System
CAAA	Clean Air Act Amendments
CEPPO	Chemical Emergency Preparedness and Prevention Office
CERI	Center for Environmental Research Information
CFCs	Chlorofluorocarbons
CTC	Control Technology Center
CTG	Control Techniques Guideline
DOE	U.S. Department of Energy
EMTIC	Emission Measurement Technical Information Center
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
ESD	Emission Standards Division
ESP	Electrostatic Precipitator
GGG	Global Greenhouse Gases
GHG	Greenhouse Gases
HAP	Hazardous Air Pollutant
HCl	Hydrogen Chloride
HF	Hydrogen Fluoride
ITTCGGG	International Technology Transfer Center for Global Greenhouse Gases
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standard
NESCAUM	Northeast States for Consolidated Air Use Management
NO_x	Oxides of Nitrogen
NTIS	National Technical Information Service
NTTC	National Technology Transfer Center
OAQPS	Office of Air Quality Planning and Standards
OAR	Office of Air and Radiation
ORD	Office of Research and Development
PC	Personal Computer
PM	Particulate Matter
PPIC	Pollution Prevention Information Center
RACT	Reasonably Available Control Technology

LIST OF ABBREVIATIONS (continued)

RBLC	RACT/BACT/LAER Clearinghouse
SAGE	Solvent Alternatives Guide
SBAP	Small Business Assistance Program
SIC/SCC	Standard Industrial Classification/Source Classification Codes
SIP	State Implementation Plan
STAPPA	State and Territorial Air Pollution Program Administrators
TTN	Technology Transfer Network
UNCED	United Nations Conference on Environment and Development
VOC	Volatile Organic Compound

ACKNOWLEDGEMENTS

The CTC acknowledges the efforts of all those who have contributed to the program's success. The CTC 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 OAQPS, AEERL, the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), and EPA's Center for Environmental Research Information (CERI) 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

The Control Technology Center (CTC) services were accessed more than 30,000 times in FY93, which is double the amount of activity experienced in FY92. This includes HOTLINE calls, access to computer bulletin board systems (BBSs) and databases, and requests for CTC products. This report summarizes the CTC's activities and accomplishments during FY93 and examines strategies to sustain this dynamic program.

SUMMARY OF CTC ACTIVITY

The following table indicates CTC activity in FY93 and the change in activity from FY92.

SUMMARY OF FY93 ACTIVITY			
Activity	FY92	FY93	Change (%)
HOTLINE Calls, Government	1,309	1,258	- 4
HOTLINE Calls, Non-Government	1,441	2,095	+ 45
Total HOTLINE Calls	2,750	3,353	+ 22
RACT/BACT/LAER Clearinghouse Information System (BLIS)	1,917	11,561	+ 503
CTC BBS	4,440	8,480	+ 91
Number of CTC Documents Requested	5,899	7,371	+ 25
Total CTC Accesses	**15,006**	**30,765**	**+ 102**

CTC PROGRAM SERVICES

A brief summary of CTC services and activities follows. The flow chart on the following page illustrates the operation of the CTC Program. More detailed information on each activity is provided in Section 2 of this report.

CTC HOTLINE

The CTC's telephone HOTLINE provides quick access to EPA information and expertise. In FY93, HOTLINE activity increased by 22 percent, about half the increase experienced in FY92. State, local, and federal government agency calls decreased slightly, but non-government HOTLINE calls continued to rise to represent 62 percent of all HOTLINE calls. This leveling off of HOTLINE activity may be attributable to the growing popularity of the CTC BBSs.

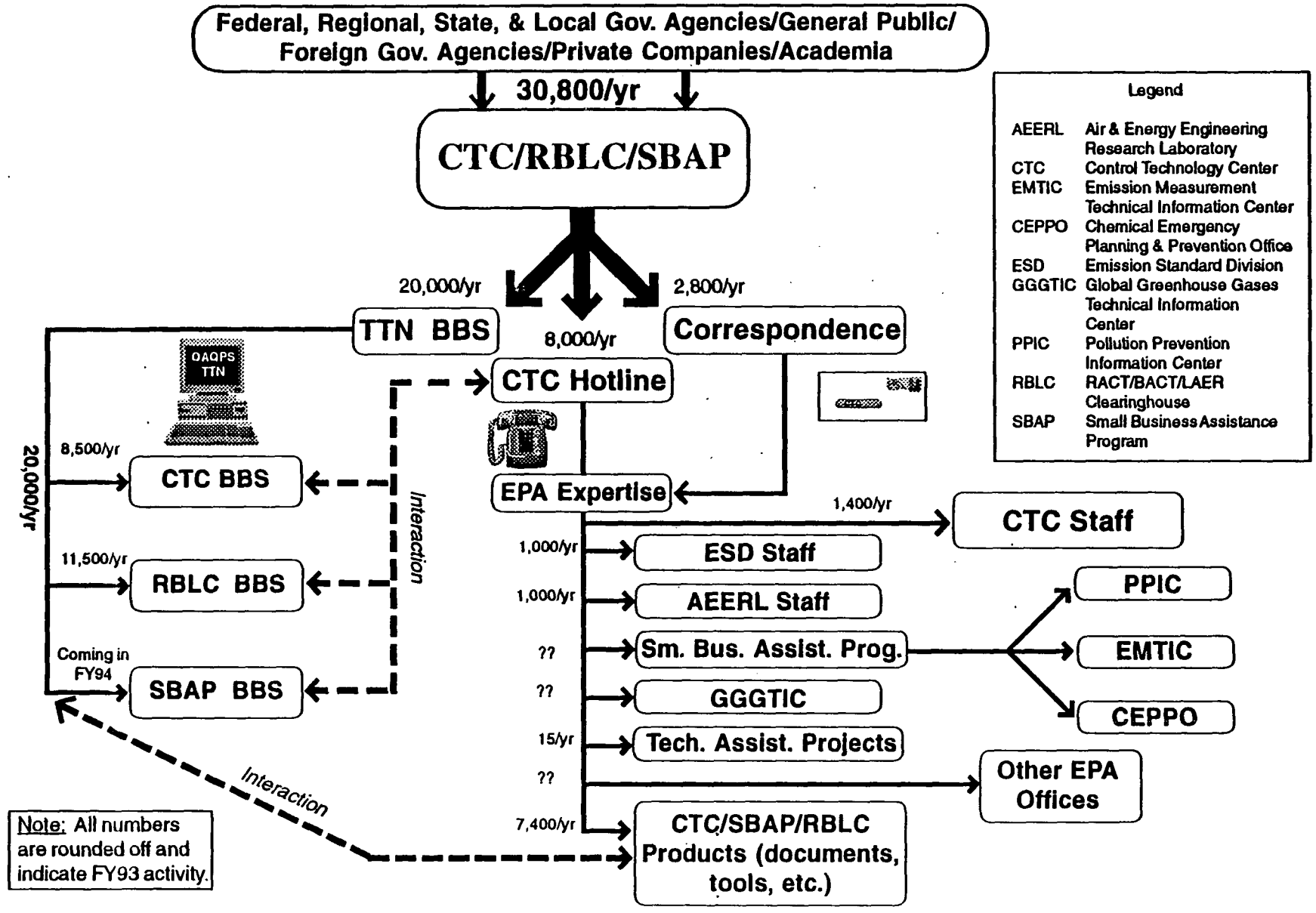
CTC Bulletin Board System

The CTC BBS completed its second full year of service with a 91 percent increase in activity. The BBS is part of the OAQPS Technology Transfer Network (TTN). It provides around-the-clock access to CTC services to anyone with a personal computer, a modem, and appropriate software.

RACT/BACT/LAER Clearinghouse

The RACT/BACT/LAER Clearinghouse (RBLC), a repository for state and local agency control technology determinations, can be easily accessed with a personal computer equipped with a modem and communications software for the price of a telephone call. FY93 was the RBLC's first full year of operation as a BBS. Use of the system increased more than 500 percent above its mainframe-based predecessor.

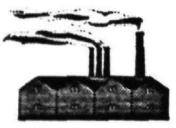
CTC PROGRAM OPERATION



Federal Small Business Assistance Program

The CTC is the focal point of coordination for the existing EPA technical assistance centers participating in the Federal Small Business Assistance Program (SBAP). The other centers include the Emission Measurement Technical Information Center (EMTIC), the Chemical Emergency Preparedness and Prevention Office (CEPPO), the Pollution Prevention Information Center (PPIC), and the EPA Small Business Ombudsman's Office. In FY93, the Federal SBAP coordinator participated in several regional meetings, initiated development of an SBAP BBS, and began work on the first annual SBAP Technical Assistance Program Conference. SBAP news also became a standard feature of the CTC's quarterly bulletin, "CTC News," in FY93.

Engineering Assistance and Technical Guidance Projects



The CTC funded 13 new technical guidance or engineering assistance projects during FY93. Many of these projects resulted from HOTLINE and written requests for technical assistance. In addition, the CTC completed 14 projects, three of which were initiated in FY93.

CTC Products

As part of its technology transfer effort, the CTC distributed 7,371 reports and software tools that resulted from CTC projects. These products were requested by and provided to government agencies free of charge. Other requestors were directed to the National Technical Information Service (NTIS) or the CTC BBS. Products acquired through NTIS or downloaded from the CTC BBS are not included in this total.

Outreach Activities

The CTC conducted several outreach activities during FY93. More than 5,000 copies of CTC's quarterly bulletin, "CTC News," were mailed to CTC clients each quarter in FY93. In addition, the CTC participated in the Air and Waste Management Association's national conference and several EPA workshops.

International Technology Transfer Center for Global Greenhouse Gases

To date, modest funding has been provided to develop technology transfer tools for waste methane sources. The initial emphasis was on landfill methane because of soon-to-be final air rates rules for municipal solid waste landfills. Further highlights in the area include plans for a research symposium on greenhouse gas emissions, planned for spring 1995.

Technical assistance and information are available on landfills and other waste management sources, coal mines, natural gas industry, small-scale combustion services (including coal stoves), and biomass utilization.

RESOURCES

The CTC expended $475,000 in contract funds on engineering assistance and technical guidance projects during FY93. This amount is a 20 percent decrease from the $592,000 the CTC expended on projects in FY92. This does not include funding for the Federal SBAP and the RBLC programs. These programs are funded under separate allotments not directly associated with CTC funding. RBLC expended $100,000 for maintenance and improvements in FY93. The Federal SBAP is using its $100,000 FY93 budget to develop a small business bulletin board and to hold a national SBAP conference. In addition to contract funds, the CTC expended 6.6 person years of EPA staff time implementing its programs.

PROGRAM DEVELOPMENT

CTC is planning a number of initiatives including the following:

- Building pollution prevention capacity
- Developing an innovative technologies electronic bulletin board
- Expanding cooperative projects with industry
- Developing cost recovery procedures under Section 112(l)(3) of the Clean Air Act (CAA)
- Developing the capacity to evaluate cross-media impacts of air pollution control technology applications

The Federal SBAP will also establish an SBAP BBS to promote timely coordination and sharing of information, and initiate the Leadership Grants Program to promote innovative approaches to small business assistance.

SUMMARY

The CTC continues to experience significant growth and program expansion. Most of these challenges have been met through the use of electronic BBSs. As a result, the CTC effectively doubled its capacity and increased user access with no change in staff resources and a decrease in project funding compared to FY92.

The best indicator of CTC program success is client access and use of CTC services. Access to CTC services doubled again in FY93 and now exceeds 30,000 accesses per year. Although access to existing CTC services is expected to moderate, new activity generated by the Federal SBAP and the Innovative Technology/Pollution Prevention BBS is expected to result in significant growth in the future.

SECTION 1.0

INTRODUCTION

The Control Technology Center (CTC) has completed its seventh year of successful operation and expansion in providing technical assistance. In addition to basic program activities, CTC activities include the RACT/BACT/LAER Clearinghouse (RBLC) and the Federal Small Business Assistance Program (SBAP). The CTC also acts as a contact point for and distribution center of products prepared by the International Technical Information Center for Global Greenhouse Gases (GGG). This report summarizes the operation and accomplishments of the CTC during FY93. It documents the program's efforts during this period to respond to increased demands for technical assistance and information from the air pollution control community. It also discusses the growth and evolution of the CTC since its conception in 1987, as well as its efforts and plans to meet client needs in the future.

The CTC was originally established to support the U.S. Environmental Protection Agency's (EPA's) Air Toxics Strategy. The strategy called for state and local agencies to assume regulatory responsibilities for toxic air pollutants with EPA providing technical assistance to support their efforts. In response, EPA's Air and Energy Engineering Research Laboratory (AEERL) and the Office of Air Quality Planning and Standards (OAQPS) developed and implemented an innovative technology assistance and transfer program—the CTC. In addition to supporting state and local agency air toxics programs, the CTC was also charged with providing technical assistance to these agencies on volatile

organic compound (VOC) control issues to support their efforts to attain the national ambient air quality standard (NAAQS) for ozone.

The CTC's mission has expanded significantly over time. RBLC responsibilities had been assumed by CTC staff as an independent program since the CTC's inception; however, the relationship proved to be extremely beneficial to both activities. The RBLC became an important tool in responding to client requests for technical assistance about control technology applicability and performance. At the same time, the CTC technical assistance role proved to be a logical response to RBLC clients in need of more in-depth technical assistance. The expansion of the RBLC to include Reasonable Available Control Technology (RACT), as required by the 1990 Clean Air Act Amendments (CAAA), also resulted in a more interconnected relationship between these two activities. RACT supports efforts to attain the ozone NAAQS, a basic CTC function. As a result, the CTC and RBLC now function as one integrated program.

The CAAA also effected other significant changes. The most critical change was the extension of CTC services to non-governmental clients. The private sector now accounts for more than 60 percent of the CTC's activities. In addition, because of its well-established role in assisting state and local agencies, EPA also decided to make the CTC the focal point for the Federal SBAP required in Section 507 of the CAA. The role of the Federal SBAP is to provide technical support and coordination to state SBAPs.

EPA policy and the needs of CTC clients require that the CTC continue to adapt and change. The CTC will build pollution prevention capacity into its program. As part of this effort, the Center plans to establish an innovative technology/pollution prevention information transfer system to provide quick and timely information exchange among developers, vendors, industry, and regulatory agencies. The CTC will also need to develop capacity to consider cross-media implications of air pollution control technology applications, and the ability to work with industry in assessing new and emerging technologies.

SECTION 2.0

PROGRAM STATUS AND ANALYSIS

All CTC program services continue to increase in activity. The total number of direct accesses to CTC services in FY93 was more than 30,000. This total includes HOTLINE, BBS, and RBLC activity, and product requests from CTC clients. Figure 1 summarizes the expansion of CTC activity over the last three years.

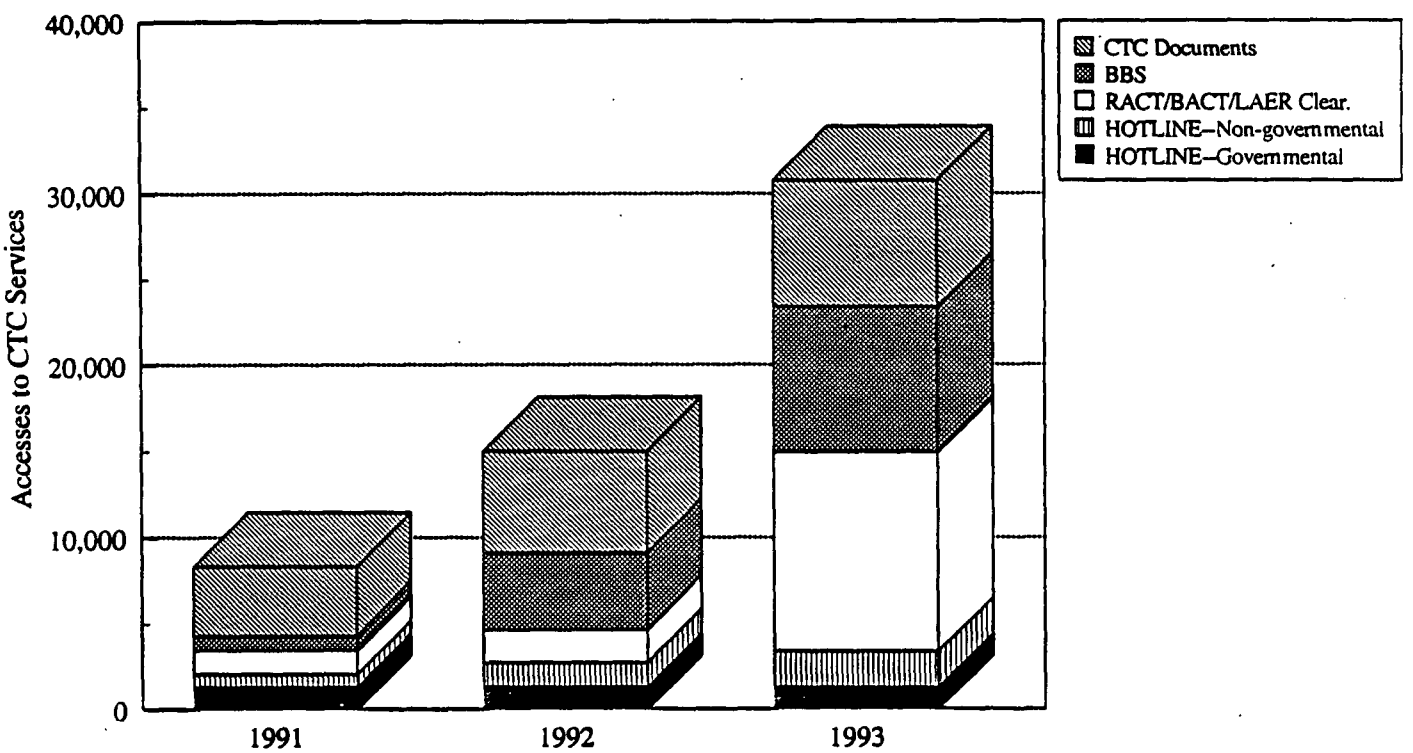
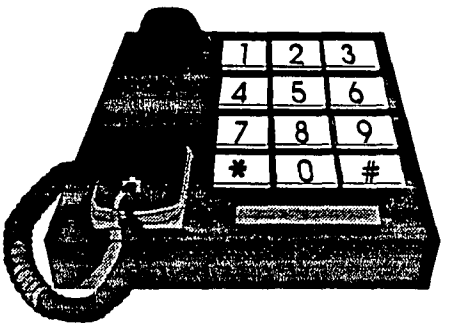


Figure 1. CTC activity expansion.

2.1 THE CTC HOTLINE



The CTC operates a telephone HOTLINE service staffed by technical experts from the sponsoring organizations. The HOTLINE provides callers with quick access to EPA air pollution control information and expertise during regular business hours (7:30 a.m. to 5:00 p.m. Eastern time). Most simple technical assistance requests can be addressed immediately by CTC staff. When a more detailed analysis or evaluation of a request is required, it is referred to an expert in the particular field.

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 seven-year history. The HOTLINE received 3,353 calls for assistance in FY93 (this figure does not include requests for CTC products). This represents an overall increase in HOTLINE activity of 22 percent, about half the rate of increase experienced in FY92. This leveling off of HOTLINE activity may be attributable in part to the growing popularity of CTC electronic BBSs which experienced a tremendous increase in activity in FY93.

For the first time since the CTC began its HOTLINE, calls from state, local, and federal governmental agencies decreased slightly. HOTLINE calls from governmental agencies totaled 1,258 in FY93 compared to 1,309 in FY92 (a decrease of 4 percent). This appears to be the culmination of a gradual leveling off in government calls that has been experienced in recent years.

Non-governmental callers now represent 62 percent of all HOTLINE calls. Non-governmental HOTLINE calls increased from 1,441 in FY92 to 2,095 in FY93, a 45 percent increase over FY92 activity. About 700 additional calls have been received from non-governmental callers each year since the 1990 CAAA required that the CTC make its services available to others (i.e., other than governmental agencies). Although the actual increase in the number of non-governmental calls has

been constant, the rate of increase in non-governmental calls in FY93 was about half that experienced in FY92.

Figure 2 shows the increase in HOTLINE calls over the last three fiscal years and the impact of private sector calls on the totals.

An analysis of HOTLINE calls reveals that major topics for technology assistance by both the governmental and private sectors fall into similar pollutant and subject/process areas. As indicated in Table 1, the top four HOTLINE pollutant topics accounted for 77 percent of all calls where a pollutant was specified.

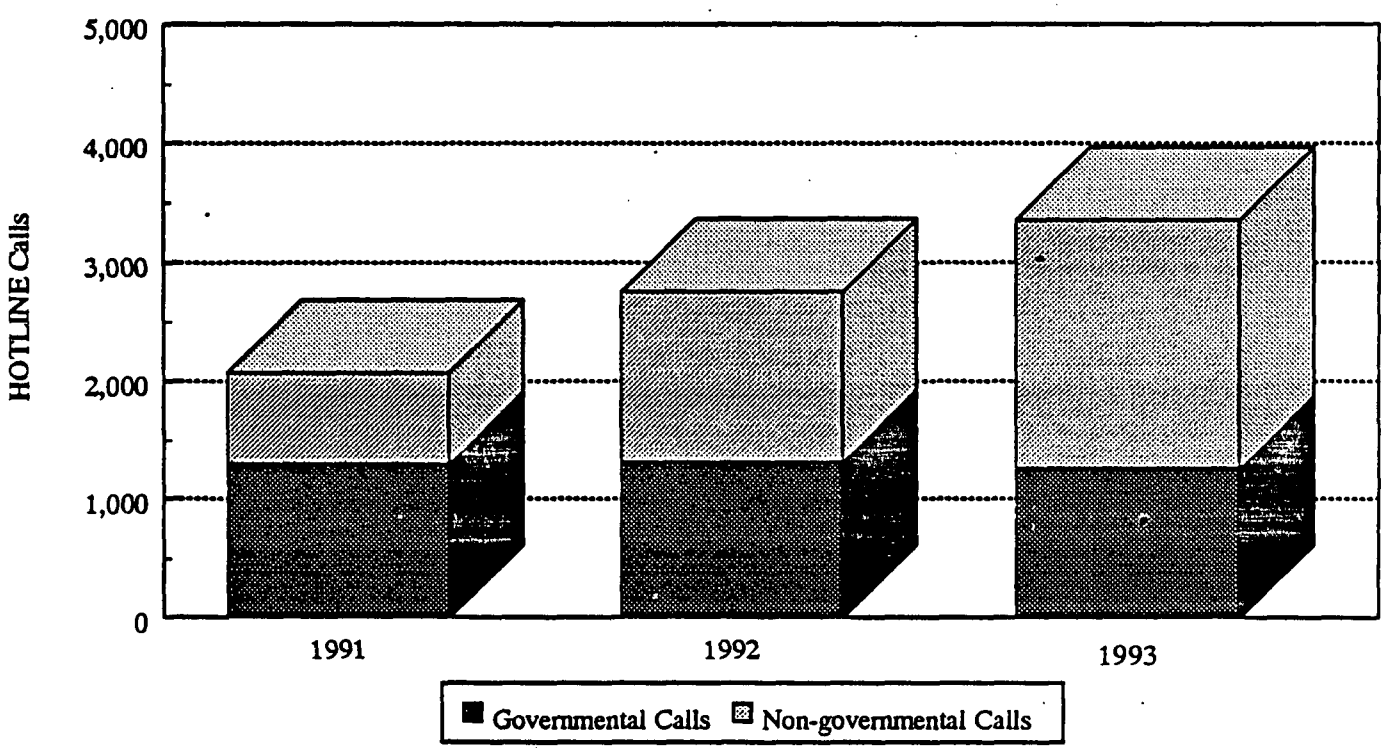


Figure 2. Increase in HOTLINE calls for the last three fiscal years.

TABLE 1. HOTLINE CALLS BY POLLUTANT

Pollutant	Percent of Calls		
	All	Governmental	Non-governmental
Volatile Organic Compounds (VOCs)	40	38	43
Hazardous Air Pollutants (HAPs)	18	20	15
Particulate Matter (PM)	11	12	9
Oxides of Nitrogen (NO_x)	8	8	8
Total for Top Four Pollutants	**77**	**78**	**75**

Based on subject/process area, requests were very scattered; however, 24.2 percent dealt with CTC products or activities (i.e., the RBLC and CTC reports and software). Approximately four percent concerned other EPA reports. The top five technical topics addressed paints and coatings, control technique guidelines (CTGs), the CAA, incineration, and emission factors. Table 2 presents the top 25 topics.

2.2 THE CTC BULLETIN BOARD SYSTEM

The CTC initiated an electronic BBS in August 1991. The system supplements the HOTLINE service which is provided only during normal business hours. The BBS system is operated and maintained on the Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TTN) BBS and can be accessed via a personal computer (PC) equipped with communication software and a modem. The BBS operates around-the-clock except for routine maintenance on Mondays between 8:00 a.m. and noon Eastern time. The BBS allows the user to access CTC-generated technical reports and software, which may be downloaded to the user's PC. The user may also leave requests for assistance or solicit input from other users by posting questions and requests on the BBS.

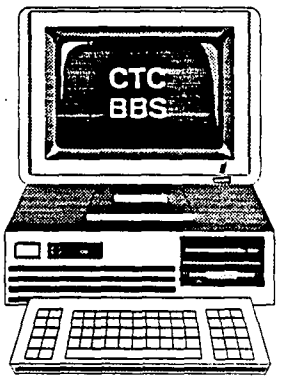
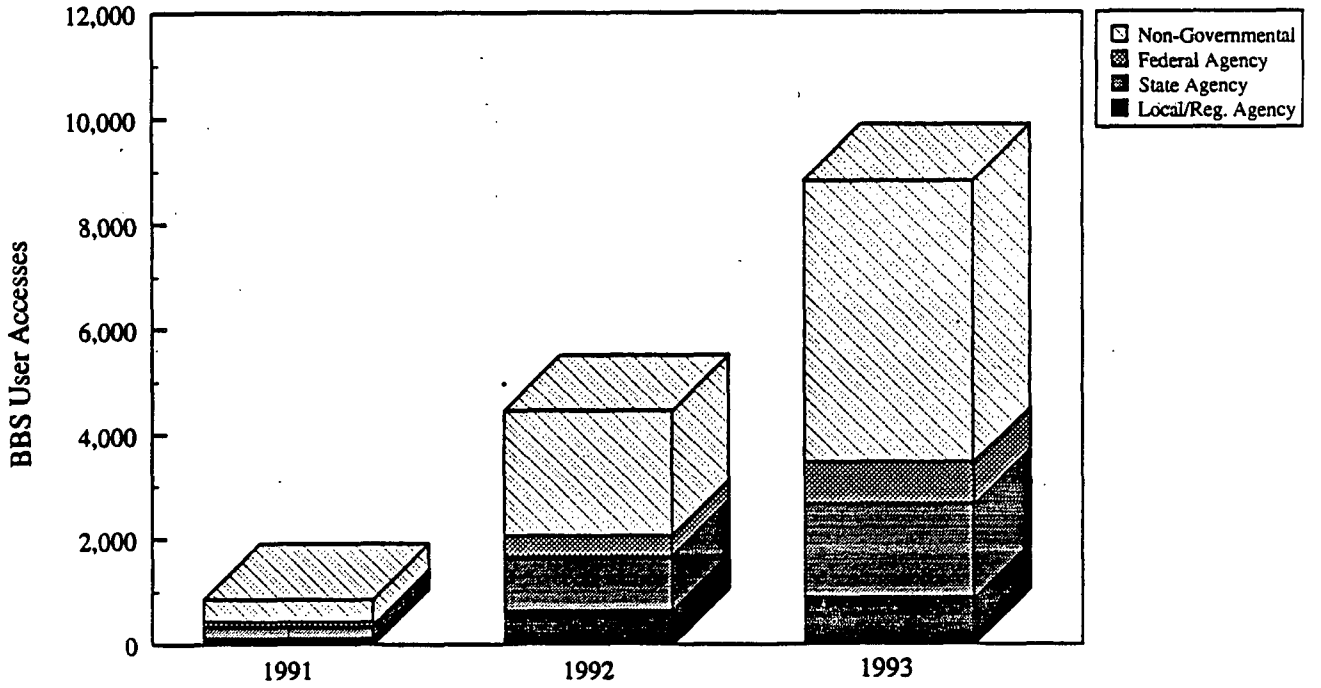


TABLE 2. HOTLINE CALL TOPICS AND PERCENT OF CALLS

Rank	Subject	All	Governmental (Rank)	Non-governmental (Rank)
1	CTC Products/Services	13.9	14.1 (1)	13.7 (1)
2	RBLC	10.3	10.0 (2)	10.6 (2)
3	Paints/Coatings	5.5	6.4 (3)	4.4 (5)
4	CTGs	4.3	3.8 (6)	5.0 (3)
5	Other EPA Reports	4.1	5.7 (4)	1.9 (8)
6	CAA	3.8	3.3 (7)	4.5 (4)
7	Incineration	3.7	5.3 (5)	1.6 (11)
8	Emission Factors	2.6	3.3 (8)	1.7 (9)
9	Engines/Turbines	2.6	2.3 (12)	3.1 (6)
10	Test Methods	2.1	1.7 (20)	2.6 (7)
11	Boilers	2.0	2.7 (9)	1.1 (17)
12	Asphalt	1.8	2.3 (11)	1.0 (18)
13	Landfills	1.8	1.9 (14)	1.7 (10)
14	Solvents	1.8	2.5 (10)	0.8 (22)
15	Printing/Graphic Arts	1.6	2.1 (13)	1.0 (19)
16	SBAP	1.6	1.8 (17)	1.3 (14)
17	Dry Cleaning	1.4	1.7 (18)	0.9 (20)
18	NSPS/NESHAP Rules	1.4	1.8 (15)	0.9 (20)
19	Wastewater Treatment	1.4	1.5 (22)	1.3 (15)
20	Tire Burning	1.2	1.6 (21)	0.6 (23)
21	Electroplating	1.1	1.7 (19)	0.3 (24)
22	Wood Products	1.1	0.9 (23)	1.3 (16)
23	Iron and Steel	1.0	0.7 (24)	1.5 (12)
24	Petroleum Industry	1.0	0.5 (25)	1.5 (13)
25	SAGE	1.0	1.8 (16)	0.0 (25)

In FY93, its second full year of operation, the CTC BBS was accessed 8,480 times, representing a 91 percent increase in activity over FY92. As with the CTC HOTLINE, non-governmental access to the BBS represents the largest share of use (58 percent). About one-third of all BBS accesses result in a download of a CTC report or CTC software. Table 3, Figure 3, and Table 4 provide information on the type of BBS activity, user access, and the most popular downloadable items, respectively.



*1991 was only a partial year.

Figure 3. CTC BBS user access.

TABLE 3. CTC BBS ACTIVITY

Type of Activity	Number of Events	
	FY92	FY93
Total Accesses	4,440	8,480
Total Downloads	1,385	2,796
Add to Mailing List	245	324
Document Orders	160	243
HOTLINE Requests	46	68
Project Suggestions	12	15

TABLE 4. CTC BBS MOST POPULAR DOWNLOADABLE ITEMS

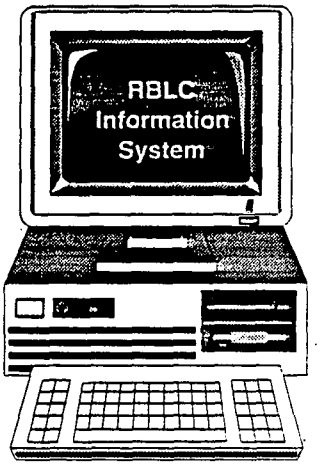
Item	Number of Downloads	
	FY92	FY93
Solvent Alternatives Guide (SAGE)—PC Software	N/A	391
Document Text	228	658
HAP-PRO—PC Software	256	285
"CTC News"	178	279
Landfill Emission Model—PC Software	172	219
Control Techniques Guideline (CTG) List	97	107

N/A—Not available

The CTC BBS has become an important and popular part of the CTC. It has allowed the CTC to expand its services and technology transfer capability with only a minimum impact on resources. New CTC products will be available as downloadable files from the BBS. This will increase user access to this information and potentially reduce printing and document handling costs. The CTC BBS is also being considered as the location for an innovative technologies database that will allow users to identify and access information on new and emerging pollution control and prevention methods.

2.3 RACT/BACT/LAER CLEARINGHOUSE

The RBLC is a repository for state and local agency control technology determinations. It includes control technology determinations for the following:



- Major new or modified sources located in non-attainment areas and subject to Lowest Achievable Emission Rate (LAER) control requirements
- Major new or modified sources located in attainment areas and subject to Best Available Control Technology (BACT) requirements under the Prevention of Significant Air Quality Deterioration Program
- Existing sources located in non-attainment areas and subject to Reasonably Available Control Technology (RACT) requirements

The RBLC allows anyone with a PC, modem, and communications software to review, browse, and print examples of the types of controls required or used on similar sources. In addition, RBLC also contains the name, agency, and telephone number of a contact to obtain additional in-depth information on those sources.

During FY93, the RBLC was accessed 11,561 times, representing a 503 percent increase over FY92. This tremendous increase in use probably resulted from moving the RBLC to the OAQPS TTN in late FY92. Before that time, the RBLC had been on EPA's IBM mainframe computer. Security and administrative procedures significantly inhibited direct user access to Clearinghouse data. Even after installing more user-friendly programming, the old mainframe system averaged only about 120 accesses per month. The BBS version in FY93, its first full year of operation, averaged almost 1,000 accesses per month. More than half of those accesses resulted in a download of substantive information from the RBLC database. In addition to being moved, the RBLC was revamped to include many new data elements. This provides the user greater freedom in searching, retrieving, formatting, and downloading data. The new system also allows direct updating by authorized state

and local pollution control agency personnel. Table 5, Figure 4, and Table 6 provide information on the type of access activity, user access, and the most popular downloadable items, respectively.

TABLE 5. RBLC ACCESS ACTIVITY

Type of Activity	Number of Events		
	FY91	FY92	FY93
Total Accesses	1,311	1,917	11,561
Total Downloads	N/A	N/A	5,555
Add to Mailing List	N/A	N/A	648
Document Orders	N/A	N/A	124
HOTLINE Requests	N/A	N/A	30

N/A= Not available

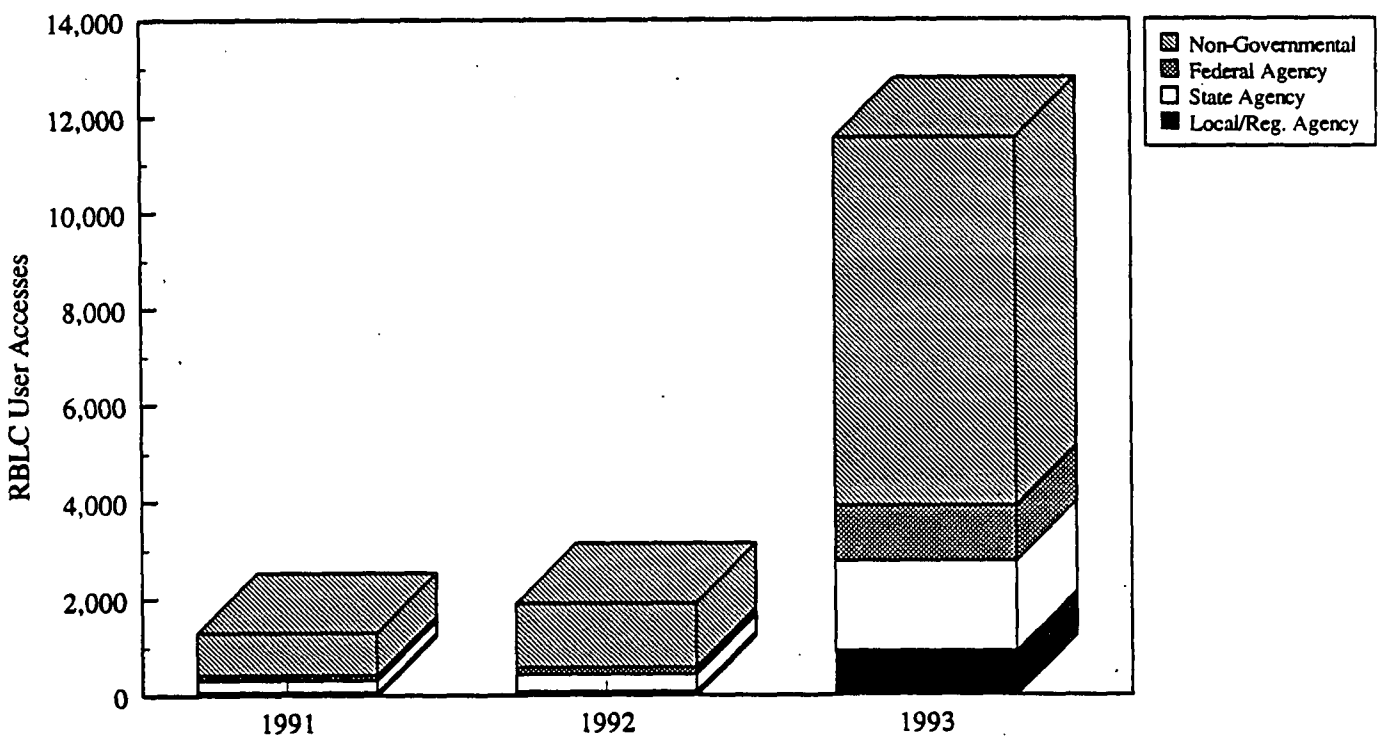


Figure 4. RBLC user access.

TABLE 6. RBLC MOST POPULAR DOWNLOADABLE ITEMS

Item	Number of Downloads
User Generated Files (database search results)	3,296
User's Manual	438
Document Summaries	386
Process Code List	276
SIC/SCC Codes	271
Informational Flyer	235

The RBLC is in the process of implementing a number of improvements including the following:

- Full utilization of statistical ranking capabilities based on standardized emission units
- A rule database which includes a summary of requirements of all federal air emission standards and provides for direct entry of similar information by state and local agencies
- Direct computer-based data transfer between the California Air Resources Board Clearinghouse and the RBLC
- A standardized floppy disk data transfer program to facilitate data submission by state and local agencies
- An interactive PC program to familiarize new users with RBLC capabilities and procedures

The RBLC has also taken part in discussions concerning additional improvements and expansion of Clearinghouse capabilities that are being evaluated by the ongoing New Source Review Reform Workgroup. Many of the actions being discussed by the Workgroup are dependent on making the RBLC more comprehensive and complete with regard to new source permitting and emerging emission control technologies. Improvements to the RBLC that would enhance its ability to present pollution prevention information are also being considered as part of the Environmental Technology Initiative.

2.4 FEDERAL SMALL BUSINESS ASSISTANCE PROGRAM

Under Title V, Section 507, of the 1990 CAAA, EPA is required to provide assistance to the State Small Business Stationary Source Technical and Environmental Compliance Assistance Programs. The Federal SBAP is a coordinated effort among several existing EPA technical service centers. The CTC serves as the focal point for coordination of efforts among the participating groups, as well as the contact point for general Office of Air and Radiation (OAR) small business assistance activities. EPA's assistance centers associated with this program include: the 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's Hotline. These centers are expanding their services to provide support to state and local agencies as they develop SBAPs, and on a continuing basis as these programs become operational (no later than November, 1994). They will also be able to assist small businesses in understanding and complying with CAAA requirements in their respective program areas.

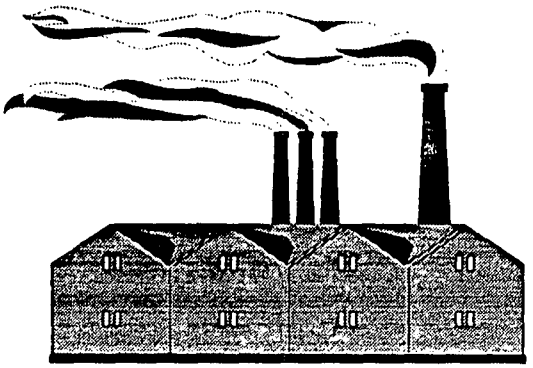
Several briefings were held this year to introduce the Federal SBAP to the ESD regulatory development staff and discuss the need for development of materials to explain new emission standards to small businesses. Beginning in FY94, the Federal SBAP will coordinate the development of information for use by the State SBAPs in educating small businesses. These materials will include simplified fact sheets prior to proposal of a rule, and documents written in layman's terms to explain the requirements of final rules. These materials may also contain compliance options, including

pollution prevention alternatives, where appropriate. To assist in the development of information for small businesses, the CTC/Federal SBAP has issued "A Guidebook for Explaining Environmental Regulations to Small Businesses" (See Appendix C). This Guidebook addresses this issue in general terms, in order to be useful not only to EPA staff, but also to state and local agencies as well as the public at large.

During FY93, the CTC Federal SBAP Coordinator presented discussions on services available through the Federal SBAP and Section 507 implementation issues, at regional meetings of the State SBAPs in New Orleans, LA; Raleigh, NC; and Portland, OR. A similar discussion was presented at the annual EPA Regional Small Business Liaison's meeting, and another will be given at the First Annual National Small Business Ombudsman's Conference in Washington, DC, in early FY94. The CTC Federal SBAP Coordinator also participated in the development of testimony concerning the implementation of Section 507 of the CAAA. This testimony was given by the Director of OAQPS before the U.S. Senate Subcommittee on Clean Air and Nuclear Regulation of the Committee on Environment and Public Works.

The "Small Business Update" is now included in each edition of the "CTC News" to discuss Federal SBAP activities. Developmental work has begun on the Small Business BBS, to be included on the OAQPS TTN by mid-FY94. The Small Business BBS will provide an avenue for state and local SBAPs and EPA to share materials for use in assisting small businesses. Planning activities are under way for the First Annual National Small Business Technical Assistance Conference, to be hosted by the CTC/Federal SBAP in January, 1994. Also planned for FY94 is the establishment of the Leadership Grants Program to benefit innovative approaches to small business assistance by the state Section 507 programs.

2.5 TECHNICAL PROJECTS



The CTC is unique among technology assistance programs in its ability to conduct on-site technical and research projects for its clients. Many technical issues impacting the development of regulatory programs do not fall within EPA's traditional research and development activities. The CTC is designed to conduct non-traditional technical and research studies that support state and local agencies and businesses in developing regulatory and compliance agendas and pollution control strategies. Most of these studies are requested and defined by state and local governmental agencies. Others are identified by CTC management and are based on the volume of technical assistance requests on specific topics presented during HOTLINE calls and/or other technical assistance communications. Since its inception, the CTC has completed more than 100 studies to fulfill its technical assistance mandate. Many of these products have been recognized as authoritative resources on these subjects.

The CTC initiated 13 projects in FY93. A brief description of these projects is found in Appendix A. They include the following:

- Two program administration/quality control projects designed to monitor, track, support, and improve the operation of the CTC and its projects
- Seven engineering assistance projects in response to requests received from various state and local governmental agencies
- Four technical guidance projects in response to HOTLINE requests and the need to upgrade existing CTC products

Direct engineering assistance projects are initiated when a state or local agency requests technical assistance in specific areas (either through the HOTLINE or by written request). These projects are usually short-term, take about three to six months to complete, and involve the evaluation of emissions, emission control technologies, or pollution prevention methods for certain operations.

Technical guidance projects result from multiple HOTLINE requests for technical assistance in a particular topical area. The projects are usually long-term, take about one year to complete, and are applicable to a broad client base. Both types of projects are generally conducted for governmental clients free of charge depending on the availability of funds. However, the CTC has on occasion entered into joint ventures with other agencies in order to conserve and leverage limited resources. If the current trend of decreasing funding continues, the CTC will increasingly seek out these joint ventures.

The CTC completed 14 technical projects in FY93. They include three projects initiated in FY93 and six projects initiated in FY92. The five remaining projects completed were initiated prior to FY92. These CTC products address a wide range of issues, including controlling particulate emissions from grain handling, mercury emissions from fluorescent lamp crushing, styrene emissions from fiberglass products manufacture, and HAPs from leather tanning and coating. Other projects addressed potential HAPs emitted when burning fiberglass, fluff (the non-metallic residue of scrapped automobiles), and scrap from wood cabinet manufacturing. The CTC also completed the first step in upgrading its popular software tool called HAP-PRO. HAP-PRO is a PC-based program that helps evaluate control options for HAPs. A complete list of projects completed in FY93 is provided in Appendix B.

Currently, the CTC only accepts projects requested by governmental agencies (primarily state and local air pollution control agencies). Projects requested by non-governmental clients are not accepted because, to date, neither cost recovery procedures required under Section 112(l)(3) of the CAAA nor federal funding to conduct such projects have been provided for this client group. However, the CTC has entered into several joint agreements with non-governmental clients. Among these agreements are the following:

1. An agreement with the Electric Power Research Institute (EPRI) to jointly develop PC-based software to evaluate and design electrostatic precipitators (ESPs). The CTC provided an existing internal EPA ESP evaluation program

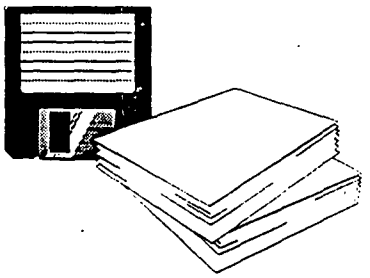
and technical expertise. EPRI provided programming expertise and resources. A comprehensive ESP design model has been developed and is available through the CTC BBS, free of charge, to anyone wishing to download it. This comprehensive model is the property of EPA. EPRI is still refining a less sophisticated, user-friendly version. The EPRI version is the property of EPRI; however, a licensing agreement between EPA and EPRI will allow the CTC to distribute this version to state and local agencies free of charge.

2. An agreement with Weatherly, Inc., the distributor of The Polyad® FB Process, and Eljer Plumbingware, Inc., to test and evaluate the effectiveness of Weatherly's styrene emission control system. Weatherly provided a Polyad® FB control system and transportation, installation, operation, and removal of the system from the site of the Eljer Plant in Wilson, NC. Eljer provided an emission source from its manufacturing process and on-site utilities needed to operate the control system. EPA provided for stack testing and generated an independent report evaluating the performance of this control system in treating styrene emissions.

3. An agreement with QUAD Environmental Technologies, manufacturer of the QUAD Chemtact™ System, and Eljer Plumbingware, Inc., to test and evaluate the effectiveness of QUAD's styrene emission control system. The arrangement was very similar to that described in 2 above.

These projects, especially 2 and 3 above, were very significant. They demonstrated the CTC's ability to work with the private sector and produce an independent evaluation of emerging control technology. Control of styrene, a HAP, has been troublesome for more conventional control systems because of cost or technical feasibility issues. The CTC hopes to continue this type of project because it puts the CTC on the cutting edge of technology and provides valuable information to industry and regulatory agencies wrestling with air pollution control questions. The CTC would also like to pursue the establishment of cost-reimbursable procedures that may facilitate future evaluation of emerging technologies and eliminate or minimize CTC costs.

2.6 CTC REPORTS AND SOFTWARE



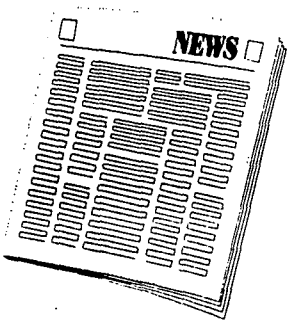
Another major CTC technology transfer and support effort is the distribution of more than 100 different documents and software tools developed from CTC technical assistance projects. Governmental air pollution control personnel can request copies of CTC technical

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." Governmental clients receive the available reports and software systems at no charge. Non-governmental clients receive information about ordering these items from NTIS. In addition, many of these items can be downloaded by anyone through the CTC BBS at the cost of a telephone call. The CTC mailed 7,371 technical assistance reports and computer disks to clients in FY93. The increasing number of publications and software distributed by the CTC each fiscal year is evidence that CTC products have gained in popularity. Titles of CTC reports and software available through the end of FY93 are listed in Appendix C.

The CTC is also using its bulletin board to distribute the PC program "Solvent Alternative GuidE" (SAGE). This software tool was developed by staff at AEERL, one of the CTC's sponsoring organizations. SAGE helps users identify more environmentally friendly solvents by answering basic questions about the product they are manufacturing, the material with which they are dealing, and processes involved. As seen in Table 4, SAGE is a very popular downloadable item. About 400 copies were downloaded from the BBS in FY93.

2.7 OUTREACH ACTIVITIES

The CTC publishes the "CTC News" quarterly to inform its audience of available services, the status of CTC projects, and other activities related to air emissions and control technology. It identifies new projects and those nearing completion. The "CTC News" also highlights EPA staff members who respond to assistance requests. The quarterly publication often solicits from its readers information related to ongoing projects or requests for CTC assistance and suggestions for ways in which the program may better serve their needs. In FY93, the "CTC News" reached a mailing list of more than 5,000 clients per quarter, a 32 percent increase over the FY92 mailing rate.



In addition to the "CTC News," the CTC updates clients and informs potential users of its services by conducting briefings at EPA regional offices and other locations. In FY93, the CTC staff attended workshops and conferences such as the Office of Air Quality Planning and Standards Air Quality Management Workshop, CAA Title III Implementation Workshop, and the Air and Waste Management Association Conference. As appropriate, program briefings, seminars, and conference presentations or interactive displays were used to promote CTC program objectives and services.

2.8 INTERNATIONAL TECHNOLOGY TRANSFER CENTER FOR GLOBAL GREENHOUSE GASES

The United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in June 1992, created an unprecedented need for rapid and effective transfer of technology and information regarding emissions measurements methodology and inventory development, and technology development, demonstration, and deployment.

The EPA and the U.S. technical community have extensive expertise on greenhouse gas (GHG) emissions and controls. This will continue to grow as the global change research program progresses. The goal of the International Technology Transfer Center for Global Greenhouse Gases (ITTCGGG) is to provide access to this expertise and to respond to incoming requests both domestically and internationally for information on greenhouse gas emissions.

A modest program within AEERL has already begun to provide information on emissions and strategies to a variety of information users. In 1992, ITTCGGG, a part of EPA's CTC was established. Since its inception in May 1992, ITTCGGG has received hundreds of calls and requests for information. FY91 and FY92 funding was applied to developing an EPA report on the technological options and case studies on landfill gas utilization. To date, more than 1,100 copies of this report have been distributed. A follow-up report is being developed that contains information on

landfill gas-to-energy projects in North America, Europe, and Australia. This report will provide an overview of the different philosophies about gas cleanup and energy equipment modifications for landfill gas utilization. Information in this report is being provided through the International Energy Agency Expert Working Group on Landfill Gas, in which AEERL participates. Another accomplishment is AEERL's first symposium on GHG emissions and mitigation research which was held in Washington, DC, in August 1992 and was attended by more than 300 participants. A second research symposium is planned for the spring of 1995.

Information on the following subjects is available through ITTCGGG:

- Landfills and other waste management facilities, the natural gas industry, and coal mining
- Biomass utilization for energy generation and production of liquid fuel and for pollution prevention technologies
- Energy conservation and pollution prevention technologies for residential, commercial, industrial, and utility application

SECTION 3.0

PROGRAM RESOURCES

The CTC has a small, dedicated staff. However, to accomplish its mission, the CTC draws expertise from the staffs of its sponsoring organizations—AEERL and ESD. Additional resources and expertise are provided through EPA contractors when appropriate and necessary. This section addresses the CTC's staff resources and contractor budget.

3.1 STAFF RESOURCES

Each of the sponsoring organizations provides four individuals to support CTC activities. Although these eight CTC staff members are assigned to the CTC, some of their time is allocated to projects and activities that are part of the sponsoring organizations' missions, but unrelated to the CTC. It is estimated that the equivalent of 6.6 person years of effort were used to support CTC activities in FY93. Table 7 indicates the distribution of staff time among the CTC's three major components.

TABLE 7. DISTRIBUTION OF CTC STAFF RESOURCES (IN PERSON YEARS)

Sponsoring Program	CTC Base Program	RBLC	SBAP	Total
ESD/OAQPS	1.5	0.8	1.3	3.6
AEERL/ORD	2.8	0.0	0.2	3.0
Total	4.3	0.8	1.5	6.6

3.2 PROJECT BUDGET

The CTC expended $475,000 on engineering assistance and technical guidance projects during FY93. This represents a 20 percent decrease from the $592,000 the CTC expended on projects in FY92. This amount does not include funding for the Federal SBAP and the RBLC program, each of which has independent funding.

More than 87 percent of the FY93 expenditures was used to fund technical guidance and engineering assistance projects. The remaining expenditures covered CTC administrative costs, such as publishing the "CTC News," maintaining the CTC HOTLINE database, and mailing documents. The program's FY92 administrative costs did not increase from FY92's $60,000.

The decrease in CTC expenditures occurred mainly because of budgetary considerations at ESD. Because of a 40 percent overall decrease in ESD's budget and the need to provide initial funding to the SBAP, ESD's share of CTC funding decreased from $450,000 in FY92 to $150,000 in FY93. This trend in funding is expected to stabilize. Requests for new projects are expected to increase because of the formation and expansion of the state technology assistance efforts, including the SBAPs, and the full impact of the 1990 CAAA.

As noted above, the SBAP and RBLC programs are funded under separate allotments not directly associated with CTC funding. The RBLC expended $100,000 in FY93 for maintenance and improvements. The Federal SBAP is using its $100,000 FY93 budget to develop a small business bulletin board and to hold a national SBAP conference. The distribution of CTC contract resources in FY93 is indicated in Table 8.

TABLE 8. CTC CONTRACT RESOURCES FOR FY93

Program	Amount (Dollars)
CTC Base Program	475,000
RBLC	100,000
SBAP	100,000
Total Contract Resources	675,000

SECTION 4.0

PROGRAM DEVELOPMENT

In FY94, the CTC plans to expand its capacity to serve the needs of its clients. Based on three major EPA initiatives—pollution prevention, encouragement of new and innovative technologies, and cross-media impacts—the expansions planned for CTC include the following:

1. Build pollution prevention capacity within the CTC to aid in assisting State SBAPs and other CTC clients. This will be accomplished by modifying the RBLC to enhance pollution prevention information fields and search capabilities, developing contacts with other government centers to share information, and establishing electronic links with existing pollution prevention centers.

2. Expand the CTC BBS to include information on new and emerging technologies (both add-on and pollution prevention). This type of BBS is being considered as part of the Environmental Technology Initiative (ETI) and in response to recommendations being developed by the New Source Review Reform Workgroup for the RBLC.

3. Expand efforts to conduct new technology assessment projects in cooperation with industry. These projects help define the technical and economic feasibility of new technologies as they relate to the control or elimination of specific waste/emission streams.

4. Explore the development of policy, procedures, guidance, and rules implementing the "cost recovery" provisions of Section 112(l)(3) of the CAAA. This will give the CTC expanded capability to consider and implement projects requested by the private sector.

5. Develop capacity to consider cross-media implications of air pollution control/prevention technology applications.

6. Establish an SBAP BBS to provide an avenue for state and local SBAPs and EPA to share materials developed for small businesses.

7. Coordinate the development of informational materials targeted at small businesses. These materials will explain, in layman's terms, new regulatory requirements as well as applicable pollution prevention and control options.

These expansion initiatives represent a plan extending well beyond FY94. However, the CTC hopes to make significant strides in implementing and attaining these initiatives in the near future.

SECTION 5.0

CONCLUSIONS

The CTC continued to grow rapidly in FY93. Access to CTC services more than doubled FY92 activity; that is, 30,765 accesses in FY93 compared to 15,006 accesses in FY92. This growth was primarily attributable to the tremendous increase in activity by the CTC BBS (91 percent increase) and especially the RBLC (503 percent increase).

Overall CTC HOTLINE activity increased by 22 percent but showed a significant change in clientele. Private sector, non-governmental agency calls now account for 62 percent of all HOTLINE calls. Non-governmental calls increased by 45 percent over FY92 levels, whereas calls from governmental agencies decreased by 4 percent compared to the same period. Since the passage of the 1990 CAAA, calls from government agencies have leveled off and remained fairly constant, but non-governmental calls have risen significantly.

Requests for CTC products continued to increase, but at a slower rate than in FY92. The increase in FY93 was 25 percent compared to a 47 percent increase in FY92. These figures do not include products downloaded from the CTC BBS. The popularity and use of the CTC BBS to obtain copies of CTC reports and products could account for the lower rate of increase in product requests. The use of the CTC BBS is being encouraged in order to reduce printing costs and resources required to handle and mail documents.

Federal SBAP activity is about to explode. Virtually all State SBAPs will become fully operational in FY94. Work has begun on an SBAP BBS that will provide an avenue for state and

local SBAPs and EPA to share materials developed to assist small businesses. The CTC/Federal SBAP will be hosting the first annual Small Business Technical Assistance Conference in January 1994 to initiate coordination and identify program needs and goals. The Leadership Grants Program is also being established to promote innovative approaches to assisting small businesses.

Dramatic increases in access and use of CTC services indicate that the CTC is successfully responding to the ever-increasing demand for air pollution control information. However, this level of activity and growth is proving to be a challenge.

APPENDIX A

CONTROL TECHNOLOGY CENTER PROJECTS STARTED IN FY93

93-1 Administrative Support

This project covers the maintenance of the CTC database and the library of CTC documents.

93-2 Quality Assurance

This project provided for on-going quality assurance support by the Air and Energy Engineering Laboratory (AEERL), Office of Research and Development (ORD) for CTC projects involving sampling and analysis.

93-3 Control of Emissions from Heat-Setting Carpet Yarn

Completed project; see Appendix B.

93-4 Argonne National Laboratories Development of Air Pollution Compliance Strategy Expert Systems

This joint project with ANL will develop the conceptual design of an expert system. The objective of the system is a decision-making mechanism that will evaluate the various elements of pollution control and define a facility control strategy. It will provide the user with complete information on technology, regulations, costs, and cross-media impacts.

93-5 HAP-PRO Carbon Absorber Module

Completed project; see Appendix B.

93-6 Spray Gun Cleaning

This project will develop a spray gun cleaning system emission testing protocol. This protocol will allow evaluation of the emissions generated from different spray gun cleaning system designs and cleaning procedures.

93-7 Quad Scrubber Polystyrene Removal

The CTC initiated a project to evaluate the QUAD CHEMTACT scrubber for controlling styrene emissions at Eljer Plumbingware in Wilson, NC. The pilot unit is advertised to remove styrene emissions by spraying fine droplets (mist) of diluted chemical solutions into the contaminated air stream that passes through a hollow cylindrical reaction chamber. The styrene is absorbed into the liquid, oxidized, and exhausted from the reaction chamber.

93-8 Hydrogen Fluoride/Hydrogen Chloride Leak Detection

This engineering assistance project, to identify a device and protocol to detect hydrogen fluoride (HF) and hydrogen chloride (HCl) leaks at chemical plants and establish emission factor, was requested by the Kentucky Department of Environmental Protection. The project was canceled because an appropriate sensing device, capable of detecting and accurately recording concentrations of HF or HCL in an acceptable range at a leak, proved to be unavailable.

93-9 Protocol for Defining Emissions from Paint and Coating Mixing Processes

This project will determine emissions from paint mixing vats by using theoretical equations and then validating the equations with a laboratory study involving a simulation of the process.

93-10 HF Emissions from Fertilizer Plant Impoundments

The primary purpose of this project was to determine the potential magnitude of hydrogen fluoride (HF) air emissions from scrubber cooling ponds and gypsum stack ponds in Florida. Secondary purposes were to gather process and emission data to evaluate potential control, if required, and enhanced monitoring options. This project was canceled because industry provided adequate new test data indicating the magnitude of HF emissions from the process.

93-11 Oil Suppressions of Particulate Matter (PM) at Grain Elevators

Completed project; see Appendix B.

93-12 HAP-PRO Incinerator Module

The incinerator module of the HAP-PRO Version 1.1 model will be examined and modified to assist the user in designing the needed unit (i.e., develop a user-friendly interface).

93-13 Beyond RACT for Existing CTG Categories

This project, requested by the Lake Michigan Air Directors, documents the extent existing state and local agency rules exceed emission control requirements for 29 VOC source categories covered by EPA CTG's.

APPENDIX B

PROJECTS COMPLETED IN FY93

90-5 "Emissions from Burning Cabinet Making Scraps," EPA-600/R-93-213, PB94-130408

The report gives results of an initial determination of differences in emissions when burning ordinary cordwood compared to kitchen cabinet making scraps. The tests were performed in an instrumented woodstove testing laboratory on a stove that simulated units observed in use at a kitchen cabinet manufacturer's facility.

90-7 "Characterization of Emissions from the Simulated Open Burning of Non-metallic Automobile Shredder Residue," EPA-600/R-93-044, PB93-172914

The report gives results of a study in which the open combustion of a nonmetallic waste product called "fluff" was simulated and the resulting emissions collected and characterized to gain insight into the types and quantities of these air pollutants. The reclamation process for recyclable ferrous and non-ferrous metals from scrap automobiles generates fluff consisting of a combination of glass, plastics, rubber, wood products, and electrical wiring. The waste product is often stockpiled or landfilled. A number of the stockpiles have caught fire, resulting in the emission of many air pollutants.

91-8 "Evaluation and Costing of NO_x Controls for Existing Utility Boilers in the NESCAUM Region," EPA-453/R-92-010, PB93-142016

This technical report discusses NO_x controls for utility boilers in the Northeast States for Coordinated Air Use Management (NESCAUM) region. The document discusses utility boiler population profile in the NESCAUM region, uncontrolled NO_x emissions and factors that affect NO_x emissions, available NO_x controls and their levels of performance, cost methodology for determining the costs of NO_x controls, costs and cost effectiveness of NO_x controls, and impacts of NO_x controls on combustible emissions.

91-11 "Characterization of Air Emissions from Simulated Open Combustion of Fiberglass Materials," EPA-600/R-93-239, PB94-136231

The report identifies and quantifies a broad range of pollutants that are discharged during small-scale, simulated, open combustion of fiberglass, and reports these emissions relative to the mass of fiberglass material combusted. Two types of fiberglass materials (representing the boating and building materials industries) were combusted in a controlled outbuilding designed to simulate open burning.

91-12 "A Guidebook for Explaining Environmental Regulations to Small Businesses," EPA-453/B-93-023, NTIS PB94-120334

This report was prepared by the EPA's Control Technology Center (CTC) in support of the Federal Small Business Assistance Program. This report presents guidelines on how to prepare materials that explain technical information in layman's terms, specifically focusing on producing enabling documents. Enabling documents explain new standards and rules to small business operators, conveying the information that they will need to know in order to comply with these standards and regulations. The document discusses small business' concerns and perceptions of government and regulations; writing for your audience; document content, format, and style; use of graphics and other communication "tools;" and presentation options.

92-2 "Automobile Assembly Plant Spray Booth Cleaning Emission Reduction Technology," EPA-453/R-94-029

Cleaning of automobile spray booths is a source of volatile organic compound (VOC) emissions. This study was conducted to obtain and evaluate information on: (1) the use of alternative cleaning practices within the industry that reduce or eliminate the use of organic cleaning solvents, (2) the current level of VOC emissions resulting from spray booth cleaning, and (3) the emissions reductions achieved by implementing alternative cleaning practices. Information from 15 automobile assembly plants operated by eight companies was reviewed, evaluated, and summarized. The conclusions from this study are: (1) there is significant potential for VOC emissions reductions; (2) emissions and, thus, potential reductions range from a few tons to nearly 1,000 tons/year per plant; (3) typical emissions reductions achieved by specific alternatives are less than 20 tons/year but can range up to nearly 200 tons/year; and (4) elimination of solvent spraying as a cleaning practice holds the greatest potential for reducing emissions.

92-9 "Use of Temporary Enclosure Test Procedure for Polystyrene Foam Blowing"

This project was requested by the U.S. EPA Region 3 to help support an on-going enforcement action with the Pennsylvania Department of Environmental Resources. The final report evaluated the potential of using EPA's proposed temporary total enclosure test procedure to determine emissions from polystyrene blowing processes. It also considered other potential options that could be used to determine emissions from these processes. Since the final report addressed emissions at a particular source and contained information claimed as confidential by the source, this report is not available for public distribution.

92-13 "Evaluation of the Polyad® FB Air Purification and Solvent Recovery Process for Styrene Removal," EPA-600/R-93-212, PB94-130317

The report gives results of a study evaluating the Polyad® fluidized-bed (FB) process for controlling styrene emissions at a representative fiberglass shower stall and bath tub manufacturing plant. The process was evaluated using a transportable unit supplied by Weatherly, Inc., of Atlanta, GA, responsible for domestic marketing and sale of the process. The evaluation was carried out November 3-5, 1992, at the Eljer Plumbingware facility in Wilson, NC. The Polyad® FB process uses beds of macroporous polymer particles as a regenerable adsorbent to capture styrene emissions. The source tested was a gel coat spray booth exhaust. A side stream from the source was routed to the pilot unit, and inlet and outlet styrene concentrations were measured using Total Hydrocarbon Analyzers (THCs) and carbon adsorption tubes (EPA Method 18). The process demonstrated the capabilities of removing from 94 to 99% of the styrene emissions.

92-15 "Review of HWVP BARCT Determination of the Air Emissions and Defense Waste Branch, Radiation Protection Division, Washington Department of Health," P.O. No. 2D3029NASA; GP-R-71193010

This report documents assistance provided to the Washington Department of Health in evaluating the Hanford Waste Vitrification Plant (HWVP) Best Available Radionuclide Control Technology (BARCT) demonstration and provides technical comments on the proposed control technology. Because this effort deals with specific issues in the HWVP BARCT demonstration and because radioactive waste vitrification is not a topic of general interest, the CTC decided not to publish this document; however, the CTC may make copies available on an as needed basis.

92-16 "Air Emissions and Control Technology for Leather Tanning and Finishing Operations," EPA-453/R-93-025, NTIS PB94-120219

This document was developed in response to an interest expressed by the States and industries. The information has been obtained from available literature, information provided through Federal, State, and local air pollution control agencies, and information obtained from the leather tanning and finishing measures to control volatile organic compound (VOC) emissions from leather tanning and finishing facilities. It also provides a general description of the industry; describes the key processes employed in manufacturing leather; characterizes the emissions of VOCs and HAPs from the industry; describes applicable emission reduction technologies; and finally, discusses current State and local air pollution regulations affecting the industry.

92-17 "Evaluation of Mercury Emissions from Fluorescent Lamp Crushing," EPA-453/R-94-018

The CTC assisted the Florida DNR in evaluating potential mercury emissions and potential control techniques for a process that crushes/recycles fluorescent lighting tubes. The project involved reviewing the sources permit application, information gathering, an evaluation of the emission potential of this source, and the identification and evaluation of potential mercury emission control techniques.

93-3 "Initial Assessment of Emissions from Heat Setting Carpet Yarn," EPA-600/R-93-161, PB93-229862

The report gives initial results of a project to determine the nature of emissions resulting from the heat setting of carpet yarn and to identify possible control options. To collect the necessary technical information, two manufacturing facilities were visited: World Carpets in Dalton, GA (a yarn and carpet manufacturing facility) and Diamond Mills in Rome, GA (a yarn spinning facility). Information on the yarn spinning and heat setting operations was gathered, the carpet manufacturing process was viewed, and (with input from the plant technical staff) opportunities were identified for preventing and/or controlling the heat setting emissions.

93-5 "HAP-PRO Carbon Absorber Module Improvements"

The carbon absorber module has been rewritten to include an "expert" system to assist and check the solutions provided. It is available on the CTC BBS.

93-11 "Oil Suppression of PM at Grain Elevators"

At the request of and in cooperation with the Nebraska DEC, the CTC conducted a project to evaluate oil suppression to control particulate emissions from grain elevators; however, Nebraska was not able to coordinate testing of this technology needed to verify its effectiveness. Although the final report cited information that suggested that oil suppression was a practical and cost-effective technology, this information was inconclusive. The CTC is withholding the release of this report while alternatives for conducting the needed tests are being considered.

APPENDIX C

CTC REPORTS AND SOFTWARE

AIR TOXICS

3 ( ) "Evaluation of Potential Emissions of **TDI** from Two Facilities," EPA-450/3-87-022, PB88-120845

5s ( ) "**HAP-PRO** User's Manual, Version 1.0," EPA-600/8-91-211a, EPA-600/8-91-211b (software); PB92-501212 (manual and software), PB92-135904 (manual only)

9 ( ) "Handbook: Control Technologies for Hazardous Air Pollutants" (**HAP Manual**), EPA-625/6-91-014, PB92-141373

13 ( ) "Emission Factors for **Iron and Steel Sources**--Criteria and Toxic Pollutants," EPA-600/2-90-024, PB90-242314

24 ( ) "Source Characterization and Control Technology Assessment of **MeCl** Emissions from Eastman Kodak Company," EPA-600/2-89-043, PB89-224471

36 ( ) "Emission Factors for **Iron Foundries**--Criteria and Toxic Pollutants," EPA-600/2-90-044, PB90-266743

47 ( ) "**Benzene** Enabling Document for Standards on Benzene Transfer and Waste Operations," EPA-450/3-90-009, PB91-161737

52 ( ) "Determination of **Perchloroethylene** Content of Waste Materials from Filters and Still Bottoms--Conditional Test Method" (also on EMTIC BBS)

53 ( ) "Evaluation of VOC Emissions from Heated Roofing **Asphalt**," EPA-600/2-91-061, PB92-115286

57 ( ) "**Carbon Disulfide** Emission Control Options," EPA-450/3-91-023, PB93-124667

59 ( ) **High Risk Point Source** Documents--List

60 ( ) "Controlling **Odorous Emissions** from Iron Foundries," EPA-600/R-92-058, PB92-166925

67 ( ) "Air Emissions from the Treatment of **Soils Contaminated with Petroleum Fuels and Other Substances**," EPA-600/R-92-124, PB92-212976

94 ( ) "Analysis of Atmospheric Deposition Samples from Easton, PA," EPA-600/R-93-057, PB93-181600

95 ( ) "Alternative Control Technology Document - Carbon Reactivation Processes," EPA-453/R-92-019, PB93-180826

100 ( ) "Air Emissions and Control Technology for **Leather Tanning and Finishing** Operations," EPA-453/R-93-025, PB94-120219

COMBUSTION

4 ( ) "Guidelines for **Stack Testing** at Municipal Waste Combustion Facilities," EPA-600/8-88-085, PB88-234893

6 ( ) "Chemical and Biological Characterization of Products of Incomplete Combustion from the Simulated Field Burning of **Agricultural Plastic**," EPA-600/J-89-025, PB90-100835

14 ( ) "Characterization of Emissions from the Simulated Open Burning of **Scrap Tires**," EPA-600/2-89-054, PB90-126004

19 ( ) "**Operation and Maintenance of Hospital Waste** Incinerators," EPA-450/3-89-002, PB89-190615

20 ( ) "Hospital Incinerator Operator Training Course: Volume I: **Student Handbook**," EPA-450/3-89-003, PB89-189872; "Hospital Incinerator Operator Training Course: Volume II: **Presentation Slides**," EPA-450/3-89-004, PB89-189880

43 ( ) "Source Book: **NO_x Control** Technology Data," EPA-600/2-91-029, PB91-217364

56 ( ) "Hospital Incinerator Operator Training Course: Volume III: **Instructors Manual**," EPA-450/3-89-010

50 ( ) "**Radioactive and Mixed Waste Incineration:** Background Information Document, Volume I: Technology," EPA-520/1-91-010-1, PB91-222505; "Radioactive and Mixed Waste Incineration: Background Information Document, Volume II: Risk of Radiation Exposure," EPA-520/1-91-010-2, PB91-222513

58 ( ) "**Burning Tires for Fuel** and Tire Pyrolysis: Air Implications," EPA-450/3-91-024, PB92-145358

66 ( ) "Characterization of Emissions from the Simulated Open Burning of Non-Metallic Automobile Shredder Residue," EPA-600/R-93-044, PB93-172914

76 ( ) "Mutagenicity of Emissions from the Simulated **Open Burning of Scrap Rubber Tires**," EPA-600/R-92-127, PB92-217009

78 ( ) "Evaluation and Costing of NO_x Controls for Existing Utility Boilers in the NESCAUM Region," EPA-453/R-92-010, PB93-142016

102 ( ) "Emissions from Burning Cabinet Making Scraps," EPA-600/R-93-213, PB94-130408

105 ( ) "Characterization of Air Emissions from Simulated Open Combustion of Fiberglass Materials," EPA-600/R-93-239, PB94-136231

GLOBAL GREENHOUSE GASES TECHNOLOGY TRANSFER CENTER

80 ( ) "Development of an Empirical Model of Methane Emissions from Landfills," EPA-600/R-92-037, PB92-152875

81 ( ) "Approach for Estimating Global Landfill Methane Emissions," EPA-600/7-91-002, PB91-149534

82 ( ) "Landfill Gas Energy Utilization: Technology Options and Case Studies," EPA-600/R-92-116, PB92-203116

83 ( ) "Analysis of Factors Affecting Methane Gas Recovery from Six Landfills," EPA-600/2-91-055, PB92-101351

84 ( ) "List of Papers and Reports for EPA's Research Program on Air Emissions from Landfills and Other Waste Management Processes"

85 ( ) "A Comparison of Methods for Estimating Global Methane Emissions from Landfills," EPA-600/J-93-250, PB93-212561

86 ( ) "Landfill Gas Recovery/Utilization - Options and Economics," EPA-600/A-92-170, PB92-217066

87 ( ) "Landfill Gas Utilization - Options, Benefits, and Barriers," EPA-600/A-92-129, PB92-195916

88 ( ) "Emissions and Mitigation at Landfills and Other Waste Management Facilities"

RACT/BACT/LAER CLEARINGHOUSE

79 ( ) "**RACT/BACT/LAER**: A Compilation of Control Technology Determinations, **Second Supplement** to 1990 Edition," EPA-453/R-92-002, PB92-235647

103 ( ) "**RACT/BACT/LAER** Clearinghouse Information System (BLIS) User's Manual," EPA-453/B-93-049, PB94-114402

104 ( ) "**RACT/BACT/LAER**: A Compilation of Control Technology Determinations," Volume 1-**Third Supplement** to the 1990 Edition," EPA-453/R-93-037a, PB94-111234
"**RACT/BACT/LAER**: A Compilation of Control Technology Determinations, "Volume 2-**Third Supplement** to the 1990 Edition," EPA-453/R-93-037b, PB94-111572

VOC - OTHER SOURCE CATEGORIES

11 ( ) "Assessment of VOC Emissions from **Fiberglass** Boat Manufacturing," EPA-600/2-90-019, PB90-216532

35 ( ) "**Soil Vapor Extraction**--VOC Control Technology Assessment," EPA-450/4-89-017, PB90-216995

39 ( ) "Control of VOC Emissions from **Polystyrene Foam** Manufacturing," EPA-450/3-90-020, PB91-102111

41s ( ) "**Landfill** Air Emissions Estimation Model, Version 1.1," EPA-600/8-90-085a, PB91-167718, manual; EPA-600/8-90-085b, PB91-507541, software and manual

45 ( ) "Enabling Document for NSPS for **Air Oxidation Processes and Distillation** Operations in the SOCMI," EPA-450/3-90-018, PB92-161967

46 ( ) "**Polymer** Manufacturing Industry Enabling Document," EPA-450/3-90-019, PB91-161745

61 ( ) "Assessment of VOC Emissions and Their Control from **Baker's Yeast** Manufacturing Facilities," EPA-450/3-91-027, PB92-145408

65 ( ) "The Measurement Solution: Using a Temporary Total Enclosure for **Capture Efficiency** Testing," EPA-450/4-91-020a, PB92-190271

68 ( ) "Identification and Characterization of Missing or Unaccounted for Area Source Categories," EPA-600-R-92-006, PB92-139377

70 ( ) "Control of VOC Emissions from **Ink and Paint** Manufacturing Processes," EPA-450/3-92-013, PB92-190230

77 ( ) "Control of VOC Emissions from **Nonferrous Metal Rolling** Processes," EPA-453/R-92-001, PB92-227677

93 ( ) "Alternative Control Technology Document for **Bakery Oven** Emissions," EPA-453/R-92-017, PB93-157618

101 ( ) "Initial Assessment of Emissions from Heat Setting Carpet Yarn," EPA-600/R-93-161, PB93-229862

VOC - SURFACE COATING/GRAPHIC ARTS

15 ( ) "**Ultrasonic Cleaning** of Rotogravure Cylinders," EPA-450/3-89-024, PB89-216360

16 ( ) "Reduction of Volatile Organic Emissions from **Automobile Refinishing**," EPA-450/3-88-009, PB89-148282

18 ( ) "Reduction of Volatile Organic Compound Emissions from the Application of **Traffic Markings**," EPA-450/3-88-007, PB89-148274

25 ( ) "Evaluation of Emission Control Options at Leeds Architectural Products" (**Spray Booth** Controls), EPA-450/3-89-001, PB90-120106

30 ( ) "**Powder Coatings** Technology Update," EPA-450/3-89-033, PB90-127341

38 ( ) "**Radiation** Curable Coatings," EPA-600/2-91-035, PB91-219550

40 ( ) "Best Demonstrated Control Technology for **Graphic Arts**," EPA-450/3-91-008, PB91-168427

75 ( ) "Alternate VOC Control Technique Options for **Small Rotogravure and Flexography** Facilities," EPA-600/R-92-201, PB93-122307

WASTEWATER/GROUNDWATER TREATMENT

1 ( ) "Air Stripping of **Contaminated Water** Sources--Air Emissions and Controls," EPA-450/3-87-017, PB88-106166

12s( ) "**Surface Impoundment** Modeling Systems (SIMS) Version 2.0 Users' Manual," EPA-450/4-90-019a, PB91-156711 and "Background Document for Surface Impoundment Modeling System (SIMS) Version 2.0," EPA-450/4-90-019b, PB91-156729, PB 91-506998 (software, Manual and Background),

26 ( ) "**ASPEN** Expert System for Steam Stripping Calculations: Users' Manual," EPA-450/3-90-003

28 ( ) "Control Technology Assessment Report for Air Emissions from **Wastewater Treatment Operations**," EPA-450/3-89-008, PB89-207922

31 ( ) "**Industrial Wastewater** VOC Emissions--Background for BACT/LAER," EPA-450/3-90-004, PB90-194754

32 ( ) "Comparisons of **Air Stripper Simulations** and Field Performance Data," EPA/450/1-90-002, PB90-207317

33 ( ) "Air Stripper **Design Manual**, Air/Superfund National Technical Guidance," EPA-450/1-90-003, PB91-125997

WOOD PRODUCTS

2 ( ) "Evaluation of Emission **Sources at a Waferboard Manufacturing Plant**," EPA-450/3-87-021, PB88-107735

8 ( ) "Evaluation of Emission Factors for **Formaldehyde** from Certain Wood Processing Operations," EPA-450/3-87-023, PB88-118492

22 ( ) "Evaluation of Emission Sources from **Creosote** Wood Treatment Operations," EPA-450/3-89-028, PB89-224729

27 ( ) "Evaluation of Emission **Control Devices at Waferboard Plants**," EPA-450/3-90-002, PB90-131442

51 ( ) "Evaluation of Air Toxic Emissions at **Minnesota's Reconstituted Panelboard** Plants," EPA-450/3-91-009

MISCELLANEOUS

29 ( ) "Affordability Analysis of **Lead Emission** Controls for a Smelter-Refinery," EPA/450-3-90-001, PB90-120122

37 ( ) "Test Report: Method Development & Evaluation of Draft Protocol for **Measurement of Condensible Particulate**," EPA-450/4-90-012, PB90-240805

42 ( ) "Assessment of the **Controllability of Condensible** Emissions," EPA-600/8-90-075, PB91-125807

55 ( ) Control Technology Center Program Operating **Manual**

63 ( ) "**OAQPS Cost Control Manual (Fourth Edition)**," EPA-450/3-90-006, PB90-169954

64 ( ) "OAQPS Cost Control Manual--**Supplement 1**," EPA-450/3-90-006a, PB92-137181

69 ( ) "**Managing Chemicals Safely**, Putting It All Together," EPA-510-P-92-001

71 ( ) "The Clean Air Act of 1990: A Guide for **Small Businesses**," EPA 450/K-92-001

74 ( ) "**Electrostatic Precipitator** V-I and Performance Model: User's Manual," EPA-600/R-92-104a, PB92-169614

90 ( ) "OAQPS Cost Control Manual--**Supplement 2**," EPA/450/3-90-006b, PB93-138147

92 ( ) "A Guidebook for Explaining Environmental Regulations to **Small Businesses**," EPA 453/B-93-023, PB94-120334

97 ( ) SAGE-Solvent Alternative Guide

98 ( ) CTC NEWS - most recent issue

99 ( ) "Evaluation of the **Polyad®** FB Air Purification & Solvent Recovery Process for **Styrene Removal**," EPA-600/R-93-212, PB94-130317

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16. ABSTRACT

The report summarizes the Fiscal Year 1993 activities and accomplishments of EPA's Control Technology Center (CTC), located in Research Triangle Park, North Carolina, and sponsored by EPA's Air and Energy Engineering Research Laboratory and the Office of Air Quality Planning and Standards. CTC services were accessed over 30,000 times during the year. This includes HOTLINE CALLS, access to computer bulletin boards and databases, and requests for CTC products. Overall use of CTC services increased 102% over FY92. The report discusses program activities and outreach efforts during FY93 to provide services to its growing client list. It also examines strategies to maintain the CTC's continued success in providing technical assistance to both governmental air pollution control agencies and the private sector.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Pollution Control	13B
Inforamtion Centers	Stationary Sources	05B
Data	Technical Assistance	14G
Technical Reports	Data Bases	
Computer Programs	Bulletin Boards (Electronic)	09B

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