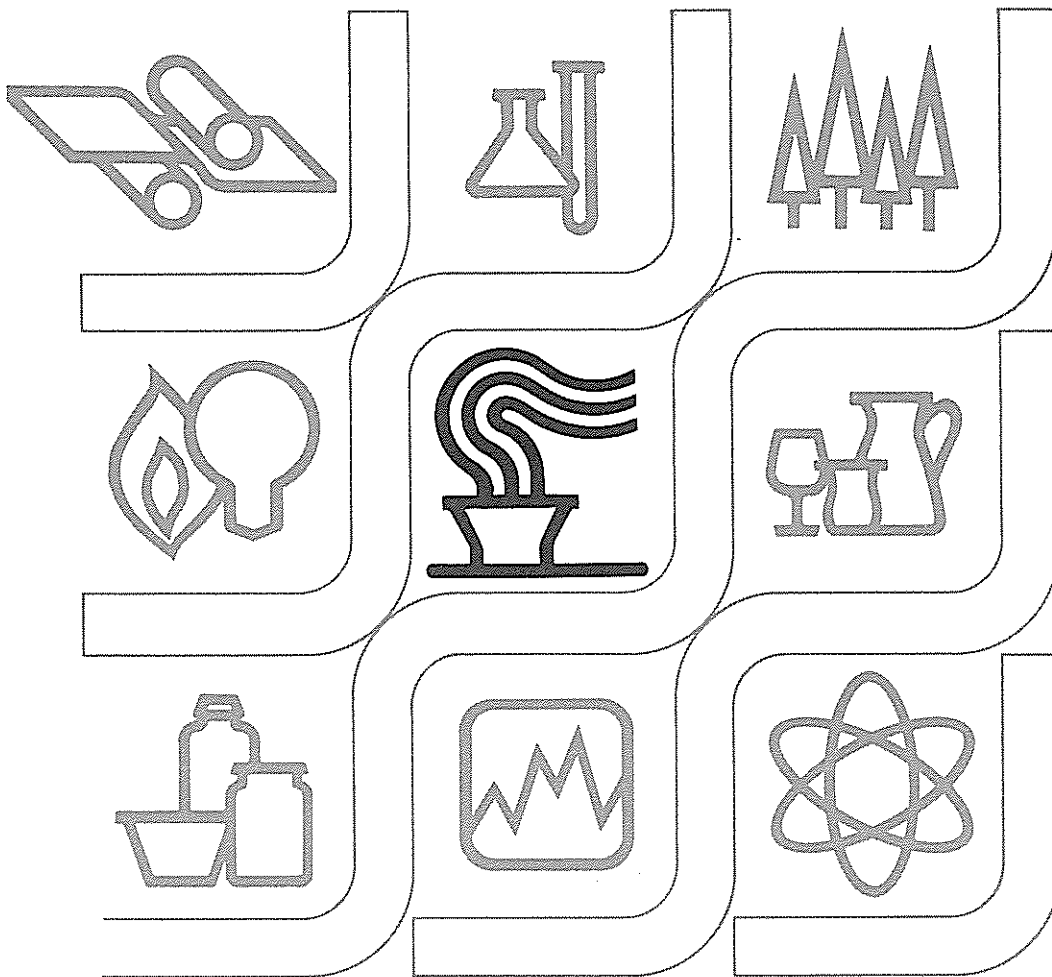

Current Industrial Reports

U. S. Department of Commerce

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Pollution Abatement Costs and Expenditures, 1981 MA-200(81)-1



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Issued January 1983

Pollution Abatement Costs and Expenditures, 1981

MA-200(81)-1



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Introduction

SUMMARY OF SURVEY RESULTS

Pollution abatement capital expenditures by manufacturing establishments with 20 employees or more amounted to \$3,485 million in 1981. Of this total, \$2,194 million was for air pollution abatement, \$1,028 million was for water pollution, and \$263 million was for solid waste pollution abatement. In addition, operating costs related to pollution abatement activities (including payments to governmental units) totaled \$9,110 million in 1981 of which \$3,698 million was spent for air pollution, \$3,554 million for water pollution, and \$1,856 million for solid waste pollution. These totals for 1981 compare with \$3,503 million in capital expenditures and \$8,142 million in operating costs for 1980. Although the overall decline in total pollution abatement capital expenditures was 1 percent, air and solid waste capital expenditures both registered a 4 percent increase. Water pollution capital expenditures decreased \$119 million or 11 percent in 1981. All components of pollution abatement operating costs (air, water, and solid waste) registered increases as in the previous year. Total operating costs increased \$968 million or 12 percent.

Data in this publication are collected in the annual census report, Survey on Pollution Abatement Costs and Expenditures, (Form MA-200). See appendix A for a reproduction of the report form and instructions.

POLLUTION ABATEMENT CAPITAL EXPENDITURES

Approximately 68 percent of the \$3,485 million new capital expenditures for pollution abatement were made by establishments classified in four major industry groups. In order of value, they include Chemicals and Allied Products (major group 28), Primary Metal Industries (major group 33), Petroleum and Coal Products (major group 29) and Paper and Allied Products (major group 26). These same industries also accounted for the largest amount of pollution abatement capital expenditures in previous years. Chart A illustrates this concentration, on a historical basis, for air, water, and solid waste capital expenditures by major industry group.

In 1981, the States of Texas, Pennsylvania, California, and Michigan accounted for about 33 percent of the total new pollution abatement capital expenditures. Chart B illustrates the pollution capital expenditures by State. Chart C shows the total capital expenditures for pollution abatement for the 10 largest standard metropolitan statistical areas (SMSA) ranked by number of manufacturing employees in 1978. (Appendix B contains the definitions for each SMSA.)

Within tables 2A, 2B, and 2C both air and water pollution abatement capital expenditures are separated on the basis of abatement technique, distinguishing between plant and equipment designed to abate pollutants through end-of-line (EOL) techniques and those designed to reduce or eliminate the generation of pollutants through changes-in-production processes (CIPP). These data show that the major portion of pollution abatement capital expenditures is spent on EOL techniques.

Separate expenditure data are also shown in these tables for major types of air pollutants to be abated such as particulates; sulfur oxides; nitrogen oxides, hydrocarbons, and carbon monoxides; and heavy metals, radioactive and toxic substances, and other. These data show that the largest share of capital expenditures for air pollution abatement in 1981, as in earlier years, related to particulates. (Where expenditures occur for techniques that abate both sulfur oxides and particulates, the respondent was instructed to include all such expenditures with sulfur oxides.)

Pollution abatement capital expenditures reported in this survey exclude expenditures for the reduction of noise pollution and the improvement of aesthetics or employees comfort or safety. Also excluded are purchase of motor vehicles with pollution abatement devices and expenditures to assure an adequate water supply for production. Manufacturers of pollution abatement equipment of materials, such as electrostatic precipitators or desulfurized fuels, to be sold to others for pollution abatement purposes were instructed to exclude expenses associated with the development and production of these products.

POLLUTION ABATEMENT OPERATING COSTS

Operating costs related to pollution abatement totaled \$9,110 million in 1981. The operating costs (excluding payments to governmental units) totaled \$8,423 million for plants with 20 or more employees and consisted of \$1,487 million for depreciation, \$1,796 million for labor, \$2,568 million for materials and supplies, and \$2,569 million for services, equipment leasing, and other costs. Chart D shows the relationship between capital expenditures and operating costs by form of pollutant being abated for 1981. Chart E shows pollution abatement operating costs by type of expense for 1981.

Certain industries typically rely more on governmental units for pollution abatement activities rather than utilizing capital investments and operations at their own plant. Those industries with the largest amounts are Food and Kindred Products

CHART A.
Capital Expenditures by Manufacturers for Pollution Abatement-
By Form of Abatement and Major Industry Group: 1977 to 1981

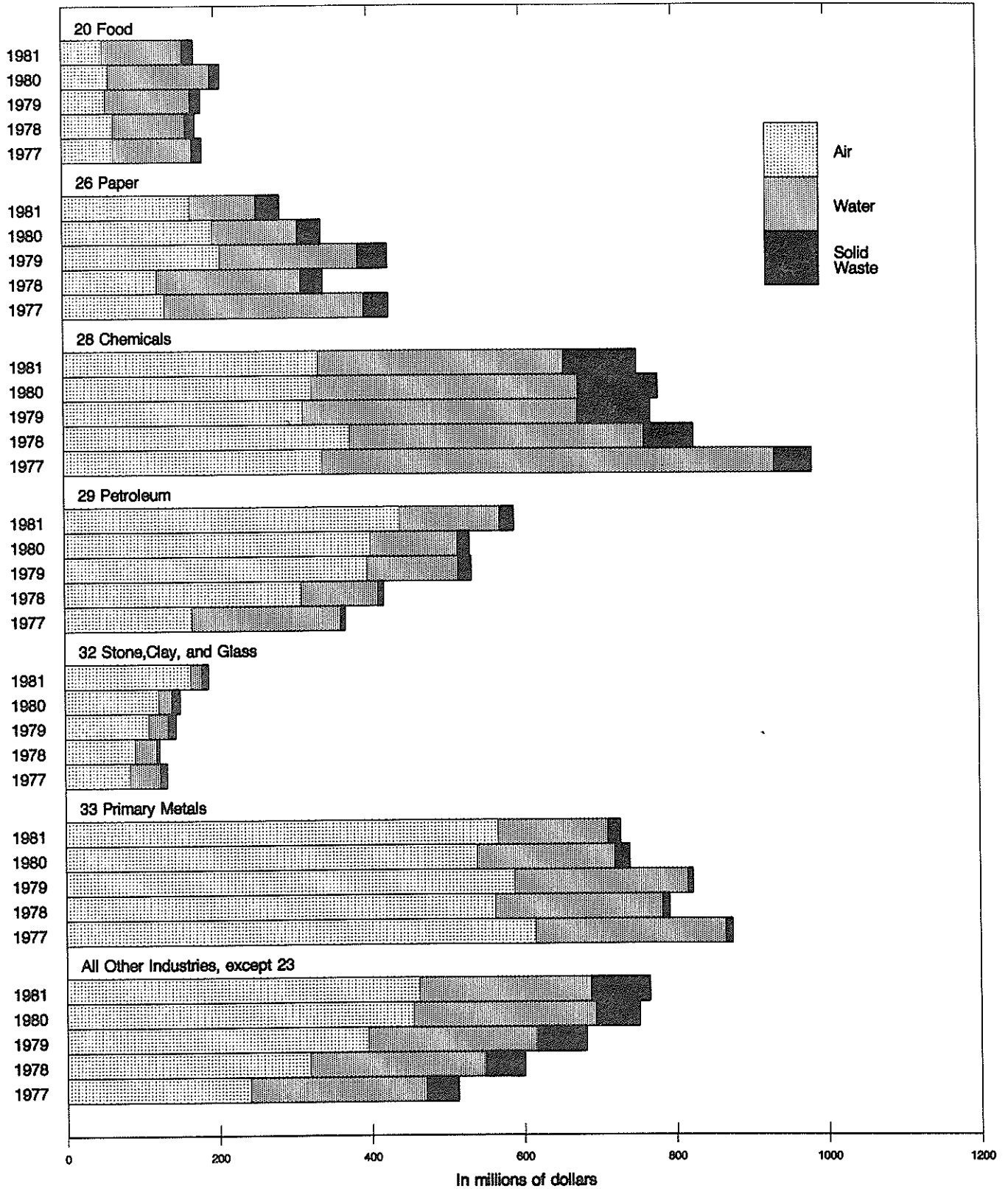


CHART B.
Capital Expenditures by Manufacturers for Pollution Abatement- By State: 1981

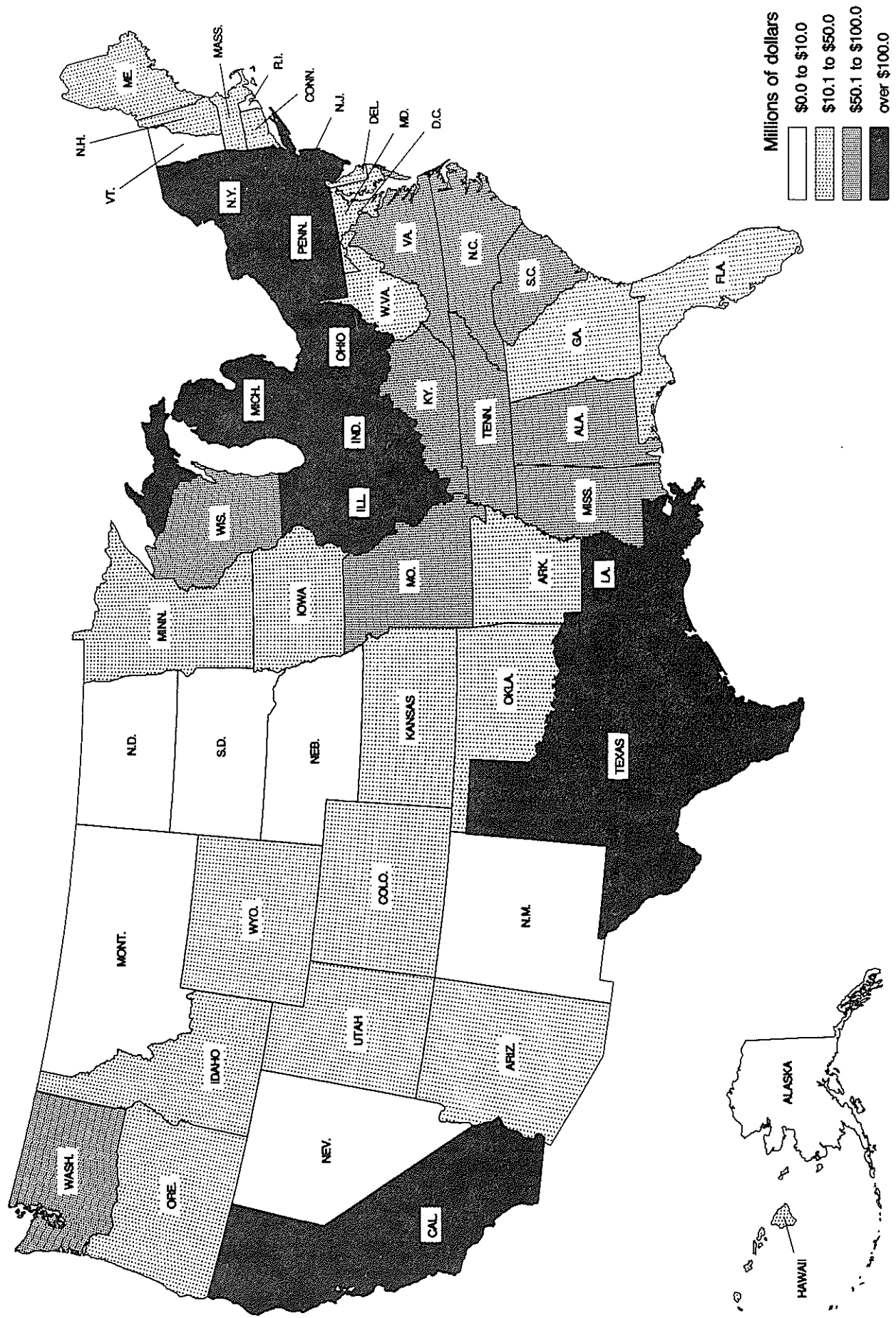
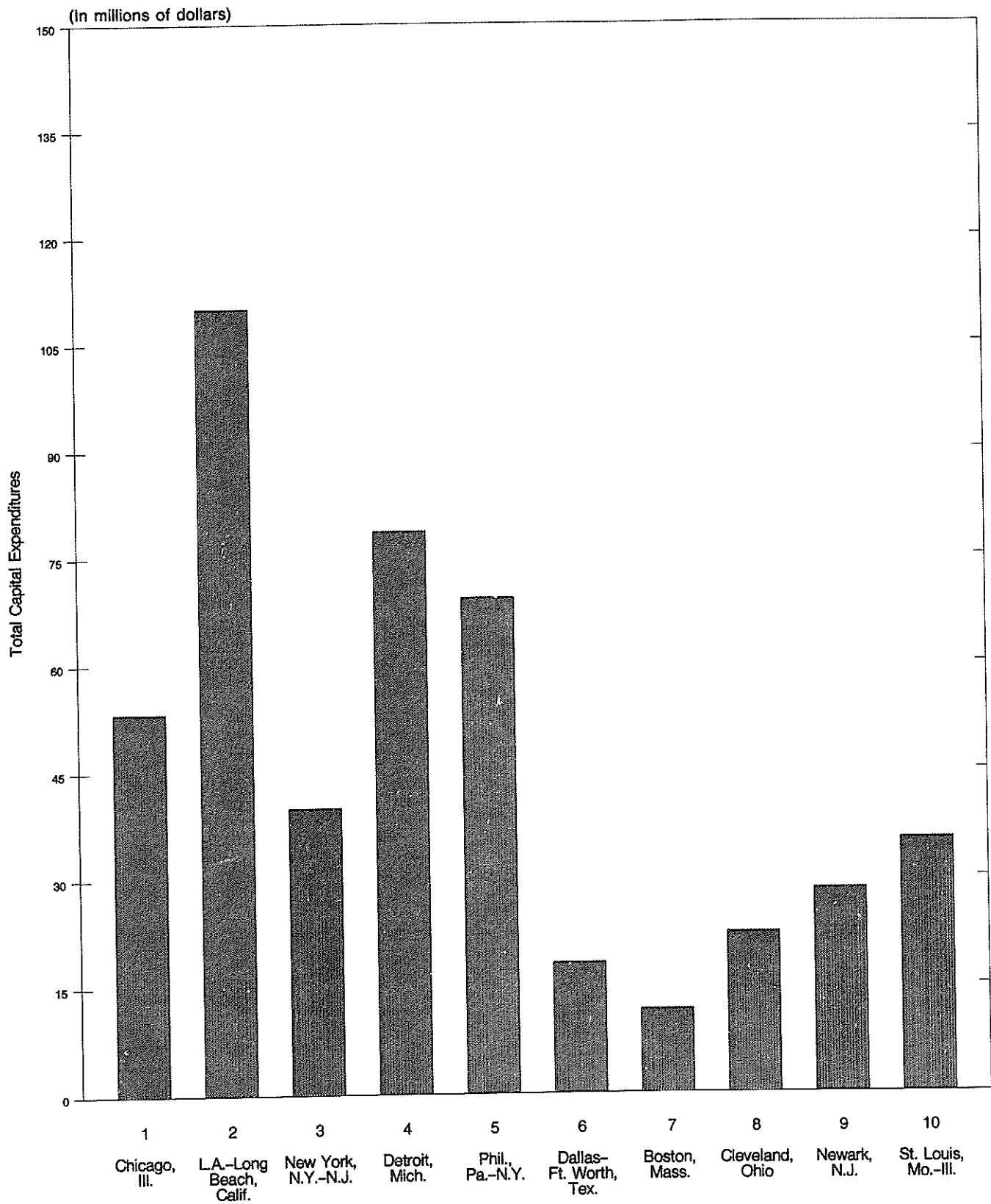


CHART C.

**Capital Expenditures by Manufacturers for Pollution Abatement-
By Standard Metropolitan Statistical Areas With the Largest
Manufacturing Employment, Ranked by Number of Employees: 1981**

Standard Metropolitan Statistical Area (1978 Ranking)

CHART D.
Capital Expenditures and Annual Operating Costs by Manufacturers for Pollution Abatement-
By Form of Abatement and Major Industry Group: 1981

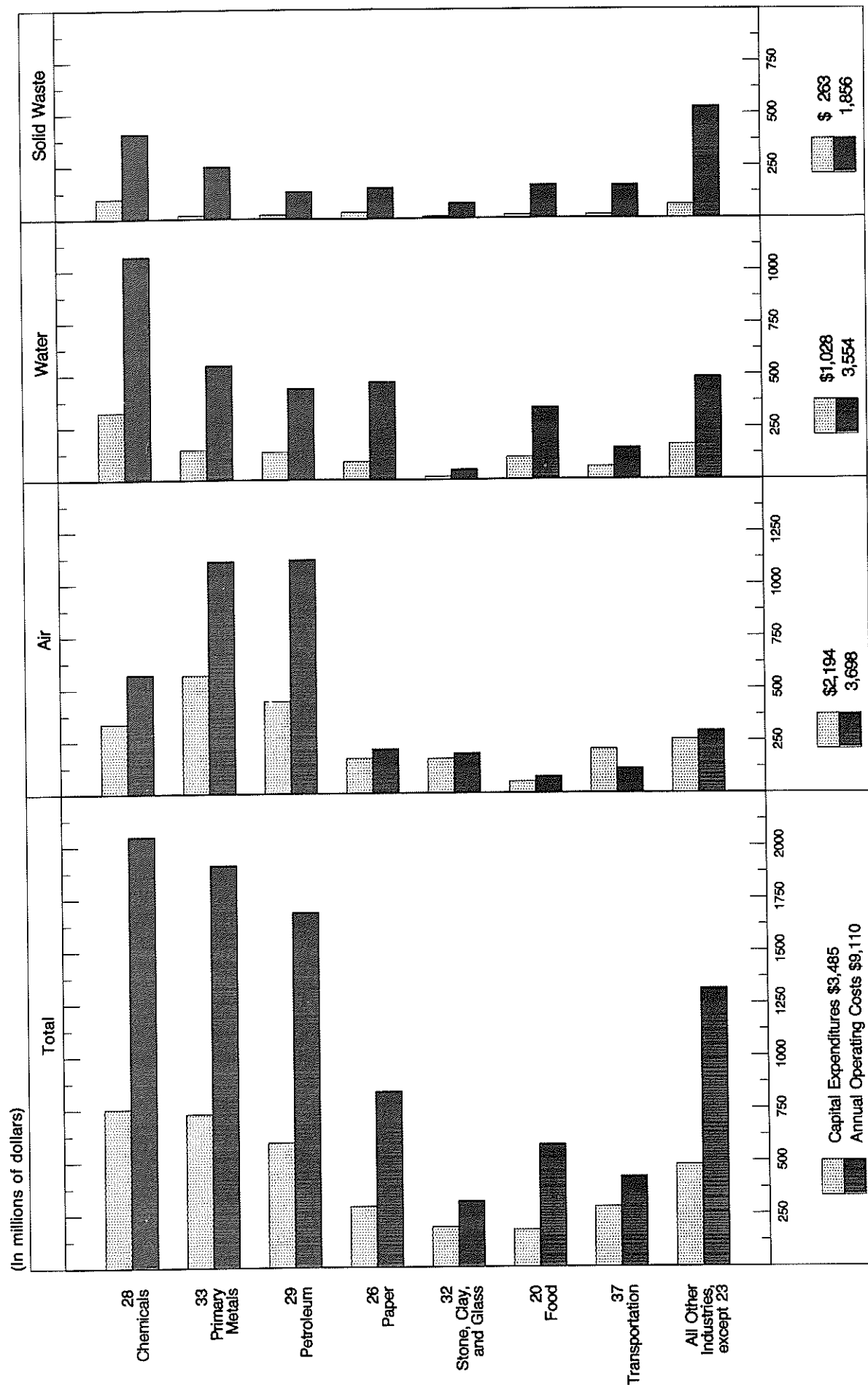
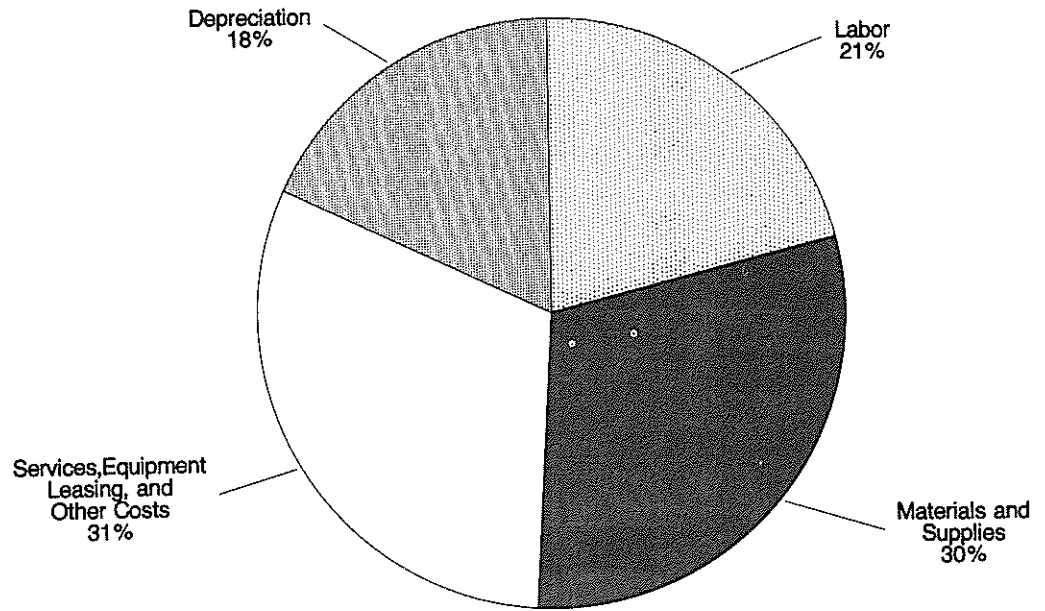


CHART E.

**Operating Costs by Manufacturers
for Pollution Abatement-
By Type of Expense for
All Industries: 1981**



Note: Total operating costs, \$8,422.6 million
(excluding payments to governmental units)

(major group 20), Chemicals and Allied Products (major group 28), and Paper and Allied Products (major group 26). (For another Census Bureau report on the pollution abatement activities in the public sector, see *Environmental Quality Control, Government Finances: Fiscal Year 1980.*)

OTHER INFORMATION IN TABLES

In addition to the data on capital expenditures and operating costs, there are a number of tables which present other information of importance. Tables 4A, 4B, and 4C contain information on the costs recovered by manufacturers either by reuse in production or by sale. Tables 5A, 5B, and 5C present data on quantities of air, water, and solid waste pollutants removed in 1981.

For an explanation of the terms used in this report, see appendix A, which is a reproduction of the report form and instructions.

ABBREVIATIONS

The following abbreviations and symbols appear frequently in the tables:

*	Less than \$0.5 million.
(NA)	Not available.
r	Revised from previously published figures.
—	Represents zero.
(D)	Withheld to avoid disclosing operations of individual companies.
p	Preliminary.
(S)	Data suppressed because did not meet publication standards. This includes cells where PACE or GAC is less than \$5.0 million or the standard error is 20 or greater. See text.
(X)	Not applicable.
(Z)	Represents less than \$50,000.
TNCE	Total New Capital Expenditures.
BEA	Bureau of Economic Analysis
PACE	Pollution Abatement Capital Expenditures
GAC	Pollution Abatement Gross Annual Costs

DESCRIPTION OF THE SURVEY SAMPLE

The statistics presented in this report are estimates compiled from a survey of a probability sample of about 20,000 manufacturing establishments with 20 employees or more selected as a subsample of the 1977 Annual Survey of Manufactures (ASM). The 1977 ASM was in turn, a probability sample of about 70,000 establishments selected from a total of about 312,000 establishments. The ASM sample was selected from the 1972 Census of Manufactures lists supplemented by Social Security Administration lists of new manufactures that opened after 1972. At that time, the ASM sample was defined on a company rather than an establishment basis; that is, selected companies were required to report for all of their plants in the ASM so that new establishments of existing companies were included in the ASM sample.

The following specific differences between the 1977 ASM sample and the pollution abatement expenditures (PAE) sample are worthy of note:

1. Establishments in major group 23, Apparel and Other Textile Products, are excluded from the PAE survey. These establishments operate primarily in rented quarters where the abatement of pollution (probably most of which is solid waste) is generally arranged by the landlord. We assume that capital expenditures for pollution abatement in such establishments are minimal.
2. The PAE sample was selected as an establishment sample rather than a company sample; that is, a company included in the ASM sample with 10 manufacturing plants might be included in the PAE survey for only 4 of the plants.
3. The 1977 to 1981 PAE sample does not include any establishments with fewer than 20 employees. This is a departure from previous PAE (and the present ASM) panels which included establishments of all sizes. Previous PAE surveys had indicated that establishments with fewer than 20 employees contributed only about 2 percent to the pollution estimates while constituting more than 10 percent of the sample size. To reduce the reporting burden for small establishments, plants with fewer than 20 employees were eliminated from the 1977 sampling frame. In previous reports, data for establishments with fewer than 20 employees had been estimated and displayed in tables 1A and 1B. This series has been discontinued and will not appear in future reports.

The probabilities of selection assigned to establishments in the sampling frame (all in-scope ASM establishments) were determined so that the final probabilities of selection of the PAE sample were proportional to the establishments' value of shipments in the 1976 ASM. Out of a total fixed sample size of 20,000 plants, all establishments with a value of shipments in the 1976 ASM of \$30.1 million or more were included in the PAE survey. Establishments in the 1977 ASM sample with less than \$30.1 million value of shipments in 1976 were assigned probabilities of selection ranging from 0.99 to 0.005.

The smaller establishments were arrayed by industry and selected systematically to assure a proportionate representation from each major industry group. Establishments chosen for the PAE survey were assigned weights equal to the reciprocal of the establishment's probability of selection. Individual establishment data were inflated by their sampling weights to develop industry, State, or SMSA estimates.

LIMITATIONS OF DATA

Conceptual Problems

Changes-in-production processes (CIPP) capital expenditures. The survey respondent is instructed to report "the difference between expenditures on new plant and equipment that your establishment actually made for changes-in-production processes

and what your establishment would have spent for comparable plant and equipment without pollution abatement features." Telephone conversations and interviews with survey respondents indicate that estimating such an incremental cost difference is very difficult in many instances. The net effect of this reporting problem is not known and hence, care should be exercised by the data user in interpreting the CIPP data.

Cost recovered through abatement activities. This question attempts to measure how much of pollution abatement costs are recovered through reuse or sale. Part of the instructions state: "Exclude the value of salable items such as scrap if the sale represents essentially an economic rather than pollution decision." This qualification makes it imperative that the data preparer be aware of the original motivation of the decision in order to adequately complete the form. The Bureau of the Census believes this is not always known.

Operating cost for pollution abatement. The survey respondent is asked to provide separately depreciation, labor, materials and supplies, services and equipment leasing, and other costs. In many cases, interviews with survey respondents have revealed that with the exception of depreciation, book records are not kept for each category and must be estimated from other information.

Sampling Variation

The particular sample selected for this survey is one of a large number of similar probability samples of the same size that could have been selected, by chance, using the same sample design. Each of the possible samples would yield somewhat different sets of results. The sampling errors—the differences between the estimate obtained and the results theoretically obtainable from a comparable complete canvass of the same target universe—are unknown. Guides to the potential size of the sampling errors, however, are provided by the estimated relative standard errors of the estimates. These are shown for a few key data items in the report. On the average, relative standard errors tend to be somewhat higher for detailed figures than for larger aggregates.

In conjunction with its associated estimates, the relative standard error (computed as the estimated standard error of estimate divided by the value of the estimate itself) may be used to define confidence intervals, ranges which could be expected to include comparable complete coverage values for specified percentages of all possible samples. The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all samples.
2. From 2 standard errors below to 2 standard errors above the derived estimate for about 19 out of 20 of all possible samples.
3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable complete coverage results would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates shown would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, if an estimated total is shown as \$20.0 million with an associated relative standard error of 2 percent, the standard error is \$0.4 million (2 percent of \$20.0 million). Then there is approximately 67 percent confidence that the interval \$19.6 to \$20.4 million includes the complete coverage total, about 95 percent confidence that the interval \$19.2 to \$20.8 million includes the complete coverage total, and almost certain confidence that the interval \$18.8 to \$21.2 million includes the complete coverage total.

Processing Errors

In addition to the sampling errors, the estimates are subject to various response and operational errors: errors of collection, reporting, transcription, etc. These operational errors would also occur if a complete canvass were to be conducted under the same conditions as this survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Census Bureau's review of the data for reasonableness and consistency.

COMPARISON OF BUREAU OF ECONOMIC ANALYSIS AND CENSUS DATA

The Bureau of the Census estimates of total capital expenditures and pollution abatement expenditures are generally lower than those published by the Bureau of Economic Analysis (BEA) in the Survey of Current Business. Since both sets of data are based on samples, some of the differences by industry are to be expected. However, most of the differences result from the types of reporting units used to collect the data.

The Census Bureau survey relies on the establishment as the reporting unit. The census questionnaire covers only capital expenditures at the particular location engaged in manufacturing selected for the sample. In aggregating the data, the industry group classification is based on the manufacturing activity at that location.

The BEA survey relies on the company as the reporting unit. Each company files a report for its entire operation and that report is classified by industry according to the primary or largest activity of the company as a whole. Companies classified by BEA as primarily manufacturing include many other activities individually classified as retailing, mining, transportation, and services. Reports for such companies cover capital expenditures at establishments in these activities as well as the manufacturing locations.

In this respect, the BEA information for manufacturing tends to be overstated compared to the Census Bureau's. On the other hand, some manufacturing activity takes place in companies which are primarily engaged in retail, service, transporta-

tion, or some other nonmanufacturing activity. The capital expenditures applicable to manufacturing activity of these companies are not included in the BEA data for manufacturing but are identified as separate operations in the Census Bureau survey. In this situation, the Census Bureau figures would tend to be higher than the Bureau of Economic Analysis figures.

Because the nonmanufacturing activity of manufacturing companies tends to exceed considerably the manufacturing activity of nonmanufacturing companies, the net effect is to attribute greater capital expenditures to manufacturing in company-based data than in establishment-based data. Over the years, total capital expenditures for manufacturing estimated in census establishment surveys has varied between 60 and 70 percent of the BEA estimates. Table A shows a comparison of BEA and Census total and pollution abatement capital expenditures for 1979 to 1981.

SELECTED INDUSTRIAL AIR POLLUTION CONTROL EQUIPMENT

Table B highlights annual manufacturing data for air pollution control equipment from 1977 to 1981. This information is collected and published in series MA35J, *Selected Industrial Air Pollution Control Equipment*, by the Bureau of the Census. Data in this survey are collected for two types of manufactured air pollution equipment: particulate emissions collectors (e.g., electrostatic precipitators, wet scrubbers) and gaseous emission control devices (e.g., catalytic oxidation systems, gas absorbers). The published report is divided into two parts. The first presents data on quantity and value of new orders, shipments, and backlog of orders at the year-end. The second provides value of the equipment shipped by end use. As shown in the table, steam electric power plants are the largest end user of industrial air pollution control equipment (approximately 47 percent in 1981). In 1981, shipments increased for several manufacturers' end users.

RESEARCH AND DEVELOPMENT FOR POLLUTION ABATEMENT PURPOSES

Tables C and D show the amounts spent from 1977 to 1981, on research and development (R&D) for the purpose of pollution control. These data are collected by the Bureau of the Census and published by the National Science Foundation. Total expenditures for industrial pollution abatement R&D by source of funds, type of pollution abatement, and some detail industry data are not available due to high rates of nonresponse.

REVISION TO 1980 DATA

The data for quantities of solid waste removed in tables 5A, 5B, and 5C of the 1980 report, Pollution Abatement Costs and

Expenditures, 1980 MA200(80)-1, issued in December 1980, should be revised as shown in the following partial table:

Quantities of Pollutants Removed and Related Statistics for Establishments With 20 or More Employees: 1980

(Quantities in thousands of short tons)		
SIC code	Industry, State and major industry group, or SMSA	Quantity of solid waste removed
TABLE 5A: INDUSTRY		
	All industries ¹	*149,872.8
33	Primary metal industries	*37,523.9
331	Blast furnace, basic steel products	*21,952.8
3312	Blast furnaces and steel mills	*21,165.3
3313	Electrometallurgical products	456.0
3315	Steel wire and related products	117.3
3316	Cold finishing of steel shapes	186.8
332	Iron and steel foundries	7,674.7
3321	Gray iron foundries	6,172.1
3325	Steel foundries, n.e.c.	1,130.2
333	Primary nonferrous metals	*6,707.5
3331	Primary copper	*5,861.8
3332	Primary lead	106.3
3333	Primary zinc	101.0
3334	Primary aluminum	544.1
3339	Primary nonferrous metals, n.e.c.	94.3
TABLE 5B: STATE AND MAJOR INDUSTRY GROUP		
	United States ¹	*149,872.8
	Indiana	*10,569.5
20	Food and kindred products	134.5
28	Chemicals and allied products	352.5
29	Petroleum and coal products	(D)
30	Rubber, misc. plastics products	122.8
33	Primary metal industries	*8,155.8
35	Machinery, except electrical	102.7
36	Electric, electronic equipment	133.3
37	Transportation equipment	398.0
	Texas	*15,086.4
26	Paper and allied products	402.8
28	Chemicals and allied products	5,871.8
29	Petroleum and coal products	2,032.8
32	Stone, clay, glass products	1,014.1
33	Primary metal industries	*2,669.2
35	Machinery, except electrical	98.1
36	Electric, electronic equipment	24.8
37	Transportation equipment	101.4
TABLE 5C: SMSA		
	Gary-Hammond-East Chicago, Ind.	*7,893.5

*Only those data with an asterisk have been corrected.

¹Major industry group 23, Apparel and Other Textile Products, is excluded.

Table A. Total New Capital Expenditures and Pollution Abatement Expenditures for New Plant and Equipment—BEA and Census, by Industry Group: 1979 to 1981

(In millions of dollars)

Industry group	Data source	TNCE	1981				TNCE	1980				TNCE	1979			
			Pollution abatement expenditures					Pollution abatement expenditures					Pollution abatement expenditures			
			Total	Air	Water	Solid waste		Total	Air	Water	Solid waste		Total	Air	Water	Solid waste
All manufacturing.....	BEA	126,790	5,420	2,690	2,100	630	115,810	5,520	2,880	2,090	550	96,680	4,820	2,250	1,840	430
	Census	(NA)	3,485	2,194	1,028	263	70,569	3,503	2,106	1,147	251	61,533	3,565	2,072	1,246	247
Durable goods.....	BEA	61,840	1,970	1,090	700	180	58,910	2,270	1,420	690	150	51,070	2,000	1,210	650	140
	Census	(NA)	1,587	1,141	358	88	39,608	1,530	1,062	390	77	33,926	1,553	1,040	440	71
Primary metals.....	BEA	8,120	780	540	190	50	7,710	980	670	260	40	6,760	920	640	260	20
	Census	(NA)	728	567	144	17	5,496	740	540	181	20	5,129	823	589	227	7
Electrical machinery.....	BEA	10,310	180	80	70	20	9,590	160	70	60	20	7,280	110	50	60	10
	Census	(NA)	97	49	41	7	7,934	79	44	27	8	4,566	91	42	42	7
Machinery except electrical.....	BEA	13,220	150	50	90	10	11,590	150	70	70	10	10,520	140	70	60	10
	Census	(NA)	67	31	28	8	6,162	75	34	35	6	6,817	85	39	38	8
Transportation equipment.....	BEA	18,390	460	200	210	60	18,160	520	310	170	40	15,320	410	190	160	60
	Census	(NA)	283	209	60	14	8,002	275	201	61	13	6,854	190	120	60	10
Stone, clay, and glass.....	BEA	3,140	160	120	30	10	3,820	250	210	30	10	3,940	210	170	30	10
	Census	(NA)	189	166	14	9	3,039	151	123	18	10	2,606	147	110	25	10
Fabricated metals ²	BEA	2,960	70	20	40	(*)	2,960	70	20	30	10	7,270	220	110	90	10
	Census	(NA)	76	37	30	8	3,919	77	38	35	4		7,981	217	140	48
Other durable ²	BEA	5,690	160	70	70	20	5,090	140	70	60	10	7,981	217	140	48	29
	Census	(NA)	147	82	41	25	5,056	133	82	34	16					
Nondurable goods.....	BEA	64,950	3,460	1,600	1,400	450	56,900	3,250	1,460	1,400	400	47,610	2,820	1,343	1,190	290
	Census	(NA)	1,900	1,052	672	177	30,961	1,976	1,044	760	175	27,607	2,014	1,035	804	177
Food, including beverages.....	BEA	8,220	300	130	140	40	7,390	270	80	180	20	6,620	270	80	160	30
	Census	(NA)	174	54	105	15	5,852	208	62	133	14	5,034	183	58	111	14
Textiles.....	BEA	1,560	50	30	20	(*)	1,620	70	50	20	(*)	1,500	60	30	20	(*)
	Census	(NA)	48	27	16	5	1,495	60	33	24	4	1,329	39	22	15	2
Paper.....	BEA	6,720	380	160	120	110	6,800	390	160	160	70	5,550	400	180	180	50
	Census	(NA)	286	168	87	31	5,213	340	197	111	31	4,447	426	207	181	39
Chemicals.....	BEA	13,600	880	380	360	140	12,600	730	320	320	100	10,780	630	290	280	60
	Census	(NA)	753	335	322	96	8,763	781	326	350	105	7,976	771	315	361	96
Petroleum.....	BEA	26,560	1,760	880	740	140	20,690	1,710	830	690	190	16,210	1,380	720	530	130
	Census	(NA)	591	441	132	18	3,615	532	402	114	15	3,273	534	398	119	17
Rubber.....	BEA	1,770	40	20	20	10	1,730	40	20	10	10	2,170	60	40	10	10
	Census	(NA)	28	15	6	7	2,087	22	13	7	2	2,208	25	13	9	3
Other nondurables.....	BEA	6,530	40	20	20	10	6,080	40	10	20	10	4,780	40	10	10	20
	Census	(NA)	20	12	4	5	3,936	33	11	18	4	3,340	36	22	8	6

Note: See text for explanation of differences between BEA and Census estimates.

Totals may not agree with detail because of independent rounding. Census data for pollution abatement expenditures includes only those manufacturing establishments with 20 or more employees; see text.

¹Major industry group 23, Apparel and Other Textile Products, is excluded from all figures except for TNCE from the Annual Survey of Manufactures.

²Appears separately for the first time in this report.

Source: U.S. Bureau of the Census, Survey of Pollution Abatement Cost and Expenditures, 1979-1981, Annual Survey of Manufactures 1979-1980, and the U.S. Bureau of Economic Analysis, Plant and Equipment Expenditures, by Business for Pollution Abatement 1973-1981, and Planned 1982, Survey of Current Business, June 1982

Table B. Selected Industrial Air Pollution Control Equipment: 1977 to 1981

(Millions of dollars)

Air pollution control equipment	Value			Shipments by end use											
	New order	Total shipments	Backlog of orders	Pulp and paper mill operations	Chemical and fertilizer production	Petroleum refining	Cement manufacturing	Foundries	Iron and steel mills	Primary metals smelting plants	Grain milling and handling	Coal mining and cleaning	Steam electric utility power plants	Steam industrial power plants	Other end use industries
Total air pollution control equipment ¹1981..	1,074.0	951.2	1,522.0	32.7	59.1	28.5	20.5	16.0	52.3	36.0	9.4	6.4	463.6	53.8	173.0
1980..	1,159.1	827.3	1,398.4	29.4	61.0	16.4	31.8	16.0	33.3	20.6	6.0	7.1	407.9	59.8	138.1
1979..	710.6	738.4	988.1	31.8	59.0	14.1	19.1	11.1	33.1	16.8	7.0	7.9	376.6	45.5	116.4
1978..	741.5	612.0	916.2	^r 27.5	41.9	^r 12.4	^r 15.9	^r 13.4	39.4	^r 5.2	^r 9.2	6.8	287.0	^r 38.0	115.3
1977..	605.9	617.3	788.1	28.8	35.3	^r 12.3	18.3	6.7	^r 35.7	13.9	^r 3.8	^r 6.0	^r 307.2	^r 26.4	^r 122.9
Particulates emission collectors.....1981..	639.3	693.4	696.2	31.8	34.0	(D)	(D)	15.5	48.9	35.7	9.4	5.7	290.3	43.0	136.8
1980..	582.4	637.4	750.3	28.3	39.6	14.3	(D)	(D)	32.7	20.1	6.0	6.0	(D)	47.9	106.9
1979..	467.1	570.9	742.5	30.4	37.2	(D)	(D)	(D)	32.3	16.5	(D)	6.8	(D)	40.7	96.3
1978..	544.6	497.0	684.9	^r 25.8	^r 29.7	(D)	(D)	(D)	35.4	(D)	(D)	(D)	(D)	(D)	^r 92.7
1977..	460.1	484.1	^r 650.7	27.6	^r 20.5	3.4	(D)	(D)	31.4	13.0	(D)	(D)	246.2	^r 13.3	^r 96.9
Gaseous emission control devices.....1981..	417.7	242.1	819.1	(D)	24.5	6.6	-	(D)	(D)	(D)	-	(D)	167.1	9.5	29.5
1980..	552.1	166.9	642.7	(D)	(D)	(D)	(D)	-	(D)	(D)	-	(D)	(D)	(D)	21.5
1979..	209.8	167.5	236.7	(D)	(D)	1.8	-	(D)	(D)	32.7	(D)	-	(D)	4.3	14.9
1978..	158.3	83.1	199.8	^r 0.6	(D)	^r 2.3	-	(D)	0.6	(D)	-	-	(D)	2.7	12.1
1977..	113.0	^r 99.3	116.4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	-	-	^r 53.5	^r 9.1	^r 13.1

¹Includes other types of industrial air pollution control equipment not shown separately.

Source: Current Industrial Reports, Selected Industrial Air Pollution Control Equipment, (MA-35J), 1977 to 1981.

Table C. Industrial Research and Development Expenditures for Pollution Abatement, by Type: 1977 to 1981

(Millions of dollars)

Type of pollution abatement	1981 ^P			1980			1979			1978			1977		
	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
Total.....	(¹)	132	(²)	1,183	117	1,066	1,237	98	1,139	1,067	75	992	901	56	845
Air.....	(¹)	(¹)	(²)	(²)	(²)	(²)	954	30	923	(²)	(²)	(²)	676	22	654
Water.....	110	8	102	(²)	(²)	(²)	120	13	107	(²)	(²)	(²)	97	7	90
Solid waste.....	101	62	39	(²)	(²)	(²)	43	33	11	(²)	(²)	(²)	28	7	21
All other.....	71	(²)	(²)	(²)	(²)	(²)	120	22	98	(²)	(²)	(²)	100	20	80

¹Data not available due to high rate of nonresponse.²Not separately available but included in total.

Source: National Science Foundation/Bureau of the Census, Survey of Industrial Research and Development, 1977 to 1981.

Table D. Total Industrial Research and Development Expenditures for Pollution Abatement, by Source of Funds and Industry: 1977 to 1981

(Millions of dollars)

Source of funds and industry	1981 ^P	1980	1979	1978	1977
Total.....	(¹)	1,183	1,237	1,067	901
Source of funds:					
Federal funds.....	132	117	98	75	56
Company funds.....	(¹)	1,066	1,139	992	845
Industry:					
Electrical equipment.....	40	39	33	19	20
Petroleum refining.....	92	98	82	72	61
Aircraft and missiles.....	31	38	64	64	57
Chemical and allied products.....	196	184	149	81	83
Motor vehicles and equipment.....	(¹)	(²)	(²)	605	487
Other manufacturing.....	(¹)	4	109	107	100
Nonmanufacturing.....	130	101	113	119	93

¹Data not available due to high rate of nonresponse.²Not separately available but included in total.

Source: National Science Foundation/Bureau of the Census, Survey of Industrial Research and Development, 1977 to 1981.

Table 1A. Pollution Abatement Capital Expenditures and Operating Costs, by Form of Abatement and Major Industry Group: 1977 to 1981—Continued

(In millions of dollars, except percents)

SIC code	Industry	Annual Survey of Manufactures (ASM) ¹		Pollution abatement capital expenditures (PACE)				Pollution abatement gross annual costs (GAC) including payments to government units				Percent change (prior year to current year)		Standard error of estimates (percent)		
		Total value of shipments	Total new capital expenditures	Total	Air	Water	Solid waste	Total	Air	Water	Solid waste	PACE	GAC	PACE	GAC	
36	Electric, electronic equipment.....	1981..	(NA)	(NA)	97.1	48.7	41.0	7.4	247.1	51.8	106.2	88.8	23	21	3	2
		1980..	128,587.3	6,162.0	79.0	43.5	27.1	8.4	205.0	45.2	87.8	71.9	-13	12	3	1
		1979..	116,031.9	4,565.7	90.9	41.8	42.0	7.1	182.3	46.7	82.8	52.8	26	23	5	1
		1978..	100,530.1	3,699.7	72.2	32.9	36.0	3.3	148.6	30.7	71.7	46.1	13	16	5	2
		1977..	88,433.1	2,866.5	63.8	23.0	36.0	4.9	128.1	28.0	63.2	37.1	9	17	4	2
37	Transportation equipment.....	1981..	(NA)	(NA)	283.3	209.2	60.0	14.2	426.1	117.5	150.7	157.7	3	6	1	1
		1980..	186,281.7	8,002.4	275.0	201.4	60.7	12.9	401.5	110.7	137.4	153.2	45	21	1	1
		1979..	201,625.0	6,853.8	189.5	120.1	59.5	9.9	331.8	96.4	126.3	109.1	36	18	1	1
		1978..	188,773.3	5,834.3	139.5	71.0	57.9	10.7	280.5	77.3	110.2	93.0	69	20	1	1
		1977..	166,954.0	4,670.9	82.6	36.9	39.4	6.3	233.9	60.6	97.3	76.1	5	18	1	1
38	Instruments, related products.....	1981..	(NA)	(NA)	40.1	14.4	23.7	2.1	90.4	12.8	40.0	37.5	47	17	4	2
		1980..	46,138.7	1,701.3	27.2	11.3	12.7	3.2	77.1	11.3	33.7	32.1	17	11	9	1
		1979..	37,740.2	1,419.2	23.2	13.0	7.7	2.5	69.2	10.6	30.7	27.9	37	23	12	1
		1978..	33,701.2	1,099.5	16.9	6.8	9.5	0.6	55.8	7.3	26.9	21.6	-31	18	2	2
		1977..	28,897.8	938.9	24.4	14.5	8.5	1.4	47.3	9.0	23.0	15.4	-24	4	4	2
39	Miscellaneous manufacturing industries.....	1981..	(NA)	(NA)	11.5	6.7	3.9	0.9	28.4	6.2	7.9	14.1	5	8	19	5
		1980..	25,031.6	731.8	11.0	6.4	4.2	0.5	26.3	5.2	7.2	13.8	(X)	-	19	5
		1979..	23,015.6	595.4	(S)	(S)	(S)	(S)	26.3	6.5	7.2	12.6	(X)	19	(X)	16
		1978..	20,779.6	533.3	(S)	(S)	(S)	(D)	22.1	4.0	5.8	12.3	(X)	16	(X)	4
		1977..	19,150.7	473.6	6.5	2.5	3.9	0.3	19.0	5.3	5.2	8.4	35	15	28	5

Note: Totals may not agree with detail because of independent rounding. For data prior to 1977, see MA-200(80)-1. Statistics in other than the first two columns in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹Data from the Annual Survey of Manufactures includes establishments with fewer than 20 employees. These data also include major industry group 23, Apparel and Other Textile Products.

²Excludes major industry group 23, Apparel and Other Textile Products.

Table 2A. Pollution Abatement Capital Expenditures, by Industry: 1981—Continued

(Millions of dollars)

SIC code	Industry	Total pollution abatement capital expenditures	Air						Water			Solid waste	Standard error of estimates (percent) PACE	
			Total	By abatement technique		By type of pollutant abated				Total	By abatement technique			
				End of line	Changes in production processes	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxides	Heavy metals, radioactive and toxic substances, and other		End of line			Changes in production processes
33	Primary metal industries.....	728.2	567.2	531.0	36.3	487.6	43.6	10.9	24.6	144.1	139.4	4.7	16.9	1
331	Blast furnace, basic steel products.....	459.1	355.0	(D)	(D)	343.9	(D)	(D)	(D)	98.9	95.1	3.8	5.2	1
3312	Blast furnaces and steel mills.....	442.3	346.7	(D)	(D)	337.2	(D)	(D)	(D)	91.0	89.8	1.1	4.6	1
3313	Electrometallurgical products.....	9.2	6.6	6.6	-	6.5	-	-	-	2.6	2.6	-	-	1
332	Iron and steel foundries.....	56.4	50.1	38.8	11.3	48.3	-	1.5	0.2	2.9	2.8	-	3.5	16
3325	Steel foundries, n.e.c.....	6.7	6.2	6.1	0.1	6.2	-	-	-	0.2	0.2	-	0.3	19
333	Primary nonferrous metals.....	146.0	123.0	120.9	2.1	66.8	34.2	1.5	20.5	(D)	(D)	(D)	(D)	1
3331	Primary copper.....	37.9	(D)	33.7	(D)	(D)	16.5	(D)	9.0	3.9	3.9	-	(D)	4
3333	Primary zinc.....	11.4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1
3334	Primary aluminum.....	83.5	68.7	(D)	(D)	51.4	(D)	(D)	(D)	11.2	11.2	-	3.6	1
3339	Primary nonferrous metals, n.e.c.....	10.1	9.1	(D)	(D)	3.8	(D)	(D)	(D)	(D)	(D)	(D)	(D)	15
3341	Secondary nonferrous metals.....	27.4	22.3	20.2	2.1	19.5	1.4	0.4	0.9	(D)	(D)	(D)	(D)	19
335	Nonferrous rolling and drawing.....	26.9	14.1	13.3	0.8	6.5	(D)	(D)	(D)	11.4	11.1	0.4	1.4	3
3353	Aluminum sheet, plate, and foil.....	12.4	8.4	8.2	0.2	3.7	-	4.5	-	3.6	3.3	-	0.7	1
3356	Nonferrous rolling and drawing, n.e.c.....	6.5	2.3	(D)	(D)	1.3	(D)	(D)	(D)	4.0	(D)	(D)	0.2	3
336	Nonferrous foundries.....	11.5	2.3	2.3	0.1	2.2	-	-	0.1	(D)	(D)	-	(D)	6
3361	Aluminum foundries.....	10.8	1.6	1.6	-	1.6	-	-	-	(D)	(D)	-	(D)	6
34	Fabricated metal products.....	75.7	37.4	29.3	8.1	23.7	1.0	11.3	1.0	30.4	26.8	3.5	7.6	7
342	Cutlery, handtools and hardware.....	8.2	1.9	1.7	0.1	1.2	-	0.6	0.1	5.0	4.6	0.4	1.4	18
346	Metal forgings and stampings.....	9.3	4.9	3.6	1.3	2.8	0.3	1.6	-	3.7	3.3	0.4	0.7	12
348	Ordnance and accessories, n.e.c.....	10.3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	6.0	5.8	0.2	(D)	5
3483	Ammunition, except small arms, n.e.c.....	6.6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	3.9	(D)	(D)	(D)	5
349	Miscellaneous fabricated metal products.....	7.2	3.4	2.7	0.7	2.3	(D)	(D)	(D)	2.6	1.7	0.9	1.1	9
35	Machine, except electrical.....	67.1	30.9	21.3	9.6	10.6	0.7	14.2	4.4	28.0	24.4	3.6	8.2	2
352	Farm and garden machinery.....	11.2	6.8	(D)	(D)	1.8	-	(D)	(D)	4.0	(D)	(D)	0.4	3
3523	Farm machinery and equipment.....	10.8	6.6	(D)	(D)	1.6	-	(D)	(D)	4.0	(D)	(D)	0.3	3
353	Construction, related machinery.....	8.9	4.4	4.2	0.1	2.0	0.3	0.8	0.8	2.6	2.5	0.1	1.9	6
357	Office and computing machines.....	17.7	4.8	4.5	0.3	(D)	(D)	3.4	0.6	12.3	12.0	0.2	0.6	1
3573	Electronic computing equipment.....	14.2	1.6	1.3	0.3	(D)	(D)	0.6	0.6	12.0	11.8	0.1	0.6	1
358	Refrigeration and service machinery.....	10.4	6.8	3.5	3.3	(D)	-	4.7	(D)	3.0	(D)	(D)	0.7	7
3585	Refrigeration, heating equipment.....	9.8	6.4	3.1	3.3	(D)	-	4.6	(D)	2.8	(D)	(D)	0.6	7
36	Electric, electronic equipment.....	97.1	48.7	40.0	8.7	15.9	0.7	16.4	14.7	41.0	37.5	3.5	7.4	3
362	Electrical industrial apparatus.....	17.3	13.3	13.1	0.1	7.0	0.2	(D)	(D)	1.0	2.8	0.2	1.0	7
3624	Carbon and graphite products.....	12.6	11.9	11.9	-	6.3	0.1	(D)	(D)	0.5	0.5	-	0.2	8
363	Household appliances.....	9.4	6.0	2.1	3.9	1.7	0.1	3.8	0.4	2.1	2.0	0.1	1.3	4
366	Communication equipment.....	12.3	3.2	3.0	0.3	0.9	0.1	1.2	1.0	7.3	6.3	0.9	1.8	2
3662	Radio and TV communication equipment.....	8.6	2.0	1.9	0.2	0.6	-	0.4	1.0	5.7	5.0	0.7	0.8	4
367	Electronic components, accessories.....	33.0	12.9	(D)	(D)	1.4	0.1	7.8	3.5	18.5	17.1	1.4	1.5	5
3674	Semiconductors, related devices.....	16.2	4.5	4.4	0.1	0.7	-	2.2	1.6	11.2	10.0	1.2	0.5	5
3679	Electronic components, n.e.c.....	11.9	7.4	(D)	(D)	0.5	-	(D)	(D)	3.9	3.8	0.1	0.5	10
369	Misc. electronic equipment, supplies.....	11.6	7.2	6.8	0.4	2.7	0.2	0.3	3.8	3.9	3.8	0.1	0.5	19
37	Transportation equipment.....	283.3	209.2	194.3	14.8	44.9	1.7	158.7	3.5	60.0	55.7	4.3	14.2	1
371	Motor vehicles and equipment.....	241.3	187.4	175.1	12.4	28.6	1.6	156.7	0.4	44.1	40.4	3.7	9.8	1
3711	Motor vehicles and car bodies.....	202.9	173.0	163.4	9.6	(D)	(D)	153.9	(D)	23.4	(D)	(D)	6.5	1
3714	Motor vehicle parts, accessories.....	37.9	14.0	11.3	2.7	(D)	(D)	2.6	(D)	20.7	(D)	(D)	3.1	2
372	Aircraft and parts.....	18.0	9.7	9.5	0.3	8.3	-	0.9	0.5	5.3	5.0	0.2	3.0	2
3721	Aircraft.....	10.0	6.3	(D)	(D)	(D)	(D)	(D)	(D)	2.1	1.9	0.2	1.6	1
373	Ship, boat building, repairing.....	7.1	3.9	3.1	0.8	2.3	-	(D)	(D)	2.5	2.5	-	0.8	8
3731	Ship building and repairing.....	6.0	3.0	(D)	(D)	1.8	-	(D)	(D)	2.4	2.4	-	0.7	3
376	Guided missiles, space vehicles.....	11.3	4.9	(D)	(D)	(D)	(D)	(D)	(D)	6.0	5.7	0.3	0.4	1
3761	Guided missiles, space vehicles.....	9.6	4.0	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1
38	Instruments, related products.....	40.1	14.4	13.9	0.5	2.9	0.2	8.6	2.7	23.7	23.4	0.3	2.1	4
382	Measuring, controlling devices.....	8.2	1.0	0.8	0.2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	7
3825	Instruments to measure electricity.....	6.0	0.5	0.5	-	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2
3861	Photographic equipment and supplies.....	26.6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	14.3	14.2	0.1	(D)	1
39	Misc. manufacturing industries.....	11.5	6.7	6.6	0.1	3.2	0.1	3.3	0.1	3.9	3.5	0.4	0.9	19

Note: Totals may not agree with detail because of independent rounding. Statistics in this table covers manufacturing establishments with 20 employees or more. See text for a description of survey coverage. No 3- or 4-digit industries are shown where PACE is less than \$5.0 million or the standard error is 20 or greater.

¹Excludes major industry group 23, Apparel and Other Textile Products.

Table 2B. Pollution Abatement Capital Expenditures, by State and Major Industry Group: 1981—Continued

(Millions of dollars)

SIC code	State and major industry group	Total pollution abatement capital expenditures	Air							Water			Solid waste	Standard error of estimates (percent) PACE
			Total	By abatement technique		By type of pollutant abated				Total	By abatement technique			
				End of line	Changes in production processes	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxides	Heavy metals, radioactive and toxic substances, and other		End of line	Changes in production processes		
West North Central Division--Continued														
	North Dakota.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	South Dakota.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Nebraska.....	5.0	1.3	1.0	0.3	1.1	-	0.1	0.1	2.2	1.9	0.3	1.5	16
	Kansas.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
South Atlantic Division:														
29	Delaware.....	15.6	8.4	7.6	0.8	0.7	3.7	2.7	1.3	3.9	2.5	1.5	3.2	3
	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
13	Maryland.....	28.9	19.3	18.9	0.4	16.9	0.5	1.3	0.3	8.2	7.4	0.7	1.5	5
	Primary metal industries.....	13.1	11.5	11.5	-	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	8
	District of Columbia.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Virginia.....	72.4	30.9	26.9	4.0	23.8	1.7	4.2	1.2	36.8	31.4	5.4	4.7	6
26	Paper and allied products.....	20.8	17.5	(D)	(D)	14.4	(D)	(D)	(D)	2.7	(D)	(D)	0.5	1
28	Chemicals and allied products.....	30.8	(D)	(D)	(D)	3.5	(D)	(D)	(D)	23.8	(D)	(D)	(D)	1
	West Virginia.....	47.0	30.9	29.2	1.8	25.8	1.0	1.4	2.4	13.9	13.6	0.3	2.2	4
28	Chemicals and allied products.....	19.7	9.4	(D)	(D)	5.8	-	1.2	2.3	9.6	9.6	-	0.7	5
33	Primary metal industries.....	19.9	17.8	(D)	(D)	16.7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1
	North Carolina.....	71.6	41.2	37.8	3.4	27.7	1.3	4.9	7.4	24.3	21.2	3.1	6.2	7
26	Paper and allied products.....	23.9	20.1	(D)	(D)	12.8	(D)	(D)	(D)	3.6	(D)	(D)	0.2	1
28	Chemicals and allied products.....	10.9	1.6	1.3	0.3	0.7	(D)	(D)	(D)	8.6	8.5	0.1	0.7	13
	South Carolina.....	64.1	42.5	38.3	4.2	35.6	0.2	1.9	4.8	18.0	16.5	1.5	3.6	9
26	Paper and allied products.....	5.7	4.8	(D)	(D)	(D)	(D)	(D)	(D)	0.7	0.7	-	0.1	5
28	Chemicals and allied products.....	21.0	10.0	9.9	0.1	(D)	(D)	(D)	(D)	8.8	8.5	0.3	2.2	1
	Georgia.....	48.3	31.3	27.1	4.2	17.5	0.5	10.9	2.4	10.4	9.2	1.2	6.7	7
22	Textile mill products.....	5.0	4.1	4.1	-	2.6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	15
26	Paper and allied products.....	11.3	6.0	(D)	(D)	5.5	(D)	(D)	(D)	3.3	2.6	0.6	2.0	1
17	Transportation equipment.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Florida.....	49.1	20.0	15.2	4.9	9.7	5.0	3.1	2.2	23.9	17.2	6.7	5.1	7
20	Food and kindred products.....	5.0	2.1	1.7	0.5	1.9	(D)	(D)	(D)	(D)	2.3	0.4	0.2	4
28	Chemicals and allied products.....	28.5	9.9	(D)	(D)	1.3	4.8	(D)	(D)	15.2	9.3	5.8	3.4	8
East South Central Division:														
28	Kentucky.....	54.6	30.2	27.3	2.9	14.3	5.7	6.2	4.0	9.9	8.3	1.5	14.5	14
28	Chemicals and allied products.....	19.9	11.1	10.0	1.2	4.5	0.9	1.8	3.9	5.9	5.0	0.8	2.9	5
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Tennessee.....	89.8	57.5	39.4	18.0	35.3	2.5	9.3	10.0	28.6	27.1	1.6	3.7	3
28	Chemicals and allied products.....	51.8	30.9	(D)	(D)	18.8	(D)	(D)	6.3	19.3	18.5	0.8	1.6	3
33	Primary metal industries.....	8.6	5.6	5.6	-	4.6	(D)	(D)	(D)	2.3	2.3	-	0.6	2
36	Electric, electronic equipment.....	8.6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	0.7	0.6	0.1	(D)	4
	Alabama.....	93.6	62.6	39.2	23.5	41.3	1.1	2.9	17.2	21.5	19.3	2.2	9.5	10
26	Paper and allied products.....	24.9	18.7	18.7	-	17.2	(D)	(D)	(D)	5.2	(D)	(D)	1.1	1
28	Chemicals and allied products.....	32.8	(D)	2.6	(D)	1.1	(D)	(D)	(D)	10.6	(D)	(D)	(D)	1
33	Primary metal industries.....	21.7	20.1	10.7	9.3	18.3	(D)	(D)	(D)	0.7	0.7	-	0.9	41
	Mississippi.....	68.5	50.6	49.7	0.9	5.2	42.0	2.2	1.2	16.5	16.4	0.1	1.4	2
26	Paper and allied products.....	6.2	1.2	1.2	-	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1
28	Chemicals and allied products.....	6.1	3.1	(D)	(D)	(D)	(D)	(D)	(D)	2.4	2.4	-	0.6	8
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
West South Central Division:														
26	Arkansas.....	38.2	25.0	24.8	0.2	21.4	0.3	0.7	2.5	10.2	8.4	1.8	3.0	3
28	Paper and allied products.....	22.2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1
	Chemicals and allied products.....	5.6	2.0	(D)	(D)	1.5	(D)	(D)	0.2	1.9	1.9	-	1.6	10
	Louisiana.....	219.4	130.8	84.7	46.1	35.2	19.3	47.9	28.4	59.0	45.2	13.8	29.5	2
28	Chemicals and allied products.....	104.7	46.1	39.4	6.7	6.5	(D)	28.7	9.5	39.7	32.6	7.1	18.9	3
29	Petroleum and coal products.....	79.6	63.5	24.7	38.7	9.5	(D)	18.8	(D)	12.9	7.0	5.9	3.3	1
33	Primary metal industries.....	13.3	10.3	(D)	(D)	9.3	-	-	1.0	1.2	1.0	0.1	1.9	1
	Oklahoma.....	37.4	25.2	17.6	7.6	2.7	5.6	8.3	8.6	8.7	5.5	3.2	3.4	9
29	Petroleum and coal products.....	25.9	23.0	(D)	(D)	1.8	(D)	8.1	(D)	2.1	(D)	(D)	0.8	1
	Texas.....	348.8	215.4	170.3	45.1	63.7	49.5	85.3	16.7	106.8	90.5	16.3	26.7	1
26	Paper and allied products.....	6.4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.6	1.5	0.1	(D)	5
28	Chemicals and allied products.....	131.7	67.8	58.5	9.2	24.2	0.9	31.5	11.2	46.3	38.9	7.4	17.6	4
29	Petroleum and coal products.....	155.8	107.6	74.4	33.2	(D)	47.3	49.3	(D)	45.6	38.2	7.4	2.6	1
32	Stone, clay, glass products.....	13.7	11.3	11.2	0.1	11.3	-	-	-	1.3	(D)	(D)	1.1	12
33	Primary metal industries.....	17.1	13.4	(D)	(D)	11.4	1.2	-	0.8	3.2	3.2	-	0.5	3
35	Machine, except electrical.....	9.2	4.1	(D)	(D)	0.7	0.1	(D)	(D)	4.1	4.0	0.1	0.9	14
Mountain Division:														
	Montana.....	8.5	5.4	4.8	0.6	3.2	0.4	-	1.8	1.5	1.4	0.1	1.7	15
28	Idaho.....	16.1	11.7	10.4	1.3	11.3	0.1	-	0.1	3.3	3.0	0.3	1.1	9
	Chemicals and allied products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Wyoming.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)

See footnotes at end of table.

Table 2B. Pollution Abatement Capital Expenditures, by State and Major Industry Group: 1981—Continued

(Millions of dollars)

SIC code	State and major industry group	Total pollution abatement capital expenditures	Air							Water			Solid waste	Standard error of estimates (percent) PACE
			Total	By abatement technique		By type of pollutant abated				Total	By abatement technique			
				End of line	Changes in production processes	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxides	Heavy metals, radioactive and toxic substances, and other		End of line	Changes in production processes		
	Mountain Division--Continued													
20	Colorado.....	39.5	18.1	17.2	0.8	8.6	-	7.3	2.2	21.0	20.4	0.6	0.4	11
38	Food and kindred products.....	18.4	2.4	2.4	-	2.4	-	-	-	(D)	(D)	(D)	(D)	11
	Instruments, related products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	New Mexico.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
33	Arizona.....	30.5	24.8	24.6	0.2	4.5	13.7	0.4	6.2	5.1	5.0	0.1	0.6	5
	Primary metal industries.....	25.1	21.8	(D)	(D)	(D)	13.7	0.1	(D)	(D)	(D)	(D)	(D)	1
33	Utah.....	31.0	28.9	28.7	0.2	24.6	1.9	2.4	-	1.5	0.9	0.7	0.6	2
	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Nevada.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Pacific Division:													
26	Washington.....	93.0	62.9	60.9	2.0	43.4	8.5	1.1	10.0	25.4	21.3	4.2	4.6	14
	Paper and allied products.....	10.2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4.5	3.2	1.3	(D)	1
33	Primary metal industries.....	38.6	30.4	30.3	-	15.1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	6
37	Transportation equipment.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Oregon.....	49.3	27.8	26.7	1.1	22.9	-	4.3	0.3	12.0	11.1	0.9	9.5	8
24	Lumber and wood products.....	28.3	19.2	18.5	0.7	15.4	-	3.9	-	1.3	0.9	0.4	7.8	19
26	Paper and allied products.....	7.1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	3.6	(D)	(D)	(D)	1
	California.....	294.2	223.4	187.9	35.6	81.2	69.1	65.2	6.8	61.8	50.6	11.2	9.0	4
20	Food and kindred products.....	14.6	8.4	2.1	4.2	3.5	(D)	(D)	0.1	7.4	3.6	3.8	0.8	9
29	Petroleum and coal products.....	103.2	88.1	69.1	19.0	6.4	66.5	14.6	0.2	13.0	12.1	0.9	2.1	1
34	Fabricated metal products.....	8.0	4.0	1.6	2.3	(D)	(D)	2.1	0.2	3.7	3.5	0.3	0.3	17
35	Machine, except electrical.....	10.8	3.2	2.9	0.2	(D)	(D)	0.7	2.0	(D)	(D)	(D)	(D)	6
36	Electric, electronic equipment.....	7.3	2.2	2.0	0.2	0.2	0.1	0.3	1.5	4.8	4.4	0.4	0.3	13
37	Transportation equipment.....	50.9	44.3	(D)	(D)	(D)	0.3	(D)	0.4	6.0	5.7	0.3	0.6	1
	Alaska.....	8.2	7.7	7.7	-	1.4	5.0	1.2	-	0.4	0.4	-	0.1	2
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Hawaii.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)

Note: Totals may not agree with detail because of independent rounding. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage. No 2-digit industries are shown where PACE is less than \$5.0 million or the standard error is 20 or greater.

¹Excludes major industry group 23, Apparel and Other Textile Products.

Table 3A. Pollution Abatement Operating Costs, by Form of Abatement and by Industry:
1981

(Millions of dollars)

SIC code	Industry	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimator (percent) GAC
			Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
	All industries ¹	9,109.9	687.6	590.7	96.5	8,422.6	3,697.8	2,963.6	1,759.2	1
20	Food and kindred products.....	579.1	209.7	193.0	16.6	369.5	78.3	150.3	140.9	2
201	Meat products.....	102.8	39.9	35.1	4.8	62.9	3.9	34.8	24.2	4
2011	Meatpacking plants.....	54.0	23.7	20.1	3.6	30.3	2.5	16.7	11.1	4
2013	Sausages and other prepared meats.....	11.6	4.7	4.0	0.7	6.9	0.7	2.2	3.9	5
2016	Poultry dressing plants.....	32.4	9.1	8.7	0.3	23.3	0.6	14.5	8.3	10
202	Dairy products.....	64.4	29.3	27.0	2.3	35.1	1.3	13.0	20.8	11
2022	Cheese, natural and processed.....	14.3	4.3	4.1	0.2	10.0	0.2	7.7	2.1	10
2023	Condensed and evaporated milk.....	6.6	2.9	2.4	0.5	3.7	0.8	1.5	1.4	11
2026	Fluid milk.....	37.1	17.6	16.3	1.3	19.5	0.1	3.4	16.0	19
203	Preserved fruits and vegetables.....	93.9	35.1	31.5	3.7	58.8	5.1	29.6	24.0	3
2032	Canned specialties.....	10.7	4.6	4.3	0.4	6.1	0.4	2.8	2.8	3
2033	Canned fruits and vegetables.....	34.7	16.5	15.2	1.3	18.2	0.4	9.1	8.6	6
2034	Dehydrated fruits, vegetables, soups.....	6.1	1.9	1.7	0.2	4.2	1.0	2.1	1.1	9
2035	Pickles, sauces, salad dressings.....	9.1	3.1	2.6	0.4	6.0	0.5	3.9	1.6	12
2037	Frozen fruits and vegetables.....	17.4	3.5	2.7	0.8	13.8	1.6	9.1	3.1	7
2038	Frozen specialties.....	16.0	5.5	5.0	0.6	10.4	1.2	2.5	6.7	15
204	Grain mill products.....	82.0	20.2	19.2	1.0	61.8	28.7	14.8	18.3	5
2041	Flour, other grain mill products.....	8.8	1.6	1.4	0.2	7.3	6.0	0.2	1.0	8
2043	Cereal breakfast foods.....	7.7	2.1	1.9	0.2	5.6	3.0	0.5	2.1	3
2046	Wet corn milling.....	42.9	12.5	(D)	(D)	30.3	15.3	9.5	5.5	1
2047	Dog, cat, and other pet food.....	6.2	2.1	2.0	0.1	4.1	0.7	1.8	1.6	7
205	Bakery products.....	12.5	5.9	5.1	0.9	6.6	0.4	1.0	5.2	4
2051	Bread, cake, and related products.....	8.2	4.6	3.7	0.8	3.7	0.1	0.6	3.0	6
206	Sugar, confectionery products.....	43.8	5.5	4.8	0.7	38.3	7.3	16.9	14.0	8
2062	Cane sugar refining.....	6.3	1.0	0.8	0.2	5.3	1.0	3.0	1.3	1
2063	Beet sugar.....	11.7	0.8	0.7	0.1	11.0	2.9	6.1	1.9	13
2065	Confectionery products.....	9.4	2.7	2.5	0.3	6.7	1.2	1.8	3.7	6
207	Fats and oil.....	44.5	8.9	8.5	0.4	35.5	15.2	12.5	7.8	4
2075	Soybean oil mills.....	19.5	3.1	2.9	0.2	16.4	9.9	4.2	2.2	4
2079	Shortening and cooking oils.....	14.0	4.1	4.0	0.1	9.9	0.7	5.6	3.6	2
208	Beverages.....	91.4	49.1	47.2	1.9	42.3	8.3	20.3	13.7	1
2082	Malt beverages.....	63.1	35.4	34.8	0.6	27.7	5.4	16.7	5.5	1
2086	Bottled and canned soft drinks.....	15.9	9.3	8.2	1.1	6.7	0.2	1.3	5.1	7
209	Misc. foods, kindred products.....	43.9	15.6	14.6	1.1	28.2	7.9	7.3	13.0	5
2095	Roasted coffee.....	12.9	2.0	1.7	0.3	10.9	5.6	2.1	3.2	3
2099	Food preparations, n.e.c.....	23.9	11.4	11.0	0.5	12.5	2.2	2.4	7.9	9
21	Tobacco products.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
2111	Cigarettes.....	10.3	2.5	(D)	(D)	7.9	4.2	(D)	(D)	1
22	Textile mill products.....	108.5	38.4	34.8	3.6	70.1	18.9	25.4	25.8	5
2211	Weaving mills, cotton.....	12.5	4.2	4.1	0.1	8.3	1.5	2.4	2.3	6
2221	Weaving mills, manmade fiber, silk.....	17.5	5.0	4.4	0.7	12.5	4.3	4.4	3.7	7
225	Knitting mills.....	18.4	9.0	8.1	0.9	9.4	2.1	3.7	3.6	10
2257	Circular knit fabric mills.....	6.2	2.6	2.4	0.3	3.6	1.1	1.2	1.3	12
226	Textile finishing, except wool.....	26.6	9.1	8.3	0.8	17.6	2.9	10.7	4.0	17
2262	Finishing plants, manmade fiber, silk.....	10.9	2.2	2.0	0.2	8.6	0.9	5.9	1.8	8
227	Floor covering mills.....	6.2	2.4	2.1	0.3	3.8	0.3	1.2	2.3	6
2272	Tufted carpets and rugs.....	5.1	2.1	1.9	0.2	3.0	0.2	1.1	1.7	4
228	Yarn and thread mills.....	10.0	4.6	4.2	0.4	5.4	1.6	1.1	2.7	10
2281	Yarn mills, except wool.....	6.1	2.9	2.6	0.3	3.2	1.4	0.4	1.3	16
229	Miscellaneous textile goods.....	13.3	2.3	2.0	0.3	11.1	4.1	1.1	5.8	8
2295	Coated fabrics, not rubberized.....	5.3	0.6	0.5	-	4.7	1.8	0.3	2.7	8
24	Lumber and wood products.....	134.7	6.0	3.8	2.2	128.7	43.2	23.1	62.4	7
2411	Logging camps, log contractors.....	16.5	0.3	-	0.2	16.3	0.4	2.7	13.2	8
242	Sawmills and planing mills.....	40.5	0.6	0.3	0.3	39.9	19.6	2.4	18.0	14
2421	Sawmills, planing mills, general.....	38.5	0.5	0.3	0.2	38.0	18.5	2.3	17.1	14
243	Millwork, plywood, structural members.....	31.2	2.0	1.1	0.9	29.2	9.1	3.7	16.3	15
2436	Softwood veneer and plywood.....	17.5	0.5	0.4	0.2	16.9	6.6	3.5	6.8	11
249	Miscellaneous wood products.....	40.4	2.5	2.2	0.3	37.9	13.8	14.3	9.9	14
2499	Wood products, n.e.c.....	26.6	2.2	1.9	0.2	24.4	7.3	12.0	5.1	13

See footnotes at end of table.

Table 3A. Pollution Abatement Operating Costs, by Form of Abatement and by Industry:
1981—Continued

(Millions of dollars)

SIC code	Industry	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
			Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
25	Furniture and fixtures.....	34.4	5.8	3.5	2.2	28.6	12.1	2.0	14.5	5
251	Household furniture.....	22.7	3.6	2.1	1.6	19.1	9.4	0.9	8.8	7
2511	Wood household furniture.....	13.3	1.4	1.0	0.4	11.9	7.5	0.4	4.1	11
252	Office furniture.....	5.7	0.9	0.6	0.3	4.9	2.2	0.4	2.3	11
26	Paper and allied products.....	829.7	75.1	67.2	7.9	754.6	211.8	402.7	140.1	2
2611	Pulpmills.....	121.7	7.2	6.4	0.8	114.5	22.5	79.2	12.7	7
2621	Papermills, except building paper.....	394.8	36.4	33.7	2.7	358.4	88.6	208.2	61.6	1
2631	Paperboard mills.....	226.0	18.1	16.8	1.3	207.9	76.3	100.7	30.9	4
264	Misc. converted paper products.....	47.4	7.7	5.8	1.9	39.7	9.6	6.8	23.3	5
2641	Paper coating and glazing.....	21.1	2.1	1.9	0.2	19.0	6.8	1.5	10.7	7
2643	Bags, except textile bags.....	5.8	1.1	0.5	0.6	4.7	0.4	0.7	2.6	12
2647	Sanitary paper products.....	10.7	1.5	1.0	0.4	9.2	1.2	3.3	4.6	11
2653	Corrugated and solid fiber boxes.....	11.6	2.5	2.1	0.4	9.1	1.1	2.9	5.1	10
27	Printing and publishing.....	63.3	20.6	13.7	6.8	42.8	15.1	4.0	23.7	6
275	Commercial printing.....	29.6	3.4	2.1	1.3	26.1	14.4	2.2	9.5	5
2751	Commercial printing, letterpress.....	6.2	0.8	0.4	0.4	5.4	(D)	(D)	1.9	9
2752	Commercial printing, lithographic.....	11.7	1.9	1.3	0.6	9.8	(D)	(D)	5.9	7
2754	Commercial printing, gravure.....	10.1	0.5	0.3	0.2	9.6	7.7	0.7	1.2	7
28	Chemicals and allied products.....	2,047.8	79.3	71.4	7.9	1,968.2	571.7	997.7	399.0	2
281	Industrial inorganic chemicals.....	357.9	7.0	5.8	1.1	350.9	120.6	163.9	66.4	3
2812	Alkalies and chlorine.....	60.3	0.3	0.2	0.1	60.0	17.2	26.0	16.8	4
2816	Inorganic pigments.....	66.9	2.2	2.0	0.1	64.7	19.8	36.0	8.8	5
2819	Industrial inorganic chemicals, n.e.c.....	226.8	4.4	3.6	0.8	222.4	82.5	99.9	40.0	4
282	Plastics materials, synthetics.....	266.5	8.4	7.8	0.7	258.0	73.0	134.8	50.2	10
2821	Plastics materials and resins.....	169.0	6.8	6.3	0.5	162.3	48.5	79.2	34.6	15
2822	Synthetic rubber.....	(D)	(D)	(D)	(D)	20.8	7.0	10.9	2.9	(X)
2823	Cellulosic manmade fibers.....	(D)	(D)	(D)	(D)	1.9	(D)	(D)	(D)	(X)
2824	Organic fibers, noncellulosic.....	61.4	(D)	(D)	0.2	(D)	15.7	(D)	(D)	1
283	Drugs.....	101.3	14.3	12.8	1.5	87.0	21.5	39.6	25.9	2
2833	Medicinals and botanicals.....	45.3	2.1	2.1	-	43.2	9.2	23.2	10.9	5
2834	Pharmaceutical preparations.....	54.5	11.7	10.3	1.4	42.8	12.2	16.3	14.3	1
284	Soaps, cleansers, toilet goods.....	45.7	9.5	8.4	1.1	36.3	9.7	14.1	12.6	12
2841	Soap and other detergents.....	20.5	4.9	4.4	0.5	15.6	6.8	4.6	4.2	7
2843	Surface active agents.....	13.3	2.0	1.8	0.2	11.3	2.0	6.1	3.2	10
2851	Paints and allied products.....	29.5	3.1	2.5	0.6	26.4	3.2	4.5	18.7	11
286	Industrial organic chemicals.....	923.6	29.7	27.4	2.2	893.9	230.7	501.1	162.1	1
2865	Cyclic crudes and intermediates.....	166.1	8.4	7.5	0.9	157.6	37.0	89.6	31.0	2
2869	Industrial organic chemicals, n.e.c.....	752.8	20.6	19.3	1.3	732.2	192.6	408.8	130.8	1
287	Agricultural chemicals.....	238.3	1.2	0.9	0.2	237.1	74.8	117.7	44.6	3
2873	Nitrogenous fertilizers.....	(D)	(D)	(D)	(D)	73.8	19.6	43.3	10.9	(X)
2874	Phosphatic fertilizers.....	65.0	0.1	0.1	-	64.9	31.5	17.9	15.5	4
2879	Agricultural chemicals, n.e.c.....	(D)	(D)	(D)	(D)	94.9	20.7	56.3	17.9	(X)
289	Miscellaneous chemical products.....	85.0	6.3	5.7	0.5	78.7	38.2	22.0	18.5	9
2892	Explosives.....	9.9	0.1	0.1	-	9.8	4.0	2.6	3.2	10
2899	Chemical preparations, n.e.c.....	40.0	3.3	3.0	0.2	36.7	10.7	17.2	8.8	11
29	Petroleum and coal products.....	1,685.5	9.0	7.0	2.0	1,676.5	1,118.0	430.2	128.2	1
2911	Petroleum refining.....	1,652.2	7.0	5.6	1.4	1,645.2	1,101.4	426.3	117.5	1
295	Paving and roofing materials.....	22.6	1.5	1.1	0.4	21.0	9.9	1.9	9.1	10
2952	Asphalt felts and coatings.....	19.5	1.5	1.1	0.4	18.0	7.7	1.9	8.5	10
299	Misc. Petroleum, coal products.....	10.7	0.4	0.3	0.1	10.3	6.7	2.0	1.6	9
2999	Petroleum and coal products, n.e.c.....	6.6	-	-	-	6.6	6.0	(D)	(D)	11
30	Rubber, misc. plastics products.....	118.3	16.6	11.2	5.4	101.6	29.8	18.2	53.4	1
3011	Tires and inner tubes.....	28.5	3.2	2.3	0.9	25.3	11.8	3.4	10.1	1
3041	Rubber, plastics hose and belting.....	5.3	1.1	0.8	0.3	4.2	1.3	0.2	2.7	16
3069	Fabricated rubber products, n.e.c.....	13.2	2.1	1.3	0.8	11.1	2.4	2.0	6.7	7
3079	Miscellaneous plastics products.....	70.2	10.0	6.6	3.4	60.2	14.0	12.6	33.5	1
31	Leather and leather products.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
32	Stone, clay, glass products.....	310.7	11.9	9.1	2.8	298.8	191.0	38.2	69.7	4
3211	Flat glass.....	12.7	0.7	0.7	-	12.0	5.5	3.2	3.3	7
322	Glass, pressed or blown.....	34.4	3.2	2.4	0.8	31.4	8.9	8.6	13.7	4
3221	Glass containers.....	12.8	1.6	1.0	0.6	11.2	2.5	1.4	7.3	3
3229	Pressed and blown glass, n.e.c.....	21.7	1.6	1.4	0.2	20.1	6.4	7.2	6.4	7

See footnotes at end of table.

Table 3A. Pollution Abatement Operating Costs, by Form of Abatement and by Industry:
1981—Continued

(Millions of dollars)

SIC code	Industry	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
			Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
32	Stone, clay, glass products--Continued									
3231	Products of purchased glass.....	5.6	0.7	0.7	-	4.9	0.3	2.2	2.4	16
3241	Cement, hydraulic.....	98.3	0.2	0.2	0.1	98.1	86.9	2.3	8.9	8
327	Concrete, gypsum, plaster products.....	36.9	1.0	0.7	0.3	36.0	23.4	3.0	9.6	13
3273	Ready-mixed concrete.....	7.9	0.4	0.3	0.1	7.5	3.7	1.4	2.3	15
329	Misc. nonmetallic mineral products.....	99.4	4.9	3.6	1.3	94.5	54.9	16.1	23.5	6
3292	Asbestos products.....	14.0	0.9	0.5	0.4	13.1	7.1	1.4	4.6	15
3296	Mineral wool.....	50.9	1.4	1.0	0.3	49.5	29.6	10.1	9.8	8
33	Primary metal industries.....	1,911.8	37.5	31.6	5.9	1,874.4	1,111.9	517.6	244.8	1
331	Blast furnace, basic steel products.....	1,221.1	18.5	15.9	2.6	1,202.6	621.6	423.8	157.1	1
3312	Blast furnaces and steel mills.....	1,164.2	15.6	13.5	2.1	1,148.6	594.2	408.1	146.3	1
3313	Electrometallurgical products.....	29.8	-	-	-	29.8	24.6	3.9	1.4	2
3315	Steel wire and related products.....	7.3	1.1	0.6	0.5	6.2	0.7	3.5	2.0	11
3316	Cold finishing of steel shapes.....	14.2	0.8	0.7	-	13.4	1.6	6.5	5.4	4
3317	Steel pipe and tubes.....	5.6	1.1	1.0	-	4.5	0.6	1.9	2.0	7
332	Iron and steel foundries.....	182.8	9.0	7.6	1.4	173.9	111.1	19.1	43.7	5
3321	Gray iron foundries.....	147.9	5.2	4.7	0.6	142.6	92.4	17.4	32.8	6
3322	Malleable iron foundries.....	10.4	1.2	1.1	0.2	9.2	6.2	0.4	2.6	8
3325	Steel foundries, n.e.c.....	21.5	2.0	1.4	0.6	19.5	11.5	0.8	7.2	9
333	Primary nonferrous metals.....	379.4	(D)	0.7	(D)	(D)	323.3	(D)	15.8	1
3331	Primary copper.....	150.7	0.2	0.1	0.1	150.5	135.7	10.3	4.4	2
3332	Primary lead.....	28.3	(D)	0.1	(D)	(D)	26.3	(D)	0.3	2
3333	Primary zinc.....	15.1	0.1	0.1	-	14.9	10.5	4.0	0.4	1
3334	Primary aluminum.....	132.1	0.2	0.1	-	132.0	112.1	14.2	5.6	1
3339	Primary nonferrous metals, n.e.c.....	53.2	0.2	0.1	-	53.0	38.7	9.3	5.0	4
3341	Secondary nonferrous metals.....	35.4	(D)	0.6	(D)	(D)	24.3	(D)	6.3	19
335	Nonferrous rolling and drawing.....	76.3	5.2	4.6	0.6	71.0	26.3	26.2	18.4	2
3351	Copper rolling and drawing.....	15.3	1.4	1.2	0.2	13.9	5.4	5.8	2.8	4
3353	Aluminum sheet, plate, and foil.....	26.5	0.6	0.5	0.1	26.0	9.7	9.4	6.9	1
3354	Aluminum extruded products.....	6.2	0.7	0.6	0.1	5.5	0.6	3.1	1.8	8
3356	Nonferrous rolling and drawing, n.e.c.....	15.3	0.9	0.8	0.1	14.4	4.7	5.8	3.9	9
3357	Nonferrous wiredrawing, insulating.....	12.0	1.8	1.5	0.3	10.2	5.6	1.7	2.9	8
336	Nonferrous foundries.....	13.0	2.3	1.7	0.5	10.7	3.7	4.4	2.6	10
3361	Aluminum foundries.....	9.4	1.5	1.1	0.4	7.9	2.5	3.3	2.0	10
34	Fabricated metal products.....	230.5	40.3	32.3	8.0	190.2	51.6	61.1	77.0	3
341	Metal cans, shipping containers.....	24.1	3.6	3.1	0.5	20.4	11.1	3.5	5.9	11
3411	Metal cans.....	19.1	3.1	2.8	0.4	16.0	8.4	2.8	4.8	7
342	Cutlery, handtools and hardware.....	33.3	4.5	3.2	1.3	28.8	7.1	11.1	10.5	4
3429	Hardware, n.e.c.....	25.8	3.6	2.5	1.1	22.2	5.4	8.8	8.0	4
343	Plumbing, heating, except electric.....	9.7	1.4	1.1	0.3	8.3	2.9	1.7	3.8	11
344	Fabricated structural metal products.....	28.8	5.6	4.3	1.3	23.2	6.1	4.6	12.4	6
3443	Fabricated platemwork, boiler shop.....	6.6	1.6	1.3	0.3	5.0	0.8	1.5	2.7	7
3444	Sheet metalwork.....	7.3	1.2	0.8	0.4	6.1	2.2	1.2	2.7	10
345	Screw machine products, bolts, etc.....	12.3	3.1	2.4	0.7	9.2	0.7	4.9	3.6	12
3452	Bolts, nuts, rivets, and washers.....	11.3	2.6	2.1	0.5	8.7	0.6	4.8	3.2	13
346	Metal forgings and stampings.....	41.9	7.3	6.6	0.7	34.7	9.3	11.5	13.8	4
3462	Iron and steel forgings.....	(D)	(D)	(D)	(D)	6.5	3.2	1.7	1.6	14
3463	Nonferrous forgings.....	(D)	(D)	(D)	(D)	4.8	2.2	1.9	0.7	10
3465	Automotive stampings.....	17.0	2.7	2.5	0.1	14.3	1.6	5.5	7.2	4
3469	Metal stampings, n.e.c.....	9.5	2.0	1.5	0.4	7.5	1.5	2.4	3.5	12
347	Metal services, n.e.c.....	34.4	6.1	5.2	0.9	28.3	6.5	13.4	8.2	19
348	Ordinance and accessories, n.e.c.....	18.8	3.0	2.5	0.5	15.8	2.9	5.2	7.7	8
349	Misc. fabricated metal products.....	27.2	5.7	3.8	1.9	21.3	5.0	5.3	11.1	5
3494	Valves and pipe fittings.....	12.9	2.2	1.8	0.4	10.6	3.5	2.4	4.6	6
3499	Fabricated metal products, n.e.c.....	5.8	1.2	1.0	0.2	4.7	0.9	0.7	3.0	17
35	Machine, except electrical.....	220.9	30.7	24.9	5.7	190.3	47.3	56.7	86.0	9
351	Engines and turbines.....	37.4	4.2	3.5	0.8	33.2	11.4	11.2	10.5	2
3511	Turbines, turbine generator sets.....	10.5	1.1	0.8	0.3	9.4	6.0	1.7	1.7	1
3519	Internal combustion engines, n.e.c.....	26.9	3.1	2.6	0.5	23.8	5.5	9.5	8.8	3
352	Farm and garden machinery.....	24.8	2.4	2.1	0.3	22.4	8.9	6.0	7.4	1
3523	Farm machinery and equipment.....	22.9	2.0	1.8	0.2	20.9	8.8	5.9	6.3	1
353	Construction, related machinery.....	36.6	4.5	3.5	1.0	32.0	8.3	7.7	16.0	12
3531	Construction machinery.....	23.8	2.3	1.7	0.5	21.5	6.0	5.5	10.0	3
3533	Oilfield machinery.....	6.6	1.1	0.8	0.3	5.5	1.3	1.5	2.7	4

See footnotes at end of table.

Table 3A. Pollution Abatement Operating Costs, by Form of Abatement and by Industry:
1981—Continued

(Millions of dollars)

SIC code	Industry	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
			Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
	Machin, except electrical--Continued									
354	Metalsworking machinery.....	14.0	3.8	2.9	0.9	10.2	1.9	1.6	6.7	5
355	Special industry machinery.....	15.5	2.0	1.5	0.5	13.6	3.9	3.5	6.0	5
356	General industrial machinery.....	27.2	4.8	4.2	0.6	22.4	4.9	5.3	12.3	5
3561	Pumps and pumping equipment.....	5.8	0.9	0.7	0.2	4.9	0.9	1.1	2.9	10
3562	Ball and roller bearings.....	7.5	1.2	1.1	-	6.3	1.0	2.4	2.9	9
3579	Office machines, typewriters, etc.....	7.0	0.7	0.5	0.2	6.3	1.7	2.6	2.0	5
358	Refrigeration and service machinery.....	24.6	3.7	3.1	0.6	20.9	4.0	7.3	9.6	2
3585	Refrigeration, heating equipment.....	21.6	3.1	2.6	0.5	18.5	3.5	6.9	8.2	2
359	Misc. machinery, exc. electrical.....	12.0	2.1	1.7	0.3	9.9	1.0	3.1	5.7	10
3592	Carburetors, pistons, rings, etc.....	7.5	1.2	1.0	0.1	6.3	0.9	2.5	2.9	5
36	Electric, electronic equipment.....	247.1	36.0	29.1	6.9	211.1	51.8	77.1	81.9	2
361	Electric distriouting equipment.....	12.0	1.5	1.3	0.2	10.5	1.4	4.1	5.0	4
3612	Transformers.....	5.6	0.5	0.4	0.1	5.1	0.6	1.9	2.6	3
3613	Switchgear, switchboard apparatus.....	6.4	1.1	0.9	0.2	5.3	0.9	2.1	2.3	7
362	Electrical industrial apparatus.....	31.5	3.7	3.0	0.7	27.8	12.4	5.7	9.8	5
3621	Motors and generators.....	7.5	1.7	1.4	0.3	5.8	0.6	1.6	3.6	3
3622	Industrial controls.....	6.1	0.9	0.7	0.1	5.2	0.8	2.4	2.0	16
3624	Carbon and graphite products.....	13.1	0.5	0.5	0.1	12.6	10.2	0.2	2.2	9
363	Household appliances.....	28.0	5.2	4.5	0.7	22.8	5.5	7.6	9.6	2
3631	Household cooking equipment.....	5.7	0.9	0.7	0.2	4.8	0.5	2.2	2.1	6
3632	Household refrigerators, freezers.....	7.7	1.7	1.5	0.1	6.0	1.3	1.6	3.1	1
3633	Household laundry equipment.....	5.9	0.9	(D)	(D)	5.0	2.2	1.6	1.2	1
364	Electric lighting, wiring equipment.....	20.3	4.3	3.9	0.5	15.9	4.2	4.4	7.3	6
3647	Vehicular lighting equipment.....	5.9	(D)	(D)	(D)	(D)	(D)	(D)	1.9	1
365	Radio, TV receiving equipment.....	8.8	1.3	1.3	-	7.5	1.2	0.4	5.9	5
3651	Radio and TV receiving sets.....	7.3	1.1	1.1	-	6.3	1.1	0.3	4.8	3
366	Communication equipment.....	39.7	7.1	5.4	1.7	32.6	5.6	14.8	12.2	8
3661	Telephone and telegraph apparatus.....	15.3	1.6	1.4	0.2	14.8	2.8	7.6	4.3	1
3662	Radio and TV communication equipment.....	23.2	5.4	4.0	1.5	17.8	2.8	7.1	7.9	13
367	Electronic components, accessories.....	77.7	9.8	7.0	2.8	68.0	9.9	31.8	26.2	7
3674	Semiconductors, related devices.....	36.3	4.4	3.3	1.1	31.9	5.1	19.0	7.6	5
3679	Electronic components, n.e.c.....	23.4	3.0	1.9	1.1	20.4	2.7	7.0	10.6	14
369	Misc. electric equipment, supplies.....	29.1	3.1	2.8	0.3	26.0	11.7	8.4	5.9	5
3691	Storage batteries.....	17.9	1.0	0.9	0.1	16.9	9.7	4.8	2.5	8
3694	Engine electrical equipment.....	6.3	1.3	1.3	0.1	4.9	0.9	2.3	1.7	1
37	Transportation equipment.....	426.1	46.0	37.4	8.6	380.1	117.5	113.3	149.1	1
371	Motor vehicles and equipment.....	308.3	32.4	27.0	5.4	276.0	93.1	78.1	104.8	2
3711	Motor vehicles and car bodies.....	185.0	14.8	12.6	2.2	170.2	70.6	34.3	65.3	1
3714	Motor vehicle parts, accessories.....	118.9	16.7	13.8	2.9	102.2	21.9	43.4	36.9	4
372	Aircraft and parts.....	52.9	6.9	5.5	1.4	46.1	9.5	18.6	17.9	2
3721	Aircraft.....	21.6	3.2	2.3	0.9	18.5	3.4	6.7	8.4	1
3724	Aircraft engines and engine parts.....	18.8	1.8	1.6	0.2	17.0	3.3	7.7	6.0	7
3728	Aircraft equipment, n.e.c.....	12.5	1.9	1.6	0.3	10.6	2.8	4.3	3.6	4
373	Ship, boat building, repairing.....	30.5	2.3	1.7	0.7	28.2	5.4	6.4	16.3	2
3731	Ship building and repairing.....	28.4	2.2	1.6	0.5	26.2	5.1	6.4	14.7	2
3743	Railroad equipment.....	8.2	0.7	0.6	0.1	7.5	2.2	2.3	3.0	1
376	Guided missiles, space vehicles.....	19.4	2.8	2.1	0.7	16.6	5.9	6.0	4.6	1
3761	Guided missiles, space vehicles.....	11.8	2.3	1.7	0.6	9.5	4.2	2.9	2.4	1
3764	Space propulsion units and parts.....	6.7	0.4	0.2	0.2	6.4	1.5	2.9	1.9	4
38	Instruments, related products.....	90.4	9.2	8.0	1.3	81.1	12.8	32.0	36.2	2
382	Measuring, controlling devices.....	14.9	2.4	1.9	0.4	12.6	0.8	6.7	5.0	4
3825	Instruments to measure electricity.....	8.8	1.0	0.8	0.2	7.8	0.3	4.7	2.8	4
384	Medical instruments, supplies.....	10.5	2.3	1.9	0.4	8.2	1.6	1.9	4.7	14
3842	Surgical appliances and supplies.....	6.5	1.4	1.2	0.3	5.1	0.8	0.9	3.4	19
3861	Photographic equipment and supplies.....	57.3	2.3	2.1	0.2	55.0	9.8	21.7	23.4	1
39	Misc. manufacturing industries.....	28.4	5.2	3.5	1.6	23.2	6.2	4.4	12.5	5
394	Toys and sporting goods.....	5.6	1.2	0.8	0.4	4.3	0.6	0.7	3.0	6
399	Miscellaneous manufactures.....	12.4	2.1	1.3	0.8	10.3	4.0	1.2	5.1	9
3996	Hard surface floor covering.....	5.2	0.6	0.1	0.5	4.6	3.2	(D)	(D)	11

Note: Total may not agree precisely with detail because of independent rounding. No data cells are shown where GAC is less than \$5.0 million or the standard error is 20 or greater. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹Excludes major industry group 23, Apparel and Other Textile Products.

Table 3B. Pollution Abatement Operating Costs, by Form of Abatement and by State and Major Industry Group: 1981

(Millions of dollars)

SIC code	State and major industry group	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
			Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
	United States ¹	9,109.9	687.6	590.7	96.5	8,422.6	3,697.8	2,963.6	1,759.2	1
	New England Division:									
26	Maine.....	57.1	4.4	3.7	0.7	52.7	8.5	33.6	10.6	4
	Paper and allied products.....	44.6	1.6	1.4	0.2	43.0	5.9	29.5	7.6	3
26	New Hampshire.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Paper and allied products.....	7.6	-	-	-	7.5	(D)	6.0	(D)	7
	Vermont.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
26	Massachusetts.....	93.5	11.4	9.6	1.7	82.1	23.5	27.7	30.9	11
	Paper and allied products.....	11.4	2.4	2.3	-	9.0	2.3	2.5	4.2	13
28	Chemicals and allied products.....	14.4	2.1	2.0	0.1	12.3	3.1	5.8	3.4	12
34	Fabricated metal products.....	9.5	0.8	0.8	-	8.7	3.2	3.7	1.8	15
35	Machine, except electrical.....	6.1	0.9	0.7	0.2	5.2	1.2	1.2	2.9	7
36	Electric, electronic equipment.....	12.1	0.7	0.7	0.1	11.3	2.0	5.9	3.4	19
38	Instruments, related products.....	8.3	0.1	0.1	-	8.2	1.1	3.4	3.8	3
	Rhode Island.....	11.9	1.5	1.4	0.1	10.4	1.5	4.1	4.7	8
28	Connecticut.....	79.8	6.3	5.3	1.0	73.5	22.5	29.3	21.6	9
	Chemicals and allied products.....	22.5	0.9	(D)	(D)	21.6	(D)	10.5	(D)	5
33	Primary metal industries.....	6.3	0.5	0.4	0.1	5.8	2.5	2.4	0.9	14
34	Fabricated metal products.....	9.6	0.7	0.4	0.3	8.9	1.7	5.0	2.2	16
37	Transportation equipment.....	9.4	0.2	0.1	0.2	9.1	1.4	5.4	2.3	2
	Middle Atlantic Division:									
	New York.....	379.4	30.3	26.6	3.7	349.0	118.2	132.6	98.2	2
20	Food and kindred products.....	16.0	7.0	6.4	0.5	9.1	1.4	3.3	4.4	7
26	Paper and allied products.....	32.6	4.1	3.0	1.1	28.6	6.2	16.7	5.7	7
28	Chemicals and allied products.....	103.9	6.9	6.6	0.4	96.9	32.3	41.0	23.7	6
32	Stone, clay, glass products.....	9.2	1.0	0.7	0.3	8.3	4.1	1.4	2.8	8
33	Primary metal industries.....	57.7	0.9	0.9	-	56.8	30.8	19.7	6.3	1
34	Fabricated metal products.....	9.7	0.8	0.5	0.3	8.8	1.7	2.7	4.4	9
35	Machine, except electrical.....	23.2	2.3	1.9	0.4	21.0	3.1	9.2	8.6	2
36	Electric, electronic equipment.....	38.5	2.1	2.0	0.1	36.4	6.3	14.4	15.8	2
37	Transportation equipment.....	32.0	0.9	0.8	0.1	31.2	(D)	6.9	(D)	1
38	Instruments, related products.....	38.3	1.8	1.7	0.1	36.5	5.7	15.0	15.7	2
	New Jersey.....	337.5	28.0	24.7	3.3	309.4	126.7	112.5	70.2	2
20	Food and kindred products.....	20.6	4.9	4.7	0.2	15.7	4.9	5.9	4.9	5
26	Paper and allied products.....	11.7	4.5	4.3	0.1	7.2	1.0	3.5	2.7	18
28	Chemicals and allied products.....	161.0	10.1	9.5	0.6	150.9	47.0	75.8	28.1	2
29	Petroleum and coal products.....	50.2	-	-	-	50.2	(D)	12.4	(D)	1
32	Stone, clay, glass products.....	18.4	0.7	0.3	0.3	17.7	10.5	1.9	5.3	12
33	Primary metal industries.....	25.8	0.9	0.8	0.1	24.9	17.4	5.6	1.9	10
34	Fabricated metal products.....	10.0	2.0	0.9	1.1	8.0	2.7	1.3	4.0	7
35	Machine, except electrical.....	5.4	0.8	0.7	0.1	4.6	1.8	0.5	2.4	7
36	Electric, electronic equipment.....	8.7	0.9	0.9	0.1	7.8	2.2	2.0	3.6	6
37	Transportation equipment.....	7.1	(D)	(D)	-	6.8	(D)	(D)	3.8	2
	Pennsylvania.....	665.0	33.6	27.4	6.2	631.4	295.9	184.3	150.8	1
20	Food and kindred products.....	20.5	8.0	7.1	0.9	12.5	2.3	4.6	5.6	4
26	Paper and allied products.....	41.4	5.7	4.7	1.0	35.7	11.8	13.4	10.3	3
28	Chemicals and allied products.....	61.5	2.5	2.4	0.1	59.0	23.1	23.7	12.2	6
29	Petroleum and coal products.....	111.5	0.8	0.8	-	110.7	71.0	32.2	7.6	1
30	Rubber, misc. plastic products.....	7.2	0.5	0.3	0.2	6.6	3.1	0.6	3.0	17
32	Stone, clay, glass products.....	28.0	0.8	0.5	0.2	27.2	15.4	3.8	7.9	16
33	Primary metal industries.....	313.2	4.2	3.7	0.6	309.0	143.4	88.4	77.2	1
34	Fabricated metal products.....	11.0	2.0	1.5	0.5	9.0	3.1	2.2	3.7	7
35	Machine, except electrical.....	17.0	2.3	1.9	0.4	14.6	6.9	3.0	4.8	3
36	Electric, electronic equipment.....	21.1	2.0	1.4	0.6	19.1	6.4	6.7	6.0	8
37	Transportation equipment.....	8.5	0.8	0.8	0.1	7.7	2.5	2.1	3.1	2
39	Misc. manufacturing industries.....	5.6	0.8	0.3	0.5	4.8	(D)	(D)	1.9	5
	East North Central Division:									
	Ohio.....	602.8	64.6	59.3	5.4	538.1	240.6	182.5	114.7	2
20	Food and kindred products.....	38.3	15.5	14.5	1.0	22.7	5.9	6.3	10.5	7
26	Paper and allied products.....	24.0	2.0	1.8	0.2	22.0	6.0	11.3	4.7	6
28	Chemicals and allied products.....	76.8	7.3	6.3	1.0	69.5	17.6	33.0	18.9	6
29	Petroleum and coal products.....	22.5	0.5	0.5	-	22.0	13.5	7.1	1.3	1
30	Rubber, misc. plastic products.....	23.9	2.7	2.2	0.5	21.2	10.8	2.3	8.1	1
32	Stone, clay, glass products.....	28.7	1.5	1.3	0.1	27.3	13.9	6.9	6.4	7
33	Primary metal industries.....	251.1	5.5	5.0	0.5	245.6	138.5	87.6	19.5	1
34	Fabricated metal products.....	35.5	7.1	6.6	0.6	28.4	8.7	8.1	11.6	8
35	Machine, except electrical.....	20.9	4.2	3.7	0.5	16.8	4.7	5.0	7.1	5
36	Electric, electronic equipment.....	12.4	2.8	2.4	0.4	9.6	2.7	3.2	3.7	3
37	Transportation equipment.....	54.7	6.1	5.8	0.2	48.6	17.8	11.2	19.6	2

See footnotes at end of table.

Table 3B. Pollution Abatement Operating Costs, by Form of Abatement and by State and Major Industry Group: 1981—Continued

SIC code	State and major industry group	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
			Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
	East North Central Division—Continued									
	Indiana.....	462.8	24.3	22.3	2.0	438.6	209.4	163.3	65.8	1
20	Food and kindred products.....	15.1	4.6	4.4	0.2	10.4	4.1	3.4	2.9	6
28	Chemicals and allied products.....	52.1	4.1	(D)	(D)	48.0	6.3	34.3	7.4	4
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	3.5	(X)
33	Primary metal industries.....	252.2	3.3	3.0	0.3	248.9	135.5	94.1	19.3	1
35	Machine, except electrical.....	7.0	1.5	1.4	-	5.5	1.5	1.6	2.4	7
36	Electric, electronic equipment.....	22.2	3.6	3.5	0.1	18.6	5.5	4.5	8.6	2
37	Transportation equipment.....	19.4	2.0	2.0	0.1	17.3	3.5	7.5	6.2	2
	Illinois.....	421.2	43.3	38.1	5.2	377.9	155.4	121.8	100.7	1
20	Food and kindred products.....	49.4	15.4	14.3	1.1	34.0	9.6	10.5	13.9	2
26	Paper and allied products.....	15.7	3.7	3.2	0.5	12.0	3.7	4.0	4.3	19
27	Printing and publishing.....	9.5	0.7	0.5	0.1	8.8	4.3	1.9	2.6	13
28	Chemicals and allied products.....	75.9	7.3	6.7	0.6	68.6	23.4	26.1	19.1	5
29	Petroleum and coal products.....	60.6	0.7	(D)	(D)	59.9	33.2	21.1	5.6	1
30	Rubber, misc. plastics products.....	8.6	0.8	0.7	0.2	7.8	1.6	1.5	4.7	8
33	Primary metal industries.....	101.4	2.8	2.4	0.4	98.7	52.4	31.8	14.4	1
34	Fabricated metal products.....	22.1	3.4	3.0	0.4	18.7	5.4	6.9	6.4	10
35	Machine, except electrical.....	31.3	3.5	2.6	0.8	27.9	6.2	8.3	13.3	2
36	Electric, electronic equipment.....	11.2	1.9	1.8	0.1	9.3	1.3	3.9	4.1	3
37	Transportation equipment.....	9.6	0.9	0.8	0.2	8.7	(D)	(D)	3.5	4
	Michigan.....	467.0	56.4	50.8	5.6	410.6	143.8	148.3	118.3	2
28	Chemicals and allied products.....	64.3	2.9	2.8	0.1	61.4	12.4	33.0	16.0	4
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	1.1	0.4	(X)
32	Stone, clay, glass products.....	17.7	0.7	0.7	0.1	17.0	10.0	1.8	5.2	10
33	Primary metal industries.....	128.4	8.2	8.0	0.2	120.2	64.7	28.9	26.6	1
34	Fabricated metal products.....	17.9	4.1	3.6	0.5	13.8	1.7	6.3	5.7	9
35	Machine, except electrical.....	15.4	2.2	2.0	0.2	13.1	3.1	4.3	5.7	3
37	Transportation equipment.....	130.7	17.5	14.6	3.0	113.1	31.8	44.6	36.7	1
	Wisconsin.....	168.7	31.9	29.3	2.6	136.8	28.9	63.3	44.5	6
20	Food and kindred products.....	26.2	13.5	13.2	0.4	12.7	1.5	6.6	4.5	7
26	Paper and allied products.....	75.6	4.4	3.5	0.9	71.2	10.2	47.2	13.8	6
34	Fabricated metal products.....	9.3	1.5	1.5	0.1	7.8	2.4	1.5	3.8	18
35	Machine, except electrical.....	11.4	1.5	1.4	0.1	9.9	3.6	1.8	4.5	3
36	Electric, electronic equipment.....	5.8	2.0	1.8	0.2	3.8	0.4	1.2	2.3	14
37	Transportation equipment.....	6.6	0.8	0.8	-	5.8	1.6	0.9	3.4	1
	West North Central Division:									
	Minnesota.....	89.0	25.7	23.8	1.9	63.3	18.7	25.2	19.3	3
20	Food and kindred products.....	20.5	7.2	6.6	0.6	13.3	4.0	6.3	2.9	7
26	Paper and allied products.....	21.4	8.9	8.7	0.2	12.5	0.9	8.7	2.9	1
29	Petroleum and coal products.....	(D)	0.3	0.2	0.2	(D)	(D)	(D)	0.9	(X)
	Iowa.....	95.3	15.9	14.3	1.6	79.4	24.3	31.0	24.0	2
20	Food and kindred products.....	40.9	12.8	12.2	0.7	28.1	10.1	10.3	7.7	3
28	Chemicals and allied products.....	17.1	0.3	0.2	0.1	16.8	2.4	12.4	2.0	5
35	Machine, except electrical.....	16.9	0.8	0.7	0.1	16.1	5.8	4.3	6.0	3
	Missouri.....	124.0	12.2	10.1	2.1	111.8	45.9	31.8	34.1	4
20	Food and kindred products.....	15.6	6.0	5.8	0.2	9.6	3.8	2.7	3.1	6
28	Chemicals and allied products.....	32.0	1.2	(D)	(D)	30.8	12.3	14.2	4.3	16
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
33	Primary metal industries.....	20.5	1.2	(D)	(D)	19.3	12.5	(D)	(D)	2
37	Transportation equipment.....	22.0	1.0	(D)	(D)	21.1	4.9	(D)	(D)	1
	North Dakota.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	South Dakota.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Nebraska.....	23.5	6.7	4.2	2.5	16.8	5.6	5.1	6.0	9
20	Food and kindred products.....	11.8	5.6	3.2	2.3	6.3	1.1	2.9	2.3	12
	Kansas.....	58.5	5.7	4.5	1.3	52.8	25.3	14.7	12.7	7
20	Food and kindred products.....	6.0	1.7	1.5	0.2	4.4	1.9	1.5	0.9	4
28	Chemicals and allied products.....	8.1	1.0	(D)	(D)	7.1	(D)	3.9	(D)	7
29	Petroleum and coal products.....	12.6	0.1	0.1	-	12.5	5.3	4.5	2.7	1
32	Stone, clay, glass products.....	13.5	0.4	(D)	(D)	13.1	10.1	(D)	(D)	11
	South Atlantic Division:									
	Delaware.....	122.8	4.5	4.1	0.4	118.3	63.8	44.5	9.9	1
28	Chemicals and allied products.....	37.8	2.4	(D)	(D)	35.4	(D)	21.5	(D)	4
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Maryland.....	137.8	10.8	9.4	1.3	127.1	59.8	43.8	23.3	2
26	Paper and allied products.....	8.5	3.4	3.4	-	5.1	(D)	(D)	0.8	11
28	Chemicals and allied products.....	27.2	0.8	0.8	0.1	26.3	7.5	9.3	9.5	4
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)

See footnotes at end of table.

Table 3B. Pollution Abatement Operating Costs, by Form of Abatement and by State and Major Industry Group: 1981—Continued

SIC code	State and major industry group	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
			Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
	South Atlantic Division—Continued	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	District of Columbia.....									
	Virginia.....	138.5	18.0	17.0	1.0	120.5	39.8	55.1	25.5	2
20	Food and kindred products.....	10.9	3.9	3.8	0.1	7.0	1.0	4.1	1.8	14
22	Textile mill products.....	8.9	2.9	2.8	0.1	5.9	0.8	3.1	2.0	4
26	Paper and allied products.....	32.6	(D)	(D)	(D)	(D)	(D)	14.4	(D)	5
28	Chemicals and allied products.....	43.0	4.2	4.0	0.2	38.8	10.0	22.7	6.1	1
36	Electric, electronic equipment.....	5.4	0.8	0.7	0.1	4.6	0.7	3.2	0.8	2
37	Transportation equipment.....	10.1	0.5	0.5	0.1	9.5	(D)	(D)	3.0	7
	West Virginia.....	198.5	5.0	4.5	0.5	193.4	65.6	90.0	37.9	2
28	Chemicals and allied products.....	91.3	3.2	3.0	0.2	88.2	19.0	54.9	14.3	1
33	Primary metal industries.....	88.9	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1
	North Carolina.....	157.1	25.5	22.7	2.8	131.6	44.2	45.9	41.3	5
21	Tobacco products.....	9.9	2.1	(D)	(D)	7.8	5.1	(D)	(D)	1
22	Textile mill products.....	34.0	12.2	11.4	0.8	21.8	7.4	8.9	5.6	8
25	Furniture and fixtures.....	7.6	1.0	0.6	0.4	6.7	4.3	0.2	2.1	14
26	Paper and allied products.....	24.1	0.2	0.2	-	23.9	9.5	10.9	3.5	1
28	Chemicals and allied products.....	24.3	1.3	1.1	0.3	22.9	3.4	12.7	6.8	7
35	Machine, except electrical.....	5.4	0.4	0.4	-	5.0	(D)	(D)	1.5	3
36	Electric, electronic equipment.....	5.6	0.8	0.6	0.2	4.8	1.9	1.7	1.2	8
	South Carolina.....	106.3	7.7	6.2	1.5	98.7	26.3	50.3	22.0	8
22	Textile mill products.....	16.5	3.8	3.4	0.4	12.6	2.9	6.0	3.7	8
28	Chemicals and allied products.....	31.4	0.5	0.4	-	30.9	8.0	15.0	7.9	2
32	Stone, clay, glass products.....	8.4	0.5	0.5	-	7.9	4.4	1.9	1.6	15
33	Primary metal industries.....	5.1	0.7	(D)	(D)	4.4	2.4	(D)	(D)	5
	Georgia.....	140.5	15.8	14.2	1.6	124.8	47.0	50.8	26.9	2
20	Food and kindred products.....	12.8	5.2	5.1	0.1	7.6	0.9	3.5	3.1	5
22	Textile mill products.....	9.9	3.8	3.5	0.3	6.1	1.4	2.1	2.5	7
26	Paper and allied products.....	52.9	2.4	1.9	0.5	50.5	25.5	17.6	7.4	3
28	Chemicals and allied products.....	31.5	1.2	1.1	0.1	30.3	7.1	19.9	3.4	7
37	Transportation equipment.....	8.9	0.7	0.7	-	8.2	1.7	2.5	4.0	1
	Florida.....	151.4	15.0	12.7	2.3	136.4	52.6	62.2	21.5	3
20	Food and kindred products.....	22.2	6.5	6.0	0.5	15.7	3.5	8.4	3.8	4
26	Paper and allied products.....	51.7	(D)	(D)	(D)	(D)	(D)	29.5	(D)	1
28	Chemicals and allied products.....	44.2	0.8	0.8	-	43.3	22.4	15.8	5.1	4
	East South Central Division:									
	Kentucky.....	134.4	14.3	13.6	0.7	120.0	45.2	40.8	34.0	3
20	Food and kindred products.....	10.4	5.5	5.4	0.1	4.9	0.7	1.3	2.9	16
28	Chemicals and allied products.....	41.8	2.9	2.9	-	38.9	10.6	21.4	6.8	4
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
33	Primary metal industries.....	20.1	0.2	0.1	-	20.0	12.2	6.1	1.6	1
35	Machine, except electrical.....	7.3	0.8	0.8	0.1	6.5	(D)	(D)	1.7	3
36	Electric, electronic equipment.....	7.5	1.4	1.4	-	6.1	3.2	1.0	2.0	5
	Tennessee.....	187.9	17.9	16.1	1.8	170.0	51.2	87.5	31.2	3
20	Food and kindred products.....	10.6	4.7	4.3	0.4	5.9	1.5	2.7	1.6	6
26	Paper and allied products.....	13.1	4.5	4.4	0.1	8.6	2.8	4.3	1.5	11
28	Chemicals and allied products.....	116.3	2.2	2.0	0.2	114.1	28.6	69.8	15.7	5
33	Primary metal industries.....	12.7	0.5	0.4	0.1	12.2	8.7	2.1	1.5	6
36	Electric, electronic equipment.....	5.6	0.7	0.5	0.2	4.9	2.4	1.2	1.3	8
	Alabama.....	210.3	9.1	7.6	1.5	201.2	87.2	76.1	38.0	4
26	Paper and allied products.....	42.7	(D)	(D)	(D)	(D)	18.2	(D)	(D)	1
28	Chemicals and allied products.....	54.3	0.2	0.1	0.1	54.1	11.2	31.6	11.3	1
33	Primary metal industries.....	72.9	0.5	0.4	0.1	72.4	46.4	20.1	5.9	9
	Mississippi.....	73.4	2.6	2.1	0.5	70.8	29.3	28.7	12.8	3
24	Lumber and wood products.....	11.5	0.1	-	-	11.4	2.7	6.4	2.3	14
26	Paper and allied products.....	(D)	-	-	-	(D)	3.6	4.2	(D)	(X)
28	Chemicals and allied products.....	16.5	-	-	-	16.4	4.7	10.0	1.7	4
29	Petroleum and coal products.....	(D)	-	-	-	(D)	(D)	(D)	(D)	(X)
	West South Central Division:									
	Arkansas.....	83.7	5.2	4.3	0.9	78.5	24.4	35.3	18.8	10
20	Food and kindred products.....	8.8	3.0	2.8	0.2	5.9	1.2	3.0	1.7	6
26	Paper and allied products.....	14.9	0.1	-	-	14.9	5.0	6.1	3.8	2
	Louisiana.....	565.6	3.4	2.9	0.5	562.2	235.0	247.0	80.2	1
20	Food and kindred products.....	5.8	1.1	1.0	0.1	4.6	1.5	1.5	1.7	9
26	Paper and allied products.....	22.5	0.3	0.3	-	22.2	7.3	10.9	4.0	4
28	Chemicals and allied products.....	269.4	1.3	1.1	0.2	268.1	62.3	149.6	56.2	2
29	Petroleum and coal products.....	238.8	0.2	0.2	-	238.6	147.3	80.6	10.7	1
33	Primary metal industries.....	17.8	-	-	-	17.8	13.9	2.2	1.7	11

See footnotes at end of table.

Table 3B. Pollution Abatement Operating Costs, by Form of Abatement and by State and Major Industry Group: 1981—Continued

(Millions of dollars)

SIC code	State and major industry group	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC ¹
			Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
West South Central Division--Continued										
	Oklahoma.....	49.6	2.1	1.7	0.4	47.5	22.5	15.4	9.6	11
29	Petroleum and coal products.....	19.6	0.1	-	-	19.5	11.5	6.5	1.5	1
33	Primary metal industries.....	6.2	-	-	-	6.2	(D)	(D)	1.3	19
	Texas.....	1,187.8	25.9	19.4	6.5	1,161.8	632.0	349.3	180.1	1
20	Food and kindred products.....	27.2	9.6	8.9	0.7	17.6	2.1	7.7	7.8	8
26	Paper and allied products.....	31.0	1.1	1.1	-	29.9	7.8	16.3	5.8	4
28	Chemicals and allied products.....	351.1	2.9	1.8	1.0	348.2	116.7	164.7	66.9	2
29	Petroleum and coal products.....	606.8	0.8	0.5	0.3	606.0	409.3	132.9	63.8	1
32	Stone, clay, glass products.....	23.4	0.7	0.4	0.3	22.8	18.1	1.9	2.8	18
33	Primary metal industries.....	94.0	0.2	0.1	0.1	93.8	69.2	16.0	8.6	2
34	Fabricated metal products.....	9.8	2.0	1.1	0.9	7.8	2.4	2.8	2.5	14
35	Machine, except electrical.....	11.5	2.4	1.4	0.9	9.1	1.3	1.7	6.2	8
36	Electric, electronic equipment.....	8.8	2.8	1.5	1.2	6.1	1.5	1.9	2.7	8
37	Transportation equipment.....	8.5	1.1	0.9	0.2	7.4	0.6	1.4	5.3	6
Mountain Division:										
	Montana.....	28.5	0.6	0.5	0.2	27.9	20.4	4.9	2.5	2
29	Petroleum and coal products.....	(D)	-	-	-	(D)	(D)	2.7	1.1	(X)
33	Primary metal industries.....	(D)	(D)	-	(D)	(D)	(D)	-	(D)	(X)
	Idaho.....	39.2	1.1	0.8	0.3	38.1	22.3	10.7	5.1	4
28	Chemicals and allied products.....	20.1	-	-	-	20.1	13.8	4.2	2.1	1
33	Primary metal industries.....	(D)	-	-	-	(D)	(D)	(D)	-	(X)
	Wyoming.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Colorado.....	54.3	4.8	4.2	0.6	49.5	20.8	18.0	10.7	4
20	Food and kindred products.....	9.3	2.4	2.2	0.1	6.9	(D)	(D)	1.7	5
28	Chemicals and allied products.....	(D)	-	-	-	(D)	(D)	(D)	(D)	(X)
33	Primary metal industries.....	(D)	-	-	-	(D)	(D)	(D)	(D)	(X)
38	Instruments, related products.....	9.9	0.3	0.2	0.2	9.5	(D)	(D)	1.6	1
	New Mexico.....	34.2	0.3	0.3	-	33.9	32.2	1.1	0.5	1
33	Primary metal industries.....	(D)	-	-	-	(D)	(D)	-	-	(X)
	Arizona.....	77.6	3.5	3.1	0.4	74.1	61.7	6.8	5.5	2
33	Primary metal industries.....	65.1	0.1	0.1	-	65.0	57.4	4.4	3.1	2
	Utah.....	42.1	1.0	0.8	0.2	41.1	31.6	5.6	3.8	3
33	Primary metal industries.....	(D)	-	-	-	(D)	(D)	(D)	(D)	(X)
	Nevada.....	5.0	0.3	0.1	0.2	4.7	2.2	2.2	0.2	8
Pacific Division:										
	Washington.....	229.0	10.6	7.7	2.9	218.5	119.1	69.4	29.9	2
20	Food and kindred products.....	9.5	5.3	4.4	0.9	4.2	0.4	2.4	1.5	13
24	Lumber and wood products.....	22.6	0.5	0.2	0.4	22.1	7.0	0.9	14.1	15
26	Paper and allied products.....	66.0	0.3	0.2	0.2	65.7	13.4	48.4	3.9	1
29	Petroleum and coal products.....	36.3	0.1	-	-	36.2	24.3	9.6	2.3	1
33	Primary metal industries.....	63.3	0.6	0.4	0.3	62.7	55.6	4.7	2.4	2
37	Transportation equipment.....	10.1	2.0	1.6	0.5	8.1	(D)	(D)	2.9	1
	Oregon.....	90.6	6.8	5.4	1.4	83.8	28.5	32.9	22.1	5
20	Food and kindred products.....	5.7	2.9	2.7	0.2	2.8	0.2	1.9	0.7	12
24	Lumber and wood products.....	19.9	0.8	0.4	0.4	19.1	7.6	2.6	8.8	11
26	Paper and allied products.....	32.8	1.0	0.7	0.3	31.7	6.9	20.2	4.7	1
33	Primary metal industries.....	19.6	0.2	0.2	-	19.4	11.0	5.9	2.5	8
	California.....	649.6	67.0	48.6	18.4	582.5	326.0	143.6	112.4	3
20	Food and kindred products.....	60.8	29.6	27.0	2.6	31.2	6.5	12.9	11.7	3
24	Lumber and wood products.....	9.2	0.1	-	0.1	9.0	3.6	1.5	3.8	17
26	Paper and allied products.....	18.2	6.0	4.7	1.3	12.2	2.6	5.3	4.2	12
28	Chemicals and allied products.....	62.8	4.6	3.6	1.0	58.2	21.2	19.9	17.1	10
29	Petroleum and coal products.....	276.2	3.4	2.6	0.8	272.8	201.9	59.1	11.8	1
30	Rubber, misc. plastics products.....	6.4	1.3	0.5	0.9	5.1	1.0	0.6	3.5	13
32	Stone, clay, glass products.....	37.9	0.5	0.2	0.3	37.4	26.6	2.4	8.3	9
33	Primary metal industries.....	61.7	1.6	1.0	0.6	60.1	34.4	15.2	10.6	7
34	Fabricated metal products.....	21.6	1.6	1.0	1.1	19.1	8.9	4.5	5.7	13
35	Machine, except electrical.....	9.7	1.5	0.9	0.6	8.3	1.2	3.0	4.0	9
36	Electric, electronic equipment.....	24.3	4.0	2.2	1.9	20.3	4.2	6.3	9.7	19
37	Transportation equipment.....	41.6	4.5	2.4	2.2	37.1	11.1	11.2	14.7	1
	Alaska.....	6.1	0.1	-	0.1	6.0	0.8	4.3	0.9	8
	Hawaii.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)

Note: Totals may not agree precisely with detail because of independent rounding. No 2-digit industries are shown where GAC is less than \$5.0 million or the standard error is 20 or greater. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹Excludes major industry group 23, Apparel and Other Textile Products.

Table 3C. Pollution Abatement Operating Costs, by Form of Abatement
and by SMSA: 1981

(Millions of dollars)

Standard metropolitan statistical area	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
		Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
Akron, Ohio	19.6	2.7	2.2	0.4	16.9	9.8	2.1	4.9	4
Albany, Ga.	6.1	1.6	1.4	0.2	4.5	0.5	2.6	1.4	1
Albany-Schenectady-Troy, N.Y.	33.8	2.1	2.0	0.1	31.6	8.6	15.2	7.9	6
Allentown-Bethlehem-Easton, Pa.-N.J.	60.6	1.7	1.6	0.1	58.8	29.8	20.1	9.0	6
Amarillo, Tex.	5.9	0.2	0.2	0.1	5.6	1.9	2.3	1.4	13
Anaheim-Santa Ana-Garden Grove, Calif.	21.2	3.2	2.1	1.1	17.9	3.7	4.4	9.8	13
Anderson, Ind.	10.1	1.5	1.5	-	8.5	3.0	2.6	2.9	16
Ann Arbor, Mich.	11.7	2.0	2.0	-	9.7	0.9	4.0	4.8	6
Appleton-Oshkosh, Wis.	14.5	2.0	1.4	0.5	12.5	3.2	5.8	3.4	9
Atlanta, Ga.	23.1	4.2	3.9	0.3	18.9	5.7	5.1	8.1	6
Augusta, Ga.-S.C.	17.5	2.5	2.0	0.4	15.0	5.0	5.5	4.5	10
Baltimore, Md.	104.0	5.1	4.1	1.0	98.9	42.3	35.9	20.6	2
Baton Rouge, La.	180.9	0.5	0.5	-	180.4	72.3	86.3	21.8	1
Beaumont-Port Arthur-Orange, Tex.	245.8	0.3	0.2	0.1	245.4	111.2	88.3	46.0	1
Billings, Mont.	10.7	0.5	0.4	0.1	10.2	5.9	2.9	1.4	1
Binghamton, N.Y.-Pa.	8.0	0.5	0.5	-	7.5	0.4	0.8	6.3	1
Birmingham, Ala.	39.4	0.7	0.7	-	38.7	23.6	10.5	4.6	5
Boston, Mass.	36.1	3.8	2.7	1.1	26.7	6.5	7.6	12.5	5
Bridgeport, Conn.	8.3	0.4	0.1	0.3	7.9	2.5	3.2	2.2	11
Buffalo, N.Y.	106.7	6.9	6.5	0.4	99.8	42.3	38.5	18.9	3
Canton, Ohio	20.5	1.4	1.4	-	19.1	7.8	9.2	1.8	2
Cedar Rapids, Iowa	11.6	4.3	4.0	0.3	7.3	4.3	1.1	1.9	7
Charleston, S.C.	14.8	0.5	0.4	0.1	14.2	5.0	6.5	2.7	13
Charleston, W.Va.	59.1	2.8	2.7	-	56.3	7.5	42.2	6.6	2
Charlotte-Gastonia, N.C.	9.0	2.7	2.5	0.3	6.3	2.3	1.4	2.6	13
Chattanooga, Tenn.-Ga.	17.0	3.9	3.9	-	13.1	4.0	4.9	4.2	12
Chicago, Ill.	255.1	28.9	25.5	3.5	226.1	89.2	73.8	63.0	2
Cincinnati, Ohio-Ky.-Ind.	46.2	11.3	10.1	1.3	34.9	13.8	10.2	10.8	6
Cleveland, Ohio	133.6	20.6	19.6	1.0	113.0	46.5	44.5	21.9	1
Columbia, S.C.	13.1	0.4	0.3	0.1	12.7	5.4	4.5	2.8	8
Columbus, Ohio	30.5	8.0	7.8	0.2	22.5	7.2	8.5	6.8	6
Corpus Christi, Tex.	53.7	0.1	0.1	0.1	53.6	39.5	9.8	4.3	1
Dallas-Fort Worth, Tex.	47.8	9.9	7.6	2.2	37.9	16.1	7.3	14.1	7
Davenport-Rock Island-Moline, Iowa-Ill.	15.5	1.4	1.3	0.1	14.1	4.4	3.2	6.4	5
Dayton, Ohio	31.3	2.9	2.3	0.6	28.3	10.4	6.2	11.8	3
Decatur, Ill.	5.7	1.2	1.1	0.1	4.5	2.1	1.6	0.7	7
Denver-Boulder, Colo.	28.9	4.0	3.5	0.5	24.9	7.2	9.3	8.4	9
Des Moines, Iowa	6.2	1.3	0.8	0.5	4.9	1.9	0.6	2.4	11
Detroit, Mich.	221.6	30.1	27.8	2.3	191.6	77.5	58.9	55.0	1
Dubuque, Iowa	6.4	0.7	0.7	-	5.7	1.5	2.6	1.7	2
El Paso, Tex.	25.7	0.5	0.4	0.1	25.3	23.6	1.1	0.6	5
Erie, Pa.	9.7	3.2	3.1	0.1	6.5	1.7	1.7	3.1	5
Eugene-Springfield, Oreg.	5.4	0.8	0.6	0.2	4.6	1.8	1.6	1.3	10
Flint, Mich.	28.9	2.0	1.9	-	26.9	13.7	5.0	8.2	1
Florence, Ala.	17.4	-	-	-	17.4	12.4	3.9	1.1	1
Fort Wayne, Ind.	8.9	1.1	0.9	0.2	7.8	3.3	1.6	2.9	12
Gadsden, Ala.	12.9	-	-	-	12.8	6.4	4.1	2.3	1
Galveston-Texas City, Tex.	77.0	1.6	1.2	0.4	75.4	39.7	22.4	13.4	1
Gary-Hammond-East Chicago, Ind.	284.7	3.1	3.0	0.1	281.6	164.4	99.3	17.8	1
Grand Rapids, Mich.	22.1	4.0	3.6	0.4	18.1	2.9	9.6	5.6	12
Green Bay, Wis.	21.5	5.8	5.6	0.2	15.7	1.1	11.9	2.7	8
Greensboro-Winston-Salem-N.C.	24.7	6.5	5.7	0.7	18.3	9.6	4.5	4.1	9
Greenville-Spartanburg, S.C.	16.0	2.6	2.2	0.4	13.4	3.6	5.2	3.5	9
Hamilton-Middletown, Ohio	38.6	1.5	1.5	-	37.1	21.0	14.5	1.6	1
Harrisburg, Pa.	7.5	1.6	1.6	0.1	5.9	4.2	0.7	1.0	5
Hartford, Conn.	11.4	1.0	0.9	0.1	10.4	1.9	3.7	4.8	12
Honolulu, Hawaii	7.3	0.5	0.5	-	6.8	2.4	3.0	1.4	10
Houston, Tex.	563.9	8.4	6.5	2.0	555.5	313.7	171.0	70.8	1
Huntington-Ashland, W. Va.-Ky.-Ohio	31.8	0.8	0.7	0.1	31.0	15.7	9.8	5.5	4
Indianapolis, Ind.	29.7	7.3	6.4	0.9	22.4	7.1	7.2	8.1	3
Jacksonville, Fla.	52.8	3.7	3.6	0.1	49.1	14.0	32.0	3.0	2
Jersey City, N.J.	20.1	1.1	0.9	0.1	19.0	6.9	6.4	5.8	9
Johnstown, Pa.	12.9	0.3	0.3	-	12.6	5.0	5.6	2.0	2
Kalamazoo-Portage, Mich.	13.5	3.5	3.5	-	10.0	2.5	2.7	4.8	4
Kansas City, Mo.-Kansas	62.5	4.8	3.8	1.0	57.6	23.1	12.9	21.6	2

See note at end of table.

Table 3C. Pollution Abatement Operating Costs, by Form of Abatement
and by SMSA: 1981—Continued

(Millions of dollars)

Standard metropolitan statistical area	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
		Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
Knoxville, Tenn.....	14.4	1.6	1.5	0.1	12.8	6.1	5.1	1.6	6
Lafayette-West Lafayette, Ind.....	15.3	0.7	0.6	-	14.6	1.2	10.1	3.4	3
Lake Charles, La.....	92.7	-	-	-	92.7	51.3	31.1	10.2	1
Lakeland-Winter Haven, Fla.....	18.8	0.2	0.1	0.1	18.6	10.5	5.6	2.5	5
Lancaster, Pa.....	12.6	1.8	1.1	0.7	10.8	4.7	2.6	3.4	6
Lansing-East Lansing, Mich.....	20.8	1.8	1.7	0.2	19.0	4.2	6.6	8.1	3
Lexington-Fayette, Ky.....	6.8	0.3	0.2	0.1	6.5	2.2	2.5	1.8	16
Lima, Ohio.....	14.1	0.8	0.7	0.1	13.3	3.9	5.8	3.6	9
Little Rock-N. Little Rock, Ark.....	9.3	1.0	0.8	0.1	8.4	3.4	2.1	2.8	15
Lorain-Elyria, Ohio.....	39.0	1.8	1.8	-	37.2	16.6	14.0	6.6	2
Los Angeles-Long Beach, Calif.....	256.1	17.4	12.2	5.2	238.7	147.7	43.8	47.1	3
Louisville, Ky.-Ind.....	47.2	9.6	9.5	0.1	37.6	14.7	12.0	10.9	5
Lynchburg, Va.....	5.0	0.2	0.2	-	4.8	2.4	1.5	0.9	16
Macon, Ga.....	5.9	0.9	0.8	0.1	5.0	1.7	2.7	0.6	6
Memphis, Tenn.-Ark.-Miss.....	38.4	5.9	5.5	0.5	32.4	3.7	24.6	4.1	4
Milwaukee, Wis.....	37.5	12.7	12.3	0.4	24.8	7.7	4.1	13.0	18
Minneapolis-St. Paul, Minn.-Wis.....	46.5	12.0	10.8	1.2	34.5	13.2	9.1	12.2	4
Mobile, Ala.....	37.3	0.5	0.4	0.1	36.8	7.6	21.9	7.4	2
Muskegon-Muskegon Heights, Mich.....	7.7	2.2	2.2	-	5.5	2.2	1.6	1.6	4
Nashville-Davidson, Tenn.....	14.6	1.9	1.5	0.4	12.7	4.0	4.4	4.3	4
Nassau-Suffolk, N.Y.....	14.0	1.3	0.8	0.4	12.7	1.2	5.4	6.1	9
New Brunswick-Perth Amboy-N.J.....	91.3	8.5	7.9	0.5	82.8	57.6	15.4	9.9	3
New London-Norwich, Conn.-R.I.....	15.1	1.4	1.4	-	13.7	5.0	6.1	2.6	9
New Orleans, La.....	29.5	1.9	1.8	0.2	27.5	12.5	10.2	4.8	3
New York, N.Y.-N.J.....	70.5	8.5	7.5	1.0	62.0	27.2	12.8	21.9	4
Newark, N.J.....	72.9	8.3	7.8	0.5	64.6	19.8	25.8	18.9	3
Newport News-Hampton, Va.....	15.0	2.6	2.6	-	12.4	5.9	3.5	3.0	1
Oklahoma City, Okla.....	6.1	1.1	1.0	0.1	5.0	2.8	1.1	1.1	8
Omaha, Nebr.-Iowa.....	10.7	3.0	2.3	0.6	7.8	3.2	1.8	2.8	11
Parkersburg-Marietta, W. Va.-Ohio.....	56.1	0.2	0.2	-	55.9	21.7	23.4	10.8	3
Pensacola, Fla.....	20.2	0.9	0.9	0.1	19.3	9.0	7.9	2.4	1
Peoria, Ill.....	26.4	0.9	0.8	0.1	25.5	12.7	7.7	5.1	1
Petersburg-Colonial Heights-Va.....	24.6	6.3	6.3	-	18.3	7.3	9.6	1.5	1
Philadelphia, Pa.-N.J.....	247.6	13.3	11.4	1.9	234.3	125.6	69.6	38.8	1
Phoenix, Ariz.....	10.2	3.4	3.0	0.4	6.8	2.6	2.1	2.0	4
Pittsburgh, Pa.....	241.8	4.3	3.6	0.7	237.6	105.0	59.8	72.8	1
Portland, Maine.....	6.5	1.0	0.6	0.4	5.5	0.4	3.8	1.3	16
Portland, Oreg.-Wash.....	38.2	4.0	3.4	0.5	34.2	14.1	12.0	8.1	10
Poughkeepsie, N.Y.....	17.6	0.2	0.2	-	17.4	1.2	11.6	4.6	1
Providence-Warwick-Pawtucket, R.I.-Mass.....	14.4	2.1	1.9	0.2	12.3	2.3	5.0	5.0	7
Provo-Orem, Utah.....	6.9	-	-	-	6.9	5.8	0.4	0.6	2
Pueblo, Colo.....	15.4	-	-	-	15.4	11.2	3.7	0.5	9
Racine, Wis.....	5.1	1.6	1.5	0.1	3.5	1.4	1.1	1.1	5
Raleigh-Durham, N.C.....	7.4	1.0	0.9	0.1	6.3	1.5	2.5	2.3	11
Reading, Pa.....	18.1	1.0	0.8	0.2	17.1	7.2	6.1	3.8	18
Richmond, Va.....	17.7	1.0	0.7	0.3	16.7	3.0	8.5	5.3	10
Riverside-San Bernardino-Calif.....	64.6	6.1	1.8	4.4	58.4	33.7	12.6	12.1	4
Rochester, N.Y.....	50.2	4.8	4.4	0.5	45.4	6.5	19.9	18.9	2
Rockford, Ill.....	8.3	1.8	1.6	0.2	6.5	1.7	2.0	2.8	10
Sacramento, Calif.....	9.2	2.4	2.2	0.3	6.8	2.3	2.2	2.2	9
Saginaw, Mich.....	34.2	3.3	1.8	1.4	30.9	20.7	5.7	4.5	6
St. Louis, Mo.-Ill.....	78.5	9.4	8.4	1.0	69.2	35.8	17.0	16.4	2
Salt Lake City-Ogden, Utah.....	32.5	0.9	0.8	0.1	31.6	25.8	3.1	2.7	2
San Diego, Calif.....	15.0	4.0	2.6	1.4	11.0	2.6	3.9	4.6	16
San Francisco-Oakland, Calif.....	156.2	8.0	6.1	1.8	148.2	76.1	49.8	24.2	2
San Jose, Calif.....	25.9	9.1	7.6	1.5	16.8	4.4	5.8	6.4	5
Savannah, Ga.....	33.4	0.3	0.3	-	33.1	14.1	16.9	2.0	6
Seattle-Everett, Wash.....	36.0	5.3	4.0	1.3	30.8	11.7	10.5	8.6	7
Spokane, Wash.....	8.3	0.1	-	0.1	8.2	6.2	1.2	0.8	7
Springfield-Chicopee-Mass.-Conn.....	17.4	1.9	1.8	0.1	15.6	6.2	3.2	6.2	17
Stuebenville-Weirton, Ohio-W. Va.....	76.6	0.9	0.7	0.2	75.7	31.1	31.8	12.8	1
Stockton, Calif.....	11.1	4.1	3.7	0.4	7.0	2.1	3.2	1.8	9
Syracuse, N.Y.....	22.3	2.6	2.4	0.2	19.7	8.0	5.4	6.4	3
Tacoma, Wash.....	37.8	1.2	0.8	0.4	36.7	31.7	3.7	1.3	1
Tampa-St. Petersburg, Fla.....	20.6	2.8	1.9	0.9	17.8	10.7	3.3	3.8	13

See note at end of table.

**Table 3C. Pollution Abatement Operating Costs, by Form of Abatement
and by SMSA: 1981—Continued**

(Millions of dollars)

Standard metropolitan statistical area	Total gross annual cost	Payments to government units for			Operating costs by form of pollutants abated				Standard error of estimates (percent) GAC
		Total	Use of public sewage	Solid waste collection and disposal	Total	Air	Water	Solid waste	
Terre Haute, Ind.....	17.5	0.5	0.5	-	17.0	4.0	10.0	3.0	15
Texarkana, Tex.-Texarkana, Ark.....	6.7	0.2	0.1	0.1	6.5	1.7	3.0	1.9	7
Toledo, Ohio-Mich.....	46.1	3.6	3.2	0.4	42.5	17.9	14.4	10.1	5
Trenton, N.J.....	9.2	1.6	0.7	0.9	7.6	3.2	1.1	3.3	8
Tucson, Ariz.....	9.5	0.1	0.1	-	9.4	7.4	1.8	0.3	8
Tulsa, Okla.....	39.8	0.6	0.5	0.1	39.2	15.1	11.7	12.4	16
Tuscaloosa, Ala.....	6.2	0.1	-	-	6.2	3.5	1.9	0.8	2
Vallejo-Fairfield-Napa, Calif.....	39.3	2.8	2.6	0.2	36.5	29.4	6.9	0.2	1
Vineland-Millville-Bridgeton, N.J.....	7.0	1.0	0.9	0.1	6.0	1.7	3.5	0.9	12
Washington, D.C.-Md.-Va.....	5.0	1.5	1.2	0.3	3.5	0.4	2.1	0.9	7
Waterbury, Conn.....	5.2	0.9	0.8	0.1	4.3	0.3	2.8	1.1	11
Waterloo-Cedar Falls, Iowa.....	8.7	0.8	0.7	0.1	7.9	3.6	2.2	2.1	1
Wilmington, Del.-N.J.-Md.....	155.2	4.3	3.9	0.4	150.9	74.4	65.9	10.5	1
Wilmington, N.C.....	15.6	0.1	-	-	15.6	2.7	8.7	4.2	3
Worcester, Mass.....	7.0	1.1	1.0	0.1	5.9	3.3	1.6	1.0	6
York, Pa.....	14.4	2.1	1.7	0.4	12.3	2.6	6.6	3.1	7
Youngstown-Warren, Ohio.....	46.5	3.1	3.0	0.2	43.4	26.5	10.4	6.5	2

Note: Totals may not agree precisely with detail because of independent rounding. Major industry group 23, Apparel and Other Textile Products, was not included in the survey and therefore is excluded from the SMSA totals. No major industry groups are shown. No SMSA totals are shown where GAC is less than \$5.0 million or the standard error is 20 or greater. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

Table 4A. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by Industry: 1981

(Millions of dollars)

SIC code	Industry	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
		Total	By kind of cost				Total	By form of pollutants			
			Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water	Solid waste	
	All industries ²	8,422.6	1,487.3	1,796.3	2,567.7	2,569.4	1,759.9	999.5	539.2	221.1	1
20	Food and kindred products.....	369.5	64.8	77.2	81.8	145.7	91.2	40.4	35.2	15.6	2
201	Meat products.....	62.9	14.2	13.6	13.2	21.9	11.6	4.0	4.9	2.7	4
2011	Meatpacking plants.....	30.3	6.8	7.7	6.8	9.0	4.8	0.6	3.4	0.9	4
2013	Sausages and other prepared meats.....	6.9	0.9	1.9	1.0	3.1	(D)	(D)	(D)	0.1	5
2016	Poultry dressing plants.....	23.3	6.3	3.3	5.0	8.7	2.6	-	(D)	(D)	10
202	Dairy products.....	35.1	3.3	5.5	3.6	22.6	5.1	2.4	2.1	0.7	11
2022	Cheese, natural and processed.....	10.0	1.7	2.2	1.4	4.7	1.9	(D)	1.3	(D)	10
2023	Condensed and evaporated milk.....	3.7	0.6	1.2	0.9	0.9	2.0	1.9	-	-	11
2026	Fluid milk.....	19.5	0.8	1.8	1.1	15.8	1.1	(D)	0.7	(D)	19
203	Preserved fruits and vegetables.....	58.8	9.2	15.6	10.9	23.1	7.5	1.3	2.4	3.8	3
2032	Canned specialties.....	6.1	0.8	1.6	1.4	2.3	(D)	-	(D)	-	3
2033	Canned fruits and vegetables.....	18.2	2.1	4.3	3.4	8.3	1.9	-	0.5	1.4	6
2034	Dehydrated fruits, vegetables, soups.....	4.2	0.9	1.4	0.7	1.3	(D)	0.2	0.4	(D)	9
2035	Pickles, sauces, salad dressings.....	6.0	0.8	1.5	1.5	2.2	0.4	-	(D)	(D)	12
2037	Frozen fruits and vegetables.....	13.8	3.1	4.6	2.7	3.4	3.4	1.1	1.1	1.2	7
2038	Frozen specialties.....	10.4	1.5	2.2	1.2	5.5	0.8	-	0.1	0.7	15
204	Grain mill products.....	61.8	10.5	11.8	15.6	23.8	17.1	10.4	4.0	2.8	5
2041	Flour, other grain mill products.....	7.3	1.7	1.3	1.7	2.6	4.5	4.1	0.3	0.1	8
2043	Cereal breakfast foods.....	5.6	1.0	2.0	0.6	2.0	3.1	1.1	0.1	2.0	3
2046	Wet corn milling.....	30.3	5.4	5.1	10.6	9.3	3.7	(D)	(D)	(D)	1
2047	Dog, cat, and other pet food.....	4.1	0.6	1.1	1.0	1.3	1.6	(D)	(D)	-	7
205	Bakery products.....	6.6	0.3	1.2	0.6	4.5	0.5	0.1	0.2	0.2	4
2051	Bread, cake, and related products.....	3.7	0.1	0.5	0.3	2.8	0.3	-	0.2	0.1	6
206	Sugar, confectionery products.....	38.3	8.8	8.7	9.8	11.0	3.7	1.9	0.7	1.1	8
2062	Cane sugar refining.....	5.3	1.0	1.1	2.1	1.1	(D)	-	(D)	-	1
2063	Beet sugar.....	11.0	5.2	1.3	4.3	0.2	0.1	-	0.1	0.1	13
2065	Confectionery products.....	6.7	0.4	2.9	1.1	2.3	1.4	0.8	-	0.5	6
207	Fats and oil.....	35.5	7.4	7.6	9.6	10.9	19.9	15.1	4.3	0.5	4
2075	Soybean oil mills.....	16.4	4.4	3.6	3.3	5.0	13.9	12.7	(D)	(D)	4
2079	Shortening and cooking oils.....	9.9	1.5	2.3	3.8	2.4	3.0	-	2.9	0.2	2
208	Beverages.....	42.3	8.0	8.9	11.7	13.8	21.3	3.9	16.0	1.4	1
2082	Malt beverages.....	27.7	6.1	6.5	8.7	6.5	19.5	3.3	15.8	0.3	1
2086	Bottled and canned soft drinks.....	6.7	0.5	0.7	0.4	5.0	1.1	-	-	1.0	7
209	Misc. foods, kindred products.....	28.2	3.0	4.2	6.8	14.2	4.6	1.4	0.7	2.5	5
2095	Roasted coffee.....	10.9	0.9	1.0	4.7	4.3	1.9	(D)	(D)	1.5	3
2099	Food preparations, n.e.c.....	12.5	1.5	2.0	1.2	7.8	1.7	(D)	(D)	0.5	9
21	Tobacco products.....	(S)	(S)	(S)	(S)	(S)	(D)	(D)	(D)	(D)	(X)
2111	Cigarettes.....	7.9	2.1	3.2	1.1	1.4	(D)	(D)	-	-	1
22	Textile mill products.....	70.1	17.9	15.2	15.0	22.0	18.2	1.1	11.3	5.8	5
2211	Weaving mills, cotton.....	8.3	2.2	2.5	1.4	2.2	0.8	(D)	(D)	0.3	6
2221	Weaving mills, manmade fiber, silk.....	12.5	3.4	2.5	2.7	3.8	1.2	(D)	0.8	(D)	7
225	Knitting mills.....	9.4	2.3	2.2	2.1	2.8	1.7	0.4	0.2	1.0	10
2257	Circular knit fabric mills.....	3.6	0.9	0.8	0.7	1.2	1.0	0.1	-	0.9	12
226	Textile finishing, except wool.....	17.6	5.8	3.5	4.9	3.4	9.1	-	(D)	(D)	17
2262	Finishing plants, manmade fiber, silk.....	8.6	2.5	1.6	3.0	1.5	8.9	-	(D)	(D)	8
227	Floor covering mills.....	3.8	0.7	0.7	0.5	2.0	0.4	-	-	0.3	6
2272	Tufted carpets and rugs.....	3.0	0.6	0.6	0.5	1.4	0.3	-	-	0.3	4
228	Yarn and thread mills.....	5.4	1.8	1.4	0.6	1.6	0.3	-	-	0.3	10
2281	Yarn mills, except wool.....	3.2	1.3	0.7	0.4	0.8	0.2	-	-	0.2	16
229	Miscellaneous textile goods.....	11.1	1.4	2.2	2.4	5.1	4.6	0.3	(D)	(D)	8
2295	Coated fabrics, not rubberized.....	4.7	0.6	1.0	0.8	2.3	(D)	0.1	(D)	(D)	8
24	Lumber and wood products.....	128.7	33.0	32.7	22.0	40.8	29.7	6.0	4.4	19.4	7
2411	Logging camps, log contractors.....	16.3	1.5	4.1	1.9	8.7	(D)	-	-	(D)	8
242	Sawmills and planing mills.....	39.9	14.4	12.2	6.2	7.1	12.5	2.3	-	10.2	14
2421	Sawmills, planing mills, general.....	38.0	13.5	11.8	5.9	6.7	12.3	2.2	-	10.1	14
243	Millwork, plywood, structural members.....	29.2	7.1	6.3	4.1	11.5	6.3	(D)	(D)	3.3	15
2436	Softwood veneer and plywood.....	16.9	5.5	4.8	3.2	3.4	1.8	(D)	(D)	0.3	11
249	Miscellaneous wood products.....	37.9	9.6	8.7	9.6	10.1	9.6	(D)	(D)	4.8	14
2499	Wood products, n.e.c.....	24.4	4.7	5.0	6.9	7.8	7.4	(D)	(D)	3.1	13

See footnotes at end of table.

Table 4A. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by Industry: 1981—Continued

(Millions of dollars)

SIC code	Industry	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
		Total	By kind of cost				Total	By form of pollutants			
			Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water	Solid waste	
25	Furniture and fixtures.....	28.6	6.7	5.7	4.6	11.6	4.5	3.3	-	1.2	5
251	Household furniture.....	19.1	5.1	3.8	2.8	7.4	4.3	3.3	-	1.1	7
2511	Wood household furniture.....	11.9	3.9	2.4	1.5	4.1	2.8	1.9	-	0.9	11
252	Office furniture.....	4.9	1.1	0.7	1.3	1.8	-	-	-	-	11
26	Paper and allied products.....	754.6	179.2	131.7	253.7	189.8	298.5	133.4	112.9	52.2	2
2611	Pulpmills.....	114.5	26.2	20.4	53.4	14.4	46.8	(D)	27.7	(D)	7
2621	Papermills, except building paper.....	358.4	90.2	61.1	115.0	92.1	139.7	56.2	60.3	23.3	1
2631	Paperboard mills.....	207.9	54.6	37.0	65.1	51.2	75.7	37.7	21.8	16.2	4
264	Misc. converted paper products.....	39.7	5.0	8.2	7.5	18.8	26.4	20.3	1.3	4.8	5
2641	Paper coating and glazing.....	19.0	2.8	2.6	4.1	9.4	12.5	11.8	-	0.7	7
2643	Bags, except textile bags.....	4.7	0.3	0.6	0.4	3.4	8.1	(D)	1.1	(D)	12
2647	Sanitary paper products.....	9.2	1.1	3.3	2.3	2.5	3.1	1.1	-	2.0	11
2653	Corrugated and solid fiber boxes.....	9.1	1.1	2.2	1.7	4.1	7.6	-	1.1	6.4	10
27	Printing and publishing.....	42.8	5.2	7.2	8.3	22.1	15.7	6.5	0.5	8.6	6
275	Commercial printing.....	26.1	3.8	3.4	6.6	12.3	8.8	6.5	0.2	2.1	5
2751	Commercial printing, letterpress.....	5.4	0.4	0.5	0.3	4.2	(D)	(D)	-	0.1	9
2752	Commercial printing, lithographic.....	9.8	0.9	1.4	3.2	4.2	(D)	(D)	-	1.3	7
2754	Commercial printing, gravure.....	9.6	2.4	1.1	2.5	3.6	4.4	3.5	0.2	0.7	7
28	Chemicals and allied products.....	1,968.2	337.4	386.0	639.0	606.0	341.1	181.2	123.1	36.8	2
281	Industrial inorganic chemicals.....	350.9	67.9	71.4	122.9	88.6	55.5	39.4	13.0	3.1	3
2812	Alkalies and chlorine.....	60.0	12.6	12.2	16.7	18.5	5.6	4.4	(D)	(D)	4
2816	Inorganic pigments.....	64.7	11.5	12.2	20.1	20.9	5.3	4.6	(D)	(D)	5
2819	Industrial inorganic chemicals, n.e.c.....	222.4	43.0	46.0	84.7	48.7	44.4	30.3	11.4	2.7	4
282	Plastics materials, synthetics.....	258.0	51.5	55.3	81.6	69.6	48.8	20.5	21.6	6.7	10
2821	Plastics materials and resins.....	162.3	32.1	33.3	44.8	52.1	31.5	11.9	15.6	4.0	15
2822	Synthetic rubber.....	20.8	2.7	4.7	9.3	4.0	7.5	3.7	(D)	(D)	6
2823	Cellulosic manmade fibers.....	(D)	3.0	(D)	(D)	0.5	(D)	(D)	(D)	(D)	1
2824	Organic fibers, noncellulosic.....	(D)	13.7	(D)	(D)	13.0	(D)	(D)	(D)	(D)	1
283	Drugs.....	87.0	11.5	18.3	22.2	35.1	6.8	1.6	3.3	1.8	2
2833	Medicinals and botanicals.....	43.2	5.6	7.6	14.1	15.8	4.7	0.7	3.1	0.8	5
2834	Pharmaceutical preparations.....	42.8	5.8	10.4	8.0	18.6	2.0	0.9	0.2	1.0	1
284	Soaps, cleaners, toilet goods.....	36.3	6.5	7.2	4.4	18.2	7.3	5.4	1.1	0.9	12
2841	Soap and other detergents.....	15.6	3.3	3.1	1.8	7.3	6.0	5.2	0.4	0.4	7
2843	Surface active agents.....	11.3	2.5	2.3	1.7	4.9	0.6	0.1	0.4	-	10
2851	Paints and allied products.....	26.4	2.2	4.1	5.8	14.3	8.8	0.1	(D)	(D)	11
286	Industrial organic chemicals.....	893.9	143.5	170.0	301.1	279.4	161.5	79.4	66.2	15.9	1
2865	Cyclic crudes and intermediates.....	157.6	23.6	23.4	39.1	71.6	34.6	(D)	13.9	(D)	2
2869	Industrial organic chemicals, n.e.c.....	732.2	118.4	145.6	261.2	207.0	125.9	(D)	51.3	(D)	1
287	Agricultural chemicals.....	237.1	43.3	43.4	80.4	70.0	39.9	26.6	(D)	(D)	3
2873	Nitrogenous fertilizers.....	73.8	14.3	10.9	27.3	21.3	6.2	(D)	3.3	(D)	8
2874	Phosphatic fertilizers.....	64.9	16.6	13.0	21.5	13.9	23.5	15.1	8.3	-	4
2879	Agricultural chemicals, n.e.c.....	94.9	11.5	18.7	30.5	34.1	9.4	(D)	(D)	-	5
289	Miscellaneous chemical products.....	78.7	11.0	16.3	20.6	30.8	12.6	8.1	4.3	0.1	9
2892	Explosives.....	9.8	0.8	3.2	4.9	1.0	1.1	0.8	0.2	-	10
2899	Chemical preparations, n.e.c.....	36.7	6.5	6.3	11.1	12.8	6.6	2.4	4.1	0.1	11
29	Petroleum and coal products.....	1,676.5	197.8	340.0	708.3	430.3	565.6	356.0	193.2	16.4	1
2911	Petroleum refining.....	1,645.2	191.4	336.3	700.4	417.1	562.3	353.1	192.9	16.3	1
295	Paving and roofing materials.....	21.0	3.7	2.5	3.9	11.0	1.9	1.8	-	0.1	10
2952	Asphalt felts and coatings.....	18.0	3.0	1.7	3.1	10.3	1.7	1.6	-	0.1	10
299	Misc. petroleum, coal products.....	10.3	2.7	1.3	4.1	2.2	1.4	1.1	0.2	-	9
2999	Petroleum and coal products, n.e.c.....	6.6	2.0	0.3	3.6	0.6	-	-	-	-	11
30	Rubber, misc. plastics products.....	101.6	10.6	20.6	28.7	41.6	14.0	7.6	1.4	4.9	1
3011	Tires and inner tubes.....	25.3	2.8	7.1	7.4	8.0	4.6	3.3	(D)	(D)	1
3041	Rubber, plastics hose and belting.....	4.2	0.4	0.7	1.0	2.2	0.4	(D)	-	(D)	16
3069	Fabricated rubber products, n.e.c.....	11.1	1.4	2.6	1.3	5.8	2.5	(D)	-	(D)	7
3079	Miscellaneous plastics products.....	60.2	6.0	10.1	18.8	25.2	6.5	(D)	(D)	3.4	1
31	Leather and leather products.....	(S)	(S)	(S)	(S)	(S)	(D)	(D)	(D)	(D)	(X)
32	Stone, clay, glass products.....	298.8	69.1	64.1	79.2	86.4	91.5	68.7	5.5	17.3	4
3211	Flint glass.....	12.0	4.6	3.0	1.4	2.9	0.1	-	-	0.1	7
322	Glass, pressed or blown.....	31.3	8.1	6.5	5.3	11.3	10.4	1.9	0.1	8.4	4
3221	Glass containers.....	11.2	1.8	2.2	1.8	3.4	8.4	1.1	0.1	7.2	3
3229	Pressed and blown glass, n.e.c.....	20.1	6.3	4.3	3.5	6.0	2.0	0.8	0.1	1.2	7

See footnotes at end of table.

Table 4A. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by Industry: 1981—Continued

(Millions of dollars)

SIC code	Industry	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
		Total	By kind of cost				Total	By form of pollutants			
			Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water	Solid waste	
Stone, clay, glass products--Continued											
3231	Products of purchased glass.....	4.9	0.5	1.6	1.1	1.7	0.1	-	0.1	-	16
3241	Concrete, hydraulic.....	98.1	21.0	24.1	34.2	18.7	53.3	48.3	0.6	4.3	8
327	Concrete, gypsum, plaster products.....	36.0	5.6	8.7	10.6	11.0	3.6	2.7	0.3	0.6	13
3273	Ready-mixed concrete.....	7.5	1.5	2.5	1.3	2.2	1.2	0.6	0.2	0.3	15
Misc. nonmetallic mineral products.....											
329	Asbestos products.....	13.1	3.6	2.6	2.2	4.8	1.7	1.1	0.2	0.4	15
3296	Mineral wool.....	49.5	13.2	8.4	7.0	20.8	15.3	9.4	(D)	(D)	8
Primary metal industries.....											
33	Blast furnace, basic steel products.....	1,874.4	384.4	391.1	489.2	609.5	189.7	156.0	24.0	9.7	1
331	Blast furnaces and steel mills.....	1,202.6	255.3	246.3	299.1	401.9	24.8	6.7	16.4	1.7	1
3312	Electrometallurgical products.....	1,148.6	245.5	234.0	280.6	388.4	22.3	5.7	15.0	1.6	1
3313	Steel wire and related products.....	29.8	6.3	8.0	12.9	2.7	(D)	(D)	-	-	2
3315	Cold finishing of steel shapes.....	6.2	1.2	1.3	1.8	1.9	0.6	-	0.5	0.1	11
3316	Steel pipe and tubes.....	13.4	1.7	2.5	3.0	6.3	(D)	(D)	(D)	(D)	4
3317	Gray iron foundries.....	4.5	0.6	0.6	0.8	2.6	(D)	(D)	(D)	(D)	7
Iron and steel foundries.....											
332	Malleable iron foundries.....	173.9	43.5	36.3	51.1	43.0	5.7	0.7	0.2	4.8	5
3321	Steel foundries, n.e.c.....	142.6	35.1	30.2	46.2	31.0	5.5	0.7	0.2	4.7	6
3322	Primary nonferrous metals.....	7.2	3.2	1.1	1.2	3.7	-	-	-	-	8
3325	Primary copper.....	19.5	4.9	4.4	3.2	7.1	-	-	-	-	9
Primary nonferrous metals.....											
333	Primary lead.....	(D)	(D)	77.2	103.2	133.4	126.4	118.8	6.2	1.4	1
3331	Primary zinc.....	150.5	19.0	30.0	36.1	65.5	44.2	44.2	-	-	2
3332	Primary aluminum.....	(D)	6.0	5.5	8.8	(D)	(D)	(D)	(D)	(D)	2
3333	Primary nonferrous metals, n.e.c.....	14.9	6.1	2.2	2.4	4.3	(D)	(D)	-	-	1
3334	Secondary nonferrous metals.....	132.0	29.1	29.7	41.3	31.8	56.6	52.1	(D)	(D)	1
3339	Nonferrous rolling and drawing.....	53.0	(D)	9.9	14.7	(D)	15.1	12.2	(D)	(D)	4
Secondary nonferrous metals.....											
3341	Copper rolling and drawing.....	(D)	(D)	7.1	11.4	8.6	5.3	5.1	0.1	0.1	19
335	Aluminum sheet, plate, and foil.....	71.0	11.0	20.4	20.7	18.9	6.8	4.4	0.7	1.6	2
3351	Aluminum extruded products.....	13.9	2.9	4.7	3.7	2.6	0.7	(D)	(D)	(D)	4
3353	Nonferrous rolling and drawing, n.e.c.....	26.0	4.5	8.0	5.7	7.7	2.5	(D)	(D)	1.4	1
3354	Nonferrous wire drawing and insulating.....	5.5	0.9	1.6	1.2	1.9	0.1	-	0.1	-	8
3356	Nonferrous foundries.....	14.4	1.5	4.6	5.0	3.3	2.1	1.9	0.1	0.1	9
3357	Aluminum foundries.....	10.2	1.0	1.3	4.9	3.0	1.4	1.0	0.3	0.1	8
Fabricated metal products.....											
34	Metal cans, shipping containers.....	10.7	2.2	2.4	3.2	2.8	16.9	16.5	0.3	0.1	8
341	Metal cans.....	7.9	1.8	2.0	2.1	2.0	16.6	(D)	(D)	(D)	10
Cutlery, handtools and hardware.....											
342	Hardware, n.e.c.....	28.8	3.6	7.8	10.3	7.1	1.3	0.1	0.5	0.7	4
3429	Plumbing, heating, except electric.....	22.2	2.5	6.4	8.0	5.3	0.9	-	0.4	0.6	4
Fabricated structural metal products.....											
343	Fabricated platework, boiler shop.....	8.3	1.8	1.9	1.1	3.5	0.7	0.1	(D)	(D)	11
344	Sheet metalwork.....	23.2	3.4	5.1	4.2	10.3	2.5	1.3	0.5	0.6	6
3443	Screw machine products, bolts, etc.....	5.0	0.8	1.2	0.5	2.4	0.6	-	-	0.5	7
3444	Bolts, nuts, rivets, and washers.....	6.1	1.1	1.1	1.0	2.9	0.5	(D)	(D)	(D)	10
Metal forgings and stampings.....											
345	Iron and steel forgings.....	9.2	1.6	2.4	2.2	3.0	0.5	-	0.3	0.2	12
3452	Nonferrous forgings.....	8.7	1.5	2.4	2.2	2.7	0.4	-	0.3	-	13
346	Automotive stampings.....	34.7	5.7	11.0	6.7	11.2	2.9	0.2	0.5	2.2	4
3462	Metal stampings, n.e.c.....	6.5	2.0	1.4	1.8	1.3	-	-	-	-	14
3463	Metal services, n.e.c.....	4.8	0.6	1.4	1.7	1.1	-	-	-	-	10
3465	Ordnance and accessories, n.e.c.....	14.3	1.6	6.2	1.4	5.1	2.5	-	0.3	2.2	4
3469	Misc. fabricated metal products.....	7.5	1.1	1.8	1.3	3.4	0.4	0.1	0.2	-	12
Valves and pipe fittings.....											
347	Fabricated metal products, n.e.c.....	28.3	5.7	6.5	9.0	7.0	9.0	6.7	2.3	-	19
348	Machine, except electrical.....	15.8	1.7	7.0	2.9	4.2	0.6	0.1	0.1	0.4	8
349	Engines and turbines.....	21.3	3.3	5.1	4.3	8.5	2.8	0.3	0.4	2.1	5
3494	Turbines, turbine generator sets.....	10.6	2.4	2.6	1.9	3.6	(D)	0.2	0.2	(D)	6
3499	Internal combustion engines, n.e.c.....	4.7	0.2	1.3	0.9	2.2	(D)	0.2	-	(D)	17
Farm and garden machinery.....											
35	Farm machinery and equipment.....	190.3	29.8	49.3	33.8	77.1	18.1	6.9	4.8	6.5	9
351	Engines and turbines.....	33.2	6.9	7.9	7.7	10.7	3.5	(D)	0.3	(D)	2
3511	Turbines, turbine generator sets.....	9.4	1.3	0.9	2.2	5.0	(D)	-	-	(D)	1
3519	Internal combustion engines, n.e.c.....	23.8	5.5	7.0	5.6	5.7	(D)	(D)	0.3	0.6	3
Construction, related machinery.....											
352	Construction machinery.....	22.4	3.1	5.9	4.8	8.6	0.8	-	(D)	(D)	1
3523	Oilfield machinery.....	20.9	3.0	5.5	4.5	7.9	0.7	-	(D)	(D)	1
Construction machinery.....											
353	Construction machinery.....	32.0	5.8	9.6	5.1	11.5	1.8	(D)	(D)	0.7	12
3531	Oilfield machinery.....	21.5	4.4	7.3	3.2	6.6	1.3	(D)	(D)	0.3	3
3533	Oilfield machinery.....	5.5	0.8	1.3	1.2	2.2	0.4	-	-	0.4	4

See footnotes at end of table.

Table 4A. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by Industry: 1981—Continued

(Millions of dollars)

SIC code	Industry	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC	
		Total	By kind of cost				Total	By form of pollutants				
			Depreciation	Labor	Materials and supplies	Services, equipment, leasing, and other costs		Air	Water	Solid waste		
	Machine, except electrical--Continued											
354	Metalworking machinery.....	10.2	1.4	2.5	1.3	4.9	0.6	0.1	-	0.5	5	
355	Special industry machinery.....	13.6	1.6	4.1	3.8	4.1	3.6	1.6	-	1.4	5	
356	General industries machinery.....	22.4	2.3	6.9	3.3	9.8	1.1	-	0.6	0.5	5	
3561	Pumps and pumping equipment.....	4.9	0.3	1.7	0.4	2.5	0.1	-	-	0.1	10	
3562	Ball and roller bearings.....	6.3	0.8	2.6	1.0	1.8	0.8	-	(D)	(D)	9	
3579	Office machines, typewriters, etc.....	6.3	(D)	1.2	(D)	3.3	1.3	1.2	-	-	5	
358	Refrigeration and service machines.....	20.9	4.5	6.0	2.9	7.5	1.9	0.5	0.4	0.9	2	
3585	Refrigeration, heating equipment.....	18.5	4.3	5.4	2.4	6.4	1.8	0.5	0.4	0.9	2	
359	Misc. machinery, except electric.....	9.9	1.3	2.0	0.9	5.6	0.9	(D)	0.5	(D)	10	
3592	Carburetors, pistons, rings, etc.....	6.3	1.2	1.6	0.7	2.8	0.4	(D)	(D)	(D)	5	
36	Electric, electronic equipment.....	211.1	32.6	56.9	45.4	75.7	22.0	12.2	3.9	5.8	2	
361	Electric distributing equipment.....	10.5	1.6	2.6	2.4	3.9	0.1	-	-	0.1	4	
3612	Transformers.....	5.1	0.6	1.1	1.3	2.1	0.1	-	-	0.1	3	
3613	Switchgear, switchboard apparatus.....	5.3	1.0	1.5	1.0	1.8	-	-	-	-	7	
362	Electrical industrial apparatus.....	27.8	4.0	7.3	6.6	10.0	1.2	0.6	0.2	0.4	5	
3621	Motors and generators.....	5.8	1.0	1.2	0.7	2.8	0.4	-	(D)	(D)	3	
3622	Industrial controls.....	5.2	0.6	0.8	1.5	2.4	0.2	-	(D)	(D)	16	
3624	Carbon and graphite products.....	12.6	1.8	4.4	3.8	2.6	(D)	(D)	-	-	9	
363	Household appliances.....	22.8	3.7	7.3	4.6	7.1	3.1	1.4	1.0	0.7	2	
3631	Household cooking equipment.....	4.8	1.2	1.2	0.7	1.7	0.8	0.3	(D)	(D)	6	
3632	Household refrigerators, freezers.....	6.0	1.0	2.2	0.9	1.9	(D)	-	(D)	0.1	1	
3633	Household laundry equipment.....	5.0	0.6	1.7	1.6	1.1	(D)	-	(D)	(D)	1	
364	Electric lighting, wiring equipment.....	15.9	1.7	5.6	3.7	4.8	1.0	0.1	0.2	0.7	6	
3647	Vehicular lighting equipment.....	(D)	(D)	(D)	(D)	0.3	-	-	-	-	1	
365	Radio, TV receiving equipment.....	7.5	1.0	2.2	0.6	3.6	1.0	0.4	(D)	(D)	5	
3651	Radio and TV receiving sets.....	6.3	1.0	2.0	0.6	2.7	0.7	0.4	(D)	(D)	3	
366	Communication equipment.....	32.6	4.8	10.6	6.2	10.7	3.7	2.7	0.2	0.8	8	
3661	Telephone and telegraph apparatus.....	14.8	2.6	5.2	3.0	3.8	(D)	(D)	-	0.5	1	
3662	Radio and TV communication equipment.....	17.8	2.2	5.5	3.1	6.9	(D)	(D)	0.2	0.3	13	
367	Electronic components, accessories.....	68.0	8.6	16.7	14.1	28.4	9.1	5.3	1.2	2.6	7	
3674	Semiconductors, related devices.....	31.9	4.3	8.8	7.1	11.6	1.2	0.1	(D)	(D)	5	
3679	Electronic components, n.e.c.....	20.4	3.4	4.0	3.3	9.7	7.7	5.2	(D)	(D)	14	
369	Misc. electric equipment, supplies.....	26.0	7.2	4.6	7.1	7.1	2.6	1.7	(D)	(D)	5	
3691	Storage batteries.....	16.9	5.3	2.6	5.7	3.4	1.2	0.8	(D)	(D)	8	
3694	Engine electrical equipment.....	4.9	1.3	1.2	0.5	1.9	0.4	-	0.4	-	1	
37	Transportation equipment.....	380.1	70.2	129.5	77.7	102.8	19.3	1.1	9.0	9.2	1	
371	Motor vehicles and equipment.....	276.0	60.9	92.5	58.5	64.3	13.4	0.4	8.3	4.7	2	
3711	Motor vehicles and car bodies.....	170.2	36.0	60.3	38.8	35.1	3.6	-	0.8	2.7	1	
3714	Motor vehicle parts, accessories.....	102.2	24.6	31.3	19.3	27.2	9.7	0.4	7.4	1.9	4	
372	Aircraft and parts.....	46.1	4.4	16.9	10.6	14.2	3.0	0.1	(D)	(D)	2	
3721	Aircraft.....	18.5	1.4	6.1	2.9	8.1	1.0	(D)	(D)	0.6	1	
3724	Aircraft engines and engine parts.....	17.0	2.1	8.0	4.8	2.0	1.8	-	0.3	1.4	7	
3728	Aircraft equipment, n.e.c.....	10.6	0.9	2.8	2.9	4.0	0.2	(D)	-	(D)	4	
373	Ship, boat building, repairing.....	28.2	2.2	9.3	2.3	14.4	0.8	(D)	-	(D)	2	
3731	Ship building and repairing.....	26.2	2.1	9.0	2.2	12.8	0.7	(D)	-	(D)	2	
3743	Railroad equipment.....	7.5	0.8	2.7	1.3	2.7	-	-	-	-	1	
376	Guided missiles, space vehicles.....	16.6	1.5	7.0	3.6	4.5	1.9	-	(D)	(D)	1	
3761	Guided missiles, space vehicles.....	9.5	1.1	3.9	1.9	2.7	1.6	-	(D)	(D)	1	
3764	Space propulsion units and parts.....	6.4	0.4	2.8	1.6	1.5	0.2	-	-	0.2	4	
38	Instruments, related products.....	81.1	9.2	25.4	20.3	26.1	9.4	1.6	4.4	3.5	2	
382	Measuring, controlling devices.....	12.6	0.7	2.9	4.1	4.8	(D)	-	-	(D)	4	
3825	Instruments to measure electricity.....	7.8	(D)	1.4	(D)	2.8	(D)	-	-	(D)	4	
384	Medical instruments, supplies.....	8.2	1.0	1.2	1.2	4.8	0.2	0.1	0.1	0.1	14	
3842	Surgical appliances and supplies.....	5.1	0.6	0.8	0.6	3.0	0.1	-	-	0.1	19	
3861	Photographic equipment and supplies.....	55.0	7.1	20.0	13.8	14.1	8.1	(D)	4.2	(D)	1	
39	Misc. manufacturing industries.....	23.2	2.9	4.4	3.8	12.1	3.2	2.2	0.1	0.9	5	
394	Toys and sporting goods.....	4.3	0.3	0.9	0.4	2.7	0.8	0.1	-	0.7	6	
399	Miscellaneous manufactures.....	10.3	1.4	1.5	1.5	5.9	(D)	(D)	0.1	-	9	
3996	Hard surface floor covering.....	4.6	0.6	0.5	0.8	2.7	(D)	(D)	-	-	11	

Note: Total may not agree precisely with detail because of independent rounding. No data cells are shown where GAC is less than \$5.0 million or the standard error is 20 or greater. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹The standard error is calculated based on GAC shown on table 3A.

²Excludes major industry group 23, Apparel and Other Textile Products.

Table 4B. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by State and Major Industry Group: 1981

(Millions of dollars)

SIC code	State and major industry group	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
		Total	By kind of cost				Total	By form of pollutants			
			Depreciation	Labor	Materials and supplies	Services, equipment, leasing, and other costs		Air	Water	Solid waste	
	United States ²	8,422.6	1,487.3	1,796.3	2,567.7	2,569.4	1,759.9	999.5	539.2	221.1	1
	New England Division:										
	Maine.....	52.7	13.8	9.5	17.3	12.3	20.1	11.8	0.1	8.2	4
26	Paper and allied products.....	43.0	11.4	7.1	14.5	10.0	19.2	(D)	-	(D)	3
	New Hampshire.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Vermont.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Massachusetts.....	82.1	12.3	18.6	23.2	28.2	17.6	10.0	3.2	4.4	11
26	Paper and allied products.....	9.0	1.2	1.4	3.6	2.9	6.3	5.3	(D)	(D)	13
28	Chemicals and allied products.....	12.3	2.7	2.2	2.2	5.2	2.4	(D)	(D)	(D)	12
34	Fabricated metal products.....	8.7	2.6	1.8	3.1	1.2	2.0	0.1	1.9	-	15
35	Machine, except electrical.....	5.2	0.7	0.8	0.8	2.9	0.7	(D)	-	(D)	7
36	Electric, electronic equipment.....	11.3	1.5	2.4	3.9	3.6	0.8	0.7	-	0.1	19
38	Instruments, related products.....	8.2	0.7	4.4	1.2	1.9	-	-	-	-	3
	Rhode Island.....	10.4	1.5	2.0	2.8	4.0	2.7	2.5	0.1	0.1	8
	Connecticut.....	73.5	7.9	12.8	28.7	24.1	13.3	1.5	6.9	5.0	9
28	Chemicals and allied products.....	21.6	1.9	2.0	9.3	8.4	6.9	(D)	6.2	(D)	5
33	Primary metal industries.....	5.8	1.0	1.4	1.8	1.6	(D)	(D)	(D)	(D)	14
34	Fabricated metal products.....	8.9	1.5	1.7	2.8	2.9	0.5	0.4	0.1	-	16
37	Transportation equipment.....	9.1	1.2	3.2	3.0	1.7	-	-	-	-	2
	Middle Atlantic Division:										
	New York.....	349.0	63.9	79.8	100.1	105.0	63.8	29.8	20.2	13.8	2
	Food and kindred products.....	9.1	1.2	2.4	1.6	4.0	2.2	1.8	0.2	0.2	7
26	Paper and allied products.....	28.6	8.0	5.8	9.9	4.8	(D)	(D)	(D)	(D)	7
28	Chemicals and allied products.....	96.9	20.6	18.0	20.5	37.8	7.5	4.6	1.7	1.2	6
32	Stone, clay, glass products.....	8.3	1.2	1.7	2.8	2.5	0.9	0.5	(D)	(D)	8
33	Primary metal industries.....	56.8	12.7	10.5	23.5	10.2	12.1	(D)	(D)	(D)	1
34	Fabricated metal products.....	8.8	1.0	2.6	1.5	3.7	0.4	-	(D)	(D)	9
35	Machine, except electrical.....	21.0	2.9	5.8	3.6	8.6	1.2	(D)	(D)	(D)	2
36	Electric, electronic equipment.....	36.4	5.8	9.3	5.5	15.8	3.4	2.3	(D)	(D)	2
37	Transportation equipment.....	31.2	4.6	5.4	17.6	3.5	0.7	-	0.6	0.1	1
38	Instruments, related products.....	36.5	4.5	13.9	9.8	8.3	(D)	(D)	(D)	(D)	2
	New Jersey.....	309.4	40.3	55.3	85.2	128.6	87.2	57.6	24.0	5.7	2
20	Food and kindred products.....	15.7	1.4	2.5	5.1	6.7	2.3	0.9	(D)	(D)	5
26	Paper and allied products.....	7.2	0.7	1.9	1.3	3.4	2.8	(D)	(D)	(D)	18
28	Chemicals and allied products.....	150.9	20.8	24.3	51.8	54.0	12.3	5.6	5.1	1.7	2
29	Petroleum and coal products.....	50.2	7.4	8.5	(D)	(D)	46.2	(D)	(D)	(D)	1
32	Stone, clay, glass products.....	17.7	4.3	2.4	2.0	9.0	4.0	0.4	1.5	2.0	12
33	Primary metal industries.....	24.9	2.4	7.7	11.5	3.3	17.1	16.9	0.1	0.1	10
34	Fabricated metal products.....	8.0	0.7	1.5	2.0	3.8	-	-	-	-	7
35	Machine, except electrical.....	4.6	0.1	1.2	1.4	1.9	0.2	-	0.1	0.1	7
36	Electric, electronic equipment.....	7.8	1.4	1.4	1.2	3.9	0.6	0.4	0.2	0.1	6
37	Transportation equipment.....	6.8	(D)	1.4	(D)	3.5	-	-	-	-	2
	Pennsylvania.....	631.4	120.5	115.9	202.1	192.5	98.6	42.1	45.6	10.9	1
20	Food and kindred products.....	12.5	1.4	2.2	4.6	4.2	2.3	0.9	1.0	0.4	4
26	Paper and allied products.....	35.7	5.4	6.8	15.4	8.1	22.0	(D)	(D)	(D)	3
28	Chemicals and allied products.....	59.0	8.6	11.9	17.7	20.7	15.2	5.1	8.7	1.4	6
29	Petroleum and coal products.....	110.7	13.6	11.1	(D)	(D)	(D)	(D)	(D)	(D)	1
30	Rubber, misc. plastics products.....	6.6	0.7	0.9	2.7	2.4	1.0	0.7	0.3	(D)	17
32	Stone, clay, glass products.....	27.2	7.2	5.6	(D)	(D)	11.9	10.5	0.7	0.7	16
33	Primary metal industries.....	309.0	72.7	61.7	94.5	80.2	14.6	3.8	7.1	3.7	-
34	Fabricated metal products.....	9.0	1.1	1.9	2.2	3.8	0.3	(D)	(D)	(D)	7
35	Machine, except electrical.....	14.6	2.8	2.0	2.0	7.9	0.1	0.1	-	-	3
36	Electric, electronic equipment.....	19.1	3.3	5.5	3.2	7.0	0.6	0.3	0.1	0.2	8
37	Transportation equipment.....	7.7	0.6	2.4	2.0	2.7	-	-	-	-	2
39	Misc. manufacturing industries.....	4.8	0.5	0.6	0.6	3.1	(D)	(D)	(D)	(D)	5
	East North Central Division:										
	Ohio.....	538.1	103.7	129.1	132.5	172.4	53.1	28.3	18.2	6.6	2
20	Food and kindred products.....	22.7	2.8	3.3	4.5	12.1	3.8	(D)	(D)	0.7	7
26	Paper and allied products.....	22.0	3.5	5.3	5.5	7.8	5.5	1.6	3.7	0.1	6
28	Chemicals and allied products.....	69.5	11.5	15.9	17.4	24.6	10.5	5.2	4.2	1.1	6
29	Petroleum and coal products.....	22.0	2.3	5.0	12.5	2.1	(D)	1.7	(D)	(D)	1
30	Rubber, misc. plastics products.....	21.2	2.5	5.2	7.9	5.6	(D)	(D)	(D)	(D)	1
32	Stone, clay, glass products.....	27.3	8.3	6.2	5.0	7.7	2.2	1.7	0.3	0.2	7
33	Primary metal industries.....	245.6	50.2	54.8	60.8	79.8	15.5	14.9	0.6	-	1
34	Fabricated metal products.....	28.4	5.7	7.9	7.2	7.5	1.7	(D)	0.9	(D)	8
35	Machine, except electrical.....	16.8	4.0	4.2	2.1	6.5	0.7	0.3	(D)	(D)	5
36	Electric, electronic equipment.....	9.6	1.1	3.2	2.2	3.2	0.8	0.3	0.1	0.4	3
37	Transportation equipment.....	48.6	11.6	17.2	6.8	13.0	3.7	0.1	1.8	1.8	2

See footnotes at end of table.

Table 4B. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by State and Major Industry Group: 1981—Continued

(Millions of dollars)

SIC code	State and major industry group	Operating cost				Cost recovered				Standard error of estimates (percent) ¹ GAC	
		Total	By kind of cost				Total	By form of pollutants			
			Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water		Solid waste
East North Central Division--Continued											
	Indiana.....	438.6	95.1	91.2	92.3	159.7	46.3	20.6	22.9	2.8	1
20	Food and kindred products.....	10.4	1.8	2.4	3.3	2.9	6.3	4.8	1.2	0.3	6
28	Chemicals and allied products.....	48.0	8.3	9.0	9.5	20.9	(D)	(D)	(D)	(D)	4
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	7.4	7.4	(D)	(D)	(X)
33	Primary metal industries.....	248.9	64.7	49.8	58.5	76.0	12.9	6.1	(D)	(D)	1
35	Machine, except electrical.....	5.5	1.1	1.6	0.7	2.1	0.7	-	0.3	0.2	7
36	Electric, electronic equipment.....	18.6	2.9	6.5	3.4	5.8	1.0	0.4	0.5	-	2
37	Transportation equipment.....	17.3	3.5	6.1	3.6	4.1	1.5	-	0.6	0.9	2
Illinois.....											
	Food and kindred products.....	377.9	67.1	76.5	94.3	139.8	52.7	30.4	10.8	11.4	1
20	Paper and allied products.....	34.0	5.3	6.7	9.3	12.7	4.7	1.5	2.3	0.8	2
26	Printing and publishing.....	12.0	1.3	1.4	4.1	5.2	2.6	1.3	0.1	1.2	19
27	Chemicals and allied products.....	8.8	1.1	1.1	2.5	4.1	(D)	(D)	(D)	(D)	13
28	Petroleum and coal products.....	68.6	13.9	11.2	17.1	26.4	9.5	4.6	4.1	0.8	5
29	Rubber, misc. plastics products.....	59.9	10.4	11.9	16.8	20.8	17.8	12.7	(D)	(D)	1
30	Primary metal industries.....	7.8	0.8	1.6	1.6	3.8	1.6	(D)	(D)	1.0	8
33	Fabricated metal products.....	98.7	20.7	17.8	24.6	35.6	5.3	4.5	0.1	0.6	1
34	Machine, except electrical.....	18.7	3.0	4.5	4.9	6.3	4.0	1.3	0.4	2.3	10
35	Electric, electronic equipment.....	27.9	4.1	8.7	5.2	9.9	1.7	(D)	(D)	(D)	2
36	Transportation equipment.....	9.3	1.1	2.5	2.3	3.2	0.8	0.4	0.2	0.2	3
37	Transportation equipment.....	8.7	1.1	3.2	1.3	3.1	0.1	-	-	-	4
Michigan.....											
	Chemicals and allied products.....	410.6	75.3	118.4	92.6	124.2	48.7	18.4	19.5	10.8	2
28	Petroleum and coal products.....	61.4	8.0	19.7	13.8	19.8	13.3	(D)	(D)	1.3	4
29	Stone, clay, glass products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
32	Primary metal industries.....	17.0	2.7	3.4	4.6	6.2	5.6	(D)	(D)	(D)	10
33	Fabricated metal products.....	120.2	24.1	35.1	31.8	29.2	3.1	2.4	(D)	(D)	1
34	Machine, except electrical.....	13.8	1.9	3.9	3.7	4.3	2.5	0.3	0.2	2.0	9
35	Transportation equipment.....	13.1	2.6	3.6	2.3	4.6	(D)	(D)	(D)	(D)	3
37	Transportation equipment.....	113.1	27.2	38.0	21.5	26.4	6.9	0.2	4.8	1.9	1
Wisconsin.....											
	Food and kindred products.....	136.8	25.9	28.1	34.6	48.1	23.1	4.9	12.2	6.0	6
20	Paper and allied products.....	12.7	2.1	3.2	2.6	4.8	1.7	1.1	0.3	0.2	7
26	Fabricated metal products.....	71.2	15.0	12.4	22.0	21.7	14.8	1.1	11.0	2.6	6
34	Machine, except electrical.....	7.8	0.9	2.2	2.4	2.2	0.7	0.2	0.1	0.4	18
35	Electric, electronic equipment.....	9.9	1.2	2.5	2.3	3.9	0.4	0.2	-	0.2	3
36	Transportation equipment.....	3.8	0.6	0.6	0.7	1.9	0.2	-	0.1	0.1	14
37	Transportation equipment.....	5.8	(D)	2.7	(D)	1.9	(D)	(D)	(D)	(D)	1
West North Central Division:											
Minnesota.....											
	Food and kindred products.....	63.3	17.4	10.8	11.7	23.4	12.4	6.8	1.9	3.7	3
20	Paper and allied products.....	13.3	6.0	2.2	2.3	2.8	2.2	1.1	0.7	0.4	7
26	Petroleum and coal products.....	12.5	4.5	1.2	1.9	4.9	2.2	(D)	(D)	(D)	1
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	5.6	(D)	(D)	(D)	(X)
Iowa.....											
	Food and kindred products.....	79.4	15.8	18.9	20.4	24.2	20.4	15.3	3.5	1.5	2
20	Chemicals and allied products.....	28.1	5.6	4.8	6.8	10.8	13.8	11.1	2.0	0.8	3
28	Machine, except electrical.....	16.8	3.6	3.6	6.1	3.5	2.3	(D)	(D)	(D)	5
35	Machine, except electrical.....	16.1	3.0	5.3	3.2	4.6	0.8	(D)	(D)	(D)	3
Missouri.....											
	Food and kindred products.....	111.8	19.5	31.1	22.7	38.4	16.3	12.8	2.2	1.2	4
20	Chemicals and allied products.....	9.6	1.6	4.1	1.2	2.7	2.0	0.5	(D)	(D)	6
28	Petroleum and coal products.....	30.8	5.3	3.0	10.2	12.3	3.8	2.5	1.1	0.3	16
29	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
33	Transportation equipment.....	19.3	3.4	4.3	2.9	8.7	(D)	(D)	(D)	(D)	2
37	Transportation equipment.....	21.1	2.2	12.2	2.0	4.7	(D)	(D)	(D)	(D)	1
North Dakota.....											
	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
South Dakota.....											
	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
Nebraska.....											
	Food and kindred products.....	16.8	3.6	4.7	4.3	4.1	5.0	2.4	1.0	1.6	9
20	Food and kindred products.....	6.3	1.7	2.3	1.2	1.1	2.6	1.1	(D)	(D)	12
Kansas.....											
	Food and kindred products.....	52.8	10.3	11.8	12.4	18.3	8.5	4.9	1.5	2.1	7
20	Chemicals and allied products.....	4.4	1.1	0.7	0.7	1.8	1.2	0.8	0.3	0.1	4
28	Petroleum and coal products.....	7.1	2.3	1.1	1.5	2.2	0.7	(D)	(D)	(D)	7
29	Stone, clay, glass products.....	12.5	1.4	4.0	4.1	3.0	(D)	(D)	(D)	(D)	1
32	Stone, clay, glass products.....	13.1	4.0	2.3	1.9	4.8	1.4	(D)	0.8	(D)	11

See footnotes at end of table.

Table 4B. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by State and Major Industry Group: 1981—Continued

(Millions of dollars)

SIC code	State and major industry group	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
		Total	By kind of cost				Total	By form of pollutants			
			Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water	Solid waste	
South Atlantic Division:											
	Delaware.....	118.3	13.4	66.9	26.3	11.7	2.2	1.0	0.8	0.3	1
28	Chemicals and allied products.....	35.4	6.5	7.2	11.6	10.1	1.2	(D)	(D)	(D)	4
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Maryland.....	127.1	27.9	18.7	36.4	44.0	9.3	4.6	2.3	2.4	2
26	Paper and allied products.....	5.1	(D)	0.6	(D)	1.3	(D)	(D)	(D)	(D)	11
28	Chemicals and allied products.....	26.3	4.8	3.1	7.9	10.6	1.5	0.5	(D)	(D)	4
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	District of Columbia.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Virginia.....	120.5	24.8	28.2	30.7	36.8	26.0	12.3	4.1	9.6	2
20	Food and kindred products.....	7.0	1.7	1.9	1.2	2.1	(D)	(D)	(D)	(D)	14
22	Textile mill products.....	5.9	1.8	1.4	1.9	0.8	0.5	(D)	(D)	(D)	4
26	Paper and allied products.....	29.2	6.5	4.5	9.7	8.4	5.6	3.7	(D)	(D)	5
28	Chemicals and allied products.....	38.8	8.1	11.3	10.4	9.0	3.8	1.3	(D)	(D)	1
36	Electric, electronic equipment.....	4.6	1.4	1.2	1.2	0.7	0.6	(D)	0.2	(D)	2
37	Transportation equipment.....	9.5	1.4	2.3	0.6	5.3	-	-	-	-	7
	West Virginia.....	193.4	32.7	48.2	51.9	60.6	15.6	2.3	10.2	3.1	2
28	Chemicals and allied products.....	88.2	16.2	20.7	30.3	21.0	10.8	0.5	(D)	(D)	1
33	Primary metal industries.....	88.4	10.6	24.3	(D)	(D)	2.3	1.4	(D)	(D)	1
	North Carolina.....	131.6	32.6	29.2	34.9	34.7	37.3	24.9	4.6	7.7	5
21	Tobacco products.....	7.8	(D)	2.9	(D)	0.5	-	-	-	-	1
22	Textile mill products.....	21.8	7.3	4.3	5.6	4.6	2.7	0.6	0.6	1.5	8
25	Furniture and fixtures.....	6.7	2.7	1.1	0.9	2.0	0.6	0.5	-	0.1	14
26	Paper and allied products.....	23.9	7.0	5.6	8.7	2.5	17.2	13.3	(D)	(D)	1
28	Chemicals and allied products.....	22.9	4.3	5.2	8.4	5.0	7.6	5.9	(D)	(D)	7
35	Machine, except electrical.....	5.0	(D)	1.8	(D)	0.7	(D)	(D)	(D)	(D)	3
36	Electric, electronic equipment.....	4.8	1.3	1.2	0.7	1.5	0.3	0.1	0.1	-	8
	South Carolina.....	98.7	22.0	20.6	32.9	23.2	39.3	23.2	14.3	1.8	8
22	Textile mill products.....	12.6	4.3	2.4	1.9	4.0	9.5	(D)	(D)	(D)	8
28	Chemicals and allied products.....	30.9	5.1	6.5	12.3	6.9	0.7	(D)	(D)	(D)	2
32	Stone, clay, glass products.....	7.9	2.6	1.7	2.5	1.1	8.3	7.6	(D)	(D)	15
33	Primary metal industries.....	4.4	1.1	0.7	0.7	1.9	-	-	-	-	5
	Georgia.....	124.8	27.6	24.9	37.4	34.8	11.8	7.5	1.4	2.9	2
20	Food and kindred products.....	7.6	1.5	1.5	2.5	2.2	1.2	(D)	(D)	0.4	5
22	Textile mill products.....	6.1	1.0	1.5	1.1	2.4	0.4	0.1	-	0.2	7
26	Paper and allied products.....	50.5	12.7	8.1	15.9	13.8	4.8	4.1	(D)	(D)	3
28	Chemicals and allied products.....	30.3	5.1	6.9	10.8	7.5	2.0	1.5	(D)	(D)	7
37	Transportation equipment.....	8.2	3.5	2.4	1.3	1.0	0.1	-	-	0.1	1
	Florida.....	136.4	27.8	22.3	50.8	35.5	53.7	21.4	30.3	1.9	3
20	Food and kindred products.....	15.7	3.1	3.6	4.5	4.4	7.0	1.8	(D)	(D)	4
26	Paper and allied products.....	48.2	8.9	6.3	24.6	8.5	(D)	(D)	(D)	(D)	1
28	Chemicals and allied products.....	43.3	11.3	5.8	14.0	12.2	17.8	10.1	7.7	-	4
East South Central Division:											
	Kentucky.....	120.0	19.5	33.0	36.1	31.3	44.9	19.4	19.2	6.4	3
20	Food and kindred products.....	4.9	0.7	0.5	0.7	2.8	0.4	(D)	0.1	(D)	16
28	Chemicals and allied products.....	38.9	6.2	8.6	14.7	9.5	5.0	(D)	2.8	(D)	4
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
33	Primary metal industries.....	20.0	2.2	5.2	5.6	7.0	(D)	(D)	(D)	(D)	1
35	Machine, except electrical.....	6.5	(D)	(D)	1.2	2.9	(D)	(D)	(D)	(D)	3
36	Electric, electronic equipment.....	6.1	1.0	1.9	1.7	1.4	(D)	(D)	(D)	(D)	5
	Tennessee.....	170.0	35.2	35.6	55.7	43.5	26.9	12.6	8.7	5.7	3
20	Food and kindred products.....	5.9	0.9	1.7	1.3	2.0	2.4	1.1	1.1	0.1	6
26	Paper and allied products.....	8.6	2.5	2.1	2.4	1.6	4.6	3.6	1.0	0.1	11
28	Chemicals and allied products.....	114.1	22.7	20.0	41.9	29.5	12.1	1.0	6.2	4.9	5
33	Primary metal industries.....	12.2	3.5	3.1	2.4	3.2	(D)	(D)	(D)	(D)	6
36	Electric, electronic equipment.....	4.9	0.6	1.6	1.8	1.0	(D)	(D)	(D)	(D)	8
	Alabama.....	201.2	46.8	37.2	51.8	65.5	22.7	17.2	3.3	2.1	4
26	Paper and allied products.....	42.5	12.6	5.7	6.6	17.6	1.2	(D)	(D)	(D)	1
28	Chemicals and allied products.....	54.1	13.0	11.5	20.5	9.0	9.1	6.4	2.6	0.1	1
33	Primary metal industries.....	72.4	15.0	11.7	17.3	28.4	5.3	5.3	-	-	9

See footnotes at end of table.

Table 4B. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by State and Major Industry Group: 1981—Continued

(Millions of dollars)

SIC code	State and major industry group	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
		Total	By kind of cost				Total	By form of pollutants			
			Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water	Solid waste	
East South Central Division--Continued											
	Mississippi.....	70.8	15.2	14.3	26.9	14.4	23.9	15.6	8.2	0.1	3
24	Lumber and wood products.....	11.4	3.1	2.2	2.6	3.6	(D)	(D)	(D)	(D)	14
26	Paper and allied products.....	(D)	3.1	(D)	2.7	(D)	(D)	(D)	(D)	(D)	(X)
28	Chemicals and allied products.....	16.4	5.4	1.9	4.1	5.1	(D)	(D)	(D)	(D)	4
29	Petroleum and coal products.....	(D)	1.6	(D)	(D)	0.2	(D)	(D)	(D)	(D)	(X)
West South Central Division:											
	Arkansas.....	78.5	16.2	15.0	22.2	25.1	23.8	19.9	2.8	1.1	10
20	Food and kindred products.....	5.9	1.5	1.4	1.4	1.6	1.6	0.5	1.0	-	6
26	Paper and allied products.....	14.9	3.7	2.4	4.0	4.8	8.1	(D)	(D)	0.3	2
	Louisiana.....	562.2	83.3	98.4	233.4	147.1	166.5	95.4	65.8	5.3	1
20	Food and kindred products.....	4.6	0.8	0.6	1.8	1.4	0.2	0.1	0.1	-	9
26	Paper and allied products.....	22.2	6.6	2.6	7.1	6.1	13.1	11.7	(D)	(D)	4
28	Chemicals and allied products.....	268.1	43.2	59.6	81.4	83.8	60.3	29.4	26.7	4.1	2
29	Petroleum and coal products.....	238.6	27.9	28.3	138.1	44.3	89.6	51.7	37.8	-	1
33	Primary metal industries.....	17.8	3.5	3.4	(D)	(D)	1.8	1.8	-	-	11
	Oklahoma.....	47.5	10.1	9.8	19.1	8.8	7.9	6.5	(D)	(D)	11
29	Petroleum and coal products.....	19.5	2.1	4.7	9.9	2.9	4.2	3.2	(D)	(D)	1
33	Primary metal industries.....	6.2	(D)	0.5	(D)	1.4	(D)	(D)	(D)	(D)	19
	Texas.....	1,161.8	165.3	228.0	462.4	306.0	344.0	226.2	96.1	21.8	1
20	Food and kindred products.....	17.6	4.8	3.7	3.4	5.6	3.2	0.4	2.1	0.7	8
26	Paper and allied products.....	29.9	4.9	4.7	13.2	7.1	(D)	(D)	(D)	(D)	4
28	Chemicals and allied products.....	348.2	48.5	63.4	138.6	97.7	75.5	60.8	7.3	7.3	2
29	Petroleum and coal products.....	606.0	79.5	118.7	269.5	138.4	234.8	140.4	(D)	(D)	1
32	Stone, clay, glass products.....	22.8	5.1	4.9	6.4	6.4	5.4	4.9	0.2	0.3	18
33	Primary metal industries.....	93.8	18.1	21.0	21.7	32.9	(D)	15.3	(D)	(D)	2
34	Fabricated metal products.....	7.8	1.1	2.0	2.2	2.4	-	-	-	-	14
35	Machine, except electrical.....	9.1	0.9	2.0	1.6	4.6	0.6	0.2	-	0.3	8
36	Electric, electronic equipment.....	6.1	0.6	1.9	2.1	1.4	(D)	(D)	(D)	(D)	8
37	Transportation equipment.....	7.4	0.4	3.6	0.3	3.1	(D)	(D)	(D)	(D)	6
Mountain Division:											
	Montana.....	27.9	5.2	5.4	15.1	2.2	4.9	3.8	1.0	0.1	2
29	Petroleum and coal products.....	(D)	(D)	1.0	(D)	0.3	(D)	(D)	(D)	(D)	(X)
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Idaho.....	38.1	10.1	9.6	10.3	8.1	6.2	1.5	1.2	3.5	4
28	Chemicals and allied products.....	20.1	(D)	5.7	7.0	(D)	(D)	(D)	(D)	(D)	1
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Wyoming.....	6.8	1.6	1.6	1.6	1.9	2.5	0.3	2.2	-	27
	Colorado.....	49.5	12.4	11.4	15.7	10.0	11.9	8.7	1.4	1.8	4
20	Food and kindred products.....	6.9	(D)	2.3	(D)	1.8	(D)	(D)	(D)	(D)	5
28	Chemicals and allied products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
38	Instruments, related products.....	9.5	(D)	2.0	(D)	2.5	1.3	(D)	(D)	0.9	1
	New Mexico.....	33.9	1.2	3.3	4.8	24.6	11.3	11.1	0.2	0.1	1
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Arizona.....	74.1	8.4	15.1	15.7	34.9	24.6	24.4	-	0.2	2
33	Primary metal industries.....	65.0	7.3	12.1	14.0	31.5	16.9	16.9	-	-	2
	Utah.....	41.1	10.8	8.6	11.3	10.3	12.3	10.6	1.7	0.1	3
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Nevada.....	4.7	0.6	0.9	2.6	0.6	0.9	0.4	0.5	-	8
Pacific Division:											
	Washington.....	218.5	45.9	42.0	66.5	64.0	76.5	44.4	23.6	8.5	2
20	Food and kindred products.....	4.2	0.5	1.8	0.7	1.2	1.7	0.3	0.6	0.8	13
24	Lumber and wood products.....	22.1	4.8	5.1	2.4	9.7	6.5	0.1	-	6.5	15
26	Paper and allied products.....	65.7	23.4	7.2	23.3	11.8	28.3	(D)	20.0	(D)	1
29	Petroleum and coal products.....	36.2	(D)	6.3	(D)	9.3	(D)	(D)	(D)	(D)	1
33	Primary metal industries.....	62.7	8.7	15.0	12.7	26.4	20.7	19.7	(D)	(D)	2
37	Transportation equipment.....	8.1	(D)	1.8	(D)	4.1	(D)	(D)	(D)	(D)	1

See footnotes at end of table.

Table 4B. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by State and Major Industry Group: 1981—Continued

(Millions of dollars)

SIC code	State and major industry group	Operating cost					Cost recovered			Standard error of estimates (percent) ¹ GAC	
		Total	By kind of cost				Total	By form of pollutants			
			Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water		Solid waste
	Pacific Division—Continued										
	Oregon.....	83.8	21.9	21.3	30.2	10.1	41.4	7.0	15.1	19.2	5
20	Food and kindred products.....	2.8	0.5	1.3	0.5	0.6	(D)	(D)	(D)	(D)	12
24	Lumber and wood products.....	19.1	6.6	6.1	3.7	2.5	3.9	1.3	-	2.5	11
26	Paper and allied products.....	31.7	8.4	6.7	14.1	2.6	25.9	(D)	14.3	(D)	1
33	Primary metal industries.....	19.4	4.9	5.2	8.2	1.2	(D)	(D)	(D)	(D)	8
	California.....	582.5	63.8	119.7	195.6	202.8	112.8	75.2	21.6	16.0	3
20	Food and kindred products.....	31.2	4.6	5.8	5.7	14.9	7.6	2.0	2.7	2.9	3
24	Lumber and wood products.....	9.0	1.9	2.8	1.6	2.7	0.9	(D)	(D)	0.2	17
26	Paper and allied products.....	12.2	1.8	2.3	4.5	3.6	3.1	0.6	1.7	0.8	12
28	Chemicals and allied products.....	58.2	6.8	10.5	14.3	26.6	7.8	6.4	1.0	0.4	10
29	Petroleum and coal products.....	272.8	21.1	53.7	125.1	72.9	60.3	45.4	(D)	(D)	1
30	Rubber, misc. plastics products.....	5.1	0.4	1.1	0.3	3.2	0.5	0.5	-	-	13
32	Stone, clay, glass products.....	37.4	7.2	8.9	10.9	10.4	13.9	9.6	(D)	(D)	9
33	Primary metal industries.....	60.1	7.6	9.3	12.7	30.6	1.3	1.0	(D)	(D)	7
34	Fabricated metal products.....	19.1	1.9	4.8	6.6	5.7	5.7	5.3	0.2	0.2	13
35	Machine, except electrical.....	8.3	1.4	1.5	1.1	4.1	2.8	1.6	1.1	0.2	9
36	Electric, electronic equipment.....	20.3	1.7	3.9	4.3	10.2	4.2	(D)	(D)	1.3	19
37	Transportation equipment.....	37.1	6.3	13.6	6.2	11.0	1.8	0.1	0.1	1.6	1
	Alaska.....	6.0	3.2	1.4	1.0	0.4	0.4	-	0.1	0.3	8
	Hawaii.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)

Note: Totals may not agree precisely with detail because of independent rounding. No 2-digit industries are shown where GAC is less than \$5.0 million or the standard error is 20 or greater. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹The standard error is calculated based on GAC shown on table 3B.

²Excludes major industry group 23, Apparel and Other Textile Products.

Table 4C. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by SMSA: 1981

(Millions of dollars)

Standard metropolitan statistical area	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
	Total	By kind of cost				Total	By form of pollutants			
		Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water	Solid waste	
Akron, Ohio.....	16.9	2.5	4.0	6.2	4.1	0.7	0.3	0.2	0.2	4
Albany, Ga.....	4.5	0.6	0.9	1.9	1.2	0.1	-	-	0.1	1
Albany-Schenectady-Troy, N.Y.....	31.6	12.0	5.5	8.0	6.0	3.9	2.2	0.8	0.9	6
Allentown-Bethlehem-Easton, Pa. N.J.....	58.8	15.0	9.9	15.5	18.5	8.0	2.0	5.7	0.3	6
Amarillo, Tex.....	5.6	1.1	1.6	2.5	0.5	-	-	-	-	13
Anaheim-Santa Ana-Garden Grove, Calif.....	17.9	1.8	4.1	4.2	7.9	0.6	0.1	0.4	0.1	13
Anderson, Ind.....	8.5	1.2	3.5	2.4	1.5	.6	-	.6	-	10
Ann Arbor, Mich.....	9.7	1.7	3.4	1.5	3.1	2.1	-	1.5	0.6	6
Appleton-Cashkosh, Wis.....	12.5	2.4	2.2	5.1	2.8	(D)	(D)	(D)	(D)	9
Atlanta, Ga.....	18.9	4.7	4.4	3.2	6.7	2.3	0.7	0.4	1.2	6
Augusta, Ga.-S.C.....	15.0	2.5	3.6	6.7	2.3	(D)	(D)	(D)	(D)	10
Baltimore, Md.....	98.9	17.5	13.3	32.3	35.8	6.1	2.8	2.1	1.1	2
Baton Rouge, La.....	180.4	21.4	21.7	95.3	41.9	45.6	33.9	10.4	1.3	1
Besant-Port Arthur-Orange, Tex.....	245.4	23.1	62.5	120.3	39.5	50.2	38.1	11.8	.2	1
Billings, Mont.....	10.2	1.1	1.1	7.7	.3	(D)	(D)	(D)	(D)	1
Binghamton, N.Y.-Pa.....	7.5	1.6	1.8	0.6	3.6	(D)	(D)	(D)	(D)	1
Birmingham, Ala.....	38.7	11.1	6.1	5.9	15.7	0.9	0.5	0.4	-	5
Boston, Mass.....	26.7	3.9	7.1	4.8	10.8	5.0	2.0	2.1	1.0	5
Bridgeport, Conn.....	7.9	0.7	1.3	3.0	2.9	0.2	0.2	-	-	11
Buffalo, N.Y.....	99.8	20.2	20.5	31.9	27.1	9.7	6.1	2.5	1.2	3
Canton, Ohio.....	19.1	4.3	7.9	3.7	3.0	(D)	(D)	(D)	(D)	2
Cedar Rapids, Iowa.....	7.3	1.1	1.4	1.3	3.5	1.7	1.3	0.3	0.1	7
Charleston, S.C.....	14.2	4.4	2.1	3.7	4.1	12.8	12.8	-	-	13
Charleston, W. Va.....	56.3	9.7	12.2	18.9	15.5	10.2	0.3	8.3	1.5	2
Charlotte-Gastonia, N.C.....	6.3	1.5	1.6	1.6	1.6	1.1	0.2	-	0.8	13
Chattanooga, Tenn.-Ga.....	13.1	3.2	3.0	3.4	3.6	3.0	0.5	0.9	1.6	12
Chicago, Ill.....	226.1	38.8	44.4	48.7	94.2	32.7	21.8	5.0	5.8	2
Cincinnati, Ohio-Ky.-Ind.....	34.9	8.6	7.4	8.5	10.3	4.7	1.1	3.4	0.1	6
Cleveland, Ohio.....	113.0	21.5	20.5	22.3	48.7	3.5	0.8	1.8	0.9	1
Columbia, S.C.....	12.7	2.0	2.4	4.0	4.3	5.0	4.6	0.2	0.1	8
Columbus, Ohio.....	22.5	4.5	5.5	7.1	5.3	6.4	0.9	4.0	1.6	6
Corpus Christi, Tex.....	53.6	12.2	5.1	19.2	17.1	13.8	9.3	.1	4.5	1
Dallas-Fort Worth, Tex.....	37.9	6.3	10.0	9.4	12.1	6.3	3.6	1.2	1.5	7
Davenport-Rock Island-Moline, Iowa-Ill.....	14.1	2.9	3.6	4.0	3.6	0.9	0.8	-	0.1	5
Dayton, Ohio.....	28.3	7.3	5.8	3.4	11.8	2.2	2.0	0.2	-	3
Decatur, Ill.....	4.5	1.2	1.6	1.2	0.6	1.0	0.5	0.4	0.1	7
Denver-Boulder, Colo.....	24.9	3.0	5.4	7.9	8.6	3.5	1.0	1.4	1.2	9
Des Moines, Iowa.....	4.9	0.8	1.3	1.8	1.0	0.5	0.4	0.0	-	11
Detroit, Mich.....	191.6	29.3	56.7	39.9	65.7	12.1	6.9	2.9	2.4	1
Dubuque, Iowa.....	5.7	1.6	2.0	1.9	0.2	0.6	-	0.4	0.2	2
El Paso, Tex.....	25.3	4.8	4.3	4.8	11.4	(D)	(D)	(D)	(D)	5
Eric, Pa.....	6.5	1.6	1.1	.8	3.0	-	-	-	-	5
Eugene-Springfield, Ore.....	4.6	1.9	0.9	1.4	0.3	(D)	(D)	(D)	(D)	10
Flint, Mich.....	26.9	6.7	12.1	4.3	3.8	(D)	(D)	(D)	(D)	1
Florence, Ala.....	17.4	2.7	2.9	9.3	2.6	0.5	0.5	-	-	1
Fort Wayne, Ind.....	7.8	1.6	1.6	1.5	3.1	1.1	0.8	0.2	0.1	12
Gadsden, Ala.....	12.8	1.1	2.1	0.3	9.3	0.1	-	-	0.1	1
Galveston-Texas City, Tex.....	75.4	8.1	9.3	29.7	28.3	(D)	(D)	(D)	(D)	1
Gary-Hammond-East Chicago, Ind.....	281.6	65.7	52.0	58.0	105.7	18.9	12.8	6.0	0.1	1
Grand Rapids, Mich.....	18.1	3.2	3.5	4.1	7.2	0.7	-	0.5	0.2	12
Green Bay Wis.....	15.7	2.1	5.2	6.8	1.7	7.4	-	7.3	0.1	8
Greensboro-Winston-Salem-N.C.....	18.3	6.9	4.9	3.9	2.5	1.1	0.7	0.4	-	9
Greenville-Spartanburg, S.C.....	13.4	4.0	2.3	2.9	4.2	1.3	.2	0.7	0.4	9
Hamilton-Middletown, Ohio.....	37.1	8.2	7.6	9.0	12.3	.0	-	-	-	1
Harrisburg, Pa.....	5.9	1.9	.6	1.2	2.2	0.9	0.6	-	0.3	5
Hartford, Conn.....	10.4	1.7	2.4	2.5	3.7	0.6	0.4	0.1	0.1	12
Honolulu, Hawaii.....	6.8	0.7	1.1	0.9	4.1	0.3	0.1	0.2	0.1	10
Houston, Tex.....	555.5	82.6	95.3	224.4	153.1	197.8	107.4	79.0	11.4	1
Huntington-Ashland, W. Va.-Ky.-Ohio.....	31.0	4.2	9.6	10.3	7.0	21.1	5.0	15.8	0.4	4
Indianapolis, Ind.....	22.4	3.9	6.6	5.6	6.2	4.9	3.2	1.2	0.5	3
Jacksonville, Fla.....	49.1	7.3	6.3	26.0	9.5	30.5	4.8	25.0	0.6	2
Jersey City, N.J.....	19.0	2.2	2.1	7.5	7.2	(D)	(D)	(D)	(D)	9
Johnstown, Pa.....	12.6	2.8	1.6	7.5	0.6	0.1	-	-	0.1	2
Kalamazoo-Portage, Mich.....	10.0	.9	3.8	.8	4.4	(D)	(D)	(D)	(D)	4
Kansas City, Mo.-Kansas.....	57.6	12.5	18.5	7.6	18.9	9.1	7.3	0.8	0.9	2

See footnotes at end of table.

Table 4C. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by SMSA: 1981—Continued

(Millions of dollars)

Standard metropolitan statistical area	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
	Total	By kind of cost				Total	By form of pollutants			
		Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other costs		Air	Water	Solid waste	
Knoxville, Tenn.	12.8	1.8	2.7	5.5	2.7	(D)	(D)	(D)	(D)	6
Lafayette-West Lafayette, Ind.	14.6	1.7	3.7	1.8	7.4	0.3	0.1	0.1	0.1	3
Lake Charles, La.	92.7	16.7	17.3	21.1	37.5	52.9	10.6	42.2	-	1
Lakeland-Winter Haven, Fla.	18.6	5.3	2.0	4.8	6.5	10.1	6.4	3.7	-	5
Lancaster, Pa.	10.8	2.5	1.8	2.4	4.1	3.0	2.9	0.1	0.1	6
Lansing-East Lansing, Mich.	19.0	3.7	5.9	3.9	5.5	(D)	(D)	(D)	(D)	3
Lexington-Fayette, Ky.	6.5	1.6	1.2	0.6	3.1	0.7	0.8	-	-	16
Lima, Ohio	13.3	1.0	5.4	2.3	4.6	(D)	(D)	(D)	(D)	9
Little Rock-N. Little Rock, Ark.	8.4	1.9	2.1	1.0	3.5	(D)	(D)	(D)	(D)	15
Lorain-Elyria, Ohio	37.2	4.1	10.0	7.9	15.1	0.6	0.1	0.2	0.3	2
Los Angeles-Long Beach, Calif.	238.7	28.3	57.6	75.9	68.3	58.9	36.1	15.9	6.9	3
Louisville, Ky.-Ind.	37.6	5.3	9.3	9.1	14.0	7.5	3.9	2.3	1.2	5
Lynchburg, Va.	4.8	0.7	0.9	1.0	2.2	1.4	0.9	-	0.5	16
Macon, Ga.	5.0	1.3	0.6	1.4	1.8	0.9	0.9	-	0.1	6
Memphis, Tenn.-Ark.-Miss.	32.4	4.6	5.9	17.5	4.5	3.5	1.5	1.0	1.0	4
Milwaukee, Wis.	24.8	3.3	5.2	4.9	11.4	1.3	0.6	0.5	0.2	18
Minneapolis-St. Paul, Minn.-Wis.	34.5	6.5	6.6	7.1	14.2	7.4	5.1	0.8	1.5	4
Mobile, Ala.	36.8	9.5	7.3	11.3	8.7	8.6	5.3	2.7	0.6	2
Muskegon-Muskegon Heights, Mich.	5.5	1.1	1.2	1.2	2.0	0.6	0.6	-	-	4
Nashville-Davidson, Tenn.	12.7	3.3	3.1	3.0	3.3	1.1	0.8	0.2	0.1	4
Nassau-Suffolk, N.Y.	12.7	0.6	3.0	2.7	6.4	0.3	-	0.2	0.1	9
New Brunswick-Perth Amboy-N.J.	82.8	8.9	13.7	23.7	36.6	26.6	26.0	0.5	0.1	3
New London-Norwich, Conn.-R.I.	13.7	1.3	2.0	5.3	5.1	(D)	(D)	(D)	(D)	9
New Orleans, La.	27.5	4.1	5.3	3.6	14.5	5.0	3.7	0.7	0.6	3
New York, N.Y.-N.J.	62.0	7.9	10.9	19.6	23.5	2.5	0.5	0.9	1.1	4
Newark, N.J.	64.6	8.1	9.3	22.8	24.4	34.1	27.7	5.5	1.0	3
Newport News-Hampton, Va.	12.4	1.1	3.1	0.8	7.4	(D)	(D)	(D)	(D)	1
Oklahoma City, Okla.	5.0	1.2	1.4	1.3	1.0	0.8	0.7	-	0.2	8
Omaha, Nebr.-Iowa	7.8	1.2	2.4	1.9	2.4	3.6	1.8	0.3	1.5	11
Parkersburg-Marietta, W. Va.-Ohio	55.9	8.1	12.4	27.0	8.4	11.0	7.5	3.4	-	3
Pensacola, Fla.	19.3	5.7	3.3	4.4	6.0	(D)	(D)	(D)	(D)	1
Poeoria, Ill.	25.5	6.5	4.3	5.7	9.0	(D)	(D)	(D)	(D)	1
Petersburg-Colonial Heights-Va.	18.3	5.0	5.5	4.3	3.6	(D)	(D)	(D)	(D)	1
Philadelphia, Pa.-N.J.	234.3	26.1	35.4	83.2	89.4	58.5	23.6	31.1	3.8	1
Phoenix, Ariz.	6.8	0.7	1.7	1.2	3.2	7.1	7.0	-	0.1	4
Pittsburgh, Pa.	237.6	53.9	48.7	65.5	69.4	14.5	7.0	7.5	-	1
Portland, Maine	5.5	1.2	1.0	1.3	2.0	3.0	2.9	0.1	-	16
Portland, Oreg.-Wash.	34.2	7.7	7.2	14.0	5.3	21.1	7.2	7.1	6.8	10
Poughkeepsie, N.Y.	17.4	1.7	4.6	2.3	8.9	(D)	(D)	(D)	(D)	1
Providence-Warwick-Pawtucket, R.I.-Mass.	12.3	1.6	2.4	3.7	4.6	3.0	2.8	0.1	0.1	7
Provo-Orem, Utah	6.9	1.3	1.2	1.5	2.9	0.1	-	0.1	-	2
Pueblo, Colo.	15.4	8.3	3.5	3.3	0.3	-	-	-	-	9
Racine, Wis.	3.5	0.5	0.6	0.7	1.7	0.3	0.1	-	0.2	5
Raleigh-Durham, N.C.	6.3	1.1	1.5	2.3	1.4	1.1	0.2	0.5	0.4	11
Reading, Pa.	17.1	3.1	3.5	4.4	6.1	2.6	2.5	0.1	-	18
Richmond, Va.	16.7	4.0	3.0	3.5	6.2	4.7	4.2	0.1	0.4	10
Riverside-San Bernardino-Calif.	58.4	6.7	8.5	15.7	27.5	6.0	5.3	00.1	0.6	4
Rochester, N.Y.	45.4	6.8	16.0	11.6	11.0	(D)	(D)	(D)	(D)	2
Rockford, Ill.	6.5	0.9	1.8	1.5	2.3	0.5	0.1	0.3	0.1	10
Sacramento, Calif.	6.8	0.9	2.3	1.6	2.0	0.2	0.1	-	0.1	9
Saginaw, Mich.	30.9	11.3	4.6	9.3	5.6	2.8	2.1	0.6	0.1	6
St. Louis, Mo.-Ill.	69.2	10.4	14.7	11.5	32.6	20.1	16.1	2.3	1.8	2
Salt Lake City-Ogden, Utah	31.6	9.1	6.8	9.4	6.3	(D)	(D)	(D)	(D)	2
San Diego, Calif.	11.0	0.7	2.7	0.9	6.7	(D)	(D)	(D)	(D)	16
San Francisco-Oakland, Calif.	148.2	9.9	21.5	57.2	59.5	20.6	18.5	0.5	1.6	2
San Jose, Calif.	16.8	2.4	4.3	2.6	7.2	3.0	1.4	0.6	0.9	5
Savannah, Ga.	33.1	9.6	5.0	7.3	11.1	1.1	0.6	0.4	-	6
Seattle-Everett, Wash.	30.8	7.6	6.0	6.7	10.4	20.4	3.8	9.8	6.7	7
Spokane, Wash.	8.2	1.5	3.0	1.1	2.6	(D)	(D)	(D)	(D)	7
Springfield-Chicopee-Mass.-Conn.	15.6	1.8	2.1	5.4	6.3	3.8	3.4	0.3	0.1	17
Stuebenville-Weirton, Ohio-W. Va.	75.7	9.1	19.8	13.9	33.0	2.1	0.4	1.5	0.2	1
Stockton, Calif.	7.0	1.6	1.5	0.9	3.0	2.8	1.1	1.2	0.5	9
Syracuse, N.Y.	19.7	2.1	3.7	4.6	9.3	1.6	0.9	-	0.6	3
Tacoma, Wash.	36.7	3.3	5.8	2.9	24.9	2.5	2.3	0.1	0.1	1
Tampa-St. Petersburg, Fla.	17.8	3.3	3.1	7.2	4.2	2.9	2.6	0.3	-	13

See footnotes at end of table.

Table 4C. Pollution Abatement Operating Costs, by Kind of Cost and Cost Recovered, by Form of Pollutants, and by SMSA: 1981—Continued

(Million of dollars)

Standard metropolitan statistical area	Operating cost					Cost recovered				Standard error of estimates (percent) ¹ GAC
	Total	By kind of cost				Total	By form of pollutants			
		Depreciation	Labor	Materials and supplies	Services, equipment leasing, and other cost		Air	Water	Solid Waste	
Torre Haute, Ind.....	17.0	3.2	3.2	3.9	6.6	2.2	0.1	1.9	0.2	15
Texarkana, Tex.—Texarkana, Ark.....	6.5	1.4	1.4	2.7	1.0	-	-	-	-	7
Toledo, Ohio-Mich.....	42.5	8.3	11.2	15.9	7.1	16.7	14.9	0.4	1.4	5
Trenton, N.J.....	7.6	.8	1.4	2.2	3.2	0.3	0.1	0.1	0.1	8
Tucson, Ariz.....	9.4	2.9	1.6	1.1	3.7	(D)	(D)	(D)	(D)	8
Tulsa, Okla.....	39.2	9.8	9.0	11.0	9.4	3.4	2.7	0.7	-	16
Tuscaloosa, Ala.....	6.2	0.2	1.7	3.2	1.1	0.4	0.4	-	-	2
Vallejo-Fairfield-Napa, Calif.....	36.5	3.0	2.9	24.6	6.1	4.3	3.1	1.2	-	1
Vinceland-Millville-Bridgeton, N.J.....	6.0	1.1	1.6	2.2	1.2	(D)	(D)	(D)	(D)	12
Washington, DC-Md-Va.....	3.5	0.9	0.8	0.8	1.0	0.9	0.1	-	0.8	7
Waterbury, Conn.....	4.3	0.8	0.9	1.1	1.4	0.5	-	0.4	0.1	11
Waterloo-Cedar Falls, Iowa.....	7.9	1.3	2.6	0.8	3.2	0.4	-	0.1	0.3	1
Wilmington, Del.—N.J.—Md.....	150.9	20.2	72.8	35.9	22.1	3.5	1.6	1.6	0.3	1
Wilmington, N.C.....	15.6	2.9	4.2	6.8	1.7	7.4	5.8	0.7	0.9	3
Worcester, Mass.....	5.9	0.9	1.6	2.7	0.6	0.1	-	-	0.1	6
York, Pa.....	12.3	2.4	2.8	2.7	4.4	0.7	0.1	-	0.5	7
Youngstown-Warren, Ohio.....	43.4	8.5	13.8	7.3	13.8	1.0	0.5	0.4	0.1	2

Note: Totals may not agree precisely with detail because of independent rounding. Major industry group 23, Apparel and Other Textile Products, was not included in the survey and therefore is excluded from the SMSA totals. No major industry groups are shown. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹The standard error is calculated based on GAC shown on table 3C.

**Table 5A. Quantities of Pollutants Removed and Related Statistics,
by Industry: 1981—Continued**

(Values in millions of dollars; quantities in thousands of short tons)

SIC code	Industry	Air					Water					Solid waste	
		Total operating cost	Quantity of pollutants removed				Total operating cost	Quantity of pollutants removed				Total operating cost including payments for solid waste collection and disposal ¹	Quantity of solid waste removed
			Particu- lates	Sulfur oxides	Nitrogen oxides, hydro- carbons, and carbon monoxides	Heavy metals, radio- active and toxic sub- stances, and other		Suspended solids	Bio- chemical oxygen demand	Chemical oxygen demand	Oil and grease, toxic substances, and other		
38	Instruments, related products.....	12.8	25.6	1.6	19.9	3.0	32.0	29.2	21.6	28.2	11.8	37.5	466.0
382	Measuring, controlling devices.....	0.8	1.0	-	0.5	0.2	6.7	1.2	-	-	4.6	5.4	56.8
3825	Instruments to measure electricity....	0.3	0.5	-	-	-	4.7	0.1	-	-	0.4	3.0	16.7
384	Medical instruments, supplies.....	1.6	(D)	(D)	1.2	0.1	1.9	0.5	(D)	(D)	2.7	5.1	100.4
3842	Surgical appliances and supplies.....	0.8	(D)	-	(D)	-	0.9	0.4	(D)	(D)	2.7	3.7	64.0
3861	Photographic equipment and supplies....	9.8	(D)	(D)	18.1	(D)	21.7	24.0	(D)	(D)	0.1	23.6	265.6
39	Misc. manufacturing industries.....	6.2	26.7	0.2	9.7	1.4	4.4	3.9	4.4	0.5	3.2	14.2	538.2
394	Toys and sporting goods.....	0.6	6.2	-	0.2	0.4	0.7	0.9	4.1	-	0.7	3.5	321.2
399	Miscellaneous manufactures.....	4.0	4.4	0.2	6.9	-	1.2	2.3	0.2	0.4	1.0	5.9	126.9
3996	Hard surface floor covering.....	3.2	(D)	-	6.8	-	(D)	(D)	-	-	-	(D)	55.9

Note: Totals may not agree precisely with detail because of independent rounding. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹The operating cost for solid waste includes payment for governmental units (solid waste collection/disposal) and operating costs as reported in table 3.

²Excludes major industry group 23, Apparel and Other Textile Products.

Table 5B. Quantities of Pollutants Removed and Related Statistics, by State and Major Industry Group: 1981—Continued

(Value in millions of dollars; quantities in thousands of short tons)

SIC code	State and major industry group	Air					Water					Solid waste	
		Total operating cost	Quantity of pollutants removed				Total operating cost	Quantity of pollutants removed				Total operating cost including payments for solid waste collection and disposal ¹	Quantity of solid waste removed
			Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxides	Heavy metals, radioactive and toxic substances, and other		Suspended solids	Bio-chemical oxygen demand	Chemical oxygen demand	Oil and grease toxic substances, and other		
33	Mountain Division--Continued	61.7	844.0	914.9	2.2	(D)	6.8	39.8	15.1	28.8	4.1	6.0	7,107.4
	Arizona.....	57.4	396.6	913.5	1.0	(D)	4.4	9.7	-	-	(D)	3.2	6,619.3
	Primary metal industries.....												
33	Utah.....	31.6	212.6	(D)	53.9	(D)	5.6	12.3	(D)	(D)	33.9	4.0	796.0
	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Nevada.....	2.2	2.9	-	0.2	10.1	2.2	1.1	-	-	12.0	0.4	35.1
	Pacific Division:												
	Washington.....	119.1	1,122.8	198.2	122.7	70.1	69.4	296.2	337.6	400.0	44.1	32.8	2,904.2
	Food and kindred products.....	0.4	17.7	-	-	-	2.4	93.0	25.9	20.4	3.3	2.4	443.3
20	Lumber and wood products.....	7.0	49.5	-	0.2	(D)	0.9	2.2	0.1	-	4.3	14.5	1,093.6
24	Paper and allied products.....	13.4	199.6	74.5	(D)	(D)	48.4	181.6	307.6	(D)	(D)	4.0	638.7
26	Petroleum and coal products.....	24.3	2.2	69.2	(D)	-	9.6	1.0	2.1	(D)	(D)	2.3	16.5
29	Primary metal industries.....	55.6	95.3	52.2	0.6	49.6	4.7	7.4	0.2	-	6.9	2.7	415.3
33	Transportation equipment.....	(D)	0.6	-	-	-	(D)	(D)	-	-	(D)	3.3	57.6
37	Oregon.....	28.5	640.3	52.1	9.1	18.9	32.9	155.4	126.9	112.0	16.0	23.6	1,317.6
	Food and kindred products.....	0.2	(D)	(D)	-	-	1.9	14.8	16.2	(D)	0.4	0.9	81.7
20	Lumber and wood products.....	7.6	354.9	0.2	2.6	(D)	2.6	14.9	4.7	-	(D)	9.2	728.6
24	Paper and allied products.....	6.9	210.4	(D)	3.0	(D)	20.2	108.2	105.8	100.1	-	5.0	300.4
26	Primary metal industries.....	11.0	46.0	(D)	0.1	5.8	5.9	16.4	-	-	(D)	2.5	104.7
33	California.....	326.0	2,662.8	1,082.0	954.3	48.2	143.6	705.0	146.3	167.1	378.9	130.8	7,096.7
	Food and kindred products.....	6.5	88.7	-	0.6	1.8	12.9	490.1	104.3	118.3	22.0	14.3	2,026.0
20	Lumber and wood products.....	3.6	26.1	-	-	0.6	1.5	(D)	-	-	-	3.9	469.9
24	Paper and allied products.....	2.6	19.1	0.1	6.7	(D)	5.3	47.5	27.0	16.5	1.2	5.5	214.0
26	Petroleum and coal products.....	21.2	46.5	13.0	11.8	9.8	19.9	20.0	4.0	9.7	14.9	18.1	339.7
28	Chemicals and allied products.....	201.9	89.0	1,051.7	847.9	(D)	59.1	8.5	8.4	12.7	233.1	12.6	429.4
29	Petroleum and coal products.....	1.0	4.4	(D)	1.4	(D)	0.6	0.3	-	-	1.0	4.4	125.3
30	Rubber, misc. plastics products.....	26.6	2,137.3	11.9	2.4	-	2.4	6.9	(D)	(D)	60.0	11.2	1,335.5
32	Stone, clay, glass products.....	34.4	208.5	3.9	34.4	17.2	15.2	3.5	0.1	1.6	10.4	6.8	85.8
33	Primary metal industries.....	8.9	7.2	0.1	36.1	0.4	4.5	3.0	0.4	0.1	3.7	4.6	76.3
34	Fabricated metal products.....	4.2	2.3	-	0.5	0.7	3.0	0.4	-	-	4.5	11.5	137.8
35	Machine, except electrical.....	1.2	12.0	0.3	2.3	10.3	6.3	(D)	-	-	18.0	16.9	252.4
36	Electric, electronic equipment.....	11.1	2.9	0.1	3.0	1.3	11.2	4.2	0.3	(D)	-	-	-
37	Transportation equipment.....	0.8	1.2	1.1	7.3	-	4.3	25.6	16.2	31.2	16.0	1.1	91.7
	Alaska.....	(S)	47.3	2.7	-	-	(S)	1,303.4	0.2	-	1.1	(S)	2,681.7
	Hawaii.....												

Note: Totals may not agree precisely with detail because of independent rounding. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹The operation cost for solid waste includes payment to governmental units (solid waste collection/disposal) and operating cost as reported in table 3.

²Excludes major industry group 23, Apparel and Other Textile Products.

Table 5C. Quantities of Pollutants Removed and Related Statistics, by SMSA: 1981—Continued

(Value in millions of dollars; quantities in thousands of short tons)

Standard metropolitan statistical area	Air					Water					Solid waste	
	Total operating cost	Quantity of pollutants removed				Total operating cost	Quantity of pollutants removed				Total operating cost including payments for solid waste collection and disposal ¹	Quantity of solid waste removed
		Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxides	Heavy metals, radio-active and toxic substances, and other		Suspended solids	Bio-chemical oxygen demand	Chemical oxygen demand	Oil and grease toxic substances, and other		
Milwaukee, Wis.....	7.7	66.1	(D)	20.7	0.2	4.1	33.1	5.7	0.9	10.3	13.4	628.1
Minneapolis-St. Paul, Minn.-Wis.....	13.2	83.7	(D)	205.5	0.2	9.1	19.4	20.8	16.0	5.5	13.4	497.9
Mobile, Ala.....	7.6	(D)	16.8	(D)	15.0	21.9	93.2	60.5	41.5	76.2	7.4	654.9
Muskegon-Muskegon Heights, Mich.....	2.2	48.4	1.5	0.5	0.8	1.6	10.7	7.4	17.6	0.6	1.6	237.4
Nashville-Davidson, Tenn.....	4.0	(D)	-	9.6	3.6	4.4	1.5	3.7	6.0	4.1	4.7	120.0
Nassau-Suffolk, N.Y.....	1.2	0.5	-	0.5	-	5.4	3.0	0.5	0.3	7.3	6.5	86.4
New Brunswick-Perth Amboy-N.J.....	57.6	65.9	(D)	10.2	24.2	15.4	25.9	11.3	30.0	5.2	10.4	544.6
New London-Norwich, Conn.-R.I.....	5.0	55.0	3.7	5.2	-	6.1	19.1	42.1	2.0	9.2	2.7	104.6
New Orleans, La.....	12.5	23.8	(D)	(D)	8.2	10.2	32.4	2.7	48.1	5.0	5.0	722.7
New York, N.Y.-N.J.....	27.2	133.4	2.0	(D)	1.7	12.8	16.4	7.1	6.2	12.3	22.9	471.2
Newark, N.J.....	19.8	53.2	(D)	231.1	53.7	25.8	9.1	15.9	24.3	11.8	19.4	925.9
Newport News-Hampton, Va.....	5.9	(D)	(D)	(D)	-	3.5	64.0	43.1	61.6	6.5	3.0	144.3
Oklahoma City, Okla.....	2.8	2.7	-	0.6	0.9	1.1	0.7	0.1	-	2.7	1.2	46.0
Omaha, Neb.-Iowa.....	3.2	10.1	-	5.0	0.2	1.8	5.6	1.8	3.1	2.7	3.4	194.1
Parkersburg-Marietta, W. Va.-Ohio.....	21.7	175.6	118.2	85.0	9.4	23.4	107.2	32.3	26.2	18.6	10.8	1,214.6
Pensacola, Fla.....	9.0	112.4	9.3	9.1	-	7.9	40.9	14.7	45.6	0.2	2.5	99.1
Peoria, Ill.....	12.7	(D)	17.9	0.4	-	7.7	61.9	7.6	12.1	2.3	5.2	466.7
Potomac-Colonial Heights-Va.....	7.3	41.6	(D)	(D)	1.5	9.6	9.5	136.0	10.7	0.3	1.5	89.8
Philadelphia, Pa.-N.J.....	125.6	364.9	120.5	569.9	21.0	69.6	50.0	19.1	45.4	30.6	40.7	1,167.3
Phoenix, Ariz.....	2.6	100.3	1.5	0.6	0.7	2.1	30.0	15.1	28.8	1.6	2.4	96.0
Pittsburgh, Pa.....	105.0	713.3	242.1	62.4	0.8	59.8	451.3	2.3	23.1	197.1	73.5	4,181.4
Portland, Maine.....	0.4	5.5	-	4.4	0.9	3.8	13.4	9.6	14.0	516.5	1.7	63.1
Portland, Oreg.-Wash.....	14.1	79.0	31.8	4.7	17.2	12.0	45.8	47.0	25.2	22.0	8.6	306.4
Poughkeepsie, N.Y.....	1.2	0.3	-	0.8	-	11.6	0.6	0.7	0.1	-	4.6	119.4
Providence-Warwick-Pawtucket, R.I.-Mass.....	2.3	0.9	1.5	1.2	0.3	5.0	6.2	4.3	5.4	37.0	5.1	97.6
Provo-Orem, Utah.....	5.8	104.3	2.7	0.9	-	0.4	7.0	-	0.2	21.3	0.7	210.9
Pueblo, Colo.....	11.2	64.6	0.2	0.2	0.3	3.7	79.2	-	-	7.4	0.5	853.3
Racine, Wis.....	1.4	16.0	-	-	-	1.1	-	-	-	2.0	1.1	108.3
Raleigh-Durham, N.C.....	1.5	3.0	-	1.9	0.1	2.5	0.1	2.5	3.9	0.2	2.5	33.8
Reading, Pa.....	7.2	129.9	5.5	9.9	1.9	6.1	1.9	1.2	0.7	1.1	3.9	162.3
Richmond, Va.....	3.0	26.1	-	(D)	-	8.5	22.8	5.8	7.0	0.8	5.6	117.1
Riverside-San Bernardino-Calif.....	33.7	889.7	(D)	40.4	0.1	12.6	100.2	4.4	-	4.2	16.5	1,936.5
Rochester, N.Y.....	6.5	59.2	(D)	(D)	-	19.9	25.2	20.1	28.6	3.7	19.4	633.7
Rockford, Ill.....	1.7	9.7	0.4	3.4	3.8	2.0	2.9	1.8	1.4	6.8	2.9	137.1
Sacramento, Calif.....	2.3	11.7	-	-	0.5	2.2	69.5	4.5	3.4	-	2.5	348.6
Saginaw, Mich.....	20.7	447.3	236.9	263.6	122.0	5.7	65.4	-	-	6.6	6.0	804.6
St. Louis, Mo.-Ill.....	35.8	937.5	314.8	117.6	23.6	17.0	79.9	10.0	12.8	27.4	17.4	819.7
Salt Lake City-Ogden, Utah.....	25.8	108.2	(D)	(D)	(D)	3.1	4.1	0.3	0.9	12.6	2.9	576.1
San Diego, Calif.....	2.6	(D)	(D)	(D)	(D)	3.9	13.5	4.9	9.7	5.0	6.0	306.1
San Francisco-Oakland, Calif.....	74.1	136.5	249.0	96.3	4.1	49.8	44.1	19.0	36.4	97.7	26.0	742.6
San Jose, Calif.....	4.4	(D)	(D)	0.6	0.1	5.8	9.2	10.1	5.7	6.0	8.0	560.5
Savannah, Ga.....	14.1	46.1	5.7	4.4	8.0	16.9	55.2	22.5	10.8	5.8	2.0	240.6
Seattle-Everett, Wash.....	11.7	729.4	(D)	0.3	-	10.5	15.8	88.8	327.2	5.0	9.9	896.3
Spokane, Wash.....	6.2	7.3	1.5	-	0.3	1.2	1.2	1.2	0.2	1.0	0.8	91.6
Springfield-Chicopee-Mass.-Conn.....	6.2	16.2	0.1	9.6	1.3	3.2	1.4	3.7	-	1.9	6.3	130.0
Steubenville-Weirton, Ohio-W. Va.....	31.1	202.2	8.1	0.6	0.1	31.8	337.0	0.7	0.3	68.1	13.0	1,970.7
Stockton, Calif.....	2.1	39.1	-	0.6	1.9	3.2	143.3	15.7	10.5	7.4	2.2	201.1
Syracuse, N.Y.....	8.0	81.8	(D)	(D)	(D)	5.4	422.7	1.7	1.5	4.1	6.6	511.1
Tacoma, Wash.....	31.7	66.1	(D)	(D)	(D)	3.7	14.6	12.6	5.1	1.7	1.7	295.1
Tampa-St. Petersburg, Fla.....	10.7	189.6	47.6	-	12.8	3.3	42.2	3.2	2.2	12.9	4.7	6,659.1
Terre Haute, Ind.....	4.0	5.5	1.8	2.3	-	10.0	5.0	30.9	33.9	0.5	3.0	77.3
Texarkana, Tex.-Texarkana, Ark.....	1.7	94.4	4.2	-	-	3.0	20.7	20.2	-	-	2.0	191.5
Toledo, Ohio-Mich.....	17.9	378.9	42.7	255.6	0.7	14.4	34.1	3.0	5.4	9.6	10.5	355.5
Tronton, N.J.....	3.2	2.5	0.2	1.1	-	1.1	0.7	-	0.2	0.8	4.2	41.0
Tucson, Ariz.....	7.4	88.5	52.0	-	-	1.8	0.1	-	0.1	2.5	0.3	26.2
Tulsa, Okla.....	15.1	90.4	(D)	71.8	17.1	11.7	2.5	2.8	1.2	8.2	12.5	340.3
Tuscaloosa, Ala.....	3.5	7.9	12.1	1.3	-	1.9	0.1	-	2.3	0.3	0.8	13.6
Vallejo-Fairfield-Napa, Calif.....	29.4	2.3	88.0	200.0	2.0	6.9	34.5	23.0	34.7	1.3	0.4	62.8
Vineland-Milville-Bridgeton, N.J.....	1.7	0.7	(D)	(D)	(D)	3.5	6.1	3.1	4.1	1.0	1.0	34.0
Washington, D.C.-Md.-Va.....	0.4	0.7	-	-	0.1	2.1	0.7	0.4	-	0.1	1.2	31.9
Waterbury, Conn.....	0.3	0.1	0.2	0.3	0.8	2.8	0.7	1.1	1.7	0.4	1.2	27.1
Waterloo-Cedar Falls, Iowa.....	3.6	57.7	-	3.1	0.1	2.2	16.3	5.1	-	3.5	2.2	170.5
Wilmington, Del.-N.J.-Md.....	74.4	82.4	(D)	(D)	(D)	65.9	60.7	9.9	11.0	25.0	10.9	385.4
Wilmington, N.C.....	2.7	74.9	1.5	1.7	0.3	8.7	60.6	4.5	8.2	3.2	4.3	377.8
Worcester, Mass.....	3.3	11.8	-	2.2	0.1	1.6	0.4	-	-	0.8	1.1	51.2
York, Pa.....	2.6	60.9	-	-	(D)	6.6	32.7	9.5	1.5	10.9	3.5	360.8
Youngstown-Warren, Ohio.....	26.5	218.6	(D)	1.0	(D)	10.4	44.3	0.4	0.7	34.1	6.6	549.3

Note: Totals may not agree precisely with detail because of independent rounding. Major industry group 23, Apparel and Other Textile Products, was not included in the survey and therefore is excluded from the SMSA totals. No major industry groups are shown. Statistics in this table cover manufacturing establishments with 20 employees or more. See text for a description of survey coverage.

¹The operating costs for solid waste include payment to governmental units (solid waste collection/disposal) and operating cost as reported in table 3.

Appendix A. Pollution Abatement Form and Instructions

DUE DATE: 60 DAYS AFTER RECEIPT OF FORM

O.M.B. No. 0607-0176: Approval Expires December 1983

<p>FORM MA-200 (7-30-81)</p> <p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS</p> <p style="text-align: center;">SURVEY ON POLLUTION ABATEMENT COSTS AND EXPENDITURES 1981</p>	<p>NOTICE - Response to this inquiry is required by law (title 13, U.S. Code). By the same law, your report to the Census Bureau is confidential. It may be seen only by sworn Census employees and may be used only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.</p>								
<p>Please read the instructions before completing this report.</p>	<p>RETURN THIS COPY</p> <p><i>(Please correct any error in name and address including ZIP code)</i></p>								
<p>RETURN TO Bureau of the Census 1201 East Tenth Street Jeffersonville, Indiana 47132</p>									
<p>Change of operating status</p> <p>Mark (X) one if applicable</p> <p>This establishment has been:</p> <p><input type="checkbox"/> Idle <input type="checkbox"/> Closed</p> <p><input type="checkbox"/> Sold - To whom? <input type="checkbox"/> Other - Specify</p>									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Name of person to contact regarding this report</td> <td colspan="3" style="text-align: center;">Telephone</td> </tr> <tr> <td></td> <td style="width: 10%;">Area code</td> <td style="width: 20%;">Number</td> <td style="width: 10%;">Extension</td> </tr> </table>		Name of person to contact regarding this report	Telephone				Area code	Number	Extension
Name of person to contact regarding this report	Telephone								
	Area code	Number	Extension						

GENERAL INSTRUCTIONS

The purpose of the questionnaire is to collect total expenditures made by industry to abate pollutant emissions. The survey covers current operating costs and capital expenditures made to reduce pollution in its air, water, or solid forms.

If you cannot answer a question from your company records, please estimate the answer carefully. In particular cases, identification of abatement expenditures may require the joint efforts of your establishment's financial and engineering staff.

Report data on a calendar year basis for 1981. However, if your establishment uses a fiscal year that ends between 10/31/81 and 2/28/82, fiscal year data will be acceptable.

Answer all questions. If data based on book records are not available, carefully prepared estimates are acceptable. If your establishment did not operate for a full year, please indicate the disposition by making the appropriate box(es) in the above item pertaining to "Change of operating status." If you have any questions regarding this report, please call (301) 763-1755.

Report all value figures in thousands of dollars.

For example:

<i>If the value figure for the year is -</i>	
\$5,600,000 - Report as	_ _ _ 5 , 6 0 0
\$5,600 - Report as	_ _ _ _ , _ _ _ 6
\$560 - Report as	_ _ _ _ , _ _ _ 1
\$499 - Mark box less than \$500 and greater than 0	
\$0 - Report as	_ _ _ _ 0 (zero)

This report is required only for the establishment specified in the address block of the report form. **DO NOT COMBINE** this report with other establishments in your company even though both operations may jointly use the same pollution abatement facilities. When this occurs, apportion the expenditures and costs according to the rate of pollution abatement equipment utilization or the relative amounts of pollutants produced.

Pollution abatement means the reduction or elimination of pollutants emitted from your property or activities. Pollution abatement includes prevention, treatment, and recycling. Treatment refers to the wide variety of techniques used to cool, detoxify, decompose, and separate-to-store or ameliorate.

Efforts to improve environmental aesthetics or employee comfort, such as landscaping or air conditioning, should not be included in the answers to this survey. Do not include purchases of motor vehicles with pollution abatement devices. The cost of such devices will be estimated by other means.

Some establishments manufacture equipment and materials, such as electrostatic precipitators or desulfurized fuels, to be sold to others for pollution abatement purposes. Current and capital expenditures for the production of such equipment and materials should not be reported.

Air pollutants are airborne substances including particulates (dust, fly ash, smoke), sulfur oxides, nitrogen oxides, carbon monoxide, hydrocarbons, odors, fluorides, lead and other heavy metals, radioactive and toxic substances.

Water pollutants are waterborne substances including phosphate, nitrates (-trites), substances that generate chemical or biochemical oxygen demand, solids, acids, bases, heavy metals, radioactive and toxic substances, synthetic organic molecules, harmful microbes, oil, grease, dyes, and heat.

Solid waste includes garbage, trash, sewage sludge, dredged spoil, incinerator residue, wrecked or discarded equipment, biological and chemical wastes, radioactive and other toxic materials. Include solid waste produced as a result of air and water pollutant abatement.

Item 1 - WHO SHOULD REPORT?

(a) **NO POLLUTION ABATEMENT ACTIVITIES** - Every concern receiving a report form which had no pollution abatement capital expenditures, payments to government, or annual operating costs and expenses during 1981 should answer only item 1, certify in item 11, and return form for processing. Failure to return the form will require the issuance of followup letters.

(b) **POLLUTION ABATEMENT ACTIVITIES** - Every concern receiving a report form which had some pollution abatement capital expenditures or payments to government or annual operating costs and expenses during 1981 is required to submit data for items 2-10 as applicable.

Item 1 - IF NO CAPITAL EXPENDITURES, CURRENT COSTS, OR PAYMENTS TO GOVERNMENT INCURRED -

Mark (X) in box for appropriate reason

- | | |
|--|---|
| <p>1. <input type="checkbox"/> No pollutants generated</p> <p>2. <input type="checkbox"/> Cost included in rent, taxes, lease agreement, or removal without charge or payment (such as scavenger services)</p> | <p>3. <input type="checkbox"/> All costs less than \$500</p> <p>4. <input type="checkbox"/> Other - Specify</p> |
|--|---|

Important

Before marking item 1, please review items 6 and 7 on page 2; under normal operations those expenses such as sewage fees and trash removal in excess of \$500 should be reported on this form.

SPECIFIC INSTRUCTIONS
CAPITAL EXPENDITURES FOR NEW PLANT AND EQUIPMENT FOR POLLUTION ABATEMENT - 1981

▶ **Capital expenditures for new plant and equipment** include new plant and equipment acquisitions (both replacement and expansion) and expenditures for construction in progress. Capital expenditures are those chargeable to your establishment's accounts for plant and equipment that are subject to depreciation or to amortization. Total capital expenditures for abatement include expenditures for both end-of-line techniques and changes-in-production processes.

▶ **Item 2a - End-of-line techniques** treat air pollutants after their generation in your production processes by use of separately identifiable abatement (retrofit) facilities such as dust collectors, scrubbers, precipitators, or other treatment processes. These facilities are installed exclusively for the purpose of abating pollutant emissions from your plant or property.

▶ **Item 2b - Changes-in-production processes** reduce or eliminate the generation of pollutants by employing material substitution, improved catalysts, reuse of waste or water, and equipment alteration. These changes may involve converting equipment to handle the use of substitute fuels that generate less pollutants. Item 2b refers to new plant and equipment necessary for such changes in production processes. If your establishment has made expenditures for changes-in-production processes, estimate the expenditures as the difference between expenditures on new plant and equipment that your establishment actually made for changes-in-production processes and what your establishment would have spent for comparable plant and equipment without air pollution abatement features.

▶ **Item 2d - To estimate the impact of emission standards** upon capital investment for pollution abatement in industry, it is necessary to match investment expenditures to major types of air pollutants abated. **Note:** Some techniques abate both sulfur oxides and particulates. If your establishment uses any of these techniques, include the expenditures for these techniques under the category "sulfur oxides."

▶ **Item 3a - Same as item 2a**, except that it refers to waste water treatment techniques such as trickling filters, settling ponds, clarifiers, oil spill dikes, and other separately identifiable treatment techniques.

▶ **Item 3b - Same as item 2b**, except that it refers to abatement of water pollutants. The purpose of pollution abatement may be achieved by converting processes and equipment to enable recycling (closed or partially closed loop systems) or to enable additional uses of water prior to discharge. Do not include capital expenditures undertaken exclusively for the purpose of insuring adequate water supply for production.

▶ **Item 4 - Disposal of solid waste** refers to the containment, transfer, or other disposal of solid wastes by means acceptable to local, State, or Federal authorities and includes sanitary or other landfill methods, incineration, and dumping in designated authorized areas. Exclude capital expenditures made for new plant and equipment designed for the disposal of salable items such as scrap metal, scrap paper, scrap wood, etc.

Item 2 - CAPITAL EXPENDITURES FOR ABATEMENT OF AIR POLLUTANTS		Item code	Expenditures in 1981 (Report in thousands of dollars)		
			Mark (X) here if less than \$500 and greater than 0.		
		Millions (\$000)	Thousands (000)		
a. Report your total expenditures in 1981 for new plant and equipment designed to abate air pollutants through end-of-line techniques		1010	\$		<input type="checkbox"/>
b. In addition or as an alternative to end-of-line techniques, did this establishment make expenditures to acquire or modify plant and equipment for changes-in-production processes to abate air pollutants? <input type="checkbox"/> YES → Report the difference between these expenditures for new plant and equipment and the expenditures that you would have made for comparable plant and equipment without air pollutant abatement features. <input type="checkbox"/> NO - Skip to c		1040	\$		<input type="checkbox"/>
c. TOTAL AIR CAPITAL (Sum of lines 2a and 2b) →		1050	\$		<input type="checkbox"/>
d. Distribute total expenditures (item 2c) in terms of percent by type of pollutants abated. Please give your best estimates. For example, if you reported \$1,350,000 in item 2c, this equals the 100% in item 2d. Break this total expenditure figure into percents between the listed types of air pollutants abated. <i>Example</i> (1) Particulates 50% (2) Sulfur oxides 00% (3) Nitrogen oxides, etc. 35% (4) Other 15% TOTAL 100%		Percentage			
		(1) Particulates	1060		%
		(2) Sulfur oxides	1070		%
		(3) Nitrogen oxides, hydrocarbons, carbon monoxide	1080		%
		(4) Other (heavy metals, radioactive and toxic substances) - Specify	1090		%
TOTAL PERCENTAGE →		100%			
Item 3 - CAPITAL EXPENDITURES FOR ABATEMENT OF WATER POLLUTANTS		Item code	Expenditures in 1981 (Report in thousands of dollars)		
			Mark (X) here if less than \$500 and greater than 0.		
		Millions (\$000)	Thousands (000)		
a. Report your total expenditures in 1981 for new plant and equipment designed to abate water pollutants through end-of-line techniques		2010	\$		<input type="checkbox"/>
b. In addition or as an alternative to end-of-line techniques, did this establishment make expenditures to acquire or modify plant and equipment for changes-in-production processes to abate water pollutants? <input type="checkbox"/> YES → Report the difference between these expenditures for new plant and equipment and the expenditures that you would have made for comparable plant and equipment without water pollutant abatement features. <input type="checkbox"/> NO - Skip to c		2040	\$		<input type="checkbox"/>
c. TOTAL WATER CAPITAL (Sum of lines 3a and 3b) →		2050	\$		<input type="checkbox"/>
Item 4 - CAPITAL EXPENDITURES FOR SOLID WASTE DISPOSAL		Item code	Expenditures in 1981 (Report in thousands of dollars)		
			Mark (X) here if less than \$500 and greater than 0.		
		Millions (\$000)	Thousands (000)		
Report your total expenditures in 1981 on new plant and equipment designed for the disposal of solid waste		3010	\$		<input type="checkbox"/>

SPECIFIC INSTRUCTIONS

COST RECOVERED THROUGH ABATEMENT ACTIVITIES - 1981

COST OF POLLUTION ABATEMENT - Continued

▶ **Item 5** - The estimate of costs recovered through abatement activities may have two parts: (1) the value of materials or energy reclaimed through abatement activities that were reused in production, and (2) revenue that was obtained from the sale of materials or energy reclaimed through abatement activities. Heat is an example of reclaimed energy. Value and revenue are net of any additional cost incurred for additional processing of materials or energy to make them reusable or salable. Do not reduce annual costs of abatement (item 7) by the estimate reported here.

Report cost recovered by form of pollution abated (air, water, or solid waste).

▶ **Item 5a** - Report all payments to governmental units for your industrial and/or sanitary sewage use. Include payments made to government for overstrength effluent charges, sewer district tax assessment, etc. Include sewage payments which are included in your local tax bill; estimate if necessary.

▶ **Item 5b** - Report all payments to governmental units for your solid waste collection/disposal services. Included are collection costs to municipal agency (haulers) and disposal cost such as dump or burial fees at a landfill or incinerator.

▶ **Item 7** - Report the annual operating costs and expenses for pollution abatement incurred in 1981. Include all costs and expenses to operate and maintain plant(s) and equipment to abate air or water pollutants or collection/disposal of solid waste, and/or services provided by private contractors.

Note: This item should include the operating cost for all pollution abatement equipment and processes in operation during 1981 regardless of the year the equipment was installed or the process initiated.

Do not include expenditures for pollution abatement research and development or health and safety.

Do not include interest for financing pollution abatement capital expenditures.

Include the estimated costs of materials, parts, fuel, power, labor, and depreciation (or amortization) due to the use of plant and equipment to abate air or water pollutant discharges or dispose of solid wastes. Include increased costs for fuel and power incurred to reduce pollution (for example, low sulfur fuel, increased fuel or power consumption). Include leasing costs of equipment used in abatement and cost of abatement services provided by private contractors.

If you abate pollutants (air, water, or solid waste), be sure to complete the corresponding quantity section (Items 8-10).

Item 5 - COSTS RECOVERED THROUGH ABATEMENT ACTIVITIES		Costs recovered in 1981 (Report in thousands of dollars)			
		Item code	Millions (\$000)	Thousands (000) and greater than 0.	
Report your best estimate of the value of materials or energy reclaimed (costs recovered) through pollution abatement activities and either reused in production or sold by form of pollution abated. (Exclude the value of items if they would have been recovered, sold, or reused in production in the absence of any pollution control regulations.)					
a. Air	4010	\$		<input type="checkbox"/>	
b. Water	4020	\$		<input type="checkbox"/>	
c. Solid waste	4030	\$		<input type="checkbox"/>	
d. TOTAL (Sum of lines 5a through 5c)	4050	\$		<input type="checkbox"/>	
Item 6 - PAYMENTS TO GOVERNMENT FOR POLLUTION REMOVAL		Annual costs in 1981 (Report in thousands of dollars)			
Total payments to governmental (Federal, State, county, local) units for -		Item code	Millions (\$000)	Thousands (000) and greater than 0.	
a. Public sewage use	5010	\$		<input type="checkbox"/>	
b. Municipal solid waste collection/disposal (If you report on this line, be sure to complete ITEM 10.)	5020	\$		<input type="checkbox"/>	
Item 7 - ANNUAL OPERATING COSTS FOR POLLUTION ABATEMENT					
a. Report your best estimate of the annual costs of pollution abatement activities, including services provided by private contractors (trash removal, etc.)					
NOTE: DO NOT reduce your estimate by costs recovered (item 5). DO NOT include the payments to governmental units (item 6).		6010	\$	<input type="checkbox"/>	
<p>SPECIAL INSTRUCTIONS</p> <p>Distribute total Operating and Maintenance cost (item code 6010) in terms of percent by Kind of Cost (7b) and Form of Pollution Abated (7c). Please give your best estimates.</p> <p>For example, if you reported \$2,350,000 in item 7a, this equals 100% in 7b and 7c. Break this cost figure into percents between the listed types of costs in each section.</p> <p>EXAMPLES</p> <p>▶ Section b</p> <p>(1) Depreciation 10%</p> <p>(2) Labor 40%</p> <p>(3) Equipment 00%</p> <p>(4) Other 50%</p> <p>TOTAL 100%</p> <p>▶ Section c</p> <p>(1) Air 10%</p> <p>(2) Water 30%</p> <p>(3) Solid 60%</p> <p>TOTAL 100%</p>	b. Report your best estimate of percentage incurred by - KIND OF COST	Item code	Percentage of total annual costs in 1981 (Item 7a)		
	(1) Depreciation	7010	%		
	(2) Labor	7020	%		
	(3) Materials and supplies	7030	%		
	(4) Services, equipment, leasing, and other costs	7040	%		
	(5) TOTAL (Sum of lines (1) through (4) should equal 100%)		100%		
	c. Report your best estimate of percentage incurred by - FORM OF POLLUTION ABATED				
	(1) Air pollutants (If you report on this line, be sure to complete item 8.)	8010	%		
	(2) Water pollutants (If you report on this line, be sure to complete item 9.)	8020	%		
	(3) Solid wastes (including private contract service) (If you report on this line, be sure to complete item 10.)	8030	%		
(4) TOTAL (Sum of lines (1) through (3) should equal 100%)		100%			

APPENDIX A

SPECIFIC INSTRUCTIONS FOR TONNAGES OF POLLUTANTS REMOVED			
<p>▶ Item 8 – Report the annual total tonnages of the listed air pollutants abated during 1981. The tonnages should include all air pollutants abated during 1981 by new as well as previously existing pollution abatement equipment. If this information is not available from records, report engineering estimates where possible.</p> <p>▶ Item 9 – Report the annual total tonnages of the listed water pollutants during 1981. The tonnages should include all water pollutants abated during 1981 by new as well as previously existing pollution abatement equipment. If this information is not available from records, report engineering estimates where possible.</p> <p>▶ Item 10 – Report the annual tonnages of solid waste disposed of by means acceptable to local, State, and Federal authorities. Solid wastes disposed consists of all solid wastes including those wastes generated by air and water pollution abatement activities.</p>			
Item 8 – AIR POLLUTANTS ABATED BY WEIGHT		<i>Mark (X) here if less than 1/2 ton and greater than 0.</i>	
On the basis of your best judgment, estimate the total tonnages of specific air pollutants abated during 1981 by new as well as previously installed pollution abatement facilities.		Item code	Tonnage abated in 1981
a. Particulates	9010	Tons	<input type="checkbox"/>
b. Sulfur oxides	9020	Tons	<input type="checkbox"/>
c. Nitrogen oxides, hydrocarbons, carbon monoxide	9030	Tons	<input type="checkbox"/>
d. Other (heavy metals, radioactive and toxic substances) – <i>Specify</i> <input checked="" type="checkbox"/>	9040	Tons	<input type="checkbox"/>
Item 9 – WATER POLLUTANTS ABATED BY WEIGHT			
On the basis of your best judgment, estimate the total tonnages of specific water pollutants abated during 1981 by new as well as previously installed pollution abatement facilities.		Item code	Tonnage abated in 1981
a. Total suspended solids (dry weight basis)	9110	Tons	<input type="checkbox"/>
b. Biochemical oxygen demand (BOD5)	9120	Tons	<input type="checkbox"/>
c. Chemical oxygen demand (COD)	9130	Tons	<input type="checkbox"/>
d. Other (oil and grease, toxic substances, etc.) – <i>Specify</i> <input checked="" type="checkbox"/>	9150	Tons	<input type="checkbox"/>
Item 10 – SOLID WASTE DISPOSAL BY WEIGHT			
On the basis of your best judgment, estimate the tonnage of solid waste properly disposed during 1981, including those wastes generated by air and water pollution abatement activities (e.g., dust, fly ash, sludge, and contained liquids). Exclude the weight of any materials that are reclaimed and also exclude the weight of dissolved solids in the waste water effluent.		Item code	Tonnage abated in 1981
		9510	Tons <input type="checkbox"/>
<p>Remarks – Suggestions for improvements in this questionnaire are solicited.</p>			
Item 11 – CERTIFICATION OF SUBSTANTIAL ACCURACY OF REPORT			
Signature of authorized person		Title	
Address (Number, street, city, State, ZIP code)			Date

Appendix B. Standard Consolidated Statistical Areas and Standard Metropolitan Statistical Areas

(Titles and definitions of the SMSA's in the State established by the Department of Commerce, Office of Federal Statistical Policy and Standards, as of December 1979)

Standard Consolidated Statistical Areas

Boston-Lawrence-Lowell, Mass.-N.H.	Consists of Boston, Mass., SMSA; Lawrence-Haverhill, Mass.-N.H., SMSA; Lowell, Mass.-N.H., SMSA; and Brockton, Mass., SMSA
Chicago-Gary, Ill.-Ind.	Consists of Chicago, Ill., SMSA, and Gary-Hammond-East Chicago, Ind., SMSA
Cincinnati-Hamilton, Ohio-Ky.-Ind.	Consists of Cincinnati, Ohio-Ky.-Ind., SMSA, and Hamilton-Middletown, Ohio, SMSA
Cleveland-Akron-Lorain, Ohio.	Consists of Cleveland, Ohio, SMSA; Akron, Ohio, SMSA; and Lorain-Elyria, Ohio, SMSA
Detroit-Ann Arbor, Mich.	Consists of Detroit, Mich., SMSA, and Ann Arbor, Mich., SMSA
Houston-Galveston, Tex.	Consists of Houston, Tex., SMSA, and Galveston-Texas City, Tex., SMSA
Los Angeles-Long Beach-Anaheim, Calif.	Consists of Los Angeles-Long Beach, Calif., SMSA; Anaheim-Santa Ana-Garden Grove, Calif., SMSA; Riverside-San Bernardino-Ontario, Calif., SMSA; and Oxnard-Simi Valley-Ventura, Calif., SMSA
Miami-Fort Lauderdale, Fla.	Consists of Miami, Fla., SMSA, and Fort Lauderdale-Hollywood, Fla., SMSA
Milwaukee-Racine, Wis.	Consists of Milwaukee, Wis., SMSA, and Racine, Wis., SMSA
New York-Newark-Jersey City, N.Y.-N.J.-Conn.	Consists of New York, N.Y.-N.J., SMSA; Nassau-Suffolk, N.Y., SMSA; Newark, N.J., SMSA; Jersey City, N.J., SMSA; New Brunswick-Perth Amboy-Sayreville, N.J., SMSA; Paterson-Clifton-Passaic, N.J., SMSA; Long Branch-Asbury Park, N.J., SMSA; Stamford, Conn., SMSA; and Norwalk, Conn., SMSA
Philadelphia-Wilmington-Trenton, Pa.-Del.-N.J.-Md.	Consists of Philadelphia, Pa.-N.J., SMSA; Wilmington, Del.-N.J.-Md., SMSA; and Trenton, N.J., SMSA
San Francisco-Oakland-San Jose, Calif.	Consists of San Francisco-Oakland, Calif., SMSA; San Jose, Calif., SMSA; and Vallejo-Fairfield-Napa, Calif., SMSA
Seattle-Tacoma, Wash.	Consists of Seattle-Everett, Wash., SMSA, and Tacoma, Wash., SMSA

Standard Metropolitan Statistical Areas

Abilene, Tex.	Consists of Callahan, Jones, and Taylor Counties, Tex.
Akron, Ohio	Consists of Portage and Summit Counties, Ohio
Albany, Ga.	Consists of Dougherty and Lee Counties, Ga.
Albany-Schenectady-Troy, N.Y.	Consists of Albany, Montgomery, Rensselaer, Saratoga, and Schenectady Counties, N.Y.
Albuquerque, N. Mex.	Consists of Bernalillo and Sandoval Counties, N. Mex.
Alexandria, La.	Consists of Grant and Rapides Parishes, La.
Allentown-Bethlehem-Easton, Pa.-N.J.	Consists of Carbon, Lehigh, and Northampton Counties, Pa.; and Warren County, N.J.
Altoona, Pa.	Coextensive with Blair County, Pa.
Amarillo, Tex.	Consists of Potter and Randall Counties, Tex.
Anaheim-Santa Ana-Garden Grove, Calif.	Coextensive with Orange County, Calif.
Anchorage, Alaska	Coextensive with Anchorage Division, Alaska
Anderson, Ind.	Coextensive with Madison County, Ind.

Ann Arbor, Mich.	Coextensive with Washtenaw County, Mich.
Anniston, Ala.	Coextensive with Calhoun County, Ala.
Appleton-Oshkosh, Wis.	Consists of Calumet, Outagamie, and Winnebago Counties, Wis.
Asheville, N.C.	Consists of Buncombe and Madison Counties, N.C.
Atlanta, Ga.	Consists of Butts, Cherokee, Clayton, Cobb, De Kalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Rockdale, and Walton Counties, Ga.
Atlantic City, N.J.	Coextensive with Atlantic County, N.J.
Augusta, Ga.-S.C.	Consists of Columbia and Richmond Counties, Ga., and Aiken County, S.C.
Austin, Tex.	Consists of Hays, Travis, and Williamson Counties, Tex.
Bakersfield, Calif.	Coextensive with Kern County, Calif.
Baltimore, Md.	Consists of Baltimore city and Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties, Md.
Baton Rouge, La.	Consists of Ascension, East Baton Rouge, Livingston, and West Baton Rouge Parishes, La.
Battle Creek, Mich.	Consists of Barry and Calhoun Counties, Mich.
Bay City, Mich.	Coextensive with Bay County, Mich.
Beaumont-Port Arthur-Orange, Tex.	Consists of Hardin, Jefferson, and Orange Counties, Tex.
Billings, Mont.	Coextensive with Yellowstone County, Mont.
Biloxi-Gulfport, Miss.	Consists of Hancock, Harrison, and Stone Counties, Miss.
Binghamton, N.Y.-Pa.	Consists of Broome and Tioga Counties, N.Y., and Susquehanna County, Pa.
Birmingham, Ala.	Consists of Jefferson, St. Clair, Shelby, and Walker Counties, Ala.
Bismarck, N. Dak.	Consists of Burleigh and Morton Counties, N. Dak.
Bloomington, Ind.	Coextensive with Monroe County, Ind.
Bloomington-Normal, Ill.	Coextensive with McLean County, Ill.
Boise City, Idaho	Coextensive with Ada County, Idaho
Boston, Mass.	Consists of Beverly, Lynn, Peabody, and Salem cities, and Boxford, Danvers, Hamilton, Lynnfield, Manchester, Marblehead, Middleton, Nahant, Saugus, Swampscott, Topsfield, and Wenham towns in Essex County; Cambridge, Everett, Malden, Medford, Melrose, Newton, Somerville, Waltham, and Woburn cities, and Acton, Arlington, Ashland, Bedford, Belmont, Boxborough, Burlington, Carlisle, Concord, Framingham, Holliston, Lexington, Lincoln, Natick, North Reading, Reading, Sherborn, Stoneham, Sudbury, Wakefield, Watertown, Wayland, Weston, Wilmington, and Winchester towns in Middlesex County; Quincy city, and Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxborough, Franklin, Holbrook, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Randolph, Sharon, Stoughton, Walpole, Wellesley, Westwood, Weymouth, and Wrentham towns in Norfolk County; Abington, Duxbury, Hanover, Hanson, Hingham, Hull, Kingston, Marshfield, Norwell, Pembroke, Rockland, Scituate towns in Plymouth County; and Boston, Chelsea, and Revere cities, and Winthrop town in Suffolk County, Mass.
Bradenton, Fla.	Coextensive with Manatee County, Fla.
Bridgeport, Conn.	Consists of Bridgeport and Shelton cities, and Easton, Fairfield, Monroe, Stratford, and Trumbull towns in Fairfield County; and Derby and Milford cities in New Haven County, Conn.
Bristol, Conn.	Consists of Bristol city and Burlington town in Hartford County, and Plymouth town in Litchfield County, Conn.
Brockton, Mass.	Consists of Easton town in Bristol County; Avon town in Norfolk County; and Brockton city, and Bridgewater, East Bridgewater, Halifax, West Bridgewater, and Whitman towns in Plymouth County, Mass.
Brownsville-Harlingen-San Benito, Tex.	Coextensive with Cameron County, Tex.
Bryan-College Station, Tex.	Coextensive with Brazos County, Tex.
Buffalo, N.Y.	Consists of Erie and Niagara Counties, N.Y.
Burlington, N.C.	Coextensive with Alamance County, N.C.
Caguas, P. R.	Consists of Caguas, Gurabo, and San Lorenzo Municipios, P.R.
Canton, Ohio	Consists of Carroll and Stark Counties, Ohio
Cedar Rapids, Iowa	Coextensive with Linn County, Iowa
Champaign-Urbana-Rantoul, Ill.	Coextensive with Champaign County, Ill.

Charleston-North Charleston, S.C.	Consists of Berkeley, Charleston, and Dorchester Counties, S.C.
Charleston, W. Va.	Consists of Kanawha and Putnam Counties, W. Va.
Charlotte-Gastonia, N.C.	Consists of Gaston, Mecklenburg, and Union Counties, N.C.
Chattanooga, Tenn.-Ga.	Consists of Hamilton, Marion, and Sequatchie Counties, Tenn.; and Catoosa, Dade, and Walker Counties, Ga.
Chicago, Ill.	Consists of Cook, Du Page, Kane, Lake, McHenry, and Will Counties, Ill.
Cincinnati, Ohio-Ky.-Ind.	Consists of Clermont, Hamilton, and Warren Counties, Ohio; Boone, Campbell, and Kenton Counties, Ky.; and Dearborn County, Ind.
Clarksville-Hopkinsville, Tenn.-Ky.	Consists of Montgomery County, Tenn. and Christian County, Ky.
Cleveland, Ohio	Consists of Cuyahoga, Geauga, Lake, and Medina Counties, Ohio
Colorado Springs, Colo.	Consists of El Paso and Teller Counties, Colo.
Columbia, Mo.	Coextensive with Boone County, Mo.
Columbia, S.C.	Consists of Lexington and Richland Counties, S.C.
Columbus, Ga.-Ala.	Consists of Chattahoochee County and Columbus (consolidated government), Ga., and Russell County, Ala.
Columbus, Ohio	Consists of Delaware, Fairfield, Franklin, Madison, and Pickaway Counties, Ohio
Corpus Christi, Tex.	Consists of Nueces and San Patricio Counties, Tex.
Dallas-Fort Worth, Tex.	Consists of Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties, Tex.
Danbury, Conn.	Consists of Danbury city and Bethel, Brookfield, New Fairfield, Newtown, and Redding towns in Fairfield County; and New Milford town in Litchfield County, Conn.
Davenport-Rock Island-Moline, Iowa-Ill.	Consists of Scott County, Iowa and Henry and Rock Island Counties, Ill.
Dayton, Ohio	Consists of Greene, Miami, Montgomery, and Preble Counties, Ohio
Daytona Beach, Fla.	Coextensive with Volusia County, Fla.
Decatur, Ill.	Coextensive with Macon County, Ill.
Denver-Boulder, Colo.	Consists of Adams, Arapahoe, Boulder, Denver, Douglas, Gilpin, and Jefferson Counties, Colo.
Des Moines, Iowa	Consists of Polk and Warren Counties, Iowa
Detroit, Mich.	Consists of Lapeer, Livingston, Macomb, Oakland, St. Clair, and Wayne Counties, Mich.
Dubuque, Iowa	Coextensive with Dubuque County, Iowa
Duluth-Superior, Minn.-Wis.	Consists of St. Louis County, Minn. and Douglas County, Wis.
Eau Claire, Wis.	Consists of Chippewa and Eau Claire Counties, Wis.
El Paso, Tex.	Coextensive with El Paso County, Tex.
Elkhart, Ind.	Coextensive with Elkhart County, Ind.
Elmira, N.Y.	Coextensive with Chemung County, N.Y.
Enid, Okla.	Coextensive with Garfield County, Okla.
Erie, Pa.	Coextensive with Erie County, Pa.
Eugene-Springfield, Oreg.	Coextensive with Lane County, Oreg.
Evansville, Ind.-Ky.	Consists of Gibson, Posey, Vanderburgh, and Warrick Counties, Ind. and Henderson County, Ky.
Fall River, Mass.-R.I.	Consists of Fall River city and Dighton, Somerset, Swansea, and Westport towns in Bristol County, Mass.; and Little Compton, Portsmouth, and Tiverton towns in Newport County, R.I.
Fargo-Moorhead, N. Dak.-Minn.	Consists of Cass County, N. Dak. and Clay County, Minn.
Fayetteville, N.C.	Coextensive with Cumberland County, N.C.
Fayetteville-Springdale, Ark.	Consists of Benton and Washington Counties, Ark.
Fitchburg-Leominster, Mass.	Consists of Shirley and Townsend towns in Middlesex County, and Fitchburg and Leominster cities and Lunenburg and Westminster towns in Worcester County, Mass.
Flint, Mich.	Consists of Genesee and Shiawassee Counties, Mich.
Florence, Ala.	Consists of Colbert and Lauderdale Counties, Ala.
Fort Collins, Colo.	Coextensive with Larimer County, Colo.
Fort Lauderdale-Hollywood, Fla.	Coextensive with Broward County, Fla.
Fort Myers-Cape Coral, Fla.	Coextensive with Lee County, Fla.

Fort Smith, Ark.-Okla.	Consists of Crawford and Sebastian Counties, Ark. and Le Flore and Sequoyah Counties, Okla.
Fort Wayne, Ind.	Consists of Adams, Allen, De Kalb, and Wells Counties, Ind.
Fresno, Calif.	Coextensive with Fresno County, Calif.
Gadsden, Ala.	Coextensive with Etowah County, Ala.
Gainesville, Fla.	Coextensive with Alachua County, Fla.
Galveston-Texas City, Tex.	Coextensive with Galveston County, Tex.
Gary-Hammond-East Chicago, Ind.	Consists of Lake and Porter Counties, Ind.
Grand Forks, N. Dak.-Minn.	Consists of Grand Forks County, N. Dak. and Polk County, Minn.
Grand Rapids, Mich.	Consists of Kent and Ottawa Counties, Mich.
Great Falls, Mont.	Coextensive with Cascade County, Mont.
Greeley, Colo.	Coextensive with Weld County, Colo.
Green Bay, Wis.	Coextensive with Brown County, Wis.
Greensboro—Winston-Salem—High Point, N.C.	Consists of Davidson, Forsyth, Guilford, Randolph, Stokes, and Yadkin Counties, N.C.
Greenville-Spartanburg, S.C.	Consists of Greenville, Pickens, and Spartanburg Counties, S.C.
Hamilton-Middletown, Ohio	Coextensive with Butler County, Ohio
Harrisburg, Pa.	Consists of Cumberland, Dauphin, and Perry Counties, Pa.
Hartford, Conn.	Consists of Hartford city and Avon, Bloomfield, Canton, East Granby, East Hartford, East Windsor, Enfield, Farmington, Glastonbury, Granby, Manchester, Marlborough, Newington, Rocky Hill, Simsbury, South Windsor, Suffield, West Hartford, Wethersfield, Windsor, and Windsor Locks towns in Hartford County; New Hartford town in Litchfield County; Cromwell, East Hampton, and Portland towns in Middlesex County; Colchester town in New London County; and Andover, Bolton, Columbia, Coventry, Ellington, Hebron, Stafford, Tolland, Vernon, and Willington towns in Tolland County, Conn.
Honolulu, Hawaii	Coextensive with Honolulu County, Hawaii
Houston, Tex.	Consists of Brazoria, Fort Bend, Harris, Liberty, Montgomery, and Waller Counties, Tex.
Huntington-Ashland, W. Va.-Ky.-Ohio	Consists of Cabell and Wayne Counties, W. Va.; Boyd and Greenup Counties, Ky.; and Lawrence County, Ohio
Huntsville, Ala.	Consists of Limestone, Madison, and Marshall Counties, Ala.
Indianapolis, Ind.	Consists of Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, and Shelby Counties, Ind.
Iowa City, Iowa	Coextensive with Johnson County, Iowa
Jackson, Mich.	Coextensive with Jackson County, Mich.
Jackson, Miss.	Consists of Hinds and Rankin Counties, Miss.
Jacksonville, Fla.	Consists of Baker, Clay, Duval, Nassau, and St. Johns Counties, Fla.
Janesville-Beloit, Wis.	Coextensive with Rock County, Wis.
Jersey City, N.J.	Coextensive with Hudson County, N.J.
Johnson City-Kingsport-Bristol, Tenn.-Va.	Consists of Carter, Hawkins, Sullivan, Unicoi, and Washington Counties, Tenn., and Bristol city and Scott and Washington Counties, Va.
Johnstown, Pa.	Consists of Cambria and Somerset Counties, Pa.
Kalamazoo-Portage, Mich.	Consists of Kalamazoo and Van Buren Counties, Mich.
Kankakee, Ill.	Coextensive with Kankakee County, Ill.
Kansas City, Mo.-Kans.	Consists of Cass, Clay, Jackson, Platte, and Ray Counties, Mo., and Johnson and Wyandotte Counties, Kans.
Kenosha, Wis.	Coextensive with Kenosha County, Wis.
Killeen-Temple, Tex.	Consists of Bell and Coryell Counties, Tex.
Knoxville, Tenn.	Consists of Anderson, Blount, Knox, and Union Counties, Tenn.
Kokomo, Ind.	Consists of Howard and Tipton Counties, Ind.
La Crosse, Wis.	Coextensive with La Crosse County, Wisc.
Lafayette, La.	Coextensive with Lafayette Parish, La.
Lafayette-West Lafayette, Ind.	Coextensive with Tippecanoe County, Ind.
Lake Charles, La.	Coextensive with Calcasieu Parish, La.
Lakeland-Winter Haven, Fla.	Coextensive with Polk County, Fla.

Lancaster, Pa.	Coextensive with Lancaster County, Pa.
Lansing-East Lansing, Mich.	Consists of Clinton, Eaton, Ingham, and Ionia Counties, Mich.
Laredo, Tex.	Coextensive with Webb County, Tex.
Las Cruces, N. Mex.	Coextensive with Dona Ana County, N. Mex.
Las Vegas, Nev.	Coextensive with Clark County, Nev.
Lawrence, Kans.	Coextensive with Douglas County, Kans.
Lawrence-Haverhill, Mass.-N.H.	Consists of Haverhill and Lawrence cities and Amesbury, Andover, Georgetown, Groveland, Merrimac, Methuen, North Andover, Salisbury, and West Newbury towns in Essex County, Mass. and Atkinson, Hampstead, Kingston, Newton, Plaistow, Salem, and Windham towns in Rockingham County, N.H.
Lawton, Okla.	Coextensive with Comanche County, Okla.
Lewiston-Auburn, Maine	Consists of Auburn and Lewiston cities and Lisbon town in Androscoggin County, Maine
Lexington-Fayette, Ky.	Consists of Bourbon, Clark, Fayette, Jessamine, Scott, and Woodford Counties, Ky.
Lima, Ohio	Consists of Allen, Auglaize, Putnam, and Van Wert Counties, Ohio
Lincoln, Nebr.	Coextensive with Lancaster County, Nebr.
Little Rock-North Little Rock, Ark.	Consists of Pulaski and Saline Counties, Ark.
Long Branch-Asbury Park, N.J.	Coextensive with Monmouth County, N.J.
Longview-Marshall, Tex.	Consists of Gregg and Harrison Counties, Tex.
Lorain-Elyria, Ohio	Coextensive with Lorain County, Ohio
Los Angeles-Long Beach, Calif.	Coextensive with Los Angeles County, Calif.
Louisville, Ky-Ind.	Consists of Bullitt, Jefferson, and Oldham Counties, Ky. and Clark and Floyd Counties, Ind.
Lowell, Mass.-N.H.	Consists of Lowell city and Billerica, Chelmsford, Dracut, Tewksbury, Tyngsborough, and Westford towns in Middlesex County, Mass.; and Pelham town in Hillsborough County, N.H.
Lubbock, Tex.	Coextensive with Lubbock County, Tex.
Lynchburg, Va.	Consists of Lynchburg city and Amherst, Appomattox, and Campbell Counties, Va.
Macon, Ga.	Consists of Bibb, Houston, Jones, and Twiggs Counties, Ga.
Madison, Wis.	Coextensive with Dane County, Wis.
Manchester, N.H.	Consists of Manchester city and Bedford and Goffstown towns in Hillsborough County; Allenstown, Hooksett, and Pembroke towns in Merrimack County; and Derry and Londonderry towns in Rockingham County, N.H.
Mansfield, Ohio	Coextensive with Richland County, Ohio
Mayaguez, P. R.	Consists of Anasco, Hormigueros, and Mayaguez Municipios P. R.
McAllen-Pharr-Edinburg, Tex.	Coextensive with Hidalgo County, Tex.
Melbourne-Titusville-Cocoa, Fla.	Coextensive with Brevard County, Fla.
Memphis, Tenn.-Ark.-Miss.	Consists of Shelby and Tipton Counties, Tenn.; Crittenden County, Ark.; and De Soto County, Miss.
Meriden, Conn.	Coextensive with Meriden city in New Haven County, Conn.
Miami, Fla.	Coextensive with Dade County, Fla.
Midland, Tex.	Coextensive with Midland County, Tex.
Milwaukee, Wis.	Consists of Milwaukee, Ozaukee, Washington, and Waukesha Counties, Wis.
Minneapolis-St. Paul, Minn.-Wis.	Consists of Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, Washington, and Wright Counties, Minn. and St. Croix County, Wis.
Mobile, Ala.	Consists of Baldwin and Mobile Counties, Ala.
Modesto, Calif.	Coextensive with Stanislaus County, Calif.
Monroe, La.	Coextensive with Ouachita Parish, La.
Montgomery, Ala.	Consists of Autauga, Elmore, and Montgomery Counties, Ala.
Muncie, Ind.	Coextensive with Delaware County, Ind.
Muskegon-Norton Shores-Muskegon Heights, Mich.	Consists of Muskegon and Oceana Counties, Mich.
Nashua, N.H.	Consists of Nashua city and Amherst, Hudson, Merrimack, and Milford towns in Hillsborough County, N.H.
Nashville-Davidson, Tenn.	Consists of Cheatham, Davidson, Dickson, Robertson, Rutherford, Sumner, Williamson, and Wilson Counties, Tenn.

APPENDIX B

Nassau-Suffolk, N.Y.	Consists of Nassau and Suffolk Counties, N.Y.
New Bedford, Mass.	Consists of New Bedford city and Acushnet, Dartmouth, Fairhaven, and Freetown towns in Bristol County; and Lakeville, Marion, and Mattapoisset towns in Plymouth County, Mass.
New Britain, Conn.	Consists of New Britain city and Berlin, Plainville, and Southington towns in Hartford County, Conn.
New Brunswick-Perth Amboy-Sayreville, N.J.	Coextensive with Middlesex County, N.J.
New Haven-West Haven, Conn.	Consists of Clinton town in Middlesex County; and New Haven and West Haven cities and Bethany, Branford, East Haven, Guilford, Hamden, Madison, North Branford, North Haven, Orange, Wallingford, and Woodbridge towns in New Haven County, Conn.
New London-Norwich, Conn.-R.I.	Consists of Old Saybrook town in Middlesex County; New London and Norwich cities and Bozrah, East Lyme, Griswold, Groton, Ledyard, Lisbon, Montville, Old Lyme, Preston, Sprague, Stonington, and Waterford towns in New London County, Conn.; and Hopkinton and Westerly towns in Washington County, R.I.
New Orleans, La.	Consists of Jefferson, Orleans, St. Bernard, and St. Tammany Parishes, La.
New York, N.Y.-N.J.	Consists of Bronx, Kings, New York, Putnam, Queens, Richmond, Rockland, and Westchester Counties, N.Y. and Bergen County, N.J.
Newark, N.J.	Consists of Essex, Morris, Somerset, and Union Counties, N.J.
Newport News-Hampton, Va.	Consists of Hampton, Newport News, Poquoson, and Williamsburg cities and Gloucester, James City, and York Counties, Va.
Norfolk-Virginia Beach-Portsmouth, Va.-N.C.	Consists of Chesapeake, Norfolk, Portsmouth, Suffolk, and Virginia Beach cities, Va. and Currituck County, N.C.
Northeast Pennsylvania	Consists of Lackawanna, Luzerne, and Monroe Counties, Pa.
Norwalk, Conn.	Consists of Norwalk city and Weston, Westport, and Wilton towns in Fairfield County, Conn.
Odessa, Tex.	Coextensive with Ector County, Tex.
Oklahoma City, Okla.	Consists of Canadian, Cleveland, McClain, Oklahoma, and Pottawatomie Counties, Okla.
Omaha, Nebr.-Iowa	Consists of Douglas and Sarpy Counties, Nebr. and Pottawattamie County, Iowa
Orlando, Fla.	Consists of Orange, Osceola, and Seminole Counties, Fla.
Owensboro, Ky.	Coextensive with Daviess County, Ky.
Oxnard-Simi Valley-Ventura, Calif.	Coextensive with Ventura County, Calif.
Panama City, Fla.	Coextensive with Bay County, Fla.
Parkersburg-Marietta, W. Va.-Ohio	Consists of Wirt and Wood Counties, W. Va. and Washington County, Ohio
Pascagoula-Moss Point, Miss.	Coextensive with Jackson County, Miss.
Paterson-Clifton-Passaic, N.J.	Coextensive with Passaic County, N.J.
Pensacola, Fla.	Consists of Escambia and Santa Rosa Counties, Fla.
Peoria, Ill.	Consists of Peoria, Tazewell, and Woodford Counties, Ill.
Petersburg-Colonial Heights-Hopewell, Va.	Consists of Colonial Heights, Hopewell, and Petersburg cities and Dinwiddie and Prince George Counties, Va.
Philadelphia, Pa.-N.J.	Consists of Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties, Pa.; and Burlington, Camden, and Gloucester Counties, N.J.
Phoenix, Ariz.	Coextensive with Maricopa County, Ariz.
Pine Bluff, Ark.	Coextensive with Jefferson County, Ark.
Pittsburgh, Pa.	Consists of Allegheny, Beaver, Washington, and Westmoreland Counties, Pa.
Pittsfield, Mass.	Consists of Pittsfield city and Adams, Cheshire, Dalton, Lanesborough, Lee, Lenox, and Stockbridge towns in Berkshire County, Mass.
Ponce, P.R.	Consists of Juan Diaz, Ponce, and Villalba Municipios, P.R.
Portland, Maine	Consists of Portland, South Portland, and Westbrook cities and Cape Elizabeth, Cumberland, Falmouth, Freeport, Gorham, Scarborough, Windham, and Yarmouth towns in Cumberland County; and Saco city and Old Orchard Beach town in York County, Maine
Portland, Oreg.-Wash.	Consists of Clackamas, Multnomah, and Washington Counties, Oreg. and Clark County, Wash.
Poughkeepsie, N.Y.	Coextensive with Dutchess County, N.Y.

Providence-Warwick-Pawtucket, R.I.-Mass. . . .	Consists of Barrington, Bristol, and Warren towns in Bristol County; Warwick city and Coventry, East Greenwich, and West Warwick towns in Kent County; Jamestown town in Newport County; Central Falls, Cranston, East Providence, Pawtucket, Providence, and Woonsocket cities and Burrillville, Cumberland, Johnston, Lincoln, North Providence, North Smithfield, Scituate, and Smithfield towns in Providence County; and Narragansett, North Kingstown, and South Kingstown towns in Washington County, R.I.; Attleboro city and North Attleborough, Norton, Rehoboth, and Seekonk towns in Bristol County; Plainville town in Norfolk County; and Blackstone and Millville towns in Worcester County, Mass.
Provo-Orem, Utah	Coextensive with Utah County, Utah
Pueblo, Colo.	Coextensive with Pueblo County, Colo.
Racine, Wis.	Coextensive with Racine County, Wis.
Raleigh-Durham, N.C.	Consists of Durham, Orange, and Wake Counties, N.C.
Rapid City, S. Dak.	Consists of Pennington and Meade Counties, S. Dak.
Reading, Pa.	Coextensive with Berks County, Pa.
Reno, Nev.	Coextensive with Washoe County, Nev.
Richland-Kennewick-Pasco, Wash.	Consists of Benton and Franklin Counties, Wash.
Richmond, Va.	Consists of Richmond city and Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, and Powhatan Counties, Va.
Riverside-San Bernardino-Ontario, Calif.	Consists of Riverside and San Bernardino Counties, Calif.
Roanoke, Va.	Consists of Roanoke and Salem cities and Botetourt, Craig, and Roanoke Counties, Va.
Rochester, Minn.	Coextensive with Olmsted County, Minn.
Rochester, N.Y.	Consists of Livingston, Monroe, Ontario, Orleans, and Wayne Counties, N.Y.
Rockford, Ill.	Consists of Boone and Winnebago Counties, Ill.
Sacramento, Calif.	Consists of Placer, Sacramento, and Yolo Counties, Calif.
Saginaw, Mich.	Coextensive with Saginaw County, Mich.
St. Cloud, Minn.	Consists of Benton, Sherburne, and Stearns Counties, Minn.
St. Joseph, Mo.	Consists of Andrew and Buchanan Counties, Mo.
St. Louis, Mo.-Ill.	Consists of St. Louis city and Franklin, Jefferson, St. Charles, and St. Louis Counties, Mo.; and Clinton, Madison, Monroe, and St. Clair Counties, Ill.
Salem, Oreg.	Consists of Marion and Polk Counties, Oreg.
Salinas-Seaside-Monterey, Calif.	Coextensive with Monterey County, Calif.
Salt Lake City-Ogden, Utah.	Consists of Davis, Salt Lake, Tooele, and Weber Counties, Utah
San Angelo, Tex.	Coextensive with Tom Green County, Tex.
San Antonio, Tex.	Consists of Bexar, Comal, and Guadalupe Counties, Tex.
San Diego, Calif.	Coextensive with San Diego County, Calif.
San Francisco-Oakland, Calif.	Consists of Alameda, Contra Costa, Marin, San Francisco, and San Mateo Counties, Calif.
San Jose, Calif.	Coextensive with Santa Clara County, Calif.
San Juan, P.R.	Consists of Bayamon, Canovanas, Carolina, Catano, Guaynabo, Loiza, San Juan, Toa Baja, and Trujillo Alto Municipios, P.R.
Santa Barbara-Santa Maria-Lompoc, Calif.	Coextensive with Santa Barbara County, Calif.
Santa Cruz, Calif.	Coextensive with Santa Cruz County, Calif.
Santa Rosa, Calif.	Coextensive with Sonoma County, Calif.
Sarasota, Fla.	Coextensive with Sarasota County, Fla.
Savannah, Ga.	Consists of Bryan, Chatham, and Effingham Counties, Ga.
Seattle-Everett, Wash.	Consists of King and Snohomish Counties, Wash.
Sherman-Denison, Tex.	Coextensive with Grayson County, Tex.
Shreveport, La.	Consists of Bossier, Caddo, and Webster Parishes, La.
Sioux City, Iowa-Nebr.	Consists of Woodbury County, Iowa and Dakota County, Nebr.
Sioux Falls, S. Dak.	Coextensive with Minnehaha County, S.D.
South Bend, Ind.	Consists of Marshall and St. Joseph Counties, Ind.
Spokane, Wash.	Coextensive with Spokane County, Wash.
Springfield, Ill.	Consists of Menard and Sangamon Counties, Ill.

Springfield, Mo.	Consists of Christian and Greene Counties, Mo.
Springfield, Ohio	Consists of Champaign and Clark Counties, Ohio
Springfield-Chicopee-Holyoke, Mass.-Conn.	Consists of Chicopee, Holyoke, Springfield, and Westfield cities and Agawam, East Longmeadow, Hampden, Longmeadow, Ludlow, Monson, Palmer, Southwick, West Springfield, and Wilbraham towns in Hampden County; Northampton city and Belchertown, Easthampton, Granby, Hadley, Hatfield, Southampton, and South Hadley towns in Hampshire County; Warren town in Worcester County, Mass.; and Somers town in Tolland County, Conn.
Stamford, Conn.	Consists of Stamford city and Darien, Greenwich, and New Canaan towns in Fairfield County, Conn.
Steubenville-Weirton, Ohio-W. Va.	Consists of Jefferson County, Ohio and Brooke and Hancock Counties, W. Va.
Stockton, Calif.	Coextensive with San Joaquin County, Calif.
Syracuse, N.Y.	Consists of Madison, Onondaga, and Oswego Counties, N.Y.
Tacoma, Wash.	Coextensive with Pierce County, Wash.
Tallahassee, Fla.	Consists of Leon and Wakulla Counties, Fla.
Tampa-St. Petersburg, Fla.	Consists of Hillsborough, Pasco, and Pinellas Counties, Fla.
Terre Haute, Ind.	Consists of Clay, Sullivan, Vermillion, and Vigo Counties, Ind.
Texarkana, Tex.-Texarkana, Ark.	Consists of Bowie County, Tex. and Little River and Miller Counties, Ark.
Toledo, Ohio-Mich.	Consists of Fulton, Lucas, Ottawa, and Wood Counties, Ohio and Monroe County, Mich.
Topeka, Kans.	Consists of Jefferson, Osage, and Shawnee Counties, Kans.
Trenton, N.J.	Coextensive with Mercer County, N.J.
Tucson, Ariz.	Coextensive with Pima County, Ariz.
Tulsa, Okla.	Consists of Creek, Mayes, Osage, Rogers, Tulsa, and Wagoner Counties, Okla.
Tuscaloosa, Ala.	Coextensive with Tuscaloosa County, Ala.
Tyler, Tex.	Coextensive with Smith County, Tex.
Utica-Rome, N.Y.	Consists of Herkimer and Oneida Counties, N.Y.
Vallejo-Fairfield-Napa, Calif.	Consists of Napa and Solano Counties, Calif.
Vineland-Millville-Bridgeton, N.J.	Coextensive with Cumberland County, N.J.
Waco, Tex.	Coextensive with McLennan County, Tex.
Washington, D.C.-Md.-Va.	Consists of District of Columbia; Charles, Montgomery, and Prince Georges Counties, Md; and Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park cities and Arlington, Fairfax, Loudoun, and Prince William Counties, Va.
Waterbury, Conn.	Consists of Thomaston, Watertown, and Woodbury towns in Litchfield County; and Waterbury city; Naugatuck borough, and Beacon Falls, Cheshire, Middlebury, Prospect, Southbury, and Wolcott towns in New Haven County, Conn.
Waterloo-Cedar Falls, Iowa	Coextensive with Black Hawk County, Iowa
West Palm Beach-Boca Raton, Fla.	Coextensive with Palm Beach County, Fla.
Wheeling, W. Va.-Ohio	Consists of Marshall and Ohio Counties, W. Va. and Belmont County, Ohio
Wichita, Kans.	Consists of Butler and Sedgwick Counties, Kans.
Wichita Falls, Tex.	Consists of Clay and Wichita Counties, Tex.
Williamsport, Pa.	Coextensive with Lycoming County, Pa.
Wilmington, Del.-N.J.-Md.	Consists of New Castle County, Del.; Salem County, N.J.; and Cecil County, Md.
Wilmington, N.C.	Consists of Brunswick and New Hanover Counties, N.C.
Worcester, Mass.	Consists of Worcester city and Auburn, Berlin, Boylston, Brookfield, Charlton, East Brookfield, Grafton, Holden, Leicester, Millbury, Northborough, Northbridge, North Brookfield, Oxford, Paxton, Shrewsbury, Spencer, Sterling, Sutton, Upton, Uxbridge, Webster, Westborough, and West Boylston towns in Worcester County, Mass.
Yakima, Wash.	Coextensive with Yakima County, Wash.
York, Pa.	Consists of Adams and York Counties, Pa.
Youngstown-Warren, Ohio	Consists of Mahoning and Trumbull Counties, Ohio

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