

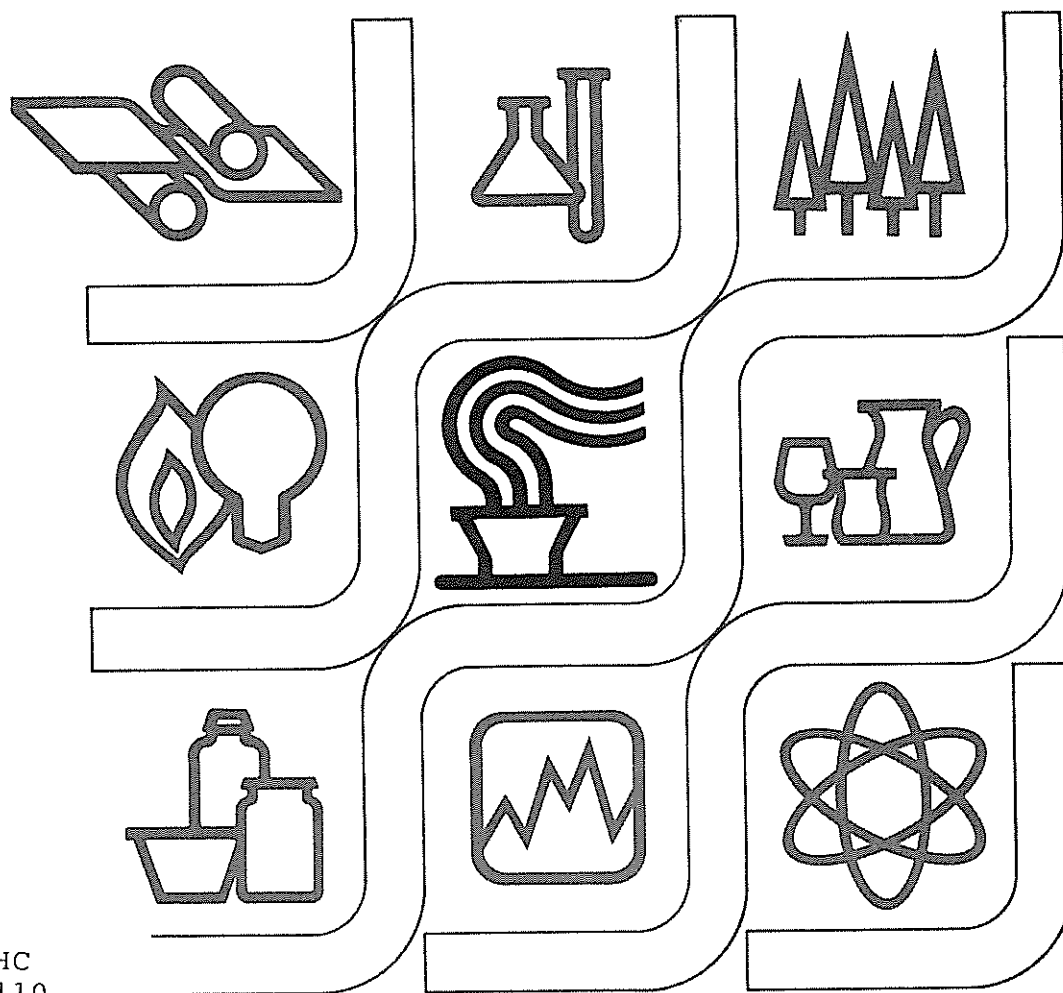
# Current Industrial Reports

U. S. Department of Commerce

BUREAU OF THE CENSUS

## Pollution Abatement Costs and Expenditures, 1978

MA-200 (78)-2



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Issued May 1980

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## Pollution Abatement Costs and Expenditures, 1978

MA - 200 (78) - 2



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# INTRODUCTION

## SUMMARY OF SURVEY RESULTS

Pollution abatement capital expenditures by manufacturing establishments amounted to \$3,316 million in 1978. Of this total, \$1,872 million was for air pollution abatement, \$1,263 million was for water pollution, and \$181 million was for solid waste pollution abatement. In addition, operating costs related to pollution abatement activities (including payments to governmental units) totaled \$6,328 million in 1978 of which \$2,547 million was spent for air pollution, \$2,550 million for water pollution, and \$1,230 million for solid waste pollution. These totals for 1978 compare to \$3,523 million in capital expenditures and \$5,470 million in operating costs for 1977. Although the overall decline in total pollution abatement capital expenditures was 6 percent, air and solid waste capital expenditures increased 12 and 13 percent respectively. Water pollution capital expenditures decreased \$432 million or 25 percent in 1978. All components of pollution abatement operating costs (air, water, and solid waste) registered substantial increases as in the previous year. Total operating costs increased \$857 million or 16 percent.

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

## REVISIONS TO THE 1978 POLLUTION ABATEMENT PUBLICATION

There are two major changes to the 1978 pollution abatement publication when compared to previous years.

The first change is an adjustment to the 1977 and 1978 data levels for certain tables to estimate pollution expenditures for establishments with less than 20 employees. When Census selected a new pollution sample for 1977, establishments with less than 20 employees were excluded from the survey panel for the first time (see "Description of Survey Sample") in order to reduce respondent reporting burden. Plants in this category contributed less than 2 percent of the pollution estimates while accounting for 10 percent of the number of plants.

To maintain a consistent time series of data, Census has estimated pollution expenditures for these smaller plants for 1977 and 1978 based upon their percentage of contribution to the estimates in 1976. Tables 1A, 1B, and 1C include this adjustment for plants with less than 20 employees. The text and chart information also includes this adjustment unless specifically noted otherwise. All other tables contain data only for establishments with 20 or more employees.

The second major change for the 1978 publication is a reduction in the amount of data cells published. In the past, it had been Census policy to publish many data cells even though the estimates were often statistically unreliable (as measured by the standard error of the estimate — see "Sampling Variation"). Census has reevaluated its policy. Now estimates are shown only if the standard error is less than 20 percent *and* the total for the cell is greater than \$4.9 million. In addition, no industry groups are shown for Standard Metropolitan Statistical Areas.

## POLLUTION ABATEMENT CAPITAL EXPENDITURES

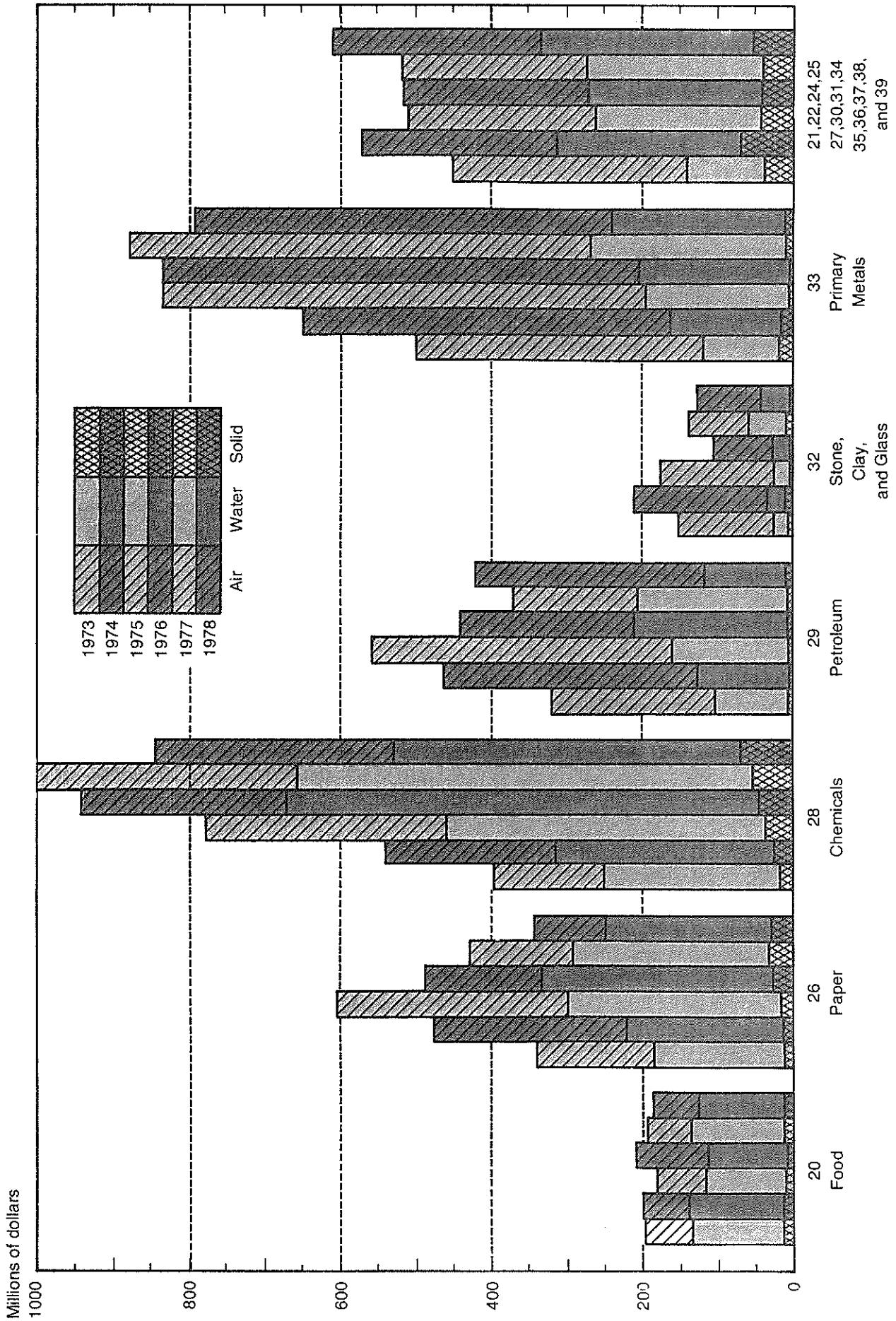
Approximately 72 percent of the \$3,316 million new capital expenditures for pollution abatement was made by establishments classified in four major industry groups. In order of value, they include Chemicals and Allied Products (Major Group 28), Primary Metal Industries (Major Group 33), Petroleum and 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 and water capital expenditures by major industry group.

In 1978, new capital expenditures for pollution abatement are concentrated in the States of Texas, Louisiana, Pennsylvania, and Ohio, accounting for about 34 percent of the total 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 top 10 Standard Metropolitan Statistical Areas (SMSA) ranked by employment size. (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 process (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 1978, as in earlier years, related to particulates. (Where expenditures occur for techniques that abate both sulfur oxides and particulates, the

Chart A. Manufacturers' Pollution Abatement Capital Expenditures, by Form of Abatement and Major Industry Group: 1973 to 1978



MAJOR INDUSTRY GROUP



Chart B. Manufacturers' Pollution Abatement Capital Expenditures, by State: 1978

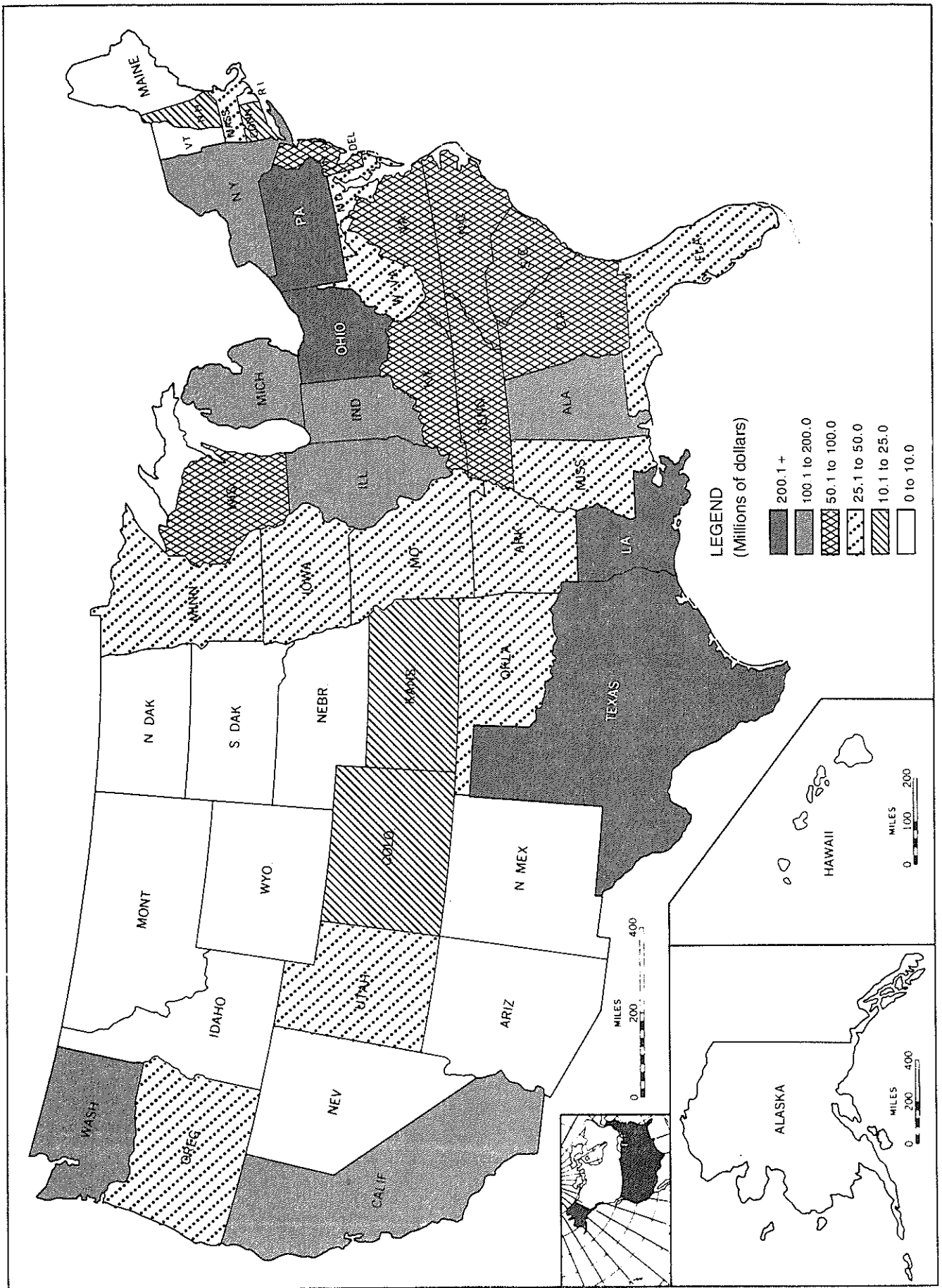
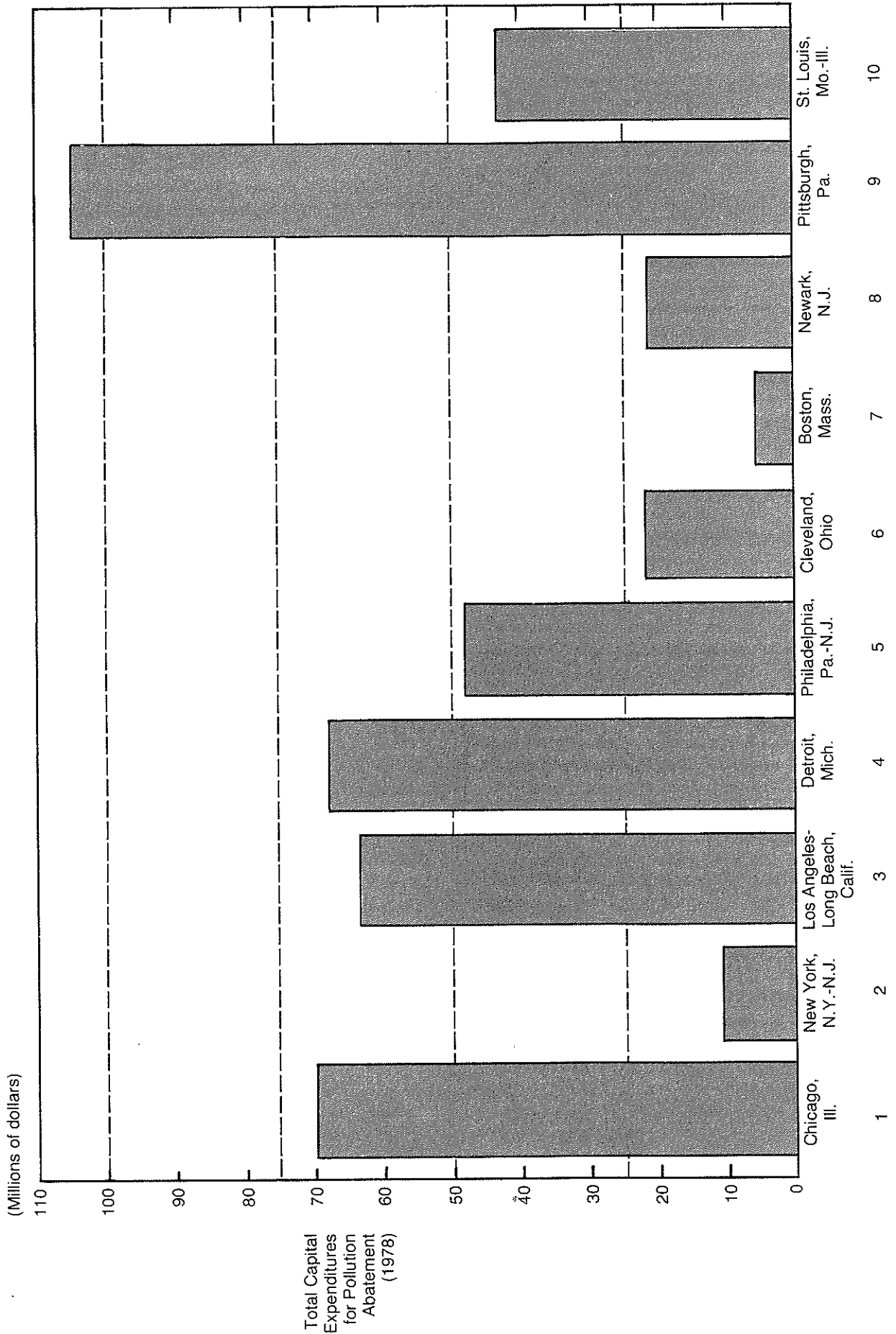


Chart C. Manufacturers' Pollution Abatement Capital Expenditures for the Top Ten Standard Metropolitan Statistical Areas, Ranked by Employment Size: 1978



STANDARD METROPOLITAN STATISTICAL AREA (1973 Ranking)

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 employee comfort or safety. Also excluded are purchases of motor vehicles with pollution abatement devices and expenditures to assure an adequate water supply for production. Manufacturers of pollution abatement equipment or 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 \$6,328 million in 1978. The operating costs (excluding payments to governmental units) totaled \$5,805 million for plants with 20 or more employees, and consisted of \$1,140 million for depreciation, \$1,236 million for labor, \$104 million for equipment leasing, and \$3,324 million for materials, supplies, services, and other costs. Chart D shows the relationship between capital expenditures and operating costs by form of pollutant being abated for 1978. Chart E shows pollution abatement operating costs by type of expense for 1973 through 1978.

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 Major Groups 20 (Food and Kindred Products), 28 (Chemicals and Allied Products), and 26 (Paper and Allied Products). (For another Census Bureau report on the pollution abatement activities in the public sector, see **Environmental Quality Control, Government Finances: Fiscal Year 1976-77.**)

### OTHER INFORMATION IN TABLES

In addition to the data highlighted previously in the text of this report, there are a number of other tables which present information of importance. Table 1C provides data for both pollution abatement total capital expenditures and total operating costs by employment-size class of establishment for major industry groups. Tables 3A, 3B, and 3C contain information on the costs recovered by manufacturers either by reuse in production or by sale. Tables 4A, 4B, and 4C present data on quantities or air pollutants abated and solid waste disposed in 1978.

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

### DESCRIPTION OF THE SURVEY SAMPLE

The statistics presented in this report are estimates compiled from a survey or a probability sample of about 20,000 manufacturing establishments selected as a subsample of the

1977 Annual Survey of Manufactures (ASM). The 1977 ASM is, 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 list supplemented by Social Security Administration lists of new manufacturers that opened after 1972. The ASM sample is defined on a company rather than an establishment basis; that is, selected companies are required to report for all of their plants in the ASM so that new establishments of existing companies are included in the ASM sample.

The following specific differences between the 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. Capital expenditures for pollution abatement in such establishments are probably minimal.
2. The PAE sample was 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 and 1978 PAE sample does not include any establishments with less 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 less 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 less than 20 employees were eliminated from the 1977 sampling frame. Data are estimated for these smaller plants in tables 1A, 1B, and 1C.

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 for 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 .99 to .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 establishments' probability of selection. Individual establishment data were inflated by their sampling weights to develop industry, State, or SMSA estimates.

Chart D. Manufacturers' Pollution Abatement Capital Expenditures and Operating Costs, by form of Abatement and Major Industry Group: 1978

(Millions of dollars)

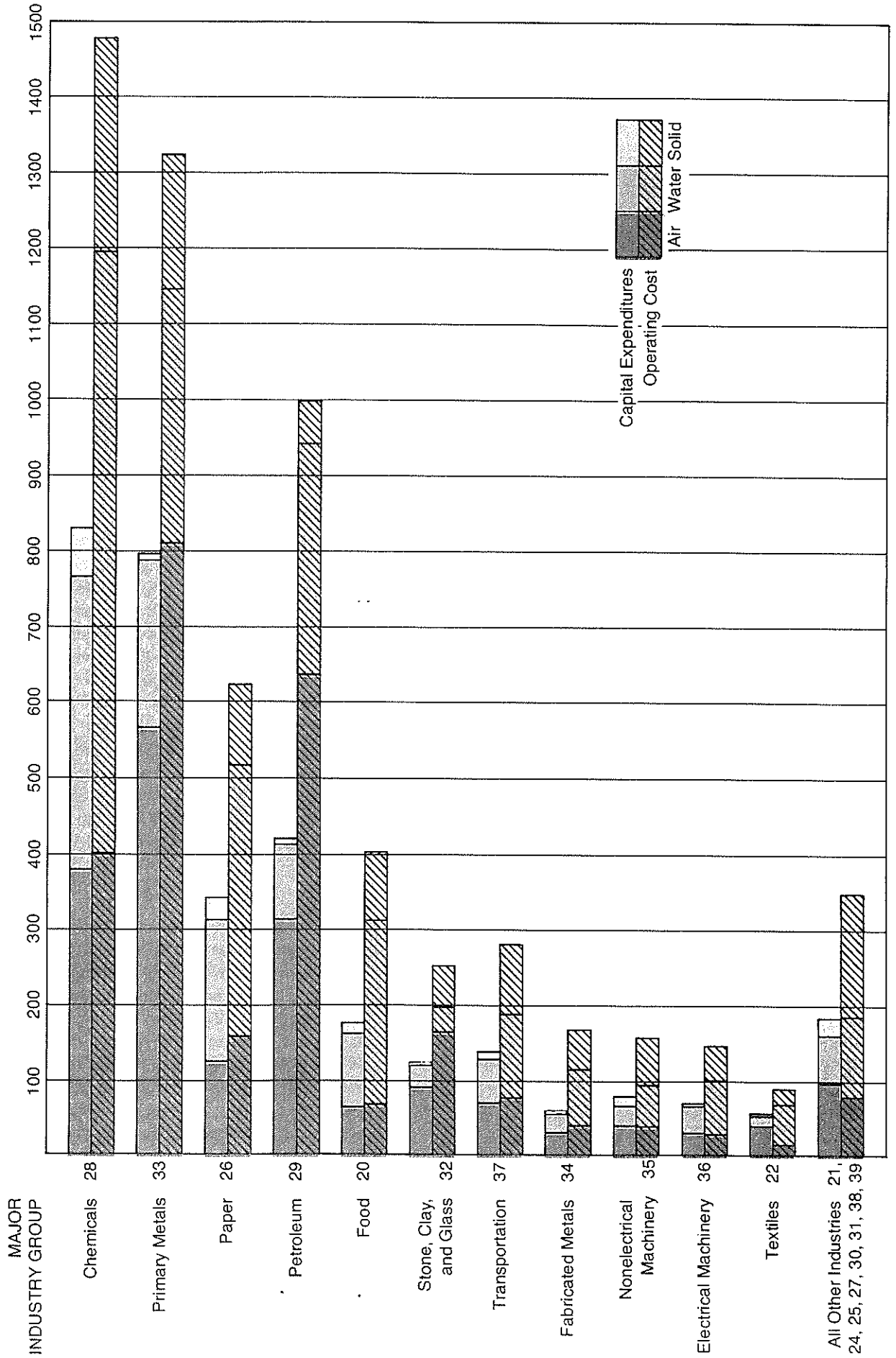
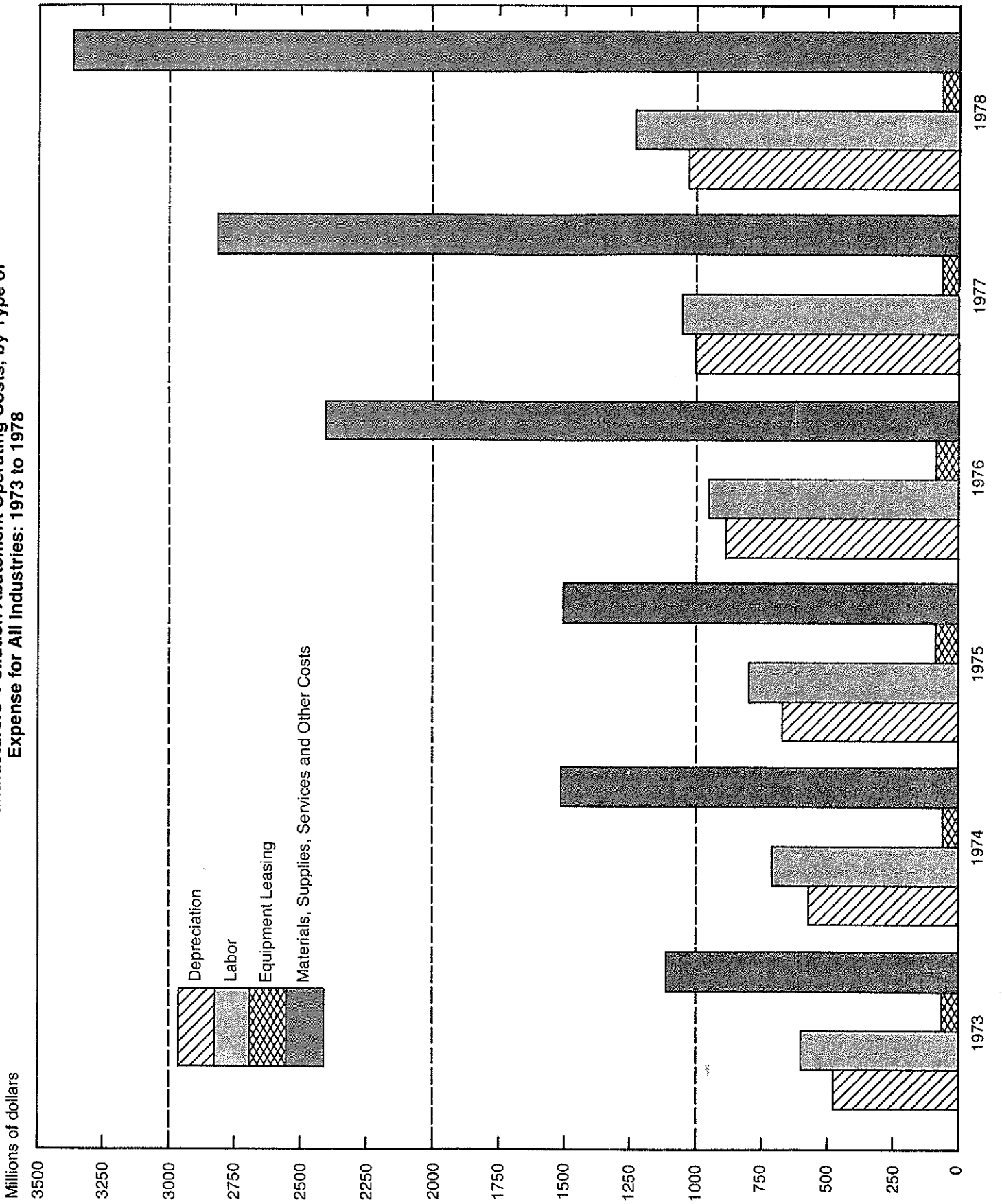


Chart E. Manufacturers' Pollution Abatement Operating Costs, by Type of Expense for All Industries: 1973 to 1978



## LIMITATIONS OF DATA

### Reporting Problems

In the 1973 survey, two significant factors resulted in an understatement of the published data. They were (1) a misunderstanding of the intent of the questionnaire and (2) a number of respondents' failure to return the form at all. For more detailed information regarding these reporting problems, refer to **Pollution Abatement Costs and Expenditures 1974, MA-200(74)-1**.

### Conceptual Problems

**Changes-in-Production Process (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 recorded 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 true.

**Operating Costs for Pollution Abatement—**The survey respondent is asked to estimate separately for depreciation; labor; equipment leasing; and materials, supplies, services, 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 or 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 estimates 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 WITH BUREAU OF ECONOMIC ANALYSIS

The Bureau of the Census' estimates of pollution abatement capital expenditures are generally lower than those published by the Bureau of Economic Analysis (BEA) in the Survey of Current Business. In addition to normal sampling variations, another source of difference relates to the methodology employed for the two series.

## INTRODUCTION

The Census data are based on a probability sample of 20,000 manufacturing establishments. All establishments which reported shipments in the 1976 ASM of \$30.1 million or more are included, while establishments with less than \$30.1 million are selected on a random sample basis. Each establishment is classified into a manufacturing industry based upon its primary activity and receives one report form.

The BEA estimates are based on questions incorporated in the BEA annual new plant and equipment survey which is mailed to approximately 10,000 companies. Each company receives one report form to supply data for its entire operation. The companies are designated either as manufacturing or nonmanufacturing based upon their primary activity as classified by 1967 Census of Enterprise Statistics. Currently, the BEA survey has about 4,000 companies classified in the manufacturing sector of which about 60 percent respond with data. Nonrespondents are estimated.

Companies classified as manufacturing include all establishments of the company, both manufacturing and nonmanufacturing. Likewise, companies classified as nonmanufacturing have their manufacturing establishments included in the nonmanufacturing totals. The net effect of the different definitions has been to include more capital expenditures in the BEA series for manufacturing than those estimated by the Bureau of the Census. Table A shows a comparison of BEA and Census total capital expenditures and pollution abatement expenditures for 1976 to 1978.

### SELECTED INDUSTRIAL AIR POLLUTION CONTROL EQUIPMENT

Table B highlights annual manufacturing data for air pollution control equipment from 1973 to 1978. This information is

collected and published in the series MA-35J, **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 yearend. 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 1978). In 1978, shipments increased for several manufacturer's end users.

### RESEARCH AND DEVELOPMENT FOR POLLUTION ABATEMENT PURPOSES

Tables C and D show the amount of money spent from 1973 to 1978 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. As shown in the tables, approximately 93 percent of the R&D pollution control expenditures are company sponsored, and the remaining 7 percent are federally sponsored. Over a 6-year period, the motor vehicle and equipment industry accounted for more than half of all R&D expenditures for pollution abatement. In 1978, total R&D expenditures for pollution control increased to \$1,067 million compared to \$901 million in 1977. This increase was largely the result of a \$118 million increase in R&D expenditures in the motor vehicle and equipment industry.

Table A. Total New Capital Expenditures (TNCE) and Pollution Abatement for New Plant and Equipment—BEA and Census,  
by Industry Group: 1976 to 1978

(Millions of dollars)

Industry group	Data source	1976					1977					1978				
		TNCE	Pollution abatement expenditures				TNCE	Pollution abatement expenditures				TNCE	Pollution abatement expenditures			
			Total	Air	Water	Solid		Total	Air	Water	Solid		Total	Air	Water	Solid
All manufacturing <sup>1</sup> .....	BEA	52,979	4,382	2,105	1,993	284	61,026	4,282	2,032	1,993	258	67,646	3,953	1,992	1,652	306
	Census	40,246	3,532	1,798	1,599	135	47,246	3,523	1,668	1,695	160	(NA)	3,316	1,872	1,263	181
Durable goods.....	BEA	23,595	1,560	952	537	72	28,258	1,668	941	636	91	31,749	1,561	901	566	94
	Census	19,576	1,334	907	383	44	24,253	1,434	903	483	48	(NA)	1,402	906	440	56
Primary metals.....	BEA	5,883	923	661	250	12	5,893	927	607	295	26	5,971	752	530	205	17
	Census	4,179	834	633	198	3	4,526	876	617	251	8	(NA)	793	564	220	9
Electrical machinery.....	BEA	2,640	148	44	86	19	3,298	111	30	65	15	3,937	130	26	88	16
	Census	2,240	58	23	31	4	2,833	66	24	38	5	(NA)	75	34	38	3
Machinery, except electrical.....	BEA	5,026	80	40	30	10	5,859	104	51	49	5	6,416	111	57	46	9
	Census	3,428	69	45	22	3	4,447	90	42	42	6	(NA)	82	41	28	13
Transportation equipment.....	BEA	3,689	125	53	51	21	5,274	163	58	74	31	6,271	224	93	98	33
	Census	3,131	79	21	54	4	4,769	83	37	39	6	(NA)	140	71	58	11
Stone, clay, and glass.....	BEA	1,675	103	74	25	5	2,039	149	107	39	4	2,484	164	109	47	7
	Census	1,504	105	82	19	4	1,774	137	88	40	9	(NA)	127	95	29	4
Other durables.....	BEA	4,682	181	81	95	5	5,895	213	88	116	10	6,670	181	87	82	12
	Census	5,094	189	104	59	27	5,904	182	95	73	14	(NA)	186	100	69	17
Nondurable goods.....	BEA	29,384	2,821	1,153	1,456	212	32,768	2,615	1,091	1,357	167	35,897	2,389	1,092	1,086	211
	Census	20,670	2,198	891	1,217	91	22,994	2,089	765	1,212	112	(NA)	1,914	966	823	125
Food, including beverages.....	BEA	3,903	175	90	75	10	4,154	176	71	96	8	4,820	172	75	75	22
	Census	3,817	208	103	98	7	4,192	194	72	109	13	(NA)	185	71	100	14
Textiles.....	BEA	841	37	11	24	2	933	35	11	23	1	1,022	29	13	8	8
	Census	1,087	53	9	43	2	1,221	37	21	15	1	(NA)	60	43	15	2
Paper.....	BEA	3,473	511	182	304	25	3,397	468	188	256	23	3,371	239	105	103	31
	Census	3,010	487	181	279	27	3,280	428	134	262	32	(NA)	342	124	189	29
Chemicals.....	BEA	6,723	765	287	433	45	6,902	701	249	414	38	7,205	563	236	286	42
	Census	7,122	942	320	577	45	8,489	1,000	346	604	51	(NA)	842	383	393	66
Petroleum.....	BEA	11,744	1,275	554	594	126	14,185	1,167	531	546	90	15,560	1,294	611	586	98
	Census	2,837	441	237	200	5	2,318	369	168	196	5	(NA)	420	312	101	8
Rubber.....	BEA	1,093	37	20	14	3	1,442	47	31	12	4	1,751	58	40	12	7
	Census	1,317	37	24	10	3	1,632	37	17	14	5	(NA)	28	19	6	3
Other nondurables.....	BEA	1,607	23	9	11	2	1,755	21	9	9	2	2,168	32	11	17	4
	Census	1,480	30	18	11	1	1,862	24	7	13	4	(NA)	37	14	20	4

Note: Totals may not agree with detail because of independent rounding. Census data for 1977 to 1978 on pollution abatement have been adjusted to estimate pollution expenditures for establishments with less than 20 employees, see text.

(NA) Not available.

<sup>1</sup>Major Industry Group 23, Apparel and Other Textile Products, is excluded from all Census figures.

Source: U.S. Bureau of the Census, "Survey of Pollution Abatement Costs and Expenditures," 1976, 1977, and 1978, and the U.S. Bureau of Economic Analysis, "Capital Expenditures by Business for Pollution Abatement, 1977, 1978, and Planned 1979," Survey of Current Business, June 1979.



**Table B. Selected Industrial Air Pollution Control Equipment: 1973 to 1978**

(Millions of dollars)

Air pollution control equipment	Value			Shipments by end use											
	New orders	Total shipments	Backlog of orders	Pulp and paper mill operations	Chemicals and fertilizer production	Petroleum refining	Cement manufacturing	Foundries <sup>1</sup>	Iron and steel mills <sup>1</sup>	Primary metals smelting plant	Grain milling and handling	Coal mining and cleaning	Steam electric utility power plants <sup>1</sup>	Steam industrial power plants	Other end uses
<b>Total air pollution control equipment.....</b>															
1978..	777.2	627.9	937.3	29.6	41.4	14.7	14.9	12.4	39.7	6.7	8.2	7.1	295.8	40.3	117.0
1977..	605.9	617.3	788.1	28.8	35.3	12.2	18.3	6.7	35.7	13.8	3.8	6.0	307.2	26.4	110.1
1976..	571.6	571.4	735.0	23.0	30.5	(D)	18.4	( <sup>2</sup> )	58.8	(D)	(D)	8.2	(D)	( <sup>3</sup> )	105.6
1975..	606.8	545.9	779.4	(D)	37.5	11.4	11.4	( <sup>2</sup> )	55.7	37.2	(D)	4.6	214.9	( <sup>3</sup> )	125.8
1974..	669.5	370.9	617.1	26.2	23.1	9.0	29.1	( <sup>2</sup> )	40.9	16.1	7.1	2.6	145.8	( <sup>3</sup> )	70.5
1973..	382.9	250.9	286.5	17.4	16.2	5.7	22.8	( <sup>2</sup> )	21.6	6.3	5.6	(D)	89.3	( <sup>3</sup> )	65.3
<b>Particulates emission collectors.....</b>															
1978..	559.6	496.1	714.3	27.8	27.8	(D)	(D)	(D)	35.8	(D)	(D)	(D)	(D)	(D)	86.7
1977..	460.0	484.1	650.7	27.6	20.5	3.4	(D)	(D)	31.4	13.0	(D)	(D)	246.2	13.3	96.7
1976..	485.1	493.3	642.7	22.4	23.4	9.5	18.4	( <sup>2</sup> )	58.1	24.7	6.4	8.2	240.4	( <sup>3</sup> )	81.7
1975..	529.2	470.2	694.0	22.8	22.1	9.0	22.1	( <sup>2</sup> )	54.7	36.7	5.1	4.6	182.3	( <sup>3</sup> )	104.8
1974..	635.1	341.5	585.0	(D)	(D)	(D)	(D)	( <sup>2</sup> )	(D)	(D)	7.1	2.6	(D)	( <sup>3</sup> )	62.0
1973..	368.2	242.0	274.7	(D)	14.3	5.7	22.8	( <sup>2</sup> )	(D)	(D)	(D)	(D)	(D)	( <sup>3</sup> )	59.0
<b>Gaseous emission control devices.....</b>															
1978..	166.9	85.8	197.5	(D)	(D)	4.8	-	(D)	0.6	(D)	-	-	(D)	2.7	11.6
1977..	113.0	99.3	116.4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	-	(D)	53.5	9.1	13.1
1976..	72.5	65.4	86.7	1.6	7.1	(D)	-	( <sup>2</sup> )	0.7	(D)	(D)	-	(D)	( <sup>3</sup> )	11.4
1975..	68.5	64.1	82.2	(D)	15.4	2.4	-	( <sup>2</sup> )	1.0	0.5	(D)	-	32.7	( <sup>3</sup> )	9.3
1974..	34.4	29.4	32.1	(D)	(D)	(D)	(D)	( <sup>2</sup> )	(D)	(D)	-	-	(D)	( <sup>3</sup> )	8.5
1973..	11.3	8.8	9.3	(D)	1.9	-	-	( <sup>2</sup> )	(D)	(D)	(D)	-	(D)	( <sup>3</sup> )	6.3

- Represents zero. (D) Withheld to avoid disclosing figures for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published figures.

<sup>2</sup>Appeared separately for first time in 1977. <sup>3</sup>Combined with iron and steel mills in 1976 and earlier years. <sup>4</sup>Combined with steam electric utility powers in 1976 and earlier years.

Source: Current Industrial Reports, "Selected Industrial Air Pollution Control Equipment," (MA-35J), 1973 to 1978.

**Table C. Industrial Research and Development Expenditures for Pollution Abatement by Type: 1974 to 1978**

(Millions of dollars)

Type of pollution abatement	1974			1975			1976			1977			1978		
	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
<b>Total.....</b>	657	51	606	651	44	607	754	51	703	901	56	845	1,067	75	992
Air.....	508	17	491	482	16	466	569	26	543	676	22	654	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Water.....	60	( <sup>2</sup> )	( <sup>2</sup> )	71	( <sup>2</sup> )	( <sup>2</sup> )	84	7	77	97	7	90	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Solid waste.....	14	( <sup>2</sup> )	( <sup>2</sup> )	22	( <sup>2</sup> )	( <sup>2</sup> )	21	1	20	28	7	21	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
All other.....	75	29	46	76	23	53	80	17	63	100	20	80	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )

<sup>1</sup>Category not available for reporting purposes. <sup>2</sup>Not separately available but included in total.

Source: National Science Foundation/Bureau of the Census "Survey of Industrial Research and Development," 1974 to 1978.

**Table D. Total Industrial Research and Development Expenditures for Pollution Abatement, by Source of Funds and Industry: 1973 to 1978**

(Millions of dollars)

Source of funds and industry	1973	1974	1975	1976	1977	1978
<b>Total.....</b>	603	657	651	759	901	1,067
<b>Source of funds:</b>						
Federal funds.....	35	51	44	51	56	75
Company funds.....	568	606	607	708	845	992
<b>Industry:</b>						
Electrical equipment.....	13	16	17	18	20	19
Petroleum refining.....	51	61	66	63	61	72
Aircraft and missiles.....	25	34	37	48	57	64
Chemical and allied products.....	55	65	71	72	83	81
Motor vehicles and equipment.....	380	384	347	413	487	605
Other manufacturing.....	44	70	79	93	100	107
Nonmanufacturing.....	35	27	34	52	93	119

Source: National Science Foundation/Bureau of the Census, "Survey of Industrial Research and Development," 1973 to 1978.



Table 1A. Pollution Abatement Capital Expenditures and Operating Costs, by Form of Abatement and Major Industry Group: 1973 to 1978

(In millions of dollars, except percent)

Table with columns: SIC code, Industry, Selected data from the Annual Survey of Manufactures (ASM), Pollution abatement capital expenditures (PACE), Pollution abatement gross annual costs (GAC), Percent change, Standard error of estimates (percent). Rows include All industries, Food and kindred products, Tobacco products, Textile mill products, Lumber and wood products, Furniture and fixtures, Paper and allied products, Printing and publishing, Chemicals and allied products, Petroleum and coal products, Rubber miscellaneous plastics products.

See footnotes at end of table.

Table 1A. Pollution Abatement Capital Expenditures and Operating Costs, by Form of Abatement and Major Industry Group: 1973 to 1978—Continued

(In millions of dollars, except percent)

SIC code	Industry	Selected data from the Annual Survey of Manufacturers (ASM)		Pollution abatement capital expenditures (PACE)				Pollution abatement gross annual costs (GAC), including payments to Government units				Percent change <sup>1</sup>		Standard error of estimate (percent) <sup>2</sup>		
		Total value of shipments	Total new capital expenditures	Total	Air	Water	Solid waste	Total	Air	Water	Solid waste	PACE	GAC	PACE	GAC	
31	Leather and leather products.....	<sup>3</sup> 1978..	(NA)	(NA)	(S)	(S)	(S)	(S)	19.7	1.4	11.5	6.7	(X)	25	(X)	16
		<sup>3</sup> 1978..	(NA)	(NA)	(S)	(S)	(S)	(S)	19.3	1.4	11.3	6.6	(X)	25	(X)	16
		<sup>3</sup> 1977..	P7,507.5	P92.5	11.5	1.8	9.4	0.4	15.7	1.1	9.3	5.3	-34	43	48	16
		<sup>3</sup> 1977..	P7,507.5	P92.5	11.4	1.8	9.3	0.4	15.4	1.1	9.1	5.2	-34	40	48	16
		1976..	7,176.0	89.4	17.4	7.3	9.6	0.5	11.0	1.1	6.7	3.3	149	18	34	17
		1975..	6,323.0	77.5	7.0	(D)	5.1	(D)	9.3	1.2	4.9	3.2	119	15	23	17
		1974..	6,176.5	76.1	3.2	(D)	1.8	(D)	8.1	1.0	4.2	2.9	-26	33	23	10
1973..	6,022.5	80.9	4.3	1.8	1.9	0.6	6.1	0.9	3.0	2.3	(X)	(X)	28	11		
32	Stone, clay, glass products.....	<sup>3</sup> 1978..	(NA)	(NA)	127.0	94.5	28.7	3.8	255.6	166.6	33.8	55.2	-7	17	7	4
		<sup>3</sup> 1978..	(NA)	(NA)	123.8	92.1	28.0	3.7	251.1	163.7	33.2	54.2	-7	17	7	4
		<sup>3</sup> 1977..	P34,937.4	P1,774.4	136.9	88.0	40.1	8.8	218.4	144.3	28.5	45.3	31	14	17	4
		<sup>3</sup> 1977..	P34,937.4	P1,774.4	133.4	85.8	39.1	8.6	214.5	141.7	28.0	44.5	27	12	17	4
		1976..	30,635.2	1,504.0	104.7	82.2	18.9	3.6	192.1	122.8	30.3	39.0	-40	12	13	5
		1975..	27,033.9	1,581.2	173.5	152.7	16.7	4.1	171.8	109.7	28.3	33.8	-17	12	11	6
		1974..	26,338.1	1,587.5	208.8	185.8	13.1	10.0	152.9	98.7	24.7	29.4	39	31	11	6
1973..	23,861.7	1,391.4	150.7	131.6	14.4	4.7	117.0	73.7	16.4	27.0	(X)	(X)	15	5		
33	Primary metal industries.....	<sup>3</sup> 1978..	(NA)	(NA)	793.4	564.4	219.5	9.4	1,321.8	809.9	333.1	179.0	-9	18	1	3
		<sup>3</sup> 1978..	(NA)	(NA)	791.8	563.3	219.1	9.4	1,321.4	809.6	333.0	178.9	-9	18	1	3
		<sup>3</sup> 1977..	P103,042.8	P4,526.3	876.4	617.2	250.7	8.4	1,122.6	721.8	268.4	132.4	5	25	2	1
		<sup>3</sup> 1977..	P103,042.8	P4,526.3	874.6	616.0	250.2	8.4	1,122.3	721.6	268.3	132.3	5	25	2	1
		1976..	93,001.8	4,178.6	833.7	632.5	197.8	3.3	895.8	575.7	229.5	90.7	0	25	3	1
		1975..	80,817.0	4,164.5	833.5	640.6	187.5	5.4	715.2	429.9	209.4	75.9	29	21	3	1
		1974..	95,618.0	3,751.8	646.8	501.5	132.7	12.5	590.2	339.6	181.2	69.5	30	26	2	1
1973..	72,727.2	2,334.2	498.6	397.2	84.7	16.8	466.8	264.7	148.3	53.8	(X)	(X)	2	1		
34	Fabricated metal products.....	<sup>3</sup> 1978..	(NA)	(NA)	61.8	33.2	26.3	2.3	170.6	42.6	74.6	53.4	-20	13	8	15
		<sup>3</sup> 1978..	(NA)	(NA)	61.6	33.1	26.2	2.3	168.7	42.1	73.8	52.8	-20	13	8	15
		<sup>3</sup> 1977..	P89,083.4	P2,542.1	76.9	32.6	39.3	5.0	150.8	40.7	66.8	43.3	5	21	7	3
		<sup>3</sup> 1977..	P89,083.4	P2,542.1	76.7	32.5	39.2	5.0	149.2	40.3	66.1	42.8	5	20	7	3
		1976..	77,507.1	2,223.2	72.9	35.5	34.1	3.4	124.3	35.4	52.7	36.1	-6	14	9	4
		1975..	68,738.7	2,074.2	77.5	46.9	29.0	1.7	109.5	32.6	45.7	31.3	-14	-1	9	4
		1974..	67,569.9	1,981.2	90.5	56.4	28.2	5.9	110.1	34.5	44.9	30.7	42	30	12	4
1973..	58,556.3	1,734.7	63.7	39.6	21.5	2.7	84.8	27.0	35.7	22.2	(X)	(X)	7	4		
35	Machinery, except electrical.....	<sup>3</sup> 1978..	(NA)	(NA)	81.5	41.4	27.8	12.6	162.5	42.0	55.7	64.6	-10	17	6	12
		<sup>3</sup> 1978..	(NA)	(NA)	81.5	41.4	27.8	12.6	158.8	41.0	54.4	63.1	-10	17	6	12
		<sup>3</sup> 1977..	P122,211.5	P4,447.1	90.2	42.3	42.4	5.5	138.5	33.9	50.9	53.8	30	17	3	2
		<sup>3</sup> 1977..	P122,211.5	P4,447.1	90.2	42.3	42.4	5.5	135.4	33.1	49.8	52.6	30	15	3	2
		1976..	105,525.2	3,428.3	69.4	44.8	21.8	2.9	117.9	30.8	37.7	49.6	15	20	12	4
		1975..	95,752.5	3,354.7	60.5	37.5	20.8	2.3	98.0	28.4	33.7	36.0	-11	7	5	2
		1974..	92,487.2	3,312.2	67.7	41.9	17.6	8.1	91.7	24.3	29.1	38.2	20	26	2	1
1973..	78,092.7	2,320.7	56.3	36.6	15.6	4.1	72.5	19.7	23.0	29.9	(X)	(X)	4	1		
36	Electric, electronic equipment.....	<sup>3</sup> 1978..	(NA)	(NA)	75.2	34.3	37.5	3.4	148.7	30.7	71.7	46.1	13	16	5	2
		<sup>3</sup> 1978..	(NA)	(NA)	72.2	32.9	36.0	3.3	148.6	30.7	71.7	46.1	13	16	5	2
		<sup>3</sup> 1977..	P87,602.7	P2,833.2	66.4	23.9	37.5	5.1	128.2	28.0	63.3	37.1	14	17	4	2
		<sup>3</sup> 1977..	P87,602.7	P2,833.2	63.8	23.0	36.0	4.9	128.1	28.0	63.2	37.1	9	17	4	2
		1976..	73,867.1	2,240.1	58.4	23.0	31.3	4.1	109.9	26.8	50.8	32.3	12	13	5	2
		1975..	64,213.9	1,876.8	52.3	22.7	26.2	3.3	97.3	27.6	43.1	26.7	-6	10	4	2
		1974..	65,804.1	2,426.3	55.6	24.6	28.0	3.1	88.6	22.7	39.8	26.2	6	2	2	4
1973..	60,864.8	1,996.1	52.7	27.0	22.2	3.5	87.2	20.2	38.9	28.1	(X)	(X)	4	6		
37	Transportation equipment.....	<sup>3</sup> 1978..	(NA)	(NA)	139.5	71.0	57.9	10.7	280.5	77.3	110.2	93.0	69	20	1	1
		<sup>3</sup> 1978..	(NA)	(NA)	139.5	71.0	57.9	10.7	280.5	77.3	110.2	93.0	69	20	1	1
		<sup>3</sup> 1977..	P166,795.2	P6,769.0	82.6	36.9	39.4	6.3	233.9	60.6	97.3	76.1	5	18	1	1
		<sup>3</sup> 1977..	P166,795.2	P6,769.0	82.6	36.9	39.4	6.3	233.9	60.6	97.3	76.1	5	18	1	1
		1976..	141,025.5	3,130.6	78.5	21.1	53.6	3.8	197.9	56.9	83.5	57.6	4	18	3	1
		1975..	113,500.6	2,762.1	75.4	32.1	36.4	6.8	168.3	52.2	66.4	49.7	-27	9	9	1
		1974..	108,244.9	3,176.1	103.4	52.7	41.5	9.2	154.8	44.8	59.5	50.5	2	19	3	1
1973..	110,710.7	2,528.9	101.2	52.6	41.7	6.9	129.8	35.2	51.1	43.4	(X)	(X)	1	1		
38	Instruments, related products.....	<sup>3</sup> 1978..	(NA)	(NA)	17.7	7.1	9.9	0.6	56.2	7.4	27.1	21.8	-31	18	2	2
		<sup>3</sup> 1978..	(NA)	(NA)	16.9	6.8	9.5	0.6	55.8	7.3	26.9	21.6	-31	18	2	2
		<sup>3</sup> 1977..	P28,707.9	P959.5	25.5	15.1	8.9	1.5	47.6	9.1	23.1	15.5	-21	4	4	2
		<sup>3</sup> 1977..	P28,707.9	P959.5	24.4	14.5	8.5	1.4	47.3	9.0	23.0	15.4	-24	4	4	2
		1976..	25,030.1	782.7	32.3	10.9	12.2	9.3	45.7	8.7	22.3	14.8	9	19	4	3
		1975..	22,058.7	794.3	29.6	11.2	17.3	1.1	38.5	5.9	19.5	13.2	89	13	3	3
		1974..	20,953.0	821.6	15.7	3.6	6.7	5.5	34.1	4.9	15.0	14.3	33	56	3	4
1973..	17,793.7	635.6	11.8	3.0	5.6	3.2	21.9	2.0	11.3	8.6	(X)	(X)	5	3		
39	Miscellaneous manufacturing industries.....	<sup>3</sup> 1978..	(NA)	(NA)	(S)	(S)	(S)	(S)	22.1	4.0	5.8	12.3	(X)	16	(X)	4
		<sup>3</sup> 1978..	(NA)	(NA)	(S)	(S)	(S)	(S)	22.1	4.0	5.8	12.3	(X)	16	(X)	4
		<sup>3</sup> 1977..	P19,013.3	P461.5	6.6	2.5	3.9	0.3	19.0	5.3	5.2	8.4	35	15	28	5
		<sup>3</sup> 1977..	P19,013.3	P461.5	6.6	2.5	3.9	0.3	19.0	5.3	5.2	8.4	35	15	28	5
		1976..	16,285.9	560.6	4.6	3.3	1.4	0.2	22.4	7.8	6.3	8.3	-13	23	18	10
		1975..	14,486.9	301.9	5.6	2.3	1.7	1.5	18.2	5.7	5.5	7.0	-60	-12	11	5
		1974..	13,990.1	362.3	14.1	7.3	5.8	1.0	20.7	7.3	5.6	7.8	17	36	10	9
1973..	13,046.1	341.2	12.1	5.3	4.8	2.0	15.2	6.0	3.9	5.4	(X)	(X)	13	13		

Note: Totals may not agree precisely with detail because of independent rounding. See appendix A for explanation of terms. See "Limitations of Data" in the text for specific limitations of the 1973 statistics.

(D) Withheld to avoid disclosing operations of individual companies. (NA) Not available. <sup>P</sup>Preliminary. Final data not available at time of publication. <sup>R</sup>Revised. (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.

<sup>1</sup>The calculation of the percent change is based on the change from the previous year to the subsequent year (i.e., 1973 to 1974, 1974 to 1975, 1975 to 1976, 1976 to 1977, and 1977 to 1978).

<sup>2</sup>Major Industry Group 23, Apparel and Other Textile Products is excluded from all but the U.S. totals of the first two columns.

<sup>3</sup>Two lines of data are presented for 1977 and 1978. The top line for each year represents the estimate for all establishments and is comparable to the estimates for 1973 to 1976. The bottom line is the estimate for establishments with 20 or more employees. See text.

Table 1B. Pollution Abatement Capital Expenditures and Operating Costs, by Form of Abatement and State: 1973 to 1978

(In millions of dollars, except percents)

Division and State	Selected data from the Annual Survey of Manufactures (ASM)		Pollution abatement capital expenditures (PACE)				Pollution abatement gross annual costs (GAC), including payments to Government units				Percent change <sup>1</sup>		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	
United States <sup>2</sup>	<sup>1978..</sup>	(NA)	3,315.9	1,871.5	1,262.9	181.2	6,327.5	2,546.6	2,550.4	1,230.3	-6	16	1	2	
	<sup>1978..</sup>	(NA)	3,279.3	1,853.6	1,246.5	178.9	6,275.7	2,527.4	2,529.9	1,218.2	-6	16	1	2	
	<sup>1977..</sup>	P1,360,483.0	P48,427.7	3,522.6	1,667.9	1,695.1	159.9	5,470.2	2,259.3	2,221.6	989.7	-	21	1	
	<sup>1977..</sup>	P1,360,483.0	P48,427.7	3,483.5	1,652.0	1,674.1	157.7	5,425.0	2,240.4	2,203.4	981.4	-1	20	1	
	1976..	1,185,695.3	40,669.9	3,531.7	1,797.8	1,599.2	134.8	4,539.2	1,888.2	1,824.0	827.1	-3	24	2	
	1975..	1,039,377.4	37,262.1	3,637.6	2,235.7	1,280.1	121.8	3,673.1	1,508.1	1,496.6	669.7	17	18	1	
	1974..	1,017,846.9	35,698.7	3,101.1	1,947.5	1,008.8	144.7	3,102.8	1,210.7	1,261.4	630.7	32	27	1	
	1973..	875,443.2	26,972.9	2,353.7	1,417.5	827.8	108.2	2,445.2	960.5	993.3	491.7	(X)	(X)	2	
New England Division	<sup>1978..</sup>	(NA)	(NA)	73.5	29.8	40.5	3.4	184.8	38.9	98.0	47.7	-27	29	(NA)	(NA)
	<sup>1978..</sup>	(NA)	(NA)	72.7	29.5	40.0	3.4	183.1	38.5	97.1	47.3	-27	29	(NA)	(NA)
	<sup>1977..</sup>	P67,436.3	P2,186.5	100.9	32.7	65.5	2.8	142.8	31.0	77.4	34.2	-17	1	(NA)	(NA)
	<sup>1977..</sup>	P67,436.3	P2,186.5	99.8	32.4	64.7	2.8	141.7	30.8	76.8	33.9	-18	-	(NA)	(NA)
	1976..	59,822.9	2,145.5	121.0	33.2	78.4	9.5	141.8	36.0	65.3	40.7	7	17	(NA)	(NA)
	1975..	52,437.9	1,810.7	113.6	33.9	74.9	4.8	120.9	37.5	56.2	27.3	17	7	5	(NA)
	1974..	52,259.9	1,706.6	97.5	24.7	67.5	5.2	113.2	35.1	50.1	28.0	39	27	(NA)	(NA)
	1973..	46,052.4	1,368.8	70.2	23.4	42.8	4.1	89.4	32.3	38.0	19.4	(X)	(X)	(NA)	(NA)
Maine	<sup>1978..</sup>	(NA)	(NA)	7.7	1.9	5.0	0.7	39.1	5.0	23.8	10.2	-67	38	8	4
	<sup>1978..</sup>	(NA)	(NA)	7.6	1.9	4.9	0.7	38.7	4.9	23.6	10.1	-67	38	8	4
	<sup>1977..</sup>	P5,145.9	P223.3	23.4	9.1	14.1	0.2	28.3	3.8	20.4	4.0	-58	94	3	4
	<sup>1977..</sup>	P5,145.9	P223.3	23.1	9.0	13.9	0.2	28.1	3.8	20.2	4.0	-58	92	3	4
	1976..	4,422.8	507.4	55.3	12.5	35.3	7.5	14.6	2.2	9.7	2.8	16	-6	13	7
	1975..	3,816.3	314.4	47.8	5.6	38.7	3.4	15.6	2.0	10.1	3.5	80	-4	5	5
	1974..	3,839.0	173.2	26.6	1.4	22.8	2.4	16.3	2.0	10.4	4.0	45	151	5	9
	1973..	3,257.2	111.9	18.3	6.6	10.5	1.2	6.5	0.9	3.9	1.8	(X)	(X)	13	5
New Hampshire	<sup>1978..</sup>	(NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)	
	<sup>1978..</sup>	(NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)	
	<sup>1977..</sup>	P4,028.9	P160.9	19.0	1.5	17.2	0.3	13.5	1.8	9.5	2.1	31	61	28	16
	<sup>1977..</sup>	P4,028.9	P160.9	18.8	1.5	17.0	0.3	13.4	1.8	9.4	2.1	30	60	28	16
	1976..	3,495.4	137.6	14.5	0.6	13.8	0.2	8.4	0.9	4.6	2.9	11	83	26	13
	1975..	3,046.3	97.2	13.1	2.3	10.5	0.4	4.6	0.4	2.6	1.7	-19	35	8	11
	1974..	3,053.4	104.0	16.1	3.3	12.5	0.3	3.4	0.3	1.7	1.4	193	21	44	9
	1973..	2,642.6	102.0	5.5	1.0	4.4	0.1	2.8	0.4	1.3	1.0	(X)	(X)	7	9
Vermont	<sup>1978..</sup>	(NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)	
	<sup>1978..</sup>	(NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)	
	<sup>1977..</sup>	P2,204.0	P93.3	2.5	0.6	1.6	0.3	3.5	0.4	1.9	1.2	-26	25	34	16
	<sup>1977..</sup>	P2,204.0	P93.3	2.5	0.6	1.6	0.3	3.5	0.4	1.9	1.2	-26	24	34	16
	1976..	2,056.2	95.6	3.4	1.2	2.1	0.1	2.8	0.2	1.8	0.8	48	56	39	15
	1975..	1,680.3	76.6	2.3	0.3	1.8	0.2	1.8	0.2	0.8	0.7	-72	-25	31	19
	1974..	1,581.3	69.3	8.3	0.2	7.5	0.5	2.4	0.3	1.2	0.8	453	-67	67	20
	1973..	1,359.6	42.5	1.5	0.5	0.8	0.2	7.3	0.3	6.2	0.8	(X)	(X)	23	71
Massachusetts	<sup>1978..</sup>	(NA)	(NA)	30.4	16.9	12.4	1.3	63.1	15.5	28.6	18.9	-16	18	11	6
	<sup>1978..</sup>	(NA)	(NA)	30.1	16.7	12.2	1.3	62.5	15.4	28.3	18.7	-15	17	11	6
	<sup>1977..</sup>	P30,662.8	P978.2	36.0	15.0	19.7	1.2	53.6	13.5	25.0	15.0	43	1	10	6
	<sup>1977..</sup>	P30,662.8	P978.2	35.6	14.9	19.5	1.2	53.2	13.4	24.9	14.9	41	-	10	6
	1976..	26,918.4	781.6	25.2	11.3	12.9	1.1	53.2	12.0	19.3	21.9	-4	29	8	17
	1975..	23,923.5	620.4	26.3	15.4	10.4	0.4	41.3	13.6	15.7	11.9	24	6	19	5
	1974..	23,807.2	764.5	21.2	10.0	10.5	0.7	38.8	13.5	13.4	12.1	-3	35	8	7
	1973..	21,337.1	669.0	21.9	7.3	12.8	1.8	28.7	12.9	8.3	7.5	(X)	(X)	10	7
Rhode Island	<sup>1978..</sup>	(NA)	(NA)	(S)	(S)	(S)	(S)	9.2	1.7	4.5	2.9	(X)	16	(X)	9
	<sup>1978..</sup>	(NA)	(NA)	(S)	(S)	(S)	(S)	9.1	1.7	4.5	2.9	(X)	17	(X)	9
	<sup>1977..</sup>	P5,410.5	P160.1	6.6	1.8	4.5	0.3	7.9	1.3	3.8	2.8	57	-25	17	7
	<sup>1977..</sup>	P5,410.5	P160.1	6.5	1.8	4.4	0.3	7.8	1.3	3.7	2.8	55	-26	17	7
	1976..	4,532.7	143.4	4.2	0.9	3.1	0.1	10.5	3.1	5.0	2.5	17	9	32	20
	1975..	3,924.0	119.5	3.6	2.2	1.3	0.1	9.6	3.3	4.2	2.1	-10	12	36	20
	1974..	4,081.1	116.5	4.5	2.3	2.2	(2)	8.6	3.4	3.3	1.8	22	46	32	19
	1973..	3,629.4	88.7	3.7	1.0	2.7	0.1	5.9	2.5	2.2	1.5	(X)	(X)	24	3
Connecticut	<sup>1978..</sup>	(NA)	(NA)	16.1	8.3	7.2	0.6	48.5	14.1	22.6	11.8	20	35	17	5
	<sup>1978..</sup>	(NA)	(NA)	15.9	8.2	7.1	0.6	48.0	14.0	22.4	11.7	20	34	17	5
	<sup>1977..</sup>	P19,984.2	P570.7	13.4	4.6	8.4	0.5	36.0	10.2	16.8	8.8	-27	-31	12	5
	<sup>1977..</sup>	P19,984.2	P570.7	13.3	4.6	8.3	0.5	35.7	10.1	16.7	8.9	-28	-32	12	5
	1976..	18,397.4	479.9	18.4	6.7	11.2	0.5	52.3	17.6	24.9	9.8	-10	9	9	25
	1975..	16,047.5	582.6	20.5	8.1	12.2	0.3	48.0	18.0	22.7	7.4	-1	10	10	27
	1974..	15,897.9	479.1	20.8	7.5	12.0	1.3	43.7	15.6	20.1	8.0	8	14	7	24
	1973..	13,826.5	354.7	19.3	7.0	11.6	0.7	38.3	15.3	16.1	6.9	(X)	(X)	19	28
Middle Atlantic Division	<sup>1978..</sup>	(NA)	(NA)	405.8	197.3	190.9	17.6	980.8	413.4	373.9	193.4	-28	12	(NA)	(NA)
	<sup>1978..</sup>	(NA)	(NA)	401.3	195.4	188.4	17.4	972.9	410.1	370.9	191.9	-28	12	(NA)	(NA)
	<sup>1977..</sup>	P217,289.7	P6,308.7	563.5	274.5	265.5	23.4	879.1	391.0	327.9	160.3	19	15	(NA)	(NA)
	<sup>1977..</sup>	P217,289.7	P6,308.7	557.2	271.9	262.2	23.1	871.6	387.7	325.1	158.9	18	14	(NA)	(NA)
	1976..	193,716.9	5,520.5	473.1	203.1	247.2	23.0	765.6	342.7	287.4	135.7	5	19	(NA)	(NA)
	1975..	176,115.1	5,327.9	450.8	267.6	173.5	9.5	644.9	276.6	245.3	120.9	2	16	2	(NA)
	1974..	177,170.0	5,446.4	442.2	275.0	148.4	19.0	556.8	233.1	203.8	119.8	39	29	(NA)	(NA)
	1973..	156,159.4	4,168.2	318.1	183.3	112.9	22.0	432.3	178.4	165.0	88.8	(X)	(X)	(NA)	(NA)
New York	<sup>1978..</sup>	(NA)	(NA)	108.1	46.1	55.6	6.4	255.0	66.1	113.6	75.3	-27	15	2	9
	<sup>1978..</sup>	(NA)	(NA)	106.9	45.7	54.9	6.3	253.0	65.5	112.7	74.7	-27	15	2	9
	<sup>1977..</sup>	P87,101.7	P2,715.6	147.2	54.4	79.7	13.2	222.6	62.5	103.7	56.5	-9	15	4	2
	<sup>1977..</sup>	P87,101.7	P2,715.6	145.6	53.9	78.7	13.0	220.7	62.0	102.8	56.0	-10	14	4	2
	1976..	76,087.1	2,303.7	162.5	50.6	98.7	13.2	192.8	55.0	86.0	51.9	38	17	13	2
	1975..	69,551.3	2,172.1	117.7	55.7	58.5	3.5	164.9	46.8	71.9	46.2	15	12	5	3
	1974..	69,271.2	2,198.2	102.4	51.3	40.5	10.6	147.1	36.8	60.6	49.5	30	29	4	

Table 1B. Pollution Abatement Capital Expenditures and Operating Costs, by Form of Abatement and State: 1973 to 1978—Continued

(In millions of dollars, except percents)

Division and State	Selected data from the Annual Survey of Manufactures (ASM)		Pollution abatement capital expenditures (PACE)				Pollution abatement gross annual costs (GAC), including payments to Government units				Percent change <sup>1</sup>		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	
Middle Atlantic Division—Continued															
Pennsylvania.....	1978..	(NA)	(NA)	221.8	112.8	101.0	8.0	484.5	256.6	150.8	77.1	-21	16	2	1
	1978..	(NA)	(NA)	219.3	111.7	99.7	7.9	480.6	255.9	149.6	75.1	-21	17	2	1
	1977..	P <sub>80,011.2</sub>	P <sub>2,103.2</sub>	279.8	155.3	115.9	8.5	416.0	226.1	120.9	68.8	39	14	7	2
	1977..	P <sub>80,011.2</sub>	P <sub>2,103.2</sub>	276.7	153.8	114.5	8.4	412.4	224.2	119.9	68.2	37	13	7	2
	1976..	71,918.5	2,000.5	201.8	122.1	71.2	8.6	366.1	194.8	119.8	51.6	6	18	4	2
	1975..	65,847.0	1,955.6	190.9	133.6	53.3	3.9	309.0	158.5	104.0	46.5	-8	20	3	2
	1974..	67,552.8	2,045.0	206.7	140.9	61.4	4.5	257.3	127.9	86.6	42.8	31	25	5	3
	1973..	55,585.6	1,569.2	158.1	104.7	46.3	7.1	193.3	90.3	69.2	34.1	(X)	(X)	3	3
East North Central Division.....															
	1978..	(NA)	(NA)	801.2	465.2	293.8	42.3	1,507.2	567.0	622.8	317.3	3	15	(NA)	(NA)
	1978..	(NA)	(NA)	792.4	460.8	290.0	41.8	1,495.1	562.5	617.8	314.7	3	15	(NA)	(NA)
	1977..	P <sub>373,857.4</sub>	P <sub>12,492.5</sub>	776.5	381.0	362.7	32.8	1,305.7	499.7	542.6	263.0	8	17	(NA)	(NA)
	1977..	P <sub>373,857.4</sub>	P <sub>12,492.5</sub>	767.9	377.4	358.2	32.3	1,294.7	495.5	538.1	260.8	7	16	(NA)	(NA)
	1976..	327,002.1	9,625.0	719.5	421.2	280.1	18.3	1,112.3	442.0	454.4	215.7	-4	23	(NA)	(NA)
	1975..	282,330.4	9,038.5	752.4	454.9	273.5	24.2	905.7	353.8	375.7	176.1	38	19	3	(NA)
	1974..	281,771.1	9,824.1	544.4	313.2	196.0	35.3	762.0	274.8	324.5	162.7	15	21	(NA)	(NA)
	1973..	249,351.1	7,449.6	473.8	263.4	177.4	33.0	632.0	225.8	268.5	138.1	(X)	(X)	(NA)	(NA)
Ohio.....															
	1978..	(NA)	(NA)	204.2	125.2	71.1	8.0	416.7	166.0	175.0	75.8	-9	18	2	1
	1978..	(NA)	(NA)	202.0	124.0	70.2	7.9	413.4	164.7	173.6	75.2	-9	18	2	1
	1977..	P <sub>95,849.9</sub>	P <sub>2,789.6</sub>	224.3	123.7	87.9	12.5	352.0	149.5	142.2	60.3	-2	18	4	2
	1977..	P <sub>95,849.9</sub>	P <sub>2,789.6</sub>	221.8	122.5	86.8	12.3	349.0	148.2	141.0	59.8	-2	17	4	2
	1976..	83,715.9	2,265.5	226.1	152.7	88.6	4.9	298.2	121.7	119.8	56.7	-14	21	5	4
	1975..	73,488.3	2,160.5	262.9	174.9	82.6	5.5	245.9	100.3	101.4	64.3	67	22	5	3
	1974..	74,484.5	2,523.6	157.3	101.5	42.6	13.3	201.0	80.3	79.9	40.8	24	18	4	2
	1973..	64,021.5	1,939.3	126.6	77.5	32.0	17.0	170.5	60.3	74.6	35.8	(X)	(X)	6	3
Indiana.....															
	1978..	(NA)	(NA)	171.0	101.5	64.7	4.8	305.8	140.7	115.5	49.8	4	22	4	1
	1978..	(NA)	(NA)	169.1	100.5	63.9	4.7	303.4	139.6	114.6	49.4	4	22	4	1
	1977..	P <sub>52,052.7</sub>	P <sub>2,130.0</sub>	163.7	89.2	70.1	4.4	251.5	115.2	97.0	39.4	19	13	4	1
	1977..	P <sub>52,052.7</sub>	P <sub>2,130.0</sub>	161.9	88.4	69.2	4.3	249.3	114.2	96.1	39.1	-17	12	4	1
	1976..	45,180.9	1,475.1	138.1	74.5	57.4	6.3	223.1	108.6	82.2	32.3	-11	30	3	2
	1975..	38,250.2	1,505.8	154.8	95.7	53.4	4.7	171.4	72.1	77.5	21.9	59	28	4	2
	1974..	39,423.9	1,402.4	97.5	55.9	38.6	3.0	134.1	50.1	61.3	22.8	28	33	4	2
	1973..	34,175.5	1,107.2	76.4	44.9	29.3	2.3	101.0	36.7	44.5	19.8	(X)	(X)	3	2
Illinois.....															
	1978..	(NA)	(NA)	168.0	99.2	58.8	10.0	328.3	127.2	126.9	73.8	7	8	3	2
	1978..	(NA)	(NA)	166.2	98.3	58.0	9.9	325.6	126.1	125.8	73.2	7	8	3	2
	1977..	P <sub>93,215.3</sub>	P <sub>2,685.0</sub>	157.3	87.0	63.6	6.8	303.7	119.1	120.2	64.1	-13	19	1	1
	1977..	P <sub>93,215.3</sub>	P <sub>2,685.0</sub>	155.6	86.2	62.8	6.7	301.1	118.1	119.2	63.5	-14	18	1	1
	1976..	82,351.3	2,335.2	180.3	128.2	49.9	6.1	255.9	100.7	102.5	52.7	24	22	2	2
	1975..	75,011.1	2,228.5	145.6	92.0	50.5	3.1	209.6	78.1	84.4	47.1	18	14	3	2
	1974..	74,702.9	2,154.5	123.2	72.5	45.5	5.2	184.4	62.6	74.9	46.9	9	22	3	2
	1973..	62,581.6	1,698.8	113.2	59.0	47.1	7.1	151.4	52.8	62.7	35.8	(X)	(X)	3	3
Michigan.....															
	1978..	(NA)	(NA)	172.7	88.7	74.2	9.8	330.8	109.8	135.1	86.0	15	14	3	3
	1978..	(NA)	(NA)	170.8	87.9	73.2	9.7	328.1	108.9	134.0	85.3	15	14	3	3
	1977..	P <sub>93,679.5</sub>	P <sub>3,698.7</sub>	150.2	61.5	82.6	6.2	290.1	95.4	121.2	73.4	41	22	3	2
	1977..	P <sub>93,679.5</sub>	P <sub>3,698.7</sub>	148.5	60.9	81.6	6.1	287.7	94.6	120.2	72.8	39	21	3	2
	1976..	80,326.7	2,636.1	106.7	45.7	57.2	3.8	236.9	91.7	93.1	52.0	-4	19	2	2
	1975..	64,535.1	2,263.3	110.7	49.9	52.5	8.4	199.8	83.0	75.5	41.3	5	11	3	2
	1974..	63,560.5	2,850.7	105.9	52.8	42.9	10.1	179.9	65.1	78.4	36.4	-2	11	4	2
	1973..	63,410.9	1,997.9	108.6	62.7	41.9	4.0	162.8	62.3	64.0	36.6	(X)	(X)	5	2
Wisconsin.....															
	1978..	(NA)	(NA)	85.2	50.6	25.0	9.7	125.5	23.4	70.3	31.8	5	16	6	4
	1978..	(NA)	(NA)	84.3	50.1	24.7	9.6	124.6	23.2	69.8	31.6	5	16	6	4
	1977..	P <sub>39,060.0</sub>	P <sub>1,189.2</sub>	81.0	19.6	58.5	2.9	108.5	20.6	62.1	25.8	19	10	6	5
	1977..	P <sub>39,060.0</sub>	P <sub>1,189.2</sub>	80.1	19.4	57.8	2.9	107.6	20.4	61.6	25.6	17	10	6	5
	1976..	35,427.3	913.1	68.3	20.1	47.0	1.2	98.2	19.3	56.8	22.0	-13	24	9	8
	1975..	31,045.7	880.4	78.4	41.4	34.5	2.5	79.0	20.3	36.8	21.9	30	26	17	10
	1974..	29,599.3	892.9	60.5	30.5	26.4	3.6	62.6	16.7	30.0	15.8	23	30	11	9
	1973..	25,161.6	706.4	49.0	19.3	27.1	2.6	48.0	14.2	22.6	11.2	(X)	(X)	5	6
West North Central Division.....															
	1978..	(NA)	(NA)	155.0	71.0	75.9	8.3	280.9	99.8	115.3	65.9	7	24	(NA)	(NA)
	1978..	(NA)	(NA)	153.3	70.3	74.9	8.2	278.6	99.0	114.4	65.4	7	24	(NA)	(NA)
	1977..	P <sub>106,572.6</sub>	P <sub>2,768.8</sub>	145.2	64.2	75.5	5.4	226.5	79.4	94.8	52.5	-24	11	(NA)	(NA)
	1977..	P <sub>106,572.6</sub>	P <sub>2,768.8</sub>	143.6	63.6	74.6	5.3	224.6	78.7	94.0	52.1	-25	10	(NA)	(NA)
	1976..	94,956.1	2,401.4	191.8	97.9	86.6	7.2	203.9	72.8	76.1	54.6	12	25	(NA)	(NA)
	1975..	85,135.6	2,327.5	171.3	95.7	65.2	10.7	162.8	61.4	62.7	38.5	-3	10	5	(NA)
	1974..	81,653.1	2,055.8	177.1	120.5	48.0	8.7	148.2	56.7	55.4	36.4	58	40	(NA)	(NA)
	1973..	71,529.7	1,524.6	112.4	74.2	34.5	3.6	106.1	41.5	37.3	27.4	(X)	(X)	(NA)	(NA)
Minnesota.....															
	1978..	(NA)	(NA)	43.5	13.0	30.1	0.4	61.7	20.8	25.6	15.4	67	21	9	9
	1978..	(NA)	(NA)	43.0	12.9	29.7	0.4	61.2	20.6	25.4	15.3	67	21	9	9
	1977..	P <sub>22,182.3</sub>	P <sub>578.9</sub>	26.1	10.3	14.4	1.4	51.1	12.3	23.1	15.8	-20	28	11	9
	1977..	P <sub>22,182.3</sub>	P <sub>578.9</sub>	25.8	10.2	14.2	1.4	50.7	12.2	22.9	15.7	-21	27	11	9
	1976..	20,439.5	494.9	32.5	20.7	11.3	0.5	39.8	9.2	18.3	11.9	-34	20	10	4
	1975..	18,646.4	487.6	49.0	34.3	14.5	0.3	33.2	8.7	17.1	7.5	-12	9	5	6
	1974..	18,221.7	488.7	55.6	37.9	15.4	2.3	30.5	7.9	14.6	8.0	146	37	5	3
	1973..	15,279.0	330.5	22.6	12.8	8.7	1.1	22.2	6.0	9.8	6.4	(X)	(X)	6	4
Iowa.....															
	1978..	(NA)	(NA)	43.0	17.2	23.9	1.9	68.1	20.3	34.6	13.5	-2	23	8	2
	1978..	(NA)	(NA)	42.5	17										

Table 1B. Pollution Abatement Capital Expenditures and Operating Costs, by Form of Abatement and State: 1973 to 1978—Continued

(In millions of dollars, except percents)

Division and State	Selected data from the Annual Survey of Manufactures (ASM)		Pollution abatement capital expenditures (PACE)				Pollution abatement gross annual costs (GAC), including payments to Government units				Percent change <sup>1</sup>		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
West North Central Division—Continued														
North Dakota.....	<sup>3</sup> 1978.. (NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)
	<sup>3</sup> 1978.. (NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)
	<sup>3</sup> 1977.. P <sub>1,314.0</sub>	P <sub>52.9</sub>	10.0	(D)	(D)	(Z)	2.6	0.4	1.5	0.7	270	-32	45	29
	<sup>3</sup> 1977.. P <sub>1,314.0</sub>	P <sub>52.9</sub>	9.9	(D)	(D)	(Z)	2.6	0.4	1.5	0.7	266	-32	45	29
	1976.. 1,236.2	54.9	2.7	2.0	0.6	(Z)	3.8	1.7	1.1	1.0	(X)	46	42	34
	1975.. 1,128.3	23.2	(D)	2.8	(D)	(D)	2.6	1.4	0.6	0.5	-27	-30	(X)	37
	1974.. 982.1	27.8	4.1	(D)	(D)	0.2	3.7	2.3	1.0	0.4	356	95	58	26
	1973.. 773.2	23.8	0.9	(D)	(D)	(D)	1.9	0.7	1.0	0.3	(X)	(X)	36	33
South Dakota.....	<sup>3</sup> 1978.. (NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)
	<sup>3</sup> 1978.. (NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)
	<sup>3</sup> 1977.. P <sub>1,783.5</sub>	P <sub>36.0</sub>	0.1	(Z)	(D)	(D)	1.2	0.1	0.7	0.4	-50	33	32	8
	<sup>3</sup> 1977.. P <sub>1,783.5</sub>	P <sub>36.0</sub>	0.1	(Z)	(D)	(D)	1.2	0.1	0.7	0.4	-50	33	32	8
	1976.. 1,608.5	48.8	0.2	(Z)	0.2	-	0.9	0.1	0.5	0.3	(X)	29	19	16
	1975.. 1,494.4	36.5	(D)	-	(D)	(D)	0.7	(Z)	0.3	0.3	-82	-	(X)	16
	1974.. 1,389.0	30.7	1.1	(D)	(D)	(Z)	0.7	0.1	0.4	0.3	-63	40	21	20
	1973.. 1,274.9	32.3	3.0	(D)	(D)	(D)	0.5	0.1	0.3	0.1	(X)	(X)	1	19
Nebraska.....	<sup>3</sup> 1978.. (NA)	(NA)	7.2	5.5	1.6	0.1	14.4	3.4	6.1	4.7	22	26	19	6
	<sup>3</sup> 1978.. (NA)	(NA)	7.1	5.4	1.6	0.1	14.3	3.4	6.1	4.7	22	27	19	6
	<sup>3</sup> 1977.. P <sub>8,653.2</sub>	P <sub>176.5</sub>	5.9	3.7	1.8	0.2	11.4	2.5	5.3	3.6	-52	-6	15	6
	<sup>3</sup> 1977.. P <sub>8,653.2</sub>	P <sub>176.5</sub>	5.8	3.7	1.8	0.2	11.3	2.5	5.2	3.6	-53	-7	15	6
	1976.. 8,773.3	167.5	12.3	8.7	3.3	0.4	12.1	4.1	5.2	2.8	-12	23	49	13
	1975.. 8,393.4	160.8	14.0	10.6	2.1	1.3	9.8	3.3	4.0	2.5	30	-6	28	11
	1974.. 7,949.3	143.3	10.8	7.8	2.7	0.2	10.4	2.4	5.8	2.2	21	37	23	14
	1973.. 6,954.9	108.5	8.9	4.2	4.7	0.1	7.6	1.8	3.8	1.9	(X)	(X)	16	8
Kansas.....	<sup>3</sup> 1978.. (NA)	(NA)	24.0	14.2	8.5	1.2	38.3	14.1	14.8	9.4	3	14	6	7
	<sup>3</sup> 1978.. (NA)	(NA)	23.7	14.1	8.4	1.2	38.0	14.0	14.7	9.3	3	14	6	7
	<sup>3</sup> 1977.. P <sub>16,047.3</sub>	P <sub>349.3</sub>	23.4	7.3	15.1	0.9	33.7	14.5	12.2	6.8	-29	-14	7	5
	<sup>3</sup> 1977.. P <sub>16,047.3</sub>	P <sub>349.3</sub>	23.1	7.2	14.9	0.9	33.4	14.4	12.2	6.8	-30	-14	7	5
	1976.. 14,657.5	328.3	23.1	19.9	11.5	1.6	39.0	12.1	12.1	14.8	49	27	14	14
	1975.. 13,006.6	321.3	22.1	12.2	9.5	0.4	26.5	10.0	9.3	7.3	-35	5	7	10
	1974.. 11,460.4	305.4	34.0	26.8	6.9	2.4	25.3	9.1	10.0	6.2	139	71	45	10
	1973.. 9,609.7	267.2	14.2	10.0	3.6	0.5	14.8	5.2	4.8	4.8	(X)	(X)	8	9
South Atlantic Division.....														
	<sup>3</sup> 1978.. (NA)	(NA)	434.6	227.1	189.9	17.7	851.7	276.5	398.0	176.7	-1	20	(NA)	(NA)
	<sup>3</sup> 1978.. (NA)	(NA)	429.8	224.9	187.4	17.5	844.4	274.1	394.5	175.1	-1	20	(NA)	(NA)
	<sup>3</sup> 1977.. P <sub>169,213.8</sub>	P <sub>6,068.9</sub>	441.0	(D)	239.9	(D)	707.8	238.2	338.3	131.4	-3	18	(NA)	(NA)
	<sup>3</sup> 1977.. P <sub>169,213.8</sub>	P <sub>6,068.9</sub>	436.1	(D)	236.9	(D)	701.9	236.2	335.5	130.3	-5	16	(NA)	(NA)
	1976.. 148,056.7	5,679.4	456.9	201.6	(D)	(D)	601.0	218.9	(D)	(D)	-19	26	(NA)	(NA)
	1975.. 127,223.8	5,230.9	565.1	350.7	197.2	17.5	476.8	216.4	168.3	94.0	22	17	5	(NA)
	1974.. 126,628.8	5,383.6	463.2	292.5	152.9	17.5	408.7	139.7	180.1	89.2	33	38	(NA)	(NA)
	1973.. 111,002.0	4,139.0	349.5	194.4	142.3	12.9	295.3	100.5	134.3	60.6	(X)	(X)	(NA)	(NA)
Delaware.....	<sup>3</sup> 1978.. (NA)	(NA)	51.0	40.1	10.2	0.6	73.3	35.1	23.3	14.9	167	49	1	3
	<sup>3</sup> 1978.. (NA)	(NA)	50.4	39.7	10.1	0.6	72.6	34.8	23.1	14.8	167	49	1	3
	<sup>3</sup> 1977.. P <sub>5,298.7</sub>	P <sub>154.0</sub>	19.1	(D)	10.5	(D)	49.1	21.6	21.7	5.9	25	15	11	3
	<sup>3</sup> 1977.. P <sub>5,298.7</sub>	P <sub>154.0</sub>	18.9	(D)	10.4	(D)	48.7	21.4	21.5	5.9	24	14	11	3
	1976.. 5,042.7	159.7	15.3	6.7	(D)	(D)	42.7	17.9	18.3	6.5	61	14	12	4
	1975.. 3,967.3	169.7	9.5	2.8	6.7	0.1	37.5	15.4	18.1	3.9	-22	20	14	4
	1974.. 4,128.9	146.9	12.2	2.4	(D)	(D)	31.2	15.0	11.0	5.3	-47	62	9	4
	1973.. 3,766.7	114.1	23.2	11.0	11.3	0.9	19.3	10.3	6.8	2.2	(X)	(X)	18	4
Maryland.....	<sup>3</sup> 1978.. (NA)	(NA)	35.2	17.9	15.2	2.1	100.9	25.2	37.8	37.9	-22	33	3	3
	<sup>3</sup> 1978.. (NA)	(NA)	34.8	17.7	15.0	2.1	100.0	25.0	37.5	37.6	-22	33	3	3
	<sup>3</sup> 1977.. P <sub>15,950.1</sub>	P <sub>517.4</sub>	44.9	14.6	29.8	0.6	76.0	39.0	25.0	12.0	31	16	1	3
	<sup>3</sup> 1977.. P <sub>15,950.1</sub>	P <sub>517.4</sub>	44.4	14.5	29.4	0.6	75.4	38.6	24.8	11.9	30	15	1	3
	1976.. 14,762.2	421.0	34.2	13.4	19.4	1.4	65.5	35.5	20.1	9.9	-3	30	7	4
	1975.. 13,189.6	460.5	35.1	16.8	18.0	0.3	50.5	25.5	18.2	6.8	-23	14	6	5
	1974.. 13,446.1	438.6	45.7	23.3	22.0	0.3	44.3	22.0	16.4	6.0	76	28	3	4
	1973.. 11,498.8	317.1	26.0	15.3	10.3	0.3	34.5	17.2	12.3	5.1	(X)	(X)	4	4
District of Columbia.....	<sup>3</sup> 1978.. (NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)
	<sup>3</sup> 1978.. (NA)	(NA)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)	(X)	(X)	(X)
	<sup>3</sup> 1977.. P <sub>990.6</sub>	P <sub>31.1</sub>	0.2	0.1	(Z)	-	0.4	(Z)	0.1	0.3	-50	-50	32	27
	<sup>3</sup> 1977.. P <sub>990.6</sub>	P <sub>31.1</sub>	0.2	0.1	(Z)	-	0.4	(Z)	0.1	0.3	-50	-50	32	27
	1976.. 932.0	20.0	0.4	0.3	(Z)	0.1	0.8	0.1	(D)	(D)	300	14	57	33
	1975.. 888.3	14.9	0.1	0.1	0.1	-	0.7	0.1	0.3	0.3	-	-	37	35
	1974.. 870.2	18.1	0.1	0.1	(D)	(D)	0.7	0.1	0.2	0.3	100	133	76	32
	1973.. 697.0	23.0	(Z)	(D)	(D)	(D)	0.3	(Z)	0.2	0.1	(X)	(X)	11	30
Virginia.....	<sup>3</sup> 1978.. (NA)	(NA)	76.3	29.2	43.4	3.8	98.9	26.8	51.6	20.4	1	19	2	7
	<sup>3</sup> 1978.. (NA)	(NA)	75.5	28.9	42.8	3.8	98.0	26.6	51.1	20.2	1	19	2	7
	<sup>3</sup> 1977.. P <sub>23,938.4</sub>	P <sub>955.9</sub>	75.5	39.2	32.8	3.5	83.1	23.6	41.8	17.7	-12	6	3	3
	<sup>3</sup> 1977.. P <sub>23,938.4</sub>	P <sub>955.9</sub>	74.7	38.8	32.4	3.5	82.4	23.4	41.5	17.5	-13	5	3	3
	1976.. 20,470.5	907.4	86.1	30.7	51.7	3.8	78.4	26.9	36.8	14.6	-8	23	7	5
	1975.. 17,700.5	672.0	93.4	70.2	17.4	5.8	63.7	20.0	29.1	14.6	78	19	15	5
	1974.. 16,719.3	784.5	52.5	31.1	17.4	4.0	53.4	16.5	24.6	12.5	13	36	8	6
	1973.. 14,699.7	615.1	46.3	23.1	21.4	1.8	39.4	13.1	17.6	8.7	(X)	(X)	11	7
West Virginia.....	<sup>3</sup> 1978.. (NA)	(NA)	47.7	26.1	20.8	0.9	154.4	53.8	75.7	24.9	-61	35	5	1
	<sup>3</sup> 1978.. (NA)	(NA)	47.2	25.8	20.5	0.9	153.2	53.4	75.1	24.7	-61	35	5	1
	<sup>3</sup> 1977.. P <sub>8,751.0</sub>	P <sub>370.1</sub>	122.6	32.2	88.5	1.9	114.4	37.0	55.5	21.9	56	9	1	2
	<sup>3</sup> 1977.. P <sub>8,751.0</sub>	P <sub>370.1</sub>	121.2	31.9	87.4	1.9	113.4	36.7	55.0	21.7	54	8	1	2
	1976.. 7,937.6	288.8	78.6	41.4	36.2	1.0	104.7	33.1	49.2	22.4	21	39	11	2
	1975.. 6,743.7	363.9	65.1	48.6	15.5	1.1	75.6	22.8	37.9	15.0	-9	18	4	2
	1974.. 6,893.4	299.6	71.4	51.5	18.1	1.8	64.2	21.1	29.3	13.8	50	39	12	3
	1973.. 5,609.1	230.7	47.5	22.9	23.9	0.7	46.3	13.8	21.8	10.7	(X)	(X)	4	4

Table 1B. Pollution Abatement Capital Expenditures and Operating Costs, by Form of Abatement and State: 1973 to 1978—Continued

(In millions of dollars, except percents)

Division and State	Selected data from the Annual Survey of Manufacturers (ASM)		Pollution abatement capital expenditures (PACE)				Pollution abatement gross annual costs (GAC), including payments to Government units				Percent change <sup>1</sup>		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
South Atlantic Division—Continued														
South Carolina.....	1978.. (NA)	(NA)	54.0	24.5	27.3	2.3	88.0	24.4	48.1	15.4	58	15	4	10
	1978.. (NA)	(NA)	53.4	24.3	26.9	2.3	87.2	24.2	47.7	15.3	58	15	4	10
	1977.. P18,781.2	P792.7	34.2	15.0	16.7	2.4	76.2	22.2	40.3	13.8	16	64	6	10
	1977.. P18,781.2	P792.7	33.8	14.9	16.5	2.4	75.6	22.0	40.0	13.7	14	63	6	10
	1976.. 16,610.1	868.0	29.6	8.0	18.9	2.6	46.4	12.1	27.0	7.4	-34	26	15	7
	1975.. 13,715.0	807.0	45.0	12.6	29.3	3.1	36.8	11.5	18.7	6.7	44	32	10	6
	1974.. 14,037.1	848.6	31.3	16.9	11.2	3.2	27.8	6.7	14.5	6.6	73	34	7	5
	1973.. 12,472.1	595.9	18.1	(D)	(D)	(D)	20.7	4.6	10.9	5.2	(X)	(X)	9	4
Georgia.....	1978.. (NA)	(NA)	74.2	35.8	37.5	0.9	99.3	29.5	52.8	16.7	26	10	4	3
	1978.. (NA)	(NA)	73.4	35.5	37.0	0.9	98.6	29.3	52.4	16.6	26	11	4	3
	1977.. P32,812.2	P1,146.0	58.9	32.4	24.6	1.8	90.0	26.4	47.5	16.0	93	37	5	3
	1977.. P32,812.2	P1,146.0	58.2	32.1	24.3	1.8	89.2	26.2	47.1	15.9	91	36	5	3
	1976.. 28,391.4	852.9	30.5	16.8	13.0	0.6	65.6	22.5	30.1	12.9	-27	20	6	5
	1975.. 23,250.8	687.0	42.0	21.2	19.5	1.3	54.6	18.2	25.5	10.9	-26	17	5	4
	1974.. 23,584.3	912.2	36.5	35.8	19.0	1.6	46.6	11.5	24.5	10.6	-9	27	4	3
	1973.. 21,092.4	669.2	62.2	42.6	17.9	1.8	36.7	9.1	20.0	7.7	(X)	(X)	3	4
Florida.....	1978.. (NA)	(NA)	42.4	18.2	21.1	3.1	129.1	49.2	57.2	22.4	11	15	5	2
	1978.. (NA)	(NA)	41.9	18.0	20.8	3.1	127.8	48.7	56.6	22.2	11	15	5	2
	1977.. P21,928.3	P752.0	38.1	15.4	20.7	2.0	112.1	40.9	52.1	19.1	-67	-5	5	2
	1977.. P21,928.3	P752.0	37.7	15.3	20.4	2.0	111.2	40.6	51.7	18.9	-68	-5	5	2
	1976.. 18,091.3	867.0	117.1	47.7	66.6	2.8	117.6	46.9	49.0	21.4	-61	35	13	12
	1975.. 16,335.8	819.2	194.7	122.9	67.4	4.4	87.3	32.9	33.1	12.7	61	17	12	5
	1974.. 15,758.4	736.0	120.9	81.4	36.1	3.4	74.5	26.5	29.2	18.8	97	68	2	4
	1973.. 13,725.6	519.9	61.3	31.7	26.8	2.9	44.3	16.4	18.1	9.8	(X)	(X)	5	5
East South Central Division.....	1978.. (NA)	(NA)	269.9	143.9	96.4	29.4	471.4	188.7	202.8	79.8	-7	16	(NA)	(NA)
	1978.. (NA)	(NA)	266.9	142.5	95.1	29.0	467.6	187.2	201.2	79.1	-7	16	(NA)	(NA)
	1977.. P85,191.6	P3,483.2	291.2	150.4	127.5	13.4	405.8	156.2	185.7	64.0	-10	27	(NA)	(NA)
	1977.. P85,191.6	P3,483.2	288.0	149.0	125.9	13.2	402.6	155.0	184.2	63.5	-11	26	(NA)	(NA)
	1976.. 73,879.7	2,791.7	325.0	184.2	131.6	9.4	320.6	134.4	137.8	48.5	-20	19	(NA)	(NA)
	1975.. 64,774.1	2,624.3	407.5	262.9	137.1	7.6	270.5	110.8	119.4	40.2	32	26	7	(NA)
	1974.. 63,550.9	2,715.7	308.3	198.4	94.1	15.9	213.9	85.7	88.7	39.4	49	34	(NA)	(NA)
	1973.. 54,116.9	1,897.7	207.2	125.3	72.7	9.1	160.1	64.2	68.8	27.0	(X)	(X)	(NA)	(NA)
Kentucky.....	1978.. (NA)	(NA)	51.1	35.7	14.4	0.9	100.7	42.6	37.3	20.8	40	31	12	2
	1978.. (NA)	(NA)	50.5	35.4	14.2	0.9	99.9	42.3	37.0	20.6	40	31	12	2
	1977.. P22,739.2	P713.7	36.5	21.0	13.6	1.9	77.0	35.0	25.8	16.2	-22	11	2	2
	1977.. P22,739.2	P713.7	36.1	20.8	13.4	1.9	76.4	34.7	25.6	16.1	-23	10	2	2
	1976.. 20,268.5	521.6	47.0	24.7	19.8	2.4	69.4	33.5	21.9	14.0	-25	15	7	7
	1975.. 17,647.4	484.5	62.7	43.2	17.4	2.1	60.1	26.6	23.6	10.0	-7	26	9	5
	1974.. 17,207.8	549.7	67.4	48.6	17.1	1.7	47.6	16.9	21.1	9.6	-4	18	13	6
	1973.. 14,332.1	504.4	70.1	48.6	20.6	1.0	40.4	14.2	19.2	7.0	(X)	(X)	34	4
Tennessee.....	1978.. (NA)	(NA)	80.0	42.0	30.2	7.7	140.4	41.9	74.2	24.2	-27	5	5	3
	1978.. (NA)	(NA)	79.1	41.6	29.8	7.6	139.3	41.6	73.6	24.0	-27	5	5	3
	1977.. P28,753.2	963.2	109.7	61.9	43.2	4.6	133.3	40.8	73.4	19.1	-12	21	8	3
	1977.. P28,753.2	963.2	108.5	61.3	42.7	4.5	132.2	40.5	72.8	18.9	-13	20	8	3
	1976.. 24,755.5	781.3	124.1	75.5	45.5	3.2	109.9	34.1	60.1	15.8	-5	14	21	5
	1975.. 21,768.2	826.1	130.3	61.8	65.2	3.3	96.2	30.1	53.0	13.1	82	22	18	6
	1974.. 21,608.1	935.4	71.5	34.7	32.0	4.8	78.7	28.1	37.9	12.8	83	31	9	5
	1973.. 18,913.7	673.5	39.0	22.7	13.6	2.6	60.2	24.4	25.4	10.4	(X)	(X)	10	5
Alabama.....	1978.. (NA)	(NA)	112.8	53.2	39.5	20.0	150.9	67.6	58.6	24.7	8	14	3	3
	1978.. (NA)	(NA)	111.5	52.7	39.0	19.7	149.7	67.1	58.1	24.5	8	14	3	3
	1977.. P20,949.5	P1,338.7	104.1	50.7	47.7	5.8	132.1	60.9	51.6	19.8	-1	41	2	3
	1977.. P20,949.5	P1,338.7	103.0	50.2	47.1	5.7	131.1	60.4	51.2	19.6	-2	40	2	3
	1976.. 17,988.1	1,151.9	105.5	67.1	35.4	3.1	93.4	44.6	35.2	13.7	-27	27	4	2
	1975.. 15,886.7	1,054.4	144.5	105.0	37.6	1.9	73.7	34.7	27.4	11.6	25	33	8	3
	1974.. 15,698.2	910.9	115.2	73.8	32.8	8.6	55.6	24.3	19.7	11.6	61	45	7	3
	1973.. 13,020.4	480.8	71.4	39.0	28.1	4.2	38.3	17.0	16.3	5.0	(X)	(X)	5	3
Mississippi.....	1978.. (NA)	(NA)	26.1	12.9	12.3	0.8	79.3	36.5	32.8	10.1	-36	25	16	6
	1978.. (NA)	(NA)	25.8	12.8	12.1	0.8	78.7	36.2	32.5	10.0	-36	25	16	6
	1977.. P12,749.7	P467.6	40.8	16.9	23.0	1.1	63.4	19.6	34.9	9.0	-16	32	4	7
	1977.. P12,749.7	P467.6	40.4	16.7	22.7	1.1	62.9	19.4	34.6	8.9	-17	31	4	7
	1976.. 10,867.6	336.9	48.4	16.9	30.9	0.7	47.9	22.2	20.6	5.0	-31	18	4	8
	1975.. 9,471.8	259.3	70.0	52.9	16.9	0.3	40.5	19.4	15.6	5.5	29	11	14	14
	1974.. 9,036.8	319.7	54.2	41.3	12.2	0.8	32.0	16.4	10.0	5.4	103	51	13	17
	1973.. 7,845.7	239.0	26.7	15.0	10.4	1.3	21.2	8.6	7.9	4.7	(X)	(X)	7	5
West South Central Division.....	1978.. (NA)	(NA)	764.2	465.2	250.7	48.3	1,140.8	479.1	477.1	184.8	13	13	(NA)	(NA)
	1978.. (NA)	(NA)	755.8	460.8	247.4	47.7	1,131.3	475.1	473.1	183.3	13	13	(NA)	(NA)
	1977.. P146,841.9	P8,336.4	673.5	253.9	369.1	50.8	1,012.5	437.9	421.5	152.9	-9	42	(NA)	(NA)
	1977.. P146,841.9	P8,336.4	666.0	251.5	364.5	50.1	1,004.0	434.2	418.0	151.6	-10	41	(NA)	(NA)
	1976.. 123,076.1	7,212.2	743.9	342.6	374.1	27.3	713.8	306.0	302.0	106.0	20	35	(NA)	(NA)
	1975.. 105,924.8	5,669.7	619.6	379.4	219.5	20.8	528.4	214.0	236.2	78.0	25	25	1	(NA)
	1974.. 95,541.1	4,676.9	496.2	292.6	183.0	20.6	422.5	165.8	191.1	65.4	60	28	(NA)	(NA)
	1973.. 70,122.3	2,723.3	310.9	178.7	122.4	9.7	331.0	131.3	146.0	53.2	(X)	(X)	(NA)	(NA)
Arkansas.....	1978.. (NA)	(NA)	49.8	21.7	27.0	1.2	56.9	17.8	27.9	11.3	48	22	15	10
	1978.. (NA)	(NA)	49.3	21.5	26.6	1.2	56.5	17.7	27.7	11.2	48	22	15	10
	1977.. P12,253.6	P467.2	33.6	19.9	12.6	1.1	46.7	15.5	22.0	9.2	117	35	6	9
	1977.. P12,253.6	P467.2	33.2	19.7	12.4	1.1	46.3	15.4	21.8	9.1	114	33	6	9
	1976.. 10,604.8	472.7	15.5	6.8	8.2	0.5	34.7	11.8	14.3	8.6	-47	26	13	14
	1975.. 9,416.9	342.7	29.4	17.4	10.7	1.4	27.6	9.3	13.7	4.6	38	28	15	10
	1974.. 9,071.3	353.6	21.3	11.5	8.8	1.0	21.5	7.8	9.7	4.0	-8	-23	14	5





Table 1B. Pollution Abatement Capital Expenditures and Operating Costs, by Form of Abatement and State: 1973 to 1978—Continued

(In millions of dollars, except percents)

Division and State	Selected data from the Annual Survey of Manufactures (ASM)		Pollution abatement capital expenditures (PACE)				Pollution abatement gross annual costs (GAC), including payments to Government units				Percent change <sup>1</sup>		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
Pacific Division.....	<sup>3</sup> 1978..	(NA)	314.4	192.5	111.1	10.5	706.9	336.0	231.8	139.4	-8	15	(NA)	(NA)
	<sup>3</sup> 1978..	(NA)	310.9	190.7	109.7	10.4	700.8	333.1	229.8	138.2	-8	15	(NA)	(NA)
	<sup>3</sup> 1977..	<sup>P</sup> 160,673.1	<sup>P</sup> 5,267.4	343.1	(D)	158.7	(D)	616.5	303.6	201.0	112.1	(X)	13	(NA)
	<sup>3</sup> 1977..	<sup>P</sup> 160,673.1	<sup>P</sup> 5,267.4	339.3	(D)	156.7	(D)	611.4	301.1	199.3	111.2	(X)	10	(NA)
	1976..	135,959.6	4,133.7	(D)	(D)	140.2	15.1	<sup>R</sup> 546.9	246.7	202.1	<sup>R</sup> 98.0	(X)	20	(NA)
	1975..	119,286.4	3,993.2	365.7	228.6	115.4	21.8	<sup>R</sup> 455.4	207.4	164.9	<sup>R</sup> 83.2	-7	18	4
	1974..	114,938.7	3,656.3	394.7	275.9	97.9	21.0	385.8	164.4	147.0	74.4	20	17	(NA)
1973..	98,045.4	2,775.4	330.2	217.7	94.4	13.0	329.6	151.5	117.1	61.0	(X)	(X)	(NA)	
Washington.....	<sup>3</sup> 1978..	(NA)	101.3	43.4	54.4	3.4	131.4	62.0	48.8	20.5	-11	7	4	2
	<sup>3</sup> 1978..	(NA)	100.2	43.0	53.7	3.4	130.3	61.5	48.4	20.3	-11	7	4	2
	<sup>3</sup> 1977..	<sup>P</sup> 21,607.9	<sup>P</sup> 980.5	114.4	47.1	65.4	1.9	122.4	54.7	49.6	18.2	30	14	5
	<sup>3</sup> 1977..	<sup>P</sup> 21,607.9	<sup>P</sup> 980.5	113.1	46.7	64.6	1.9	121.4	54.2	49.2	18.0	28	14	5
	1976..	18,842.8	662.2	88.3	31.1	56.4	0.9	106.9	46.1	40.2	20.6	-22	10	6
	1975..	16,932.5	808.0	113.9	66.2	44.6	3.1	97.6	38.0	35.8	23.8	-9	27	7
	1974..	16,068.2	560.0	125.3	91.6	25.8	8.1	77.0	29.1	27.5	20.5	5	25	5
1973..	13,524.2	446.3	119.2	78.5	38.6	2.1	61.7	21.7	25.6	14.5	(X)	(X)	4	
Oregon.....	<sup>3</sup> 1978..	(NA)	39.0	25.5	11.5	1.9	75.4	25.0	29.6	20.9	-23	15	10	4
	<sup>3</sup> 1978..	(NA)	38.6	25.3	11.4	1.9	74.7	24.8	29.3	20.7	-23	15	10	4
	<sup>3</sup> 1977..	<sup>P</sup> 14,471.8	<sup>P</sup> 584.9	50.7	30.1	18.8	1.7	65.7	24.2	27.6	14.0	74	16	6
	<sup>3</sup> 1977..	<sup>P</sup> 14,471.8	<sup>P</sup> 584.9	50.1	29.8	18.6	1.7	65.1	24.0	27.3	13.9	71	15	6
	1976..	12,229.2	378.2	29.2	9.0	(D)	(D)	56.7	20.8	25.5	10.4	-51	41	8
	1975..	10,310.8	439.3	59.5	29.7	21.3	8.5	40.1	15.4	17.7	7.0	62	17	4
	1974..	9,899.7	412.7	36.8	26.6	7.8	0.5	34.2	13.7	13.0	7.5	12	-3	6
1973..	9,067.0	332.6	32.8	20.1	9.2	3.5	35.2	15.8	14.0	5.4	(X)	(X)	9	
California.....	<sup>3</sup> 1978..	(NA)	167.6	120.1	42.4	5.0	483.4	247.5	142.7	93.4	5	15	7	1
	<sup>3</sup> 1978..	(NA)	165.7	119.0	41.9	4.9	479.6	245.5	141.6	92.7	5	15	7	1
	<sup>3</sup> 1977..	<sup>P</sup> 121,384.5	<sup>P</sup> 3,470.0	159.3	90.5	59.8	8.9	420.8	223.6	121.0	76.3	-6	15	4
	<sup>3</sup> 1977..	<sup>P</sup> 121,384.5	<sup>P</sup> 3,470.0	157.5	89.7	59.0	8.8	417.3	221.7	120.0	75.7	-7	14	4
	1976..	102,041.0	2,867.1	169.2	106.8	55.5	7.0	366.7	175.3	128.9	62.5	-10	21	16
	1975..	89,415.1	2,572.8	188.1	130.9	47.5	9.8	<sup>R</sup> 302.6	149.4	105.4	<sup>R</sup> 47.9	-7	16	6
	1974..	86,449.7	2,583.6	202.2	153.6	41.1	7.5	261.2	117.4	100.1	43.1	28	17	6
1973..	73,880.5	1,917.2	157.6	112.8	38.0	6.7	223.4	110.3	76.1	39.2	(X)	(X)	6	
Alaska.....	<sup>3</sup> 1978..	(NA)	(S)	(S)	(S)	(S)	8.7	0.3	7.4	1.0	(X)	867	(X)	3
	<sup>3</sup> 1978..	(NA)	(S)	(S)	(S)	(S)	8.6	0.3	7.4	1.0	(X)	856	(X)	3
	<sup>3</sup> 1977..	<sup>P</sup> 1,232.1	<sup>P</sup> 179.0	15.0	(D)	13.9	(D)	0.9	(2)	0.3	0.6	(X)	-78	8
	<sup>3</sup> 1977..	<sup>P</sup> 1,232.1	<sup>P</sup> 179.0	14.8	(D)	13.7	(D)	0.9	(2)	0.3	0.6	(X)	-78	8
	1976..	991.8	170.6	(D)	(D)	10.8	(D)	4.1	0.6	2.6	0.8	(X)	52	26
	1975..	827.7	121.6	2.0	1.1	(D)	(D)	2.7	0.7	1.6	0.4	(X)	-7	8
	1974..	672.9	49.8	(D)	(D)	(D)	(D)	2.9	0.9	1.4	0.5	(X)	107	(X)
1973..	487.3	42.7	(D)	(D)	(D)	(D)	1.4	0.5	0.7	0.2	(X)	(X)	6	
Hawaii.....	<sup>3</sup> 1978..	(NA)	(S)	(S)	(S)	(S)	7.6	1.0	3.1	3.5	(X)	13	(X)	16
	<sup>3</sup> 1978..	(NA)	(S)	(S)	(S)	(S)	7.6	1.0	3.1	3.5	(X)	13	(X)	16
	<sup>3</sup> 1977..	<sup>P</sup> 1,976.8	<sup>P</sup> 53.0	3.8	2.8	0.8	0.2	6.7	1.2	2.5	3.0	-27	-46	
	<sup>3</sup> 1977..	<sup>P</sup> 1,976.8	<sup>P</sup> 53.0	3.8	2.8	0.8	0.2	6.7	1.2	2.5	3.0	-27	-46	
	1976..	1,854.8	55.6	5.2	0.9	(D)	(D)	12.5	3.9	4.9	3.7	136	1	
	1975..	1,800.3	51.5	2.2	0.7	(D)	(D)	12.4	3.9	4.2	4.3	(X)	18	
	1974..	1,848.2	50.2	(D)	(D)	(D)	(D)	10.5	3.3	4.4	2.8	(X)	33	
1973..	1,086.4	36.6	(D)	(D)	(D)	(D)	7.9	3.2	2.8	2.0	(X)	(X)		

Note: Totals may not agree precisely with detail because of independent rounding.

- Represents zero. (D) Withheld to avoid disclosing operations of individual companies. (NA) Not available. <sup>P</sup>Preliminary. <sup>R</sup>Revised. (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.

<sup>1</sup>The calculation of the percent change is based upon the change from the previous year to the subsequent year (e.g. 1973 to 1974). For 1977 and 1978, the comparison is done separately for all establishment totals and establishments with 20 or more employees.

<sup>2</sup>Major industry group 23, Apparel and Other Textile Products, is excluded from all but the U.S. totals of the first two columns.

<sup>3</sup>Two lines of data are presented for 1977 and 1978. The top line for each year represents the estimate for all establishments and is comparable to the estimates for 1973 to 1976. The bottom line is the estimate for establishments with 20 or more employees. See text.

Table 1C. Pollution Abatement Capital Expenditures and Operating Costs by Employment-Size Class of Establishment and Major Industry Group: 1978

(Millions of dollars)

SIC code	Industry	Pollution abatement capital expenditures (PACE)							Pollution abatement operating costs (GAC)						
		Total (PACE)	Employment-size class						Total (GAC)	Employment-size class					
			0 to 49 <sup>1</sup>	50 to 99	100 to 249	250 to 499	500 to 999	1,000 or more		0 to 49 <sup>1</sup>	50 to 99	100 to 249	250 to 499	500 to 999	1,000 or more
	All industries <sup>2</sup> .....	3,315.9	131.6	182.0	452.4	652.3	617.7	1,279.9	6,327.5	228.6	315.0	786.0	1,042.6	1,269.0	2,686.3
20	Food and kindred products.....	184.6	25.2	27.3	38.0	39.7	32.5	21.9	421.5	55.8	44.0	104.7	86.7	67.3	63.0
21	Tobacco products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	14.2	2.1			2.9	0.3	8.9
22	Textile mill products.....	59.7	0.2	0.8	5.5	9.7	30.6	12.9	93.2	4.4	5.7	19.5	19.9	24.4	19.3
24	Lumber and wood products.....	86.2	5.2	15.5	34.2	18.8	10.5	2.0	93.6	9.1	13.2	35.5	17.9	9.2	8.7
25	Furniture and fixtures.....	11.2	0.6	0.4	3.4	1.7	3.1	2.0	26.9	3.4	3.0	5.0	5.9	5.7	3.9
26	Paper and allied products.....	341.9	1.5	3.8	29.1	57.6	133.8	116.1	622.6	5.8	26.8	80.7	113.0	213.3	183.0
27	Printing and publishing.....	12.2	0.1	1.4	1.4	2.6	1.5	5.2	37.9	7.3	3.8	8.5	4.0	5.1	9.2
28	Chemical and allied products.....	842.4	54.2	63.6	144.8	207.0	134.9	237.9	1,483.3	49.2	102.5	199.4	306.9	326.5	498.8
29	Petroleum and coal products.....	420.1	12.2	16.7	44.1	179.5	79.2	88.4	1,010.4	23.6	14.8	47.9	194.2	301.0	428.9
30	Rubber, misc. plastics products.....	27.8	3.9	3.5	4.5	4.6	2.4	8.9	86.2	5.8	10.5	14.6	10.9	10.9	33.5
31	Leather and leather products.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	19.7	1.3	6.6	3.2	7.0	1.3	0.3
32	Stone, clay, glass products.....	127.0	10.3	19.2	38.1	25.2	17.5	16.7	255.6	16.6	28.8	96.0	52.5	33.8	27.9
33	Primary metal industries.....	793.4	5.8	8.5	71.0	61.5	131.0	515.6	1,321.8	12.7	23.9	85.2	132.1	165.7	902.2
34	Fabricated metal products.....	61.8	5.4	4.0	12.7	10.2	15.5	14.0	170.6	16.9	11.9	40.7	34.4	23.8	42.9
35	Machinery, except electrical.....	81.5	1.2	3.5	8.6	13.3	6.8	48.1	162.5	8.9	6.8	15.8	14.8	19.8	96.4
36	Electric, electronic equipment.....	75.2	4.0	3.6	9.2	10.1	10.8	37.5	148.7	2.2	5.9	13.3	20.1	30.2	77.0
37	Transportation equipment.....	139.5	.5	1.4	2.1	6.7	4.2	124.6	280.5	2.0	3.1	9.0	12.1	16.5	237.8
38	Instruments, related products.....	17.7	0.9	0.2	0.8	0.7	0.9	14.2	56.2	1.7	1.9	2.2	3.0	6.1	41.3
39	Misc. manufacturing industries.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	22.1	0.8	1.8	3.8	4.3	8.1	3.3

Note: Totals may not agree precisely with detail because of independent rounding. Some employment-size classes were combined to avoid disclosing operations of individual companies.

(D) Withheld to avoid disclosing operations of individual companies.

(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.

<sup>1</sup>Establishments with less than 20 employees were not included in the panel but were estimated for this table. See text.

<sup>2</sup>Excludes Major Industry Group 23, Apparel and Other Textile Products.

Table 2A. Pollution Abatement Capital Expenditures, by Industry for Establishments With 20 or More Employees: 1978

(Millions of dollars)

SIC code	Industry	Total PACE	Air			Capital expenditures, by air pollutants abated					Water			Solid waste disposal	Standard error of estimates (percent) PACE
			Total	Abatement technique		Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, carbon monoxide	Heavy metals, radioactive and toxic substances, and other	Total	Abatement technique				
				End-of-line	Changes-in-production processes						End-of-line	Changes-in-production processes			
	All industries <sup>1</sup> .....	3,279.3	1,853.6	1,638.5	215.4	1,055.5	288.4	339.4	170.4	1,246.5	1,096.5	150.1	178.9	1	
20	Food and kindred products.....	175.0	67.7	58.5	9.2	60.0	1.5	3.3	2.7	94.4	72.8	21.6	12.9	5	
201	Meat products.....	20.0	4.2	3.3	0.8	2.9	0.3	0.2	0.8	14.9	13.1	1.8	0.9	5	
2011	Meatpacking plants.....	11.8	1.7	1.3	0.4	1.0	0.1	(2)	0.4	9.5	8.3	1.3	0.6	2	
2016	Poultry dressing plants.....	6.3	1.9	1.5	0.3	1.3	0.2	0.1	0.4	4.2	4.0	0.2	0.2	15	
202	Dairy products.....	7.8	1.1	0.9	0.1	0.9	-	(2)	0.1	6.4	5.5	0.9	0.4	16	
203	Preserved fruits and vegetables.....	20.2	1.7	1.4	0.4	1.2	0.1	0.3	0.2	16.7	14.0	2.8	1.8	12	
2033	Canned fruits and vegetables.....	8.6	0.3	0.3	(2)	0.3	(2)	(2)	(2)	7.6	6.9	0.7	0.8	17	
204	Grain mill products.....	38.9	19.5	16.7	2.9	18.4	0.1	(2)	1.0	(D)	9.3	(D)	(D)	5	
2046	Wet corn milling.....	21.3	(D)	4.2	(D)	4.7	(D)	-	(D)	9.3	6.0	3.3	(D)	1	
206	Sugar, confectionery products.....	13.2	5.5	5.0	0.5	5.4	-	0.1	(2)	7.3	6.3	0.9	0.5	16	
207	Fats and oils.....	25.9	18.9	18.5	0.4	16.4	0.8	1.4	0.2	6.7	6.3	0.4	0.4	15	
2075	Soybean oil mills.....	8.2	5.7	5.4	0.3	4.8	0.1	0.8	(D)	(D)	(D)	0.1	(D)	8	
2079	Shortening and cooking oils.....	5.2	(D)	(D)	-	(D)	(D)	0.2	(2)	3.3	3.1	0.2	(D)	3	
208	Beverages.....	38.7	10.2	6.2	4.0	8.7	0.2	1.2	0.1	26.8	15.8	11.0	1.7	9	
2082	Malt beverages.....	32.5	5.9	1.9	3.9	4.8	0.1	0.9	-	25.0	14.1	10.9	1.6	10	
209	Misc. foods, kindred products.....	7.8	4.7	4.7	(2)	4.2	0.1	0.2	0.4	2.7	2.5	0.3	0.3	10	
21	Tobacco products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	
2111	Cigarettes.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	
22	Textile mill products.....	59.7	42.7	27.9	14.8	36.7	0.2	3.4	2.2	15.4	14.9	0.5	1.6	10	
2211	Weaving mills, cotton.....	10.2	9.0	8.0	1.0	8.5	-	-	0.4	1.1	1.0	(2)	0.1	19	
2221	Weaving mills, manmade fiber, silk.....	10.5	8.5	4.9	3.6	7.6	0.1	0.3	0.5	1.7	1.6	0.1	0.3	12	
225	Knitting mills.....	8.3	2.4	2.3	0.1	1.7	(2)	0.6	(2)	5.4	5.1	0.3	0.5	16	
226	Textile finishing, except wool.....	10.4	4.7	4.5	0.2	4.1	-	0.6	(2)	5.4	5.4	(2)	0.3	17	
228	Yarn and thread mills.....	7.7	7.0	4.1	2.9	6.0	-	1.0	(2)	(D)	(D)	-	(D)	7	
2281	Yarn mills, except wool.....	5.9	5.7	3.1	2.7	5.7	-	-	-	0.2	0.2	-	(2)	19	
229	Miscellaneous textile goods.....	11.6	10.8	3.8	7.0	8.7	-	0.9	1.2	0.5	0.5	(2)	0.3	11	
24	Lumber and wood products.....	84.5	46.9	43.9	3.0	43.5	(2)	3.1	0.2	25.6	14.3	11.3	12.0	11	
242	Sawmills and planing mills.....	29.8	23.5	21.4	2.1	23.1	-	0.3	0.2	3.2	1.8	1.4	3.1	16	
2421	Sawmills, planing mills, general.....	26.9	20.8	18.7	2.1	20.4	-	0.3	0.1	3.0	1.7	1.4	3.1	16	
243	Millwork, plywood, structural members.....	23.1	12.5	12.2	0.2	9.6	(2)	2.8	(2)	5.5	3.4	2.1	5.1	14	
2436	Softwood veneer and plywood.....	18.8	8.9	8.8	0.1	6.2	(2)	2.7	-	5.0	3.0	2.1	4.8	16	
249	Miscellaneous wood products.....	27.5	10.4	9.9	0.5	10.4	-	-	-	13.6	6.7	7.0	3.5	19	
25	Furniture and fixtures.....	11.2	9.4	7.9	1.6	7.9	(2)	1.4	0.1	1.1	1.0	0.1	0.6	13	
251	Household furniture.....	7.0	6.5	6.0	0.5	6.4	-	0.1	0.1	0.1	0.1	(2)	0.3	16	
2511	Wood household furniture.....	6.3	6.0	5.6	0.4	5.9	-	(2)	(2)	0.1	0.1	(2)	0.2	17	
26	Paper and allied products.....	341.6	123.9	109.1	14.7	94.1	10.1	5.9	13.7	189.0	157.2	32.1	28.7	1	
2611	Pulpmills.....	48.7	9.4	9.0	0.5	8.4	0.1	(2)	1.0	34.9	30.5	4.4	4.4	2	
2621	Papermills, except building paper.....	161.6	52.9	51.6	1.3	36.5	7.1	0.4	8.9	88.2	82.2	6.2	20.5	1	
2631	Paperboard mills.....	104.7	47.2	39.7	7.5	41.3	2.9	0.3	2.7	54.9	34.7	20.2	2.6	3	
264	Misc. converted paper products.....	19.9	10.8	5.7	5.1	7.1	(2)	2.9	0.8	8.6	8.1	0.5	0.5	7	
2647	Sanitary paper products.....	9.2	(D)	(D)	4.0	(D)	-	-	(D)	4.1	4.1	-	(D)	8	
27	Printing and publishing.....	12.2	7.4	6.4	1.1	1.0	0.1	6.2	0.2	3.6	2.4	1.2	1.1	11	
275	Commercial printing.....	7.6	6.3	6.0	0.4	0.3	0.1	5.9	(2)	0.9	0.9	-	0.4	5	
2754	Commercial printing, gravure.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	
28	Chemicals and allied products.....	827.5	376.5	314.5	62.1	134.5	32.2	129.5	80.5	385.9	341.3	44.5	65.1	3	
281	Industrial inorganic chemicals.....	150.1	64.2	58.9	5.4	30.4	5.4	6.4	22.0	59.3	55.4	3.9	26.6	10	
2812	Alkalies and chlorine.....	34.3	15.4	14.5	0.9	1.8	1.9	1.3	10.4	16.1	15.4	0.7	2.9	5	
2813	Industrial gases.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	
2816	Inorganic pigments.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	
2819	Industrial inorganic chem., n.e.c.....	100.1	39.9	39.0	0.9	27.0	2.4	0.6	9.9	38.3	35.2	3.2	21.9	15	
282	Plastics materials, synthetics.....	149.0	96.8	83.4	13.4	26.0	2.7	42.8	25.3	43.9	39.8	4.2	8.3	3	
2821	Plastics materials and resins.....	110.2	78.3	65.4	12.9	10.5	2.7	40.5	24.7	30.6	27.4	3.2	1.3	3	
2824	Organic fibers, noncellulosic.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	
283	Drugs.....	23.7	6.5	5.2	1.4	2.6	0.1	2.7	1.1	14.9	13.6	1.3	2.4	7	
2833	Medicinals and botanicals.....	12.6	2.4	2.3	0.1	0.9	0.1	1.0	0.4	9.0	8.8	0.3	1.2	5	
2834	Pharmaceutical preparations.....	11.0	4.0	2.8	1.2	1.6	(2)	1.7	0.7	5.8	4.8	1.0	1.2	5	
284	Soaps, cleansers, toilet goods.....	17.9	9.8	9.5	0.3	5.6	0.5	2.7	1.0	7.6	7.4	0.2	0.4	6	
2841	Soap and other detergents.....	9.9	7.0	6.9	0.1	4.4	0.4	1.5	0.6	2.7	2.5	0.2	0.3	8	
286	Industrial organic chemicals.....	336.4	140.1	110.4	29.6	37.9	17.8	59.5	24.9	176.8	150.7	26.1	19.5	2	
2865	Cyclic crudes and intermediates.....	46.6	22.2	22.0	0.3	14.7	0.3	4.9	2.3	23.9	22.6	1.2	0.5	4	
2869	Industrial organic chemicals, n.e.c.....	285.5	114.3	85.1	29.2	19.9	17.4	54.5	22.4	152.3	127.5	24.9	18.9	2	
287	Agricultural chemicals.....	105.3	41.4	30.9	10.5	20.1	5.6	10.7	5.0	57.6	56.2	1.4	6.4	12	
2873	Nitrogenous fertilizers.....	50.0	20.6	15.4	5.2	11.5	0.2	7.8	1.1	28.7	27.7	1.0	0.7	8	
2874	Phosphatic fertilizers.....	26.9	12.5	7.4	5.2	5.4	5.2	1.2	0.9	(D)	(D)	0.2	(D)	7	
2879	Agricultural chemicals, n.e.c.....	26.1	6.0	5.9	0.1	1.1	0.2	1.8	2.9	16.9	16.7	0.3	3.2	4	
289	Miscellaneous chemical products.....	40.3	15.9	14.4	1.4	10.7	(2)	4.2	1.0	23.3	16.5	6.8	1.1	9	
2892	Explosives.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	
29	Petroleum and coal products.....	419.3	311.2	262.1	49.2	33.4	138.9	113.7	25.3	100.5	95.4	5.1	7.6	2	
2911	Petroleum refining.....	403.0	296.2	247.1	49.1	22.5	138.7	109.8	25.2	99.4	94.6	4.8	7.5	2	
2952	Asphalt felts and coatings.....	6.7	6.3	6.2	0.1	2.5	0.1	3.7	-	0.4	0.3	0.1	0.1	15	
299	Misc. petroleum, coal products.....	8.3	(D)	(D)	(2)	(D)	(2)	0.2	(D)	(D)	(D)	0.1	-	3	
2999	Petroleum and coal products, n.e.c.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	

See footnotes at end of table.

Table 2A. Pollution Abatement Capital Expenditures, by Industry for Establishments With 20 or More Employees: 1978—Continued

(Millions of dollars)

SIC code	Industry	Total PACE	Capital expenditures, by air pollutants abated											Standard error of estimates (percent) PACE
			Air			Water							Solid waste disposal	
			Total	Abatement technique		Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, carbon monoxide	Heavy metals, radioactive and toxic substances, and other	Total	Abatement technique			
				End-of-line	Changes-in-production processes						End-of-line	Changes-in-production processes		
30	Rubber, misc. plastics products.....	27.7	18.7	17.4	1.3	11.3	0.1	2.5	5.0	5.5	5.2	0.4	3.4	6
3069	Fabricated rubber products, n.e.c.....	4.1	2.7	2.4	0.3	1.7	(Z)	0.9	0.1	1.1	1.1	(Z)	0.3	9
3079	Miscellaneous plastics products.....	19.6	13.6	12.7	0.9	7.7	(Z)	1.3	4.6	3.3	3.1	0.2	2.7	14
31	Leather and leather products.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
32	Stone, clay, glass products.....	123.8	92.1	82.6	9.5	84.9	1.1	1.1	5.0	28.0	19.1	8.9	3.7	7
3211	Flat glass.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
322	Glass, pressed or blown.....	14.3	8.7	6.6	2.0	7.8	0.2	0.2	0.5	4.8	3.8	0.9	0.9	6
3221	Glass containers.....	6.7	4.3	3.7	0.7	3.7	0.2	0.1	0.4	(D)	(D)	0.2	(D)	8
3229	Pressed and blown glass, n.e.c.....	7.6	4.3	2.9	1.4	4.1	-	0.1	0.1	(D)	(D)	0.7	(D)	8
3241	Cement, hydraulic.....	32.2	31.1	30.4	0.6	31.1	(Z)	-	-	0.8	0.8	-	0.4	14
329	Misc. nonmetallic mineral products.....	51.5	36.8	33.6	3.3	31.5	0.3	0.9	4.1	13.0	8.8	4.2	1.7	6
3296	Mineral wool.....	30.4	25.0	24.9	0.1	23.3	(Z)	0.3	1.3	5.0	1.3	3.8	0.4	14
33	Primary metal industries.....	791.8	563.3	548.4	15.1	428.0	97.2	19.7	18.5	219.1	213.3	5.9	9.4	1
331	Blast furnace, basic steel products.....	498.7	306.7	299.3	7.4	265.6	30.7	6.1	4.2	185.8	183.9	2.9	5.2	1
3312	Blast furnaces and steel mills.....	483.6	300.7	293.4	7.4	260.5	30.7	5.6	3.9	181.7	179.9	1.7	1.3	1
3317	Steel pipe and tubes.....	5.3	0.5	0.5	(Z)	0.1	-	0.6	(Z)	(D)	(D)	0.1	(D)	18
332	Iron and steel foundries.....	92.8	81.1	78.1	3.0	73.1	-	7.6	0.3	10.5	10.5	(Z)	1.2	1
3321	Gray iron foundries.....	51.4	40.9	39.4	1.5	35.7	-	5.0	0.2	9.8	9.8	-	0.7	1
3325	Steel foundries, n.e.c.....	10.4	9.9	9.0	0.9	9.7	(Z)	0.1	0.1	0.2	0.2	(Z)	0.4	15
333	Primary nonferrous metals.....	162.0	150.4	149.7	0.8	71.6	65.8	1.3	11.8	9.4	8.8	0.6	2.2	1
3331	Primary copper.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
3332	Primary lead.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
3333	Primary zinc.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
3334	Primary aluminum.....	58.4	53.6	53.4	0.2	41.1	3.7	1.2	7.6	2.8	2.8	-	2.0	1
3339	Primary nonferrous metals, n.e.c.....	11.0	9.8	9.6	0.2	2.7	6.2	(Z)	0.8	(D)	(D)	(Z)	(D)	3
3341	Secondary nonferrous metals.....	9.7	7.1	6.2	0.9	6.1	(Z)	0.7	0.2	2.4	2.2	0.3	0.2	17
335	Nonferrous rolling and drawing.....	19.1	12.1	10.2	1.9	7.6	0.1	2.6	1.8	6.4	5.9	0.4	0.6	3
3353	Aluminum sheet, plate, and foil.....	8.6	6.0	5.1	0.9	3.6	-	1.1	1.3	2.5	2.5	-	0.2	1
336	Nonferrous foundries.....	9.4	5.9	4.8	1.1	3.8	0.5	1.4	0.2	3.4	1.8	1.6	(Z)	17
34	Fabricated metal products.....	61.6	33.1	28.7	4.4	19.6	0.6	11.2	1.7	26.2	23.8	2.4	2.3	8
341	Metal cans, shipping containers.....	5.3	3.9	2.6	1.3	1.0	(Z)	2.9	0.1	1.2	1.1	0.1	0.1	8
342	Cutlery, handtools and hardware.....	6.9	2.2	2.1	0.1	1.7	(Z)	0.3	0.3	4.1	3.8	0.3	0.5	8
3429	Hardware, n.e.c.....	5.5	1.7	1.5	0.1	1.4	(Z)	0.2	0.1	3.4	3.1	0.3	0.5	9
344	Fabricated structural metal products.....	6.2	4.1	3.8	0.2	2.0	(Z)	1.7	0.3	1.8	1.7	0.1	0.4	15
346	Metal forgings and stampings.....	11.2	6.3	5.7	0.6	4.0	0.3	2.0	0.1	4.7	3.8	0.9	0.1	10
348	Ordinance and accessories, n.e.c.....	6.3	3.0	3.0	(Z)	2.5	0.1	0.4	(Z)	3.1	3.1	(Z)	0.2	9
349	Misc. fabricated metal products.....	6.1	4.1	3.9	0.2	3.7	0.1	0.2	0.2	1.5	1.1	0.3	0.5	16
35	Machinery, except electrical.....	81.5	41.1	38.5	2.7	32.0	2.5	5.0	1.8	27.8	26.1	1.6	12.6	6
351	Engines and turbines.....	8.2	2.3	2.3	(Z)	1.8	0.3	0.1	0.1	5.8	5.8	(Z)	0.1	1
3519	Internal combustion engines, n.e.c.....	7.8	2.1	2.1	(Z)	1.7	0.3	(Z)	0.1	5.5	5.5	(Z)	0.1	1
352	Farm and garden machinery.....	9.8	6.9	6.8	0.1	6.8	(Z)	0.1	(Z)	1.8	1.7	0.1	1.1	3
3523	Farm machinery and equipment.....	9.5	6.8	6.7	0.1	6.7	(Z)	0.1	(Z)	1.6	1.5	0.1	1.0	3
353	Construction, related machinery.....	16.4	11.5	11.1	0.4	9.8	1.3	(Z)	0.4	4.2	4.0	0.2	0.6	4
3531	Construction machinery.....	13.0	9.4	9.3	0.1	7.9	1.3	(Z)	0.2	3.1	3.1	(Z)	0.5	3
354	Metalworking machinery.....	8.3	7.4	7.3	0.1	6.3	0.1	0.5	0.6	0.8	0.6	0.1	0.1	13
356	General industrial machinery.....	14.3	2.8	2.7	0.1	2.4	(Z)	0.4	(Z)	(D)	(D)	0.8	(D)	6
3561	Pumps and pumping equipment.....	9.8	(D)	(D)	0.1	(D)	-	0.2	(D)	1.1	0.3	0.8	(D)	7
357	Office and computing machines.....	5.3	1.6	1.5	(Z)	0.7	(Z)	0.7	0.1	3.2	2.9	0.4	0.5	8
358	Refrigeration and service machines.....	8.8	1.7	1.2	0.5	0.5	(Z)	1.2	(Z)	(D)	(D)	(Z)	(D)	2
3585	Refrigeration, heating equipment.....	8.6	1.5	1.0	0.5	0.4	(Z)	1.0	(Z)	(D)	(D)	(Z)	(D)	1
359	Misc. machinery, except electrical.....	6.4	4.2	3.0	1.3	1.7	0.7	1.7	0.1	(D)	(D)	(Z)	(D)	7
36	Electric, electronic equipment.....	72.2	32.9	25.5	7.3	16.3	0.5	5.9	10.2	36.0	26.9	9.1	3.3	5
361	Electric distributing equipment.....	8.8	1.1	0.4	0.7	0.3	0.1	0.6	(Z)	(D)	1.1	(D)	(D)	1
3613	Switchgear, switchboard apparatus.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
362	Electrical industrial apparatus.....	6.8	4.7	1.8	2.9	3.7	(Z)	0.7	0.3	1.7	1.5	0.2	0.4	5
363	Household appliances.....	7.5	3.1	1.7	1.5	2.5	0.1	0.5	(Z)	3.9	3.5	0.4	0.5	12
364	Electric lighting, wiring equipment.....	6.4	2.9	2.6	0.3	1.5	(Z)	0.3	1.1	2.6	2.0	0.6	0.8	18
366	Communication equipment.....	5.9	2.9	2.7	0.2	0.7	(Z)	1.5	0.7	2.5	2.4	0.1	0.5	5
367	Electronic components, accessories.....	16.5	4.0	3.8	0.2	0.9	0.1	1.9	1.1	11.8	11.1	0.7	0.7	16
3674	Semiconductors, related devices.....	5.7	1.3	1.2	0.1	0.2	0.1	0.3	0.7	4.2	3.9	0.3	0.2	7
369	Misc. electrical equipment, supplies....	19.3	13.6	12.1	1.5	6.3	0.1	0.3	6.9	5.5	5.0	0.6	0.2	8
3691	Storage batteries.....	12.8	10.0	8.7	1.2	3.3	-	0.2	6.5	(D)	(D)	0.5	(D)	12
37	Transportation equipment.....	139.5	71.0	52.1	18.9	43.5	2.1	22.6	2.8	57.9	53.5	4.4	10.7	1
371	Motor vehicles and equipment.....	120.3	61.8	44.1	17.7	36.6	2.0	21.5	1.8	49.2	44.9	4.2	9.3	1
3711	Motor vehicles and car bodies.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
3714	Motor vehicle parts, accessories.....	49.3	13.4	12.6	0.8	8.4	0.6	2.9	1.5	27.3	26.7	0.6	8.6	2
372	Aircraft and parts.....	10.7	3.9	3.1	0.8	3.0	0.1	0.3	0.5	6.1	6.1	(Z)	0.6	11
38	Instruments, related products.....	16.9	6.8	6.5	0.3	1.6	0.5	4.5	0.2	9.5	8.6	0.9	0.6	2
3861	Photographic equipment and supplies.....	13.2	5.1	5.1	(Z)	0.4	0.3	4.4	(Z)	7.8	7.7	0.1	0.3	1
39	Misc. manufacturing industries.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)

Note: Totals may not agree precisely with detail because of independent rounding.

No data cells are shown where PACE is less than \$5.0 million or the standard error is 20 or greater.

- Represents zero. (D) Withheld to avoid disclosing operations of individual companies. (S) Data suppressed because did not meet publication standards. This includes cells where PACE 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.

<sup>1</sup>Excludes Major Industry Group 23, Apparel and Other Textile Products.

Table 2B. Pollution Abatement Capital Expenditures, by State and Major Industry Group for Establishments With 20 or More Employees: 1978

(Millions of dollars)

SIC code	State and major industry group	Total PACE	Air				Capital expenditures, by air pollutants abated				Water			Solid waste disposal	Standard error of estimation (percent) PACE
			Total	Abatement technique		Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, carbon monoxide	Heavy metals, radioactive and toxic substances, and other	Total	Abatement technique				
				End-of-line	Changes-in-production processes						End-of-line	Changes-in-production processes			
	United States <sup>1</sup> .....	3,279.3	1,853.6	1,638.5	215.4	1,055.5	288.4	339.4	170.4	1,246.5	1,096.5	150.1	178.9		1
26	Maine.....	7.6	1.9	1.9	0.1	1.4	0.4	0.1	0.1	4.9	4.6	0.4	0.7		8
	Paper and allied products.....	5.1	1.4	1.3	(2)	0.8	0.4	(2)	0.1	(D)	2.8	(D)	(D)		5
	New Hampshire.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)		(X)
	Vermont.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)		(X)
28	Massachusetts.....	30.1	16.7	13.7	2.9	6.9	0.5	7.9	1.3	12.2	11.2	1.0	1.3		11
	Chemicals and allied products.....	8.0	(D)	(D)	-	1.2	-	5.9	0.2	0.6	0.4	0.1	(D)		3
	Rhode Island.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)		(X)
	Connecticut.....	15.9	8.2	7.6	0.6	7.3	(2)	0.5	0.4	7.1	5.8	1.3	0.6		17
	New York.....	106.9	45.7	39.3	6.3	28.6	6.3	7.4	3.3	54.9	51.1	3.8	6.3		2
26	Paper and allied products.....	6.8	2.5	2.4	0.1	1.5	0.1	0.7	0.1	4.1	3.9	0.2	0.2		8
28	Chemicals and allied products.....	28.1	8.2	6.4	1.9	5.4	0.1	1.8	0.9	16.1	13.9	2.2	3.8		9
33	Primary metal industries.....	29.3	17.4	16.3	1.1	11.1	5.1	0.6	0.6	(D)	11.5	(D)	(D)		3
35	Machinery, except electrical.....	9.7	1.8	1.7	0.1	1.2	(2)	0.5	(2)	6.6	6.3	0.3	1.3		1
36	Electric, electronic equipment.....	9.0	2.7	1.3	1.4	1.5	0.1	0.8	0.3	6.1	5.6	0.4	0.2		5
38	Instruments, related products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)		(X)
	New Jersey.....	75.1	38.0	35.0	3.0	12.4	4.2	5.9	15.6	33.8	29.1	4.8	3.2		1
20	Food and kindred products.....	5.6	2.7	2.6	0.1	2.5	-	(2)	0.2	2.5	2.5	0.1	0.4		11
28	Chemicals and allied products.....	43.7	18.5	16.6	1.9	3.2	1.5	3.1	10.8	22.9	20.3	2.6	2.3		5
29	Petroleum and coal products.....	7.2	5.2	4.7	0.5	0.1	2.7	2.1	0.3	2.0	1.7	0.2	-		1
	Pennsylvania.....	219.3	111.7	106.0	5.9	84.2	17.0	7.2	3.4	99.7	96.3	3.4	7.9		2
26	Paper and allied products.....	8.7	5.0	5.0	-	1.7	3.1	0.2	-	2.6	2.4	0.2	1.1		10
28	Chemicals and allied products.....	13.9	7.8	6.5	1.3	2.6	1.4	2.4	1.4	5.9	5.4	0.5	0.2		7
29	Petroleum and coal products.....	18.6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	12.1	11.1	1.0	(D)		2
33	Primary metal industries.....	139.6	65.6	65.4	0.2	54.8	10.2	3.9	0.3	73.4	72.2	1.3	0.6		2
36	Electric, electronic equipment.....	7.5	6.2	4.4	1.8	4.8	0.1	0.5	0.8	0.9	0.7	0.2	0.4		15
	Ohio.....	202.0	124.0	111.3	12.7	99.6	8.8	7.5	8.1	70.2	67.0	3.1	7.9		2
26	Paper and allied products.....	11.3	6.2	5.9	0.3	5.8	-	0.3	(2)	(D)	(D)	(D)	(D)		9
28	Chemicals and allied products.....	31.5	15.6	12.3	3.3	8.4	0.3	2.3	4.6	15.1	14.9	0.1	0.8		7
29	Petroleum and coal products.....	8.2	5.6	4.8	0.8	2.5	1.9	0.7	0.5	(D)	2.0	(D)	(D)		7
30	Rubber, misc. plastics products.....	6.0	3.6	3.4	0.2	2.9	(2)	0.5	0.1	0.6	0.6	(2)	(D)		3
32	Stone, clay, glass products.....	8.6	6.1	4.6	1.5	6.1	(2)	-	(2)	2.3	0.7	1.6	0.3		12
33	Primary metal industries.....	98.5	69.3	65.9	3.5	60.7	6.1	1.6	0.9	28.6	28.6	(2)	0.6		3
34	Fabricated metal products.....	6.4	4.2	4.1	0.2	2.5	0.3	1.1	0.4	1.6	1.5	0.1	0.5		9
37	Transportation equipment.....	18.1	6.5	5.9	0.6	5.2	0.2	0.5	0.8	9.5	9.2	0.3	2.1		6
	Indiana.....	169.1	100.5	98.6	1.9	85.6	6.3	6.2	2.4	63.9	61.1	2.7	4.7		4
20	Food and kindred products.....	6.2	2.8	2.6	0.2	2.3	0.1	0.4	-	3.1	2.8	0.3	0.3		8
28	Chemicals and allied products.....	9.1	2.0	1.9	(2)	1.5	0.1	0.2	0.2	(D)	(D)	(D)	(D)		6
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)		(X)
33	Primary metal industries.....	118.7	75.7	75.6	0.1	71.9	1.4	0.8	1.5	41.4	39.8	1.6	1.7		1
36	Electric, electronic equipment.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)		1
	Illinois.....	166.2	98.3	82.8	15.5	59.6	9.0	23.6	6.2	58.0	47.8	10.2	9.9		3
20	Food and kindred products.....	18.2	3.3	3.2	(2)	2.8	(2)	0.4	(2)	(D)	8.3	(D)	(D)		2
28	Chemicals and allied products.....	47.3	32.6	32.3	0.3	13.6	1.3	16.2	1.5	13.6	12.0	1.6	1.1		4
29	Petroleum and coal products.....	12.3	9.0	1.5	7.5	0.6	6.4	2.0	(2)	(D)	3.2	(D)	(D)		1
33	Primary metal industries.....	41.3	30.4	30.3	0.1	26.6	(2)	0.2	3.6	10.6	10.4	0.2	0.3		2
35	Machinery, except electrical.....	10.8	6.8	6.8	(2)	4.4	1.2	1.2	0.1	(D)	3.3	(D)	(D)		10
36	Electric, electronic equipment.....	8.6	0.6	0.6	0.1	0.5	-	(2)	0.1	(D)	0.1	(D)	6.7		1
	Michigan.....	170.8	87.9	70.0	17.9	60.8	3.9	20.5	2.7	73.2	62.7	10.6	9.7		3
28	Chemicals and allied products.....	14.3	3.8	2.9	1.0	1.2	0.3	1.7	0.7	9.8	7.4	2.4	0.7		2
32	Stone, clay, glass products.....	7.7	2.2	2.2	-	1.9	-	-	0.3	(D)	3.8	(D)	(D)		7
33	Primary metal industries.....	42.8	26.6	26.5	0.1	20.6	1.1	4.4	0.5	(D)	15.7	(D)	(D)		1
35	Machinery, except electrical.....	10.5	8.7	7.5	1.2	7.1	0.8	0.4	0.4	1.6	1.5	0.1	0.1		12
37	Transportation equipment.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)		(X)
	Wisconsin.....	84.3	50.1	44.9	5.1	43.0	0.3	5.5	1.2	24.7	15.0	9.7	9.6		6
20	Food and kindred products.....	5.8	3.0	3.0	0.1	2.9	(2)	-	0.1	2.7	2.2	0.5	0.1		19
26	Paper and allied products.....	20.9	4.0	3.9	0.1	3.8	0.2	-	(2)	15.9	8.6	7.3	1.0		11
35	Machinery, except electrical.....	12.9	3.3	3.3	(2)	2.9	0.1	0.1	0.1	0.2	1.6	(D)	(D)		4
	Minnesota.....	43.0	12.9	12.0	0.9	8.6	1.1	2.9	0.3	29.7	22.4	7.3	0.4		9
20	Food and kindred products.....	8.6	3.1	2.8	0.3	2.9	(2)	0.1	0.1	5.4	4.0	1.4	0.1		13
26	Paper and allied products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)		(X)
	Iowa.....	42.5	17.0	15.8	1.2	16.0	(2)	0.8	0.2	23.6	18.7	4.9	1.9		8
20	Food and kindred products.....	16.6	6.6	5.9	0.7	6.4	(2)	0.1	0.1	9.8	6.0	3.8	0.2		7
35	Machinery, except electrical.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)		(X)
	Missouri.....	33.5	17.9	16.6	1.2	11.8	1.4	2.2	2.4	11.1	9.5	1.7	4.5		6
28	Chemicals and allied products.....	7.0	3.1	3.0	(2)	1.3	0.2	0.2	1.3	3.7	3.2	0.5	0.2		13
33	Primary metal industries.....	8.0	2.4	2.4	-	1.6	0.7	0.1	0.1	(D)	(D)	-	(D)		12
	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.....	7.1	5.4	5.1	0.3	4.3	(2)	1.0	(2)	1.6	1.5	0.1	0.1		19
	Kansas.....	23.7	14.1	10.1	4.0	8.4	0.1	3.4	2.2	8.4	7.5	0.9	1.2		6
28	Chemicals and allied products.....	9.6	(D)	(D)	3.2	0.4	(2)	3.0	0.3	5.5	5.5	(2)	(D)		7
32	Stone, clay, glass products.....	7.5	6.8	6.8	-	6.7	-	0.1	-	(D)	(D)	0.4	(D)		11
	Delaware.....	50.4	39.7	37.5	2.3	2.6	27.5	1.1	8.5	10.1	9.4	0.7	0.6		1
28	Chemicals and allied products.....	14.9	8.9	8.3	0.5	0.2	(2)	0.2	8.5	(D)	4.9	(D)	(D)		1
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)		(X)

See footnotes at end of table.

Table 2B. Pollution Abatement Capital Expenditures, by State and Major Industry Group for Establishments With 20 or More Employees: 1978—Continued

(Millions of dollars)

SIC code	State and major industry group	Total PACE	Air			Capital expenditures, by air pollutants abated				Water			Solid waste disposal	Standard error of estimates (percent) PACE
			Total	Abatement technique		Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, carbon monoxide	Heavy metals, radio-active and toxic substances, and other	Total	Abatement technique			
				End-of-line	Changes-in-production processes						End-of-line	Changes-in-production processes		
28	Maryland.....	34.8	17.7	15.8	1.9	11.8	0.8	3.6	1.5	15.0	14.3	0.6	2.1	3
	Chemicals and allied products.....	8.4	6.0	4.4	1.5	1.4	0.5	3.1	1.1	(D)	(D)	-	(D)	10
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	District of Columbia.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Virginia.....	75.5	28.9	25.2	3.7	22.0	0.7	5.8	0.3	42.8	30.1	12.7	3.8	2
20	Food and kindred products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2
21	Tobacco products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
22	Textile mill products.....	5.5	2.6	2.0	0.7	2.0	(Z)	0.6	-	2.6	2.6	(Z)	0.3	(X)
26	Paper and allied products.....	7.9	4.0	4.0	-	3.9	(Z)	0.1	-	(D)	2.8	(D)	(D)	4
28	Chemicals and allied products.....	30.0	8.5	8.5	(Z)	5.3	(Z)	2.9	0.2	20.2	14.0	6.2	1.2	1
	West Virginia.....	47.2	25.8	24.7	1.1	18.1	2.9	2.3	2.5	20.5	18.9	1.6	0.9	5
28	Chemicals and allied products.....	27.6	(D)	11.0	(D)	7.3	(D)	2.2	(D)	15.2	13.9	1.3	(D)	5
33	Primary metal industries.....	14.8	10.7	10.3	0.4	7.5	2.7	-	0.5	(D)	3.9	(D)	(D)	1
	North Carolina.....	52.8	34.7	26.3	8.3	30.2	2.0	1.1	1.4	14.3	12.3	1.9	3.8	7
22	Textile mill products.....	20.2	16.6	12.5	4.2	15.4	0.1	0.6	0.5	3.1	2.9	0.2	0.5	14
26	Paper and allied products.....	7.8	5.3	1.6	3.7	3.3	1.9	-	0.2	(D)	(D)	1.2	(D)	4
28	Chemicals and allied products.....	5.8	2.7	2.6	0.2	2.5	(Z)	0.2	(Z)	1.6	1.4	0.1	1.5	3
	South Carolina.....	53.4	24.3	16.6	7.6	14.9	0.2	1.0	8.1	26.9	16.6	10.3	2.3	4
22	Textile mill products.....	9.4	4.1	1.5	2.6	3.8	(Z)	(Z)	0.3	5.1	5.1	-	0.2	11
26	Paper and allied products.....	15.5	3.7	1.2	2.5	2.8	-	0.6	0.4	11.5	4.4	7.1	0.2	3
28	Chemicals and allied products.....	14.8	8.1	8.1	-	3.0	0.2	0.4	4.5	5.2	4.6	0.6	1.5	2
32	Stone, clay, glass products.....	5.7	4.5	2.0	2.5	1.7	-	-	2.8	(D)	(D)	1.0	(D)	19
	Georgia.....	73.4	35.5	34.1	1.4	29.5	1.1	1.2	3.7	37.0	34.7	2.3	0.9	4
20	Food and kindred products.....	10.2	0.5	0.5	(Z)	0.4	0.1	(Z)	(Z)	9.4	9.4	(Z)	0.2	4
26	Paper and allied products.....	23.0	18.4	18.4	(Z)	17.6	0.6	-	0.2	4.5	3.9	0.6	0.1	1
28	Chemicals and allied products.....	21.5	4.3	4.2	(Z)	1.6	0.1	0.3	2.3	(D)	(D)	(D)	(D)	9
	Florida.....	41.9	18.0	11.3	6.7	7.5	5.8	3.3	1.5	20.8	16.5	4.4	3.1	5
20	Food and kindred products.....	7.0	2.0	1.6	0.4	1.7	0.2	0.1	(Z)	4.8	2.3	2.5	0.2	5
26	Paper and allied products.....	6.7	3.2	3.1	0.1	2.5	0.3	0.2	0.2	(D)	3.3	(D)	(D)	4
28	Chemicals and allied products.....	22.2	9.4	4.2	5.3	0.9	5.2	2.8	0.6	10.2	9.0	1.3	2.5	8
	Kentucky.....	50.5	35.4	32.6	2.8	16.3	0.2	15.8	2.9	14.2	10.8	3.3	0.9	12
28	Chemicals and allied products.....	32.4	20.2	18.5	1.7	4.7	-	13.0	2.5	11.8	8.6	3.3	0.4	16
33	Primary metal industries.....	7.2	6.9	6.9	0.1	6.6	-	0.2	0.1	(D)	(D)	(Z)	(D)	7
	Tennessee.....	79.1	41.6	37.5	4.2	35.6	2.6	2.0	1.5	29.8	28.0	1.9	7.6	5
28	Chemicals and allied products.....	48.5	20.1	19.4	0.7	16.3	1.8	0.9	1.2	21.6	20.4	1.3	6.8	6
33	Primary metal industries.....	11.5	9.1	8.4	0.6	9.1	-	-	(Z)	(D)	(D)	-	(D)	12
	Alabama.....	111.5	52.7	47.6	5.0	45.4	0.9	1.8	4.6	39.0	38.4	0.9	19.7	3
22	Textile mill products.....	5.3	4.8	4.8	-	3.9	-	-	0.9	(D)	(D)	-	(D)	3
26	Paper and allied products.....	53.8	(D)	(D)	(Z)	10.5	(D)	(D)	(D)	23.0	23.0	0.2	(D)	5
28	Chemicals and allied products.....	10.8	(D)	(D)	0.5	1.8	(D)	(D)	(D)	5.8	5.6	0.2	(D)	1
33	Primary metal industries.....	32.2	26.1	22.0	4.1	24.3	0.3	1.4	0.1	6.0	5.9	0.2	(D)	2
	Mississippi.....	25.8	12.8	10.0	2.8	9.1	1.1	1.4	1.3	12.1	11.6	0.5	0.8	16
28	Chemicals and allied products.....	5.4	(D)	(D)	(Z)	0.2	(D)	(D)	0.7	3.7	3.7	-	(D)	7
	Arkansas.....	49.3	21.5	14.5	7.0	13.9	0.9	1.8	5.0	26.6	25.0	1.6	1.2	15
26	Paper and allied products.....	17.6	(D)	(D)	4.3	(D)	-	-	0.6	(D)	10.1	(D)	(Z)	1
28	Chemicals and allied products.....	16.9	4.5	4.4	0.1	0.9	0.5	1.3	1.8	11.6	11.1	0.5	0.7	9
	Louisiana.....	243.2	112.1	101.8	10.3	33.8	19.5	41.1	17.8	110.6	101.0	9.7	20.5	2
26	Paper and allied products.....	20.0	5.8	5.8	-	4.4	1.0	-	0.4	11.7	11.5	0.2	2.5	7
28	Chemicals and allied products.....	149.8	53.6	48.3	5.4	11.8	3.1	24.1	14.7	82.4	74.1	8.2	13.9	2
29	Petroleum and coal products.....	46.9	37.8	33.2	4.6	4.5	15.3	17.0	1.0	8.8	7.6	1.2	0.3	1
33	Primary metal industries.....	7.3	6.0	6.0	(Z)	4.3	-	(Z)	1.7	(D)	(D)	(D)	(D)	16
	Oklahoma.....	25.5	19.5	7.5	12.1	6.2	5.5	5.8	2.0	5.8	5.7	0.2	0.2	5
29	Petroleum and coal products.....	12.7	(D)	(D)	10.3	0.3	(D)	5.4	(D)	(D)	1.1	(D)	-	1
	Texas.....	437.8	307.7	274.0	33.7	82.1	85.7	104.2	35.5	104.4	89.9	14.6	25.8	4
26	Paper and allied products.....	7.7	5.7	4.6	1.1	4.1	0.1	(Z)	1.4	(D)	0.7	(D)	(D)	1
28	Chemicals and allied products.....	149.6	80.5	51.8	28.8	17.4	14.9	36.2	12.1	48.8	39.3	9.4	20.3	9
29	Petroleum and coal products.....	194.9	149.0	146.9	2.1	14.1	52.0	66.8	16.1	42.9	42.1	0.8	3.0	1
33	Primary metal industries.....	40.0	38.0	37.8	0.2	16.2	18.6	0.2	3.0	1.0	1.0	-	1.0	5
	Montana.....	8.4	6.7	5.6	1.1	2.9	2.8	0.7	0.4	(D)	0.6	(D)	(D)	10
	Idaho.....	9.1	5.5	5.4	0.1	3.8	0.1	(Z)	1.6	2.1	2.0	0.1	1.6	18
	Wyoming.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Colorado.....	19.2	12.3	12.2	0.3	10.2	0.3	1.5	0.3	6.2	5.9	0.3	0.6	4
33	Primary metal industries.....	(D)	(D)	(D)	-	0.1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
38	Instruments, related products.....	5.3	0.9	0.9	-	-	-	0.8	-	4.4	4.4	-	(Z)	1
	New Mexico.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Arizona.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Utah.....	47.5	(D)	(D)	(Z)	(D)	(D)	(D)	(Z)	0.6	0.3	0.3	(D)	1
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	31.9	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Nevada.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Washington.....	100.2	43.0	40.2	2.8	26.7	4.3	6.5	5.6	53.7	46.2	7.5	3.4	4
26	Paper and allied products.....	60.9	(D)	(D)	0.3	(D)	(D)	0.2	5.0	47.2	41.2	6.1	(D)	1
33	Primary metal industries.....	16.9	16.3	16.3	0.2	10.9	2.3	3.1	0.2	(D)	(D)	(D)	(D)	8

See footnotes at end of table.

Table 2B. Pollution Abatement Capital Expenditures, by State and Major Industry Group for Establishments With 20 or More Employees:  
1978—Continued

(Millions of dollars)

SIC code	State and major industry group	Total PACE	Air			Capital expenditures, by air pollutants abated				Water			Solid waste disposal PACE	Standard error of estimates (percent) PACE
			Total	Abatement technique		Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, carbon monoxide	Heavy metals, radioactive and toxic substances, and other	Total	Abatement technique			
				End-of-line	Changes-in-production processes						End-of-line	Changes-in-production processes		
	Oregon.....	38.6	25.3	24.5	0.7	15.4	2.5	3.1	4.3	11.4	9.1	2.3	1.9	10
24	Lumber and wood products.....	9.4	5.2	5.0	0.3	3.5	(Z)	1.7	-	3.0	2.2	0.8	1.2	14
26	Paper and allied products.....	8.5	4.6	4.5	0.1	3.1	0.8	0.4	0.3	(D)	(D)	(D)	(D)	2
33	Primary metal industries.....	10.6	9.5	9.4	(Z)	3.9	1.6	(Z)	3.8	0.9	0.9	-	0.2	2
	California.....	165.7	119.0	102.1	16.9	56.3	25.2	28.4	9.1	41.9	36.3	5.5	4.9	7
20	Food and kindred products.....	14.1	5.2	4.9	0.2	4.4	0.1	0.5	0.2	8.2	6.7	1.4	0.8	15
28	Chemicals and allied products.....	16.4	10.6	8.5	2.1	4.2	(Z)	3.5	2.9	5.4	5.1	0.3	0.4	17
29	Petroleum and coal products.....	37.1	28.4	17.5	10.9	4.1	11.2	9.1	4.0	(D)	(D)	(D)	(D)	7
32	Stone, clay, glass products.....	7.2	6.1	6.1	-	5.9	(Z)	0.1	0.1	(D)	(D)	(D)	(D)	11
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
37	Transportation equipment.....	12.2	7.0	5.9	1.0	0.9	(Z)	5.5	0.5	4.8	4.8	0.1	0.3	5
	Alaska.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Hawaii.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)

Note: Totals may not agree precisely with detail because of independent rounding.

No data calls are shown where PACE is less than \$5.0 million or the standard error is 20 or greater.

- Represents zero.

(D) Withheld to avoid disclosing operations of individual companies.

(S) Data suppressed because did not meet publication standards. This includes cells where PACE 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.

<sup>1</sup>Major Industry Group 23, Apparel and Other Textile Products, was not included in the survey and therefore is excluded from the U.S. and State totals.



Table 2C. Pollution Abatement Capital Expenditures, by Standard Metropolitan Statistical Area (SMSA) for Establishments With 20 or More Employees: 1978

(Millions of dollars)

SMSA	Total PACE	Air			Capital expenditures, by air pollutants abated				Water			Standard error of estimates (percent)  PACE	
		Total	Abatement technique		Particu- lates	Sulfur oxides	Nitrogen oxides, hydro- carbons, carbon monoxide	Heavy metals, radio- active and toxic sub- stances, and other	Total	Abatement technique			Solid waste disposal
			End-of- line	Changes- in- production processes						End-of- line	Changes- in- production processes		
Albany-Schenectady-Troy, N.Y.	9.1	3.3	2.5	0.8	1.9	(Z)	1.2	0.2	(D)	(D)	0.4	(D)	7
Allentown-Bethlehem-Easton, Pa.-N.J.	23.3	11.2	10.7	0.5	9.2	1.6	0.5	(Z)	(D)	(D)	0.3	(D)	1
Appleton-Oshkosh, Wis.	5.6	2.2	2.1	0.1	2.2	0.1	(Z)	(Z)	3.1	1.8	1.3	0.2	9
Augusta, Ga.-S.C.	28.3	9.4	9.4	-	4.3	0.7	0.3	4.2	(D)	(D)	-	(D)	1
Baltimore, Md.	28.7	13.7	13.4	0.2	10.4	0.5	1.5	1.2	13.0	12.9	0.1	2.1	4
Baton Rouge, La.	76.5	32.7	26.3	6.4	7.3	7.7	11.8	6.0	36.7	34.6	2.1	7.1	2
Beaumont-Port Arthur-Orange, Tex.	55.3	39.3	37.9	1.5	7.8	4.9	11.6	15.1	13.6	13.2	0.3	2.6	2
Birmingham, Ala.	29.6	24.1	20.3	3.8	23.1	0.2	0.8	(Z)	5.4	5.3	(Z)	0.2	3
Boston, Mass.	6.1	3.9	3.2	0.7	1.5	0.4	1.3	0.7	1.9	1.7	0.2	0.4	10
Buffalo, N.Y.	43.2	19.4	17.3	2.1	12.2	5.6	0.4	1.4	23.4	22.0	1.3	0.4	1
Canton, Ohio	15.5	5.4	2.4	3.0	5.0	0.3	(Z)	0.1	(D)	(D)	-	(D)	1
Charleston, S.C.	10.4	9.1	4.0	5.0	5.8	0.1	(Z)	3.2	(D)	0.3	(D)	(D)	14
Charleston, W. Va.	14.0	(D)	(D)	0.6	(D)	0.1	(D)	0.2	9.4	8.3	1.1	(D)	7
Chattanooga, Tenn.-Ga.	7.0	3.8	3.8	(Z)	3.4	0.2	0.2	0.1	2.8	2.6	0.2	0.3	17
Chicago, Ill.	69.7	34.6	33.3	1.3	22.3	1.0	7.4	3.9	27.2	18.5	8.7	7.9	4
Cincinnati, Ohio-Ky.-Ind.	13.1	7.7	7.4	0.3	6.2	0.2	1.0	0.3	4.9	4.8	0.1	0.5	9
Cleveland, Ohio	21.9	12.7	12.5	0.2	8.6	2.3	0.8	1.0	8.3	8.1	0.1	0.9	2
Columbus, Ohio	8.4	5.4	4.6	0.8	4.9	-	0.2	0.3	2.3	1.4	0.9	0.7	14
Corpus Christi, Tex.	7.3	3.2	3.2	-	1.7	0.5	0.9	0.1	(D)	(D)	0.5	(D)	1
Dayton, Ohio	14.0	5.7	4.3	1.3	4.1	0.2	0.7	0.8	(D)	(D)	(Z)	(D)	10
Denver-Boulder, Colo.	8.0	2.2	2.2	0.1	0.6	0.2	1.2	0.2	5.6	5.3	0.2	0.3	4
Detroit, Mich.	68.1	32.2	30.4	1.8	24.0	2.3	4.8	1.0	35.4	31.3	4.1	0.6	6
Evansville, Ind.-Ky.	8.9	4.1	4.1	-	2.5	0.1	0.2	1.4	(D)	(D)	(Z)	(D)	9
Galveston-Texas City, Tex.	21.9	(D)	(D)	0.3	0.6	(D)	(D)	0.3	14.6	12.2	2.4	(D)	1
Gary-Hammond-East Chicago, Ind.	116.8	74.1	73.7	0.4	70.1	2.8	1.1	0.1	(D)	(D)	0.1	(D)	1
Greensboro-Winston-Salem-High Point, N.C.	10.1	8.5	7.9	0.6	7.8	-	0.1	0.6	(D)	(D)	0.2	(D)	17
Houston, Tex.	241.8	163.4	134.4	29.0	18.4	53.1	80.0	11.9	60.8	53.2	7.7	17.6	6
Huntington-Ashland, W. Va.-Ky.-Ohio	8.1	5.8	5.8	(Z)	5.6	0.1	0.1	(Z)	2.1	2.0	0.1	0.2	2
Indianapolis, Ind.	9.7	7.6	6.9	0.7	3.7	3.4	0.5	(Z)	1.5	1.4	0.1	0.5	6
Jacksonville, Fla.	10.2	4.9	3.9	0.9	3.3	0.4	1.0	0.2	4.9	2.0	3.0	0.4	14
Jersey City, N.J.	5.5	3.2	3.2	(Z)	1.0	(Z)	1.4	0.7	2.2	2.2	(Z)	0.1	16
Kansas City, Mo.-Kansas	21.5	15.5	13.9	1.5	10.6	0.1	1.1	3.7	5.2	4.7	0.5	0.9	9
Knoxville, Tenn.	6.8	(D)	(D)	-	(D)	-	-	0.1	(D)	(D)	-	(Z)	7
Lake Charles, La.	37.2	15.5	15.0	0.5	2.8	0.2	7.7	4.8	20.0	19.3	0.7	1.6	5
Los Angeles-Long Beach, Calif.	63.7	41.6	35.4	6.2	12.1	7.0	19.1	3.5	20.4	18.4	2.0	1.7	14
Memphis, Tenn.-Ark.-Miss.	7.6	2.5	1.9	0.5	2.0	0.1	0.4	(Z)	4.7	4.6	0.1	0.4	9
Minneapolis-St. Paul, Minn.-Wis.	11.1	6.1	5.7	0.5	2.1	1.1	2.7	0.3	4.8	3.9	1.0	0.2	14
Mobile, Ala.	15.8	3.2	3.0	0.2	2.5	0.3	-	0.4	12.6	12.4	0.1	0.1	2
New Brunswick-Perth Amboy-Sayreville, N.J.	8.1	4.7	4.4	0.3	1.3	1.1	1.2	1.1	3.2	3.2	0.1	0.2	7
New Orleans, La.	16.0	10.4	9.3	1.0	5.9	0.9	3.4	0.1	5.5	5.3	0.2	0.1	1
New York, N.Y.-N.J.	11.3	4.5	3.1	1.4	2.6	0.2	1.2	0.6	6.1	4.3	1.8	0.7	18
Newark, N.J.	21.2	6.6	5.1	1.5	3.1	1.4	1.1	1.1	13.7	12.1	1.6	0.9	5
Parkersburg-Marietta, W. Va.-Ohio	6.0	(D)	(D)	-	(D)	-	-	(Z)	3.6	3.6	(Z)	(D)	9
Peoria, Ill.	25.4	(D)	(D)	0.1	(D)	(D)	0.2	0.1	11.2	11.2	(Z)	(D)	2
Petersburg-Colonial Heights-Hopewell, Va.	6.4	(D)	(D)	(Z)	(D)	-	(D)	(Z)	(D)	(D)	(Z)	(D)	1
Philadelphia, Pa.-N.J.	48.2	22.6	19.3	3.4	7.5	1.6	4.6	8.8	20.6	17.4	3.2	5.0	6
Pittsburgh, Pa.	105.5	53.0	52.8	0.1	40.4	11.4	0.9	0.3	52.2	52.1	0.1	0.4	1
Reading, Pa.	7.5	4.9	4.5	0.4	3.7	(Z)	0.2	0.9	2.5	2.3	0.3	0.1	17
Richmond, Va.	14.3	(D)	(D)	0.2	(D)	(D)	0.6	(Z)	9.6	9.6	(Z)	(D)	7
Rochester, N.Y.	14.5	6.1	4.8	1.3	2.5	0.3	3.1	0.3	7.5	7.5	(Z)	0.9	17
St. Louis, Mo.-Ill.	43.3	26.1	18.3	7.8	14.2	7.7	2.8	1.5	13.2	11.5	1.8	3.9	3
San Francisco-Oakland, Calif.	18.3	9.9	7.9	1.9	4.7	0.6	4.1	0.4	7.1	6.7	0.5	1.3	11
Seattle-Everett, Wash.	14.9	6.2	5.6	0.6	3.3	(Z)	2.8	0.1	8.5	8.1	0.5	0.2	11
Stouenville-Weirton, Ohio-W. Va.	13.2	10.5	10.5	(Z)	7.8	2.7	(Z)	(Z)	(D)	(D)	(Z)	(D)	2
Tacoma, Wash.	6.8	4.4	4.1	0.3	3.7	0.2	0.4	0.1	(D)	(D)	(D)	(D)	1
Tampa-St. Petersburg, Fla.	9.4	1.1	0.9	0.2	0.7	0.3	(Z)	0.1	(D)	(D)	0.5	(D)	3
Toxarkana, Tex.-Ark.	10.9	(D)	(D)	-	(D)	-	-	(D)	7.5	5.9	1.6	(D)	13
Toledo, Ohio-Mich.	13.8	4.3	4.0	0.3	1.3	1.9	0.9	0.2	9.2	9.0	0.2	0.3	2
Tulsa, Okla.	9.9	5.7	5.6	0.1	4.8	-	0.9	(Z)	4.1	4.0	0.1	0.1	7
Wheeling, W. Va.-Ohio	6.4	4.5	4.5	0.1	4.5	-	-	-	(D)	(D)	0.2	(D)	11
Wichita, Kans.	5.5	0.7	0.4	0.3	0.5	0.1	0.1	(Z)	(D)	(D)	0.2	(D)	1
Wilmington, Del.-N.J.-Md.	57.2	44.0	40.2	3.8	3.2	27.5	3.3	10.0	12.5	11.0	1.5	0.7	1

Note: Totals may not agree precisely with detail because of independent rounding. No major industry groups are shown. No SMSA totals are shown where PACE is less than \$5.0 million or the standard error is 20 or greater. Major industry Group 23, Apparel and Other Textile Products, was not included in the survey and therefore is excluded from the SMSA totals.

- Represents zero. (D) Withheld to avoid disclosing operations of individual companies. (X) Not applicable. (Z) Represents less than \$50,000.

**Table 3A. Pollution Abatement Operating Costs and Related Statistics, by Industry for Establishments With 20 or More Employees: 1978**

(Millions of dollars)

SIC code	Industry	Total operating costs	Payments to Government units			Other operating costs								Cost re-covered	Standard error of estimates (percent)	
			Total	Public sewage use	Solid waste collection and disposal	Total	By form of abatement			By kind of cost						
							Air	Water	Solid waste	De-precia-tion	Labor	Equip-ment leasing	Ma-terials, supplies, services, and other			
	All industries <sup>1</sup> .....	6,275.7	471.0	411.7	59.1	5,804.5	2,527.4	2,118.2	1,159.1	1,139.5	1,235.8	104.8	3,324.1	1,056.7	2	
20	Food and kindred products.....	412.0	139.6	130.0	9.6	272.3	69.4	113.2	89.8	48.7	62.2	5.1	156.5	57.1	4	
201	Meat products.....	64.4	26.0	23.8	2.2	38.4	4.0	20.9	13.6	6.6	10.3	1.3	20.3	7.0	2	
2011	Meatpacking plants.....	36.8	15.0	13.7	1.4	21.7	3.1	11.3	7.4	3.7	6.5	0.8	10.8	4.8	1	
2013	Sausages and other prepared meats.....	8.0	2.6	2.3	0.3	5.4	0.4	2.0	3.2	0.5	1.4	0.1	3.4	0.1	5	
2016	Poultry dressing plants.....	16.5	7.1	6.7	0.4	9.4	0.4	6.8	2.2	2.1	2.0	0.4	4.8	0.3	8	
202	Dairy products.....	37.3	20.2	19.1	1.1	17.1	1.0	7.6	8.6	2.0	4.1	0.7	10.5	2.6	4	
2022	Cheese, natural and processed.....	9.2	2.8	2.7	0.1	6.4	0.2	3.2	3.0	1.0	1.5	0.3	3.5	(D)	16	
2026	Fluid milk.....	19.5	12.8	12.0	0.8	6.7	0.1	2.9	3.7	0.4	1.4	0.3	4.7	1.4	6	
203	Preserved fruits and vegetables.....	72.0	24.9	22.3	2.6	47.1	5.0	23.3	19.0	7.5	12.1	1.1	27.0	2.8	3	
2032	Canned specialties.....	10.1	3.7	3.3	0.3	6.5	1.6	3.1	2.0	1.0	1.8	0.3	3.5	0.1	2	
2033	Canned fruits and vegetables.....	26.4	11.6	11.0	0.6	14.8	0.2	6.9	7.7	2.0	3.7	0.2	8.9	1.3	6	
2035	Pickles, sauces, salad dressings.....	5.9	2.1	1.9	0.3	3.8	0.1	2.5	1.2	0.7	0.9	0.1	2.1	0.1	12	
2037	Frozen fruits and vegetables.....	15.3	3.7	2.1	0.7	12.6	2.2	7.2	3.1	2.7	3.5	0.4	6.3	0.9	8	
2038	Frozen specialties.....	9.7	2.3	3.0	0.3	6.4	0.6	2.3	3.6	0.5	1.0	0.1	4.8	0.1	7	
204	Grain mill products.....	65.7	13.8	13.1	0.6	51.9	25.0	18.8	8.1	9.8	9.7	0.4	31.6	14.6	6	
2041	Flour, other grain mill products.....	10.5	1.9	1.8	0.1	8.6	5.9	1.9	0.8	1.7	1.3	0.1	5.5	3.5	15	
2043	Cereal breakfast foods.....	5.7	1.7	1.6	0.1	4.0	2.4	0.4	1.2	1.0	1.5	(2)	1.5	2.4	2	
2046	Wet corn milling.....	29.9	6.4	6.4	(2)	23.5	12.6	9.4	1.4	4.5	4.1	0.1	14.5	3.4	1	
2047	Dog, cat, and other pet food.....	6.5	1.7	1.6	0.1	4.8	0.9	2.1	1.8	0.9	1.2	(2)	2.7	0.5	8	
205	Bakery products.....	11.8	4.7	3.9	0.7	7.1	0.5	2.0	4.6	0.4	1.5	0.1	5.1	(D)	6	
2051	Bread, cake, and related products.....	8.8	3.7	3.1	0.6	5.1	0.1	1.7	3.2	0.3	0.7	0.1	4.0	0.1	8	
206	Sugar, confectionery products.....	37.0	5.0	4.5	0.5	32.0	8.1	11.5	12.3	8.1	8.2	0.4	15.4	1.3	7	
2061	Raw cane sugar.....	7.5	0.1	(2)	0.1	7.4	1.8	2.2	3.4	1.8	1.9	0.2	3.5	0.1	18	
2062	Cane sugar refining.....	5.3	0.9	0.8	0.1	4.3	1.3	2.1	0.9	1.1	0.8	0.1	2.3	0.1	1	
2063	Beet sugar.....	10.4	0.8	0.7	0.1	9.6	3.0	4.4	2.2	4.4	1.0	(2)	4.2	0.4	11	
2065	Confectionery products.....	11.5	2.5	2.4	0.1	9.0	1.5	2.3	5.1	0.6	3.9	0.1	4.5	0.6	18	
2075	Soybean oil mills.....	12.0	1.9	1.8	0.2	10.1	6.7	2.3	1.1	2.6	2.1	0.1	5.3	5.3	7	
2079	Shortening and cooking oils.....	11.5	3.0	2.8	0.1	8.6	0.6	6.0	2.0	1.3	1.9	0.1	5.3	1.6	3	
208	Beverages.....	65.8	30.0	29.1	0.9	35.9	8.8	14.4	12.7	6.0	7.3	0.6	22.0	10.8	2	
2082	Malt beverages.....	41.8	20.5	20.3	0.1	21.3	5.2	11.4	4.7	4.1	5.0	0.1	12.1	10.2	1	
2086	Bottled and canned soft drinks.....	12.5	6.0	5.5	0.5	6.5	(2)	0.9	5.6	0.4	0.9	0.3	4.9	0.2	8	
209	Misc. foods, kindred products.....	24.9	8.6	8.0	0.7	16.3	5.3	3.9	7.1	2.1	3.7	0.2	10.3	7.4	5	
2095	Roasted coffee.....	7.0	1.4	1.3	0.1	5.6	3.5	0.8	1.3	0.8	0.7	(2)	4.0	5.4	1	
2099	Food preparations, n.e.c.....	13.7	6.0	5.6	0.4	7.7	1.6	1.9	4.2	0.9	2.2	0.1	4.4	1.8	7	
21	Tobacco products.....	13.2	2.8	2.7	0.1	10.4	6.0	1.9	2.6	3.4	3.8	0.3	2.9	(D)	2	
2111	Cigarettes.....	8.7	2.4	2.3	(2)	6.3	3.1	1.3	1.9	1.8	2.7	0.2	1.5	(D)	1	
22	Textile mill products.....	92.5	28.6	26.5	2.1	63.9	19.0	25.1	19.8	14.5	14.7	1.0	33.6	(D)	4	
2211	Weaving mills, cotton.....	9.6	2.2	2.1	0.1	7.4	3.6	2.5	1.3	1.2	2.4	0.1	3.6	0.4	8	
2221	Weaving mills, manmade fiber, silk.....	10.5	4.3	4.0	0.4	6.2	1.3	3.0	1.9	1.3	1.6	0.1	3.2	0.7	10	
2225	Knitting mills.....	17.4	7.3	6.7	0.5	10.1	2.2	4.3	3.6	2.6	2.3	0.2	5.0	0.7	8	
2257	Circular knit fabric mills.....	6.5	2.7	2.5	0.2	3.8	1.1	1.5	1.2	1.1	0.8	0.1	1.9	0.1	17	
226	Textile finishing, except wool.....	20.4	5.3	5.1	0.1	15.1	2.5	9.8	2.8	4.8	3.0	0.2	7.2	1.7	12	
2262	Finishing plants, manmade fiber, silk.....	9.7	1.7	1.5	0.1	8.1	0.7	5.9	1.5	2.5	1.0	0.1	4.5	0.9	11	
227	Floor covering mills.....	6.0	2.5	2.3	0.2	3.5	0.1	1.4	2.0	0.4	0.8	0.1	2.2	0.3	7	
2272	Tufted carpets and rugs.....	5.1	2.3	2.1	0.2	2.8	0.1	1.3	1.5	0.3	0.7	0.1	1.7	0.3	8	
24	Lumber and wood products.....	90.7	3.7	1.8	1.8	87.1	27.7	17.6	41.9	17.5	26.3	2.3	40.9	26.7	5	
2411	Logging camps, log contractors.....	9.9	(2)	(2)	(2)	9.8	0.7	4.1	5.0	1.2	3.4	0.5	4.7	(D)	12	
242	Sawmills and planing mills.....	28.8	0.5	0.2	0.2	28.3	10.9	1.7	15.7	5.4	10.9	0.6	11.5	7.9	10	
2421	Sawmills, planing mills, general.....	26.3	0.4	0.2	0.2	25.9	9.6	1.7	14.6	4.7	10.6	0.4	10.1	7.8	10	
243	Millwork, plywood, structural members.....	22.2	1.2	0.8	0.4	21.0	8.6	2.7	9.7	5.5	5.7	0.7	9.1	4.7	8	
2431	Millwork.....	5.7	0.5	0.2	0.2	5.2	2.5	0.4	2.3	1.3	1.2	0.1	2.6	0.9	18	
2436	Softwood veneer and plywood.....	12.0	0.4	0.3	0.1	11.6	5.1	2.2	4.3	3.5	3.6	0.4	4.1	2.9	10	
245	Wood buildings and mobile homes.....	5.4	0.8	0.1	0.7	4.5	0.1	0.1	4.4	0.1	0.7	0.3	3.5	-	10	
249	Miscellaneous wood products.....	23.0	0.8	0.4	0.4	22.1	7.2	8.9	6.1	5.1	5.2	0.3	11.5	13.7	13	
2499	Wood products, n.e.c.....	15.7	0.5	0.3	0.3	15.2	3.5	7.1	4.5	2.8	3.3	0.3	8.9	7.9	15	
25	Furniture and fixtures.....	26.4	3.8	2.4	1.5	22.6	9.1	1.6	11.9	4.8	5.0	0.4	12.4	2.8	7	
251	Household furniture.....	17.5	2.3	1.2	1.1	15.1	7.5	0.6	7.1	4.1	3.6	0.3	7.1	2.7	7	
2511	Wood household furniture.....	9.9	0.9	0.6	0.3	9.0	5.9	0.3	2.7	3.2	2.1	0.1	3.6	1.5	11	
26	Paper and allied products.....	622.0	49.2	40.3	8.9	572.8	158.4	317.3	96.7	146.1	96.2	11.9	318.8	175.6	2	
2611	Pulpmills.....	91.3	4.5	3.9	0.6	86.8	20.6	59.6	5.4	19.0	14.4	0.1	53.3	34.9	9	
2621	Papermills, except building paper.....	280.9	24.2	18.0	6.2	256.7	62.3	151.6	42.8	72.5	43.3	7.4	139.4	59.9	1	
2631	Paperboard mills.....	183.3	10.4	10.3	0.1	172.9	62.8	87.9	22.3	48.0	27.3	1.7	96.0	68.9	5	
264	Misc. converted paper products.....	39.3	5.5	4.3	1.2	33.8	7.4	11.8	14.7	4.0	6.8	2.2	21.1	9.2	4	
2641	Paper coating and glazing.....	12.2	1.9	1.7	0.2	10.2	3.6	1.0	5.7	1.5	2.2	1.8	4.8	3.9	7	
2647	Sanitary paper products.....	13.7	1.2	0.7	0.5	12.5	1.2	8.5	2.8	1.4	2.4	0.2	8.8	1.8	5	
265	Paperboard containers and boxes.....	18.5	3.6	3.0	0.6	14.8	2.6	2.9	9.4	1.6	2.9	0.5	9.8	1.2	10	
2653	Corrugated and solid fiber boxes.....	8.5	1.9	1.5	0.4	6.6	0.5	2.2	3.9	1.2	1.1	0.3	4.0	0.5	12	
27	Printing and publishing.....	37.3	7.9	5.0	2.9	29.4	7.9	1.9	19.6	2.4	5.8	0.4	20.9	5.8	6	
2711	Newspapers.....	6.0	2.5	1.7	0.8	3.5	0.3	0.2	3.0	0.2	0.8	0.1	2.5	0.6	6	
275	Commercial printing.....	19.2	3.0	1.5	1.6	16.2	7.0	1.0	8.2	1.7	2.6	0.3	11.6	3.5	6	
2752	Commercial printing, lithographic.....	10.0	2.1	1.0	1.2	7.8	2.2	0.5	5.2	0.7	1.2	0.2	5.8	0.1	8	
28	Chemicals and allied products.....	1,473.0	56.3	50.5	5.8	1,416.7	398.8	743.6	274.3	264.4	272.3	16.9	862.7	231.3	2	
281	Industrial inorganic chemicals.....	265.5	6.5	6.2	0.3	259.0	91.6	108.1	59.3	46.1	54.1	4.2	154.6	49.6	9	
2812	Alkalies and chlorino.....	33.5	0.6	0.5	0.1	32.9	8.2	18.0	6.7	6.8	7.3	1.6	17.1	3.9	5	
2816	Inorganic pigments.....	47.7	1.4	1.3	0.1	46.2	13.0	23.4	9.8	7.9	8.7	0.3	29.3	5.0	4	
2819	Industrial inorganic chemicals, n.e.c.....	182.4	4.3	4.2	0.1	178.1	69.9	65.8	42.4	31.						

Table 3A. Pollution Abatement Operating Costs and Related Statistics, by Industry for Establishments With 20 or More Employees: 1978—Continued

(Millions of dollars)

SIC code	Industry	Total operating costs	Payments to Government units			Other operating costs								Cost re-covered	Standard error of estimates (percent)
			Total	Public sewage use	Solid waste collection and disposal	Total	By form of abatement			By kind of cost					
							Air	Water	Solid waste	De-precia-tion	Labor	Equip-ment leasing	Ma-terials, supplies, and other		
Chemicals and allied products--Continued															
282	Plastics materials, synthetics.....	193.5	6.4	6.1	0.2	187.1	52.1	103.6	31.4	38.7	38.3	2.1	108.1	30.5	1
2821	Plastics materials and resins.....	111.4	5.3	5.1	0.2	106.2	31.3	56.3	18.6	21.7	18.3	1.1	65.1	23.2	2
2822	Synthetic rubber.....	18.2	0.9	0.9	-	17.3	5.1	10.0	2.1	2.7	4.4	0.6	9.5	4.6	3
2823	Cellulosic manmade fibers.....	13.5	(Z)	(Z)	-	13.5	1.9	10.7	0.8	3.3	1.7	0.2	8.2	(D)	1
2824	Organic fibers, noncellulosic.....	50.5	0.2	0.2	0.1	50.2	13.8	26.6	9.8	11.1	13.8	0.1	25.2	(D)	1
283	Drugs.....	65.7	10.3	7.3	3.0	55.3	13.7	26.2	15.5	8.2	11.3	1.2	34.8	10.1	3
2833	Medicinals and botanicals.....	27.1	0.8	0.8	(Z)	26.3	6.2	13.4	6.7	4.2	4.9	0.3	16.9	2.7	4
2834	Pharmaceutical preparations.....	37.3	9.3	6.3	3.0	28.0	7.5	12.4	8.2	4.0	6.2	0.9	17.2	7.3	5
284	Soaps, cleaners, toilet goods.....	30.6	6.8	6.5	0.3	23.9	7.3	9.5	7.2	4.3	3.7	0.3	15.5	3.8	5
2841	Soap and other detergents.....	15.6	4.2	4.1	0.1	11.4	5.6	3.2	2.6	1.9	1.7	0.1	7.7	3.6	8
2843	Surface active agents.....	7.7	1.1	1.0	0.1	6.6	1.4	4.1	1.2	2.0	0.8	0.1	3.7	(Z)	12
2851	Paints and allied products.....	18.0	2.1	1.6	0.5	15.9	2.3	3.6	10.1	1.4	3.1	0.5	10.9	2.6	7
286	Industrial organic chemicals.....	651.1	19.8	18.9	0.9	631.3	151.3	373.1	107.3	112.9	119.0	3.8	395.6	95.8	1
2865	Cyclic crudes and intermediates.....	120.0	5.7	5.6	(Z)	114.3	23.1	70.8	20.7	21.2	16.5	0.9	75.7	17.7	3
2869	Industrial organic chemicals, n.e.c.....	527.8	13.6	12.8	(Z)	514.2	127.4	300.8	86.1	90.6	101.9	2.8	318.8	77.2	1
287	Agricultural chemicals.....	202.3	1.1	0.9	0.2	201.2	61.9	106.9	32.5	44.2	34.5	3.2	119.5	302.0	3
2873	Nitrogenous fertilizers.....	47.9	0.2	0.1	(Z)	47.7	12.6	31.8	3.2	11.5	8.1	0.6	27.5	58.9	7
2874	Phosphatic fertilizers.....	76.2	0.1	0.1	0.1	76.1	30.4	28.2	17.5	17.4	10.6	1.3	46.8	16.6	3
2879	Agricultural chemicals, n.e.c.....	75.5	0.7	0.6	0.2	74.8	16.8	46.5	11.5	14.5	15.1	1.3	44.0	(D)	5
289	Miscellaneous chemical products.....	45.8	3.4	3.0	0.4	42.4	18.7	12.6	11.0	8.6	8.4	1.7	23.7	8.6	8
2892	Explosives.....	5.0	0.1	0.1	(Z)	4.9	2.5	1.6	0.8	0.3	1.7	-	2.9	0.6	12
2899	Chemical preparations, n.e.c.....	23.0	2.3	2.1	0.2	20.8	4.9	9.6	6.2	4.7	3.6	1.4	11.0	2.5	9
29	Petroleum and coal products.....	997.4	6.6	5.6	1.0	990.8	636.4	298.5	56.0	157.9	182.0	7.2	643.8	261.8	1
2911	Petroleum refining.....	964.5	4.4	3.6	0.8	960.1	620.9	292.5	46.7	151.4	176.0	6.5	626.3	257.8	1
295	Paving and roofing materials.....	23.4	2.0	1.9	0.1	21.4	11.7	2.8	7.0	4.3	3.4	0.2	13.5	1.0	11
2952	Asphalt felts and coatings.....	19.0	2.0	1.9	0.1	17.0	8.0	2.5	6.6	2.9	1.8	0.1	12.2	0.9	11
299	Misc. petroleum, coal products.....	9.4	0.2	0.1	0.1	9.2	3.8	3.2	2.3	2.2	2.6	0.4	4.0	3.0	18
30	Rubber, misc. plastics products.....	84.9	10.6	7.8	2.8	74.3	17.7	16.1	40.5	9.0	17.1	2.7	45.5	8.0	3
3011	Tires and inner tubes.....	18.6	2.4	2.1	0.3	16.2	4.4	2.9	8.9	2.4	5.0	0.4	8.3	2.7	1
3069	Fabricated rubber products, n.e.c.....	12.2	1.7	1.1	0.6	10.5	3.2	2.3	5.0	1.4	2.3	0.3	6.5	1.3	7
3079	Miscellaneous plastics products.....	49.0	5.6	3.9	1.7	43.4	9.2	10.3	23.8	4.8	9.0	1.7	29.7	3.6	10
31	Leather and leather products.....	19.3	6.2	5.2	1.0	13.1	1.4	6.1	5.6	2.2	2.6	0.2	8.0	0.4	16
314	Footwear, except rubber.....	2.9	0.4	0.3	0.1	2.5	0.3	0.1	2.1	0.1	0.4	(Z)	1.9	-	13
32	Stone, clay, glass products.....	251.1	9.3	7.3	2.0	241.8	163.7	25.9	52.2	62.6	56.2	6.4	115.6	74.8	4
3211	Flat glass.....	11.6	0.7	0.6	(Z)	10.9	5.1	3.1	2.7	3.9	2.1	0.5	4.4	(D)	12
322	Glass, pressed or blown.....	21.5	2.0	1.6	0.4	19.5	8.2	4.4	7.2	5.6	3.8	0.2	10.0	5.6	5
3221	Glass containers.....	8.1	1.0	0.9	0.1	7.1	2.5	0.8	3.8	1.0	1.7	0.1	4.3	(D)	5
3229	Pressed and blown glass, n.e.c.....	13.4	1.0	0.8	(Z)	12.4	5.6	3.6	3.4	4.6	2.1	(Z)	5.6	(D)	7
3241	Cement, hydraulic.....	89.9	0.2	0.1	(Z)	89.7	80.0	2.5	7.3	24.7	22.2	1.3	40.9	37.5	8
327	Concrete, gypsum, plaster products.....	36.1	1.1	0.7	0.5	34.9	19.3	4.1	11.5	8.2	9.2	2.5	15.1	4.9	12
329	Misc. nonmetallic mineral products.....	74.4	4.2	3.3	0.9	70.1	44.3	8.6	17.3	16.9	14.3	1.4	37.6	16.7	8
3292	Asbestos products.....	8.3	0.5	0.5	0.1	7.7	4.6	0.8	2.4	1.7	1.4	0.3	4.4	2.3	10
3296	Mineral wool.....	36.6	1.9	1.4	0.5	34.7	20.8	5.3	8.6	7.4	6.5	(Z)	20.8	10.8	8
33	Primary metal industries.....	1,321.4	25.4	22.7	2.8	1,296.0	809.6	310.3	176.1	295.3	279.5	34.2	686.8	141.7	3
331	Blast furnace, basic steel products.....	809.2	10.7	10.0	0.6	798.5	433.7	248.5	116.3	177.3	166.8	28.5	425.9	17.7	1
3312	Blast furnaces and steel mills.....	761.5	9.2	8.8	0.4	752.3	408.4	234.4	109.5	165.3	158.3	27.2	401.4	15.1	1
3313	Electrometallurgical products.....	27.9	(Z)	(Z)	(Z)	27.9	23.9	2.7	1.3	9.6	4.8	(Z)	13.5	(D)	4
3315	Steel wire and related products.....	6.1	0.6	0.5	0.1	5.5	0.6	2.8	2.1	0.8	1.3	0.2	3.2	(Z)	14
3316	Cold finishing of steel shapes.....	10.2	0.3	0.3	0.1	9.8	0.7	6.6	2.5	1.2	1.9	1.0	5.7	(D)	6
332	Iron and steel foundries.....	155.8	7.4	6.3	1.1	148.4	104.7	12.2	31.5	39.4	37.4	1.8	69.5	0.6	4
3321	Gray iron foundries.....	129.2	4.8	4.0	0.9	124.9	84.9	10.6	24.9	34.6	31.0	1.2	57.8	0.4	4
3325	Steel foundries, n.e.c.....	15.2	1.4	1.3	0.2	13.7	8.0	1.2	4.6	2.7	3.4	0.6	6.9	(Z)	8
333	Primary nonferrous metals.....	270.8	0.6	0.4	0.2	270.2	232.7	25.1	12.4	63.9	55.6	3.0	147.8	110.2	1
3331	Primary copper.....	98.3	0.1	0.1	(Z)	98.2	89.6	5.5	3.0	18.2	18.3	2.4	59.3	42.4	2
3332	Primary lead.....	(D)	0.1	0.1	-	(D)	13.5	0.5	(D)	2.3	(D)	(D)	9.1	(D)	(X)
3333	Primary zinc.....	(D)	0.2	0.1	0.1	(D)	25.3	4.0	(D)	1.7	(D)	(D)	14.5	15.8	(X)
3334	Primary aluminum.....	83.3	0.1	(Z)	(Z)	83.2	70.7	6.9	5.7	20.4	19.4	0.3	43.2	36.9	2
3339	Primary nonferrous metals, n.e.c.....	44.8	0.1	0.1	(Z)	44.7	33.6	8.2	2.9	15.3	7.5	0.1	21.8	7.8	4
3341	Secondary nonferrous metals.....	22.4	0.4	0.3	0.1	22.0	17.1	2.1	2.7	5.0	4.2	0.2	12.6	4.0	11
335	Nonferrous rolling and drawing.....	49.5	3.9	3.3	0.6	45.6	16.8	18.2	10.6	7.2	13.1	0.5	24.8	8.2	2
3351	Copper rolling and drawing.....	11.0	1.1	1.0	0.2	9.8	3.9	4.3	1.7	2.5	2.4	0.1	4.8	0.7	4
3353	Aluminum sheet, plate, and foil.....	14.5	0.6	0.5	0.1	13.9	4.4	5.6	4.0	2.0	5.1	0.2	6.6	3.8	1
3356	Nonferrous rolling and drawing, n.e.c.....	9.6	0.4	0.4	(Z)	9.1	3.7	4.1	1.4	1.0	2.8	(Z)	5.2	2.5	7
3357	Nonferrous wiredrawing, insulation.....	8.7	1.1	1.0	0.2	7.5	3.7	1.3	2.5	0.6	1.3	0.1	5.5	1.1	7
336	Nonferrous foundries.....	10.7	1.4	1.3	0.1	9.2	3.6	3.7	1.9	2.3	1.6	0.3	5.1	0.8	14
3361	Aluminum foundries.....	5.9	1.0	1.0	0.1	4.8	1.4	2.1	1.3	1.5	1.2	0.2	1.9	(D)	8
34	Fabricated metal products.....	168.7	27.9	24.1	3.8	140.7	42.1	49.7	49.0	22.3	36.7	2.6	79.2	4.5	15
341	Metal cans, shipping containers.....	20.5	2.4	2.1	0.3	18.1	10.6	2.7	4.8	2.7	2.0	(Z)	13.3	0.5	6
3411	Metal cans.....	17.1	1.9	1.7	0.2	15.2	8.8	2.4	4.1	2.4	1.6	(Z)	11.2	0.2	4
342	Cutlery, handtools and hardware.....	23.9	3.0	2.7	0.3	20.9	4.6	10.0	6.3	2.8	7.1	0.3	10.8	0.6	4
3429	Hardware, n.e.c.....	20.2	2.5	2.3	0.2	17.8	3.9	8.7	5.2	2.2	6.5	0.2	8.9	0.5	4
343	Plumbing, heating, except electric.....	8.1	1.0	0.9	0.1	7.1	2.2	2.0	2.9	1.5	1.7	0.1	3.8	0.4	10
344	Fabricated structural metal products.....	19.2	4.3	3.2	1.1	14.8	3.1	4.5	7.2	1.7	3.7	0.6	8.8	1.1	10
3443	Fabricated platework, boiler shop.....	5.4	1.3	1.0	0.3	4.1	0.8	1.2	2.1	0.3	1.4	0.1	2.3	0.1	13
345	Screw machine products, bolts, etc.....	8.5	2.3	2.0	0.2	6.2	0.4	3.3	2.5	0.7	1.7	0.1	3.8	0.1	10
3452	Bolts, nuts, rivets, and washers.....	7.7	1.9	1.8	0.1	5.8	0.4	3.3	2.2	0.7	1.6	0.1	3		

Table 3A. Pollution Abatement Operating Costs and Related Statistics, by Industry for Establishments With 20 or More Employees:  
1978—Continued

(Millions of dollars)

SIC code	Industry	Total operating costs	Payments to Government units			Other operating costs								Cost recovered	Standard error of estimates (percent)
			Total	Public sewage use	Solid waste collection and disposal	Total	By form of abatement			By kind of cost					
							Air	Water	Solid waste	De-precia-tion	Labor	Equip-ment leasing	Ma-terials, supplies, services, and other		
Fabricated metal products—Continued															
346	Metal forgings and stampings.....	33.7	5.3	4.9	0.4	28.4	7.9	8.3	12.2	4.9	9.6	0.5	13.4	0.8	6
3465	Automotive stampings.....	16.1	2.6	2.4	0.2	13.5	2.4	4.2	6.9	1.7	6.0	0.4	5.4	0.5	5
3469	Metal stampings, n.e.c.....	7.3	1.3	1.2	0.2	6.0	1.6	1.7	2.7	1.2	1.5	0.1	3.2	0.2	14
347	Metal services, n.e.c.....	23.2	4.5	4.1	0.5	18.7	4.6	11.7	2.4	3.3	3.1	0.4	11.8	0.7	18
348	Ordinance and accessories, n.e.c.....	12.5	1.8	1.7	0.1	10.6	2.1	4.1	4.4	1.6	4.4	0.1	4.6	0.2	12
349	Misc. fabricated metal products.....	19.2	3.2	2.4	0.8	16.0	6.6	3.1	6.2	3.1	3.3	0.6	9.0	0.2	11
3494	Valves and pipe fittings.....	9.1	1.7	1.3	0.5	7.4	3.9	1.1	2.4	2.1	1.3	0.2	3.8	0.2	10
35	Machinery, except electrical.....	158.8	24.3	20.5	3.6	134.5	41.0	33.9	59.5	19.9	36.0	3.6	75.1	14.8	12
351	Engines and turbines.....	23.2	2.3	2.1	0.2	20.9	9.5	6.3	5.0	4.5	4.6	0.1	11.6	1.5	1
3511	Turbines, turbine generator sets.....	6.2	0.3	0.3	-	5.8	4.2	0.9	0.8	0.8	0.5	(2)	4.5	(D)	1
3519	Internal combustion engines, n.e.c.....	17.0	2.0	1.8	0.2	15.0	5.3	5.5	4.2	3.8	4.1	(1)	7.1	(D)	2
352	Farm and garden machinery.....	16.7	1.8	1.6	0.1	14.9	6.3	2.8	5.7	2.2	3.9	0.2	8.6	0.3	2
3523	Farm machinery and equipment.....	15.5	1.5	1.3	0.1	14.0	6.3	2.7	5.1	2.2	3.7	0.1	8.1	0.1	2
353	Construction, related machinery.....	30.7	3.3	2.9	0.4	27.4	8.3	6.8	12.3	4.6	8.3	0.4	14.0	1.1	3
3531	Construction machinery.....	20.8	1.8	1.5	0.3	19.0	5.7	5.1	8.2	3.5	6.5	0.3	8.6	(D)	3
3533	Oilfield machinery.....	5.5	0.8	0.7	(2)	4.7	1.4	1.3	2.0	0.6	1.0	(2)	3.1	(D)	11
354	Metalworking machinery.....	10.8	3.1	2.7	0.3	7.7	1.9	1.2	4.5	0.9	1.5	0.3	5.0	0.2	9
355	Special industry machinery.....	12.2	1.5	1.2	0.3	10.7	3.1	2.6	5.0	1.5	2.9	0.3	6.0	(D)	5
3551	Food products machinery.....	1.1	0.2	0.2	0.1	0.9	0.3	0.1	0.5	0.1	0.1	(2)	0.7	(2)	11
3559	Special industry machinery, n.e.c.....	7.4	0.6	0.5	0.1	6.8	1.9	1.8	3.1	0.9	2.2	0.1	3.6	(D)	7
356	General industrial machinery.....	19.1	3.9	3.2	0.6	15.2	3.8	4.2	7.2	1.9	4.3	0.3	8.8	0.8	5
357	Office and computing machines.....	13.5	2.2	1.8	0.4	11.3	2.1	4.0	5.2	1.8	2.5	0.2	6.7	2.7	3
3573	Electronic computing equipment.....	8.6	1.4	1.2	0.2	7.2	1.3	2.7	3.3	0.9	1.5	0.2	4.7	(D)	2
358	Refrigeration and service machinery.....	23.7	4.1	3.1	0.9	19.6	3.1	4.3	12.2	1.5	6.7	1.8	9.7	(D)	2
3585	Refrigeration, heating equipment.....	21.2	3.2	2.7	0.6	17.9	2.8	3.9	11.2	1.3	6.3	1.7	8.6	(D)	2
359	Misc. machinery, except electrical.....	8.9	2.0	1.7	0.3	6.9	2.9	1.6	2.4	1.0	1.2	(2)	4.7	0.3	19
36	Electric, electronic equipment.....	148.6	25.1	21.3	3.7	123.5	30.7	50.4	42.4	20.2	33.9	4.0	65.4	16.0	2
361	Electric distributing equipment.....	6.1	1.2	1.0	0.2	4.9	0.7	2.2	1.9	0.5	1.2	(2)	3.1	(2)	4
362	Electrical industrial apparatus.....	19.7	2.5	2.1	0.4	17.2	7.9	4.2	5.2	3.3	2.9	0.6	10.4	1.5	4
3621	Motors and generators.....	5.4	1.1	1.0	0.2	4.3	0.8	1.6	1.9	1.0	0.9	0.1	2.4	(D)	4
3624	Carbon and graphite products.....	8.4	0.4	0.4	-	8.0	6.7	0.4	1.0	1.5	1.1	0.3	5.1	(D)	7
363	Household appliances.....	20.5	3.6	3.2	0.5	16.8	4.9	5.1	6.8	1.8	5.8	0.4	8.9	1.2	2
3632	Household refrigerators, freezers.....	6.2	1.1	1.0	0.2	5.1	1.4	1.3	2.4	0.2	1.7	0.1	3.1	(D)	1
364	Electric lighting, wiring equipment.....	17.4	3.1	2.8	0.3	14.3	3.7	4.9	5.7	1.9	4.7	0.1	7.6	0.7	7
365	Radio, TV receiving equipment.....	7.0	1.2	1.1	0.2	5.7	0.8	1.9	3.0	1.0	0.9	1.5	2.3	0.3	5
3651	Radio and TV receiving sets.....	5.7	0.8	0.8	0.1	4.9	0.5	1.8	2.5	1.0	0.8	1.5	1.6	0.3	4
366	Communication equipment.....	24.8	4.7	3.9	0.8	20.1	3.7	8.9	7.6	2.9	6.6	0.5	10.2	2.6	2
3661	Telephone and telegraph apparatus.....	(D)	(D)	1.3	(D)	10.4	2.5	5.5	2.3	2.0	3.6	0.2	4.6	(D)	3
3662	Radio and TV communication equipment.....	(D)	(D)	2.6	(D)	9.8	1.1	3.4	5.3	0.9	3.0	0.2	5.6	1.2	2
367	Electronic components, accessories.....	33.8	5.6	4.4	1.2	28.2	3.2	16.8	8.2	4.2	8.8	0.8	14.5	3.3	6
3674	Semiconductors, related devices.....	15.2	2.2	1.8	0.5	12.9	1.3	8.5	3.1	2.0	4.7	0.2	6.1	1.9	7
3679	Electronic components, n.e.c.....	11.0	2.0	1.5	0.4	9.1	1.2	5.9	2.0	1.6	2.2	0.3	5.0	1.3	12
369	Misc. electrical equipment, supplies.....	19.4	3.2	2.9	0.2	16.2	5.9	6.4	4.0	4.7	2.9	0.2	8.4	6.3	5
3691	Storage batteries.....	9.7	0.7	0.7	(2)	9.0	4.4	3.5	1.1	3.4	1.4	(2)	4.1	4.0	8
3694	Engine electrical equipment.....	6.4	1.7	1.6	0.1	4.7	0.8	2.2	1.6	1.0	0.9	(2)	2.7	(D)	5
37	Transportation equipment.....	280.5	34.8	31.0	3.8	245.7	77.3	79.2	89.2	38.9	89.1	3.8	114.0	16.6	1
371	Motor vehicles and equipment.....	208.1	24.3	22.4	1.9	183.8	63.9	57.4	62.6	31.3	63.7	2.6	86.3	14.8	1
3711	Motor vehicles and car bodies.....	116.6	11.8	10.8	1.1	104.7	43.3	27.5	33.9	18.1	40.5	0.5	45.6	(D)	1
3714	Motor vehicle parts, accessories.....	87.3	11.9	11.3	0.6	75.4	19.8	29.7	25.9	12.9	22.1	2.0	38.4	(D)	1
372	Aircraft and parts.....	30.9	5.0	4.2	0.8	25.9	5.7	11.4	8.9	2.6	12.2	0.2	10.9	1.5	3
3721	Aircraft.....	12.0	2.3	1.8	0.5	9.7	1.5	3.9	4.3	0.5	4.6	0.1	4.5	0.3	1
3724	Aircraft engines and engine parts.....	12.3	1.0	0.9	0.1	11.2	2.7	5.5	3.0	1.8	6.2	(2)	3.3	1.0	5
3728	Aircraft equipment, n.e.c.....	6.6	1.6	1.5	0.2	4.9	1.5	2.0	2.5	0.3	1.5	(2)	3.2	0.1	9
373	Ship, boat building, repairing.....	19.7	1.7	1.3	0.4	17.9	3.4	4.0	10.6	1.7	7.0	0.9	8.4	0.1	6
3731	Ship building and repairing.....	17.8	1.5	1.3	0.3	16.2	3.2	3.9	9.1	1.6	6.6	0.8	7.3	0.1	6
3743	Railroad equipment.....	7.3	0.8	0.7	0.1	6.5	2.1	2.2	2.2	1.4	1.9	0.1	3.1	(D)	4
376	Guided missiles, space vehicles.....	8.8	1.9	1.4	0.5	6.9	1.8	2.8	2.3	1.3	3.3	(2)	2.2	0.2	1
3761	Guided missiles, space vehicles.....	6.2	1.5	1.1	0.4	4.7	1.4	1.8	1.5	1.2	2.1	(2)	1.4	0.2	1
38	Instruments, related products.....	55.8	5.2	4.6	0.6	50.6	7.3	22.3	21.0	7.9	13.3	1.0	28.5	5.0	2
382	Measuring, controlling devices.....	6.8	1.5	1.3	0.2	5.3	0.5	2.2	2.6	0.8	1.4	0.1	3.1	0.1	5
384	Medical instruments, supplies.....	5.6	1.2	1.1	0.1	4.4	0.8	1.1	2.5	0.8	1.0	0.2	2.4	0.2	13
3861	Photographic equipment and supplies.....	38.7	1.4	1.3	(2)	37.3	5.6	17.8	13.9	6.0	10.0	0.6	20.7	4.7	1
39	Misc. manufacturing industries.....	22.1	3.7	2.4	1.3	18.3	4.0	3.4	11.0	1.5	3.0	0.2	13.5	2.5	4
399	Miscellaneous manufactures.....	10.3	1.3	0.7	0.6	9.1	2.3	1.3	5.4	0.5	1.0	0.1	7.5	0.6	5

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.

- Represents zero.

(D) Withheld to avoid disclosing operations of individual companies.

(S) Data suppressed because did not meet publication standards. This includes cells where GAC is less than \$5.0 million or the standard error is 20 or greater. See text.

(Z) Represents less than \$50,000.

<sup>1</sup>Excludes Major Industry Group 23, Apparel and Other Textile Products.

Table 3B. Pollution Abatement Operating Costs and Related Statistics, by State and Major Industry Group for Establishments With 20 or More Employees: 1978

(Millions of dollars)

SIC code	State and major industry group	Total operating costs	Payments to Government units			Total	Other operating costs							Cost recovered	Standard error of estimates (percent) GAC
			Total	Public sewage use	Solid waste collection and disposal		By form of abatement			By kind of cost					
							Air	Water	Solid waste	De-proc-tion	Labor	Equipment leasing	Materials, supplies, services, and other		
	United States <sup>1</sup> .....	6,275.7	471.0	411.7	59.1	5,804.5	2,527.4	2,118.2	1,159.1	1,139.5	1,235.8	104.8	3,324.1	1,056.7	1
26	Maine.....	38.7	2.7	2.6	0.1	35.9	4.9	21.0	10.0	12.4	7.1	0.4	16.3	4.3	4
	Paper and allied products.....	31.3	0.7	0.7	0.1	30.6	3.9	19.3	7.4	11.6	5.5	0.2	13.5	3.7	3
26	New Hampshire.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Paper and allied products.....	8.4	(Z)	(Z)	-	8.4	1.0	6.6	0.9	1.9	0.9	0.2	5.3	1.4	4
26	Vermont.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
26	Massachusetts.....	62.5	6.3	4.8	1.4	56.2	15.4	23.5	17.3	8.7	13.2	0.7	33.7	3.4	6
	Paper and allied products.....	7.0	0.8	0.5	0.3	6.2	1.0	3.6	1.6	0.8	1.0	(Z)	4.3	0.7	18
28	Chemicals and allied products.....	9.3	0.9	0.8	(Z)	8.5	1.4	5.2	1.8	1.6	1.5	(Z)	5.3	0.6	16
38	Instruments, related products.....	7.2	0.1	0.1	(Z)	7.2	0.5	3.5	3.1	0.3	3.5	(Z)	3.3	(Z)	3
	Rhode Island.....	9.1	1.7	1.6	0.1	7.4	1.7	2.9	2.8	1.7	1.5	0.1	4.2	1.1	9
28	Connecticut.....	48.0	3.8	3.4	0.5	44.3	14.0	19.0	11.2	6.6	9.3	1.0	27.5	12.8	5
	Chemicals and allied products.....	12.2	0.7	0.7	(Z)	11.5	3.6	5.9	2.0	1.6	1.5	0.1	8.3	9.0	4
33	Primary metal industries.....	5.1	0.2	0.1	0.1	4.9	2.6	1.3	0.9	0.8	1.1	(Z)	3.0	0.1	15
34	Fabricated metal products.....	6.3	0.4	0.2	0.1	6.0	1.7	3.1	1.2	1.1	1.4	0.5	3.1	0.2	12
37	Transportation equipment.....	5.7	0.1	0.1	(Z)	5.5	1.2	3.5	0.8	1.3	2.2	(Z)	2.0	(Z)	4
20	New York.....	253.0	24.0	21.4	2.5	229.0	65.5	91.3	72.2	41.8	52.3	7.6	127.3	38.3	9
	Food and kindred products.....	16.3	5.1	4.9	0.2	11.2	0.9	3.6	6.8	1.3	2.5	0.2	7.3	2.0	8
26	Paper and allied products.....	22.0	3.1	2.3	0.8	18.9	3.2	11.6	4.0	4.3	4.2	0.5	9.9	5.2	5
28	Chemicals and allied products.....	58.1	5.8	5.4	0.4	52.3	11.9	28.3	12.0	11.5	9.4	1.4	29.9	5.1	4
32	Stone, clay, glass products.....	9.2	0.9	0.7	0.2	8.3	4.6	1.4	2.2	1.8	2.0	0.2	4.2	2.0	8
33	Primary metal industries.....	34.5	0.8	0.4	0.1	7.2	1.4	1.6	4.2	1.0	3.0	(Z)	3.3	(Z)	8
34	Fabricated metal products.....	7.6	0.4	0.4	0.2	15.4	2.0	4.6	8.9	1.2	5.4	1.6	7.2	(D)	1
35	Machinery, except electrical.....	17.0	1.6	1.6	0.1	19.5	2.9	10.0	6.6	3.2	6.1	0.6	9.5	(D)	5
36	Electric, electronic equipment.....	21.2	1.7	1.8	0.1	22.7	13.9	5.0	3.8	3.2	4.0	1.2	14.4	(D)	1
37	Transportation equipment.....	23.6	0.9	0.8	(Z)	24.3	3.2	11.9	9.1	4.4	5.1	0.1	14.7	(D)	1
	Instruments, related products.....	25.6	1.3	1.3	(Z)	26.3	3.2	11.9	9.1	4.4	5.1	0.1	14.7	(D)	1
20	New Jersey.....	239.3	13.7	12.6	1.2	225.7	88.7	96.0	40.9	36.4	43.1	2.2	144.1	41.0	4
	Food and kindred products.....	15.2	2.5	2.4	0.1	12.7	4.5	4.8	3.4	1.4	2.9	0.3	8.1	4.5	13
26	Paper and allied products.....	7.9	2.0	2.0	-	5.9	1.2	3.1	1.6	0.8	1.1	(Z)	3.9	1.1	5
28	Chemicals and allied products.....	111.1	4.0	3.9	0.1	107.1	26.7	65.0	15.5	18.4	18.8	0.4	69.6	8.1	1
29	Petroleum and coal products.....	37.4	0.2	0.2	-	37.2	25.2	9.9	2.1	6.9	7.0	0.3	23.0	9.8	1
32	Stone, clay, glass products.....	13.9	0.4	0.3	0.1	13.5	8.6	1.5	3.5	2.7	1.5	0.5	8.8	2.5	16
33	Primary metal industries.....	18.9	1.0	0.8	0.1	17.9	10.9	5.6	1.4	2.6	4.9	0.1	10.4	14.1	5
34	Fabricated metal products.....	6.0	0.6	0.6	(Z)	5.4	2.6	1.0	1.8	1.0	1.5	(Z)	3.0	(Z)	6
37	Transportation equipment.....	5.2	(Z)	(Z)	-	5.2	1.7	1.5	2.0	0.3	0.7	(Z)	4.2	-	11
20	Pennsylvania.....	480.6	26.1	22.9	3.3	454.5	255.9	126.7	71.8	87.4	93.4	9.4	264.4	54.9	1
	Food and kindred products.....	20.0	6.5	5.9	0.6	13.5	3.8	5.9	3.7	1.6	2.6	0.2	9.1	1.2	4
26	Paper and allied products.....	23.3	3.1	2.7	0.4	20.2	4.2	10.4	5.6	3.3	4.6	4.6	7.7	7.6	4
28	Chemicals and allied products.....	43.2	2.7	2.6	0.1	40.5	14.9	19.0	6.6	7.0	7.6	0.6	25.4	8.3	7
29	Petroleum and coal products.....	82.2	0.8	0.7	(Z)	81.4	51.9	27.4	2.1	9.5	9.9	0.1	61.9	(D)	1
30	Rubber, misc. plastics products.....	5.9	0.5	0.3	0.2	4.5	1.6	0.2	2.6	0.4	0.7	0.6	2.8	0.1	14
33	Primary metal industries.....	223.7	3.2	2.7	0.5	220.5	141.8	48.4	30.3	48.2	50.7	2.7	118.9	20.3	1
34	Fabricated metal products.....	10.3	1.5	1.4	0.1	8.8	3.3	2.2	3.2	1.6	2.1	(Z)	5.0	(Z)	13
35	Machinery, except electrical.....	12.5	1.7	1.5	0.2	10.8	6.4	1.9	2.5	2.1	1.2	0.1	7.4	0.1	12
36	Electric, electronic equipment.....	12.2	1.1	1.0	0.1	11.0	4.0	4.1	3.0	2.5	2.9	0.1	5.5	(D)	6
37	Transportation equipment.....	6.6	0.7	0.5	0.2	5.9	2.6	1.4	1.9	0.5	2.8	(Z)	2.6	(Z)	7
20	Ohio.....	413.4	45.2	42.9	2.3	368.2	164.7	130.7	72.9	71.9	92.4	5.1	198.7	46.0	1
	Food and kindred products.....	21.9	12.6	12.0	0.6	9.3	3.0	3.3	3.0	1.7	1.9	0.3	5.5	3.6	4
26	Paper and allied products.....	16.4	1.6	1.5	0.1	14.8	3.5	8.7	2.6	2.9	3.2	0.9	7.9	3.4	6
28	Chemicals and allied products.....	56.6	5.2	5.1	(Z)	51.5	15.3	27.3	9.0	9.3	10.3	0.7	31.2	9.5	7
29	Petroleum and coal products.....	20.2	0.4	0.3	(Z)	19.9	11.6	5.0	3.4	2.7	4.6	0.2	12.4	10.8	8
30	Rubber, misc. plastics products.....	16.1	2.5	2.1	0.3	13.7	4.3	2.1	7.2	1.9	4.0	0.2	7.5	1.0	4
32	Stone, clay, glass products.....	21.2	1.3	1.3	(Z)	19.9	9.3	4.2	6.4	6.5	4.7	(Z)	8.7	6.3	9
33	Primary metal industries.....	170.6	3.9	3.8	0.1	166.6	97.0	55.9	13.7	35.8	40.1	2.1	88.6	7.4	2
34	Fabricated metal products.....	25.8	5.0	4.6	0.4	20.8	6.0	7.2	7.6	3.3	6.9	0.3	10.2	0.7	7
35	Machinery, except electrical.....	11.2	3.0	2.8	0.2	8.2	2.3	1.5	4.4	1.1	2.3	0.1	4.7	(D)	6
36	Electric, electronic equipment.....	11.4	2.5	2.2	0.3	8.9	2.7	3.1	3.1	0.8	2.9	(Z)	5.2	(D)	6
37	Transportation equipment.....	35.9	5.3	5.2	0.1	30.6	9.1	11.9	9.6	5.7	10.9	0.1	13.9	1.1	3
20	Indiana.....	303.4	19.5	17.8	1.8	284.0	139.6	96.8	47.6	56.1	61.3	24.5	146.8	30.3	1
	Food and kindred products.....	11.6	3.8	3.6	0.2	7.8	2.8	3.0	2.0	1.6	2.6	0.5	7.9	2.2	10
28	Chemicals and allied products.....	40.4	2.8	2.3	0.5	37.6	5.2	27.5	5.0	7.0	6.2	1.5	22.9	(D)	3
29	Petroleum and coal products.....	22.9	0.2	0.2	-	22.7	19.0	3.2	0.5	4.0	2.4	0.3	16.0	(D)	1
32	Stone, clay, glass products.....	8.8	0.5	0.4	0.1	8.3	5.5	0.7	2.1	2.4	1.7	0.1	4.1	4.4	16
33	Primary metal industries.....	158.9	2.8	2.5	0.3	156.0	94.1	43.1	18.8	32.9	33.0	20.0	70.1	5.3	1
34	Fabricated metal products.....	9.2	1.7	1.6	0.1	7.5	2.2	2.4	2.9	0.6	2.9	0.1	3.8	0.3	19
35	Machinery, except electrical.....	5.5	1.1	1.0	0.1	4.4	1.7	1.1	1.7	0.8	1.2	0.1	2.3	0.1	8
36	Electric, electronic equipment.....	17.3	2.9	2.8	0.1	14.4	3.9	5.7	4.8	2.7	3.7	1.4	6.6	1.3	2
37	Transportation equipment.....	14.5	2.1	2.0	0.1	12.4	3.6	4.3	4.5	1.4	5.3	0.2	5.6	1.0	2
20	Illinois.....	325.6	30.7	28.3	2.3	294.6	126.1	97.5	70.9	58.9	62.6	4.4	168.4	39.2	2
	Food and kindred products.....	42.9	9.9	9.5	0.4	33.0	11.1	11.7	10.2	4.7	7.1	0.5	20.8	5.5	5
26	Paper and allied products.....	6.5	1.0	0.9	0.1	5.5	0.8	1.6	3.1	1.0	0.8	0.2	3.5	0.4	10
27	Printing and publishing.....	7.6	0.6	0.5	0.1	6.9	3.6	0.6	2.7	0.8	0.5	(Z)	5.6	(D)	14
28	Chemicals and allied products.....	55.1	5.6	5.4	0.2	49.5	17.3	18.9	13.4	9.2	6.3	0.3	33.7	4.7	5
29	Petroleum and coal products.....	48.5	0.6	0.4	0.2	47.9	28.8	15.7	3.4	8.2	11.5	0.1	28.1	18.0	1
30	Rubber, misc. plastics products.....	6.6	0.5	0.4	0.1	6.1	1.2	2.4	2.5	0.9	1.0	0.1	4.1	1.2	8
33	Primary metal industries.....	79.2	2.5	2.3	0.2	76.8	41.4	28.2	7.2	22.3	16.2	1.2	37.0	3.1	1
34	Fabricated metal products.....	17.2	2.5	2.3	0.2	14.7	3.8	5.7	5.2	1.9	4.2	0.5	8.1	(D)	11
35	Machinery, except electrical.....	26.3	2.8	2.5	0.2	23.5	7.0	6.2	10.2	4.1	7.6				



**Table 3B. Pollution Abatement Operating Costs and Related Statistics, by State and Major Industry Group for Establishments With 20 or More Employees: 1978—Continued**

(Millions of dollars)

SIC code	State and major industry group	Total operating costs	Payments to Government units			Other operating costs								Cost re-covered	Standard error of estimates (percent)
			Total	Public sewage use	Solid waste collection and disposal	By form of abatement			By kind of cost						
						Air	Water	Solid waste	De-precia-tion	Labor	Equip-ment leasing	Ma-terials, supplies, services, and other	GAC		
24	Mississippi.....	78.7	2.5	2.2	0.4	76.1	36.2	30.3	9.6	31.1	12.4	0.8	31.8	23.7	6
26	Lumber and wood products.....	9.3	0.1	(Z)	0.1	9.1	2.6	5.4	1.2	2.3	2.0	0.2	4.7	5.4	16
26	Paper and allied products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
28	Chemicals and allied products.....	17.5	(Z)	(Z)	(Z)	17.5	(D)	3.8	12.0	1.6	3.3	2.0	-	12.2	1
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
20	Arkansas.....	56.5	3.6	2.8	0.8	52.9	17.7	24.9	10.4	10.4	11.5	1.1	29.8	13.4	10
26	Food and kindred products.....	5.1	2.1	1.8	0.3	3.0	0.3	1.1	1.6	0.7	0.7	(Z)	1.7	0.4	5
26	Paper and allied products.....	14.0	(Z)	(Z)	-	14.0	4.9	7.5	1.5	3.0	2.8	0.2	7.9	7.7	1
20	Louisiana.....	297.7	1.3	1.1	0.2	296.4	88.5	167.0	40.9	56.3	53.0	4.1	183.0	53.3	1
26	Food and kindred products.....	6.3	0.6	0.5	0.1	5.7	2.1	1.7	1.9	1.4	1.3	0.1	2.8	1.0	14
26	Paper and allied products.....	12.9	0.2	0.2	(Z)	12.7	4.3	6.9	1.6	4.4	1.6	0.7	6.1	4.6	2
28	Chemicals and allied products.....	163.5	0.1	0.1	(Z)	163.4	30.4	102.4	30.6	34.2	33.4	2.4	93.4	19.6	2
29	Petroleum and coal products.....	98.1	0.1	0.1	-	98.0	42.5	52.6	3.0	12.9	12.8	0.4	72.0	23.7	1
33	Primary metal industries.....	10.2	(Z)	(Z)	(Z)	10.2	7.7	1.6	0.8	2.7	1.5	0.1	5.8	1.7	7
29	Oklahoma.....	33.6	1.0	0.6	0.4	32.6	14.3	11.8	6.6	8.9	6.8	0.4	16.7	5.3	9
29	Petroleum and coal products.....	12.9	(Z)	(Z)	(Z)	12.9	7.5	4.4	1.1	1.9	3.2	(Z)	7.7	(D)	1
20	Texas.....	743.5	24.2	17.5	6.6	719.4	354.6	247.4	117.4	127.1	127.0	8.1	456.9	185.7	3
26	Food and kindred products.....	18.9	8.0	7.6	0.4	10.9	1.7	4.9	4.5	1.9	2.6	0.4	6.3	1.4	4
26	Paper and allied products.....	32.8	5.1	1.0	4.1	27.6	9.5	9.7	8.5	5.9	4.1	0.2	17.4	4.5	2
28	Chemicals and allied products.....	270.8	3.5	3.3	0.1	267.3	79.8	126.0	61.6	47.4	43.4	3.3	170.9	63.4	8
29	Petroleum and coal products.....	312.9	0.4	0.3	0.1	312.5	201.5	87.7	23.3	51.2	53.3	2.5	205.5	92.8	2
32	Stone, clay, glass products.....	14.0	0.2	0.2	0.1	13.8	10.3	1.5	2.0	3.1	3.8	0.3	6.6	4.3	17
33	Primary metal industries.....	62.7	0.2	0.2	(Z)	62.5	46.5	11.6	4.4	14.8	10.6	0.8	36.3	17.9	4
34	Fabricated metal products.....	6.4	1.4	1.2	0.2	4.9	1.2	1.9	1.8	0.6	1.2	0.1	3.0	(Z)	16
35	Machinery, except electrical.....	6.7	1.5	1.1	0.4	5.2	0.8	1.4	3.1	0.4	1.0	(Z)	3.7	(D)	6
37	Transportation equipment.....	5.3	0.8	0.7	0.1	4.5	0.8	1.3	2.4	0.5	2.7	(Z)	1.3	0.1	9
29	Montana.....	16.3	0.5	0.4	0.1	15.8	11.8	2.9	1.1	3.2	3.5	(Z)	9.1	2.2	4
33	Petroleum and coal products.....	6.2	(Z)	(Z)	(Z)	6.2	4.4	1.6	0.2	0.7	1.2	(Z)	4.3	(D)	1
33	Primary metal industries.....	5.8	(Z)	(Z)	-	5.8	5.5	0.3	-	1.4	1.2	-	3.2	(D)	1
28	Idaho.....	23.8	0.7	0.5	0.3	23.0	11.9	6.0	5.1	5.1	5.8	0.5	11.7	3.2	7
28	Chemicals and allied products.....	10.9	-	-	-	10.9	6.2	1.7	3.0	1.4	2.6	0.1	6.9	(D)	1
28	Wyoming.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
28	Colorado.....	36.7	2.9	2.6	0.3	33.8	20.0	7.7	6.1	11.7	8.1	0.3	13.6	6.5	6
33	Chemicals and allied products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	0.1	(X)
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	0.3	(X)
33	New Mexico.....	(D)	0.6	0.5	0.1	(D)	(D)	0.5	(D)	(D)	2.5	(D)	(D)	7.2	(X)
33	Primary metal industries.....	(D)	-	-	-	(D)	(D)	-	(D)	(D)	1.9	-	(D)	6.5	(X)
33	Arizona.....	66.9	0.6	0.4	0.2	66.3	58.7	2.9	4.6	14.7	10.1	2.4	39.1	22.7	15
33	Primary metal industries.....	49.1	(Z)	(Z)	(Z)	49.1	46.3	1.0	1.9	11.5	6.6	2.4	28.7	15.8	1
33	Utah.....	25.6	0.9	0.6	0.2	24.7	18.5	3.3	2.9	5.9	5.8	0.3	12.7	7.9	3
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	5.5	(X)
33	Nevada.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
20	Washington.....	130.3	6.4	4.2	2.2	123.8	61.5	44.2	18.1	33.0	25.8	0.9	64.1	39.8	2
24	Food and kindred products.....	6.5	2.5	2.0	0.5	4.0	0.6	1.9	1.5	1.1	1.3	(Z)	1.7	1.3	10
26	Lumber and wood products.....	11.4	0.5	0.2	0.3	10.9	2.0	2.3	6.6	1.6	3.5	0.3	5.5	1.3	11
26	Paper and allied products.....	37.6	0.2	0.1	0.2	37.4	8.3	27.4	1.7	15.6	4.7	(Z)	17.1	16.1	1
29	Petroleum and coal products.....	16.2	(Z)	(Z)	(Z)	16.2	9.0	6.5	0.7	3.2	3.7	0.4	8.8	(D)	4
33	Primary metal industries.....	39.5	0.2	0.1	0.1	39.3	32.5	2.8	4.0	7.0	8.9	(Z)	23.3	11.4	2
24	Oregon.....	74.7	4.4	3.4	0.9	70.5	24.8	25.9	19.8	17.9	17.4	0.4	35.2	27.6	4
26	Lumber and wood products.....	14.2	0.5	0.2	0.3	13.7	4.1	3.1	6.5	3.3	4.8	0.3	5.3	2.7	12
26	Paper and allied products.....	31.6	0.7	0.6	0.1	30.9	8.3	14.5	8.2	8.5	5.7	(Z)	16.7	21.7	6
33	Primary metal industries.....	15.5	0.1	0.1	(Z)	15.4	8.2	5.1	2.0	3.3	4.1	-	8.0	(D)	5
20	California.....	479.6	45.0	33.8	11.8	433.9	245.5	107.8	80.9	61.1	93.9	4.3	274.6	84.0	1
24	Food and kindred products.....	47.5	20.4	18.3	2.0	27.1	5.8	9.8	11.5	5.3	5.4	0.1	16.2	4.8	4
26	Lumber and wood products.....	10.8	0.4	0.2	0.3	10.4	2.9	0.9	6.6	1.7	3.8	0.3	4.5	0.8	15
26	Paper and allied products.....	23.2	3.2	2.2	1.0	20.0	6.2	9.9	3.8	3.0	3.3	(Z)	13.6	2.0	6
28	Chemicals and allied products.....	48.5	4.6	2.0	2.6	43.9	14.7	15.4	13.8	6.7	7.9	0.7	28.8	7.9	6
29	Petroleum and coal products.....	210.9	2.9	2.4	0.5	208.0	151.6	47.1	9.3	23.9	42.8	1.8	139.6	49.4	1
30	Rubber, misc. plastics products.....	6.4	0.7	0.3	0.4	5.6	1.4	0.8	3.4	0.3	1.8	0.1	3.5	0.4	10
32	Stone, clay, glass products.....	32.3	0.7	0.3	0.4	31.6	25.4	1.6	4.9	5.0	8.8	0.4	17.3	8.8	8
33	Primary metal industries.....	32.3	1.6	1.4	0.2	30.7	17.5	7.4	5.8	4.5	6.6	0.4	19.2	4.5	9
34	Fabricated metal products.....	13.6	1.9	1.1	0.7	11.7	7.3	2.2	2.0	1.3	0.1	0.1	8.4	0.5	10
35	Machinery, except electrical.....	5.6	1.1	0.6	0.5	4.5	1.4	0.8	2.2	0.9	0.8	0.1	2.8	(D)	5
36	Electric, electronic equipment.....	9.3	2.2	1.1	1.1	7.2	1.9	2.7	2.5	1.0	1.3	0.1	4.8	2.4	9
37	Transportation equipment.....	26.8	3.2	2.3	0.8	23.6	7.4	7.5	8.7	5.9	8.1	0.1	9.5	0.4	3
26	Alaska.....	8.6	0.2	0.2	0.1	8.4	0.3	7.2	0.9	1.9	1.3	(Z)	5.2	4.2	3
26	Paper and allied products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Hawaii.....	7.6	0.5	0.4	0.1	7.0	1.0	2.7	3.4	0.9	1.6	0.2	4.4	0.7	16

Note: Totals 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.

- Represents zero. (D) Withheld to avoid disclosing operations of individual companies. (S) Data suppressed because did not meet publication standards. This includes cells where 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.

<sup>1</sup>Major Industry Group 23, Apparel and Other Textile Products, was not included in the survey and therefore is excluded from the U.S. and State totals.

Table 3C. Pollution Abatement Operating Costs and Related Statistics, by Standard Metropolitan Statistical Area (SMSA) for Establishments With 20 or More Employees: 1978

(Millions of dollars)

Standard metropolitan statistical area	Total operating costs	Payments to Government units			Other operating costs								Cost re-covered	Standard error of estimates (percent)	
		Total	Public sewage use	Solid waste collection and disposal	Total	By form of abatement			By kind of cost						
						Air	Water	Solid waste	De-precia-tion	Labor	Equip-ment leasing	Ma-terials, supplies, services, and other			
Akron, Ohio.....	11.1	2.6	2.5	0.1	8.5	2.8	1.6	4.2	1.2	3.1	0.2	4.0	0.7	6	
Albany-Schenectady-Troy, N.Y.....	17.3	1.1	1.1	0.1	16.1	4.2	8.3	3.6	4.1	3.5	0.3	8.2	3.3	4	
Allentown-Bethlehem-Easton, Pa.-N.J.....	45.8	1.8	1.5	0.3	44.0	27.3	11.4	5.3	14.4	17.3	0.4	11.7	6.8	5	
Amarillo, Tex.....	5.0	0.2	0.1	(2)	4.8	2.7	1.6	0.5	0.9	1.0	-	3.0	(D)	15	
Anaheim-Santa Ana-Garden Grove, Calif.....	10.1	2.3	1.7	0.6	7.8	2.0	2.2	3.6	1.2	1.3	0.1	5.1	2.5	11	
Ann Arbor, Mich.....	8.0	1.6	1.5	(2)	6.5	1.4	2.5	2.6	1.8	1.8	0.1	2.8	0.9	5	
Appleton-Oshkosh, Wis.....	13.6	2.2	2.0	0.2	11.4	2.4	5.4	3.7	2.5	1.9	0.3	6.8	(D)	11	
Atlanta, Ga.....	13.9	3.1	2.8	0.3	10.8	3.8	2.8	4.2	1.4	3.0	0.1	6.3	2.1	6	
Augusta, Ga.-S.C.....	17.2	0.9	0.6	0.3	16.3	5.6	7.3	3.5	1.9	8.8	(2)	5.5	(D)	7	
Baltimore, Md.....	80.0	4.0	3.8	0.1	76.0	15.7	26.3	34.0	13.1	10.3	0.3	52.4	8.4	3	
Baton Rouge, La.....	101.8	(2)	(2)	(2)	101.8	33.1	59.6	9.1	16.0	14.1	1.0	70.7	27.3	2	
Beaumont-Fort Arthur-Orange, Tex.....	143.0	0.2	0.1	0.1	142.9	63.3	61.4	18.1	20.7	31.4	0.9	89.9	23.2	1	
Billings, Mont.....	7.0	0.4	0.4	(2)	6.6	4.5	1.8	0.3	0.8	1.3	(2)	4.5	(D)	1	
Binghamton, N.Y.-Pa.....	6.3	0.7	0.6	(2)	5.7	0.7	2.8	2.2	0.9	1.7	0.1	3.0	(D)	3	
Birmingham, Ala.....	36.0	0.7	0.6	0.1	35.3	19.5	11.6	4.2	10.5	5.2	0.5	19.1	1.0	6	
Boston, Mass.....	23.8	2.6	1.9	0.7	21.2	5.5	6.5	9.2	2.0	5.9	0.2	13.1	1.0	6	
Bridgeport, Conn.....	7.3	0.3	0.1	0.1	7.0	3.6	1.8	1.7	1.1	1.4	0.1	4.5	0.2	6	
Buffalo, N.Y.....	80.4	5.9	5.5	0.4	74.5	26.0	28.1	20.3	15.1	15.8	4.6	39.0	15.8	2	
Canton, Ohio.....	12.4	1.1	1.0	0.1	11.3	4.9	5.1	1.3	2.3	4.2	0.6	4.2	(D)	4	
Cedar Rapids, Iowa.....	8.5	2.7	2.6	0.1	5.7	3.4	1.4	0.9	1.0	1.5	(2)	3.2	1.9	5	
Charleston, S.C.....	9.5	0.2	0.1	(2)	9.3	4.8	3.4	1.2	2.8	2.1	0.1	4.2	10.8	13	
Charleston, W. Va.....	52.3	2.2	2.1	(2)	50.2	9.1	36.2	4.8	7.6	12.1	0.3	30.2	6.2	2	
Charlotte-Gastonia, N.C.....	5.3	1.4	1.4	0.1	3.9	1.1	1.2	1.7	0.5	1.1	(2)	2.3	0.2	8	
Chattanooga, Tenn.-Ga.....	12.9	3.5	3.3	0.2	9.4	3.6	4.0	1.9	2.0	2.5	0.2	4.7	0.6	11	
Chicago, Ill.....	174.7	17.7	16.4	1.3	156.9	60.8	51.0	45.1	28.7	33.4	3.1	91.7	18.3	2	
Cincinnati, Ohio-Ky.-Ind.....	31.2	7.9	7.5	0.4	23.3	7.8	7.1	8.4	4.1	5.2	0.5	13.4	1.8	6	
Cleveland, Ohio.....	100.6	8.9	8.6	0.3	91.8	46.2	31.3	14.2	17.1	20.0	0.2	54.4	4.1	2	
Columbus, Ohio.....	23.1	7.0	6.9	(2)	16.1	6.2	6.5	3.4	3.4	4.0	0.2	8.4	4.1	12	
Corpus Christi, Tex.....	33.1	0.1	(2)	(2)	33.1	22.2	7.5	3.4	8.8	4.0	0.1	20.2	8.2	1	
Dallas-Fort Worth, Tex.....	29.9	7.1	5.9	1.1	22.8	9.9	4.8	8.3	3.4	6.5	0.7	12.4	3.7	8	
Davenport-Rock Island-Moline, Iowa-Ill.....	9.0	1.5	1.5	(2)	7.4	3.1	2.0	2.3	2.3	2.2	0.2	2.7	1.1	8	
Dayton, Ohio.....	18.7	2.2	1.9	0.3	16.5	7.2	3.4	5.9	3.2	5.2	(2)	8.1	1.5	4	
Denver-Boulder, Colo.....	19.5	2.3	2.1	0.2	17.2	8.2	4.3	4.7	2.5	4.4	0.3	10.0	1.8	9	
Detroit, Mich.....	165.0	18.4	16.7	1.7	146.6	63.9	36.0	46.7	21.8	39.7	3.3	81.7	10.6	1	
El Paso, Tex.....	12.4	0.2	0.2	(2)	12.2	11.4	0.2	0.5	1.1	2.5	(2)	8.6	(D)	4	
Eric, Pa.....	5.0	2.1	2.0	0.1	2.9	0.7	1.0	1.3	0.8	0.7	0.1	1.4	(D)	7	
Eugene-Springfield, Ore.....	5.9	0.3	0.2	(2)	5.7	2.3	1.9	1.5	1.9	1.2	(2)	2.5	(D)	9	
Evansville, Ind.-Ky.....	19.8	0.8	0.7	0.1	19.1	3.4	12.6	3.0	3.9	3.0	(2)	12.1	(D)	1	
Flint, Mich.....	17.7	1.3	1.3	(2)	16.4	6.7	5.1	4.6	2.1	7.4	(2)	7.0	(D)	1	
Fort Wayne, Ind.....	8.4	0.9	0.7	0.2	7.5	3.3	1.7	2.5	1.3	1.7	0.2	4.3	0.2	18	
Galveston-Texas City, Tex.....	48.6	0.6	0.6	0.1	48.0	22.8	17.5	7.6	8.9	7.1	0.7	31.4	(D)	1	
Gary-Hammond-East Chicago, Ind.....	171.0	2.7	2.6	0.1	168.3	105.5	44.5	18.3	35.2	33.1	19.8	84.9	5.6	1	
Grand Rapids, Mich.....	13.0	2.7	2.3	0.3	10.3	1.5	5.6	3.2	1.3	2.3	0.2	6.5	0.2	10	
Green Bay, Wis.....	14.4	4.7	4.6	0.1	9.7	0.7	7.4	1.6	1.2	3.3	0.1	5.1	2.9	6	
Greensboro-Winston-Salem-High Point, N.C.....	20.9	5.1	4.8	0.3	15.8	7.9	4.8	3.1	4.9	3.9	0.1	6.9	1.9	9	
Greenville-Spartanburg, S.C.....	11.7	2.3	2.1	0.3	9.3	1.2	5.0	3.1	1.8	2.2	0.4	5.0	1.1	8	
Hamilton-Middletown, Ohio.....	22.5	1.3	1.3	(2)	21.2	12.3	7.7	1.3	8.1	3.8	0.8	8.6	(D)	2	
Harrisburg, Pa.....	7.3	1.3	1.2	0.1	6.1	4.6	0.6	0.9	1.6	1.3	(2)	3.1	0.4	4	
Hartford, Conn.....	6.3	0.9	0.7	0.1	5.4	1.3	2.9	1.2	1.4	1.3	(2)	2.7	0.1	12	
Houston, Tex.....	358.3	12.6	8.2	4.4	345.8	162.3	124.3	59.2	59.9	48.5	4.6	232.8	99.7	6	
Huntington-Ashland, W. Va.-Ky.-Ohio.....	24.8	0.4	0.3	0.1	24.4	11.4	10.8	2.2	3.7	8.3	0.6	11.7	6.4	4	
Indianapolis, Ind.....	21.6	5.4	4.6	0.8	16.2	6.3	5.2	4.7	2.3	5.6	0.7	7.7	2.7	3	
Jacksonville, Fla.....	40.9	3.7	3.7	0.1	37.2	11.3	22.2	3.6	7.1	4.9	0.1	25.0	12.6	2	
Jersey City, N.J.....	13.8	0.8	0.8	(2)	13.0	5.8	5.1	2.2	1.5	2.0	(2)	9.5	(D)	7	
Kalamazoo-Portage, Mich.....	11.3	2.4	1.9	0.4	8.9	1.7	4.3	2.9	1.3	2.1	0.7	4.8	(D)	5	
Kansas City, Mo.-Kans.....	45.0	4.2	3.7	0.4	40.8	19.0	13.1	8.7	8.0	8.6	0.3	24.0	6.5	3	
Knoxville, Tenn.....	9.3	1.0	0.9	0.1	8.3	3.6	3.4	1.2	1.4	2.2	0.1	4.6	(D)	6	
Lafayette-West Lafayette, Ind.....	11.3	0.4	0.4	(2)	10.9	1.4	7.5	2.0	1.3	2.3	0.9	6.5	0.2	4	
Lake Charles, La.....	23.1	(2)	(2)	-	23.1	6.4	12.6	4.1	7.4	4.3	0.1	11.3	3.3	2	
Lakeland-Winter Haven, Fla.....	25.9	0.2	0.1	0.1	25.6	15.6	6.8	3.2	6.3	3.4	0.6	15.2	6.7	3	
Lancaster, Pa.....	8.5	1.4	1.0	0.4	7.1	2.6	2.4	2.1	1.4	1.7	0.1	3.8	1.4	6	
Lansing-East Lansing, Mich.....	11.0	1.8	1.8	0.1	9.1	2.3	3.1	3.7	1.8	3.4	(2)	4.0	(D)	4	
Lima, Ohio.....	10.8	0.7	0.5	0.1	10.1	2.5	5.1	2.5	1.3	3.7	(2)	5.2	(D)	6	
Little Rock-North Little Rock, Ark.....	6.7	0.5	0.5	(2)	6.2	2.5	2.3	1.4	1.5	1.5	0.2	3.0	(D)	16	
Lorain-Elyria, Ohio.....	23.2	1.3	1.3	(2)	21.9	8.3	9.5	4.0	2.8	4.5	0.2	14.4	1.5	3	
Los Angeles-Long Beach, Calif.....	202.1	14.1	9.4	4.7	188.0	126.1	35.1	27.1	28.6	42.7	1.4	115.3	31.5	2	
Louisville, Ky.-Ind.....	36.2	7.1	7.0	0.2	29.1	14.9	6.9	7.3	4.2	8.4	0.7	15.7	5.1	3	
Memphis, Tenn.-Ark.-Miss.....	36.9	5.7	5.6	0.1	31.2	5.5	19.8	5.9	4.4	4.8	0.2	21.8	2.3	7	
Milwaukee, Wis.....	21.6	3.6	3.4	0.2	18.0	7.6	3.1	7.3	2.7	5.1	0.3	9.9	1.0	15	
Minneapolis-St. Paul, Minn.-Wis.....	37.4	7.1	6.4	0.7	30.4	16.1	6.2	8.0	5.6	4.9	2.3	17.6	3.2	5	
Mobile, Ala.....	22.6	1.6	1.1	0.5	21.1	5.1	12.0	4.0	5.5	3.6	0.1	11.9	3.7	6	
Nashville-Davidson, Tenn.....	10.6	1.6	1.5	0.2	9.0	2.6	2.8	3.6	2.5	2.6	0.4	3.4	0.4	3	
Nassau-Suffolk, N.Y.....	8.7	1.0	0.8	0.1	7.8	0.6	3.6	3.5	0.7	2.4	0.1	4.5	0.7	6	
New Brunswick-Perth Amboy-Sayreville, N.J.....	56.6	2.9	2.8	0.1	53.7	37.6	10.3	5.8	7.6	11.1	0.4	34.6	19.6	3	
New London-Norwich, Conn.-R.I.....	9.9	0.5	0.5	-	9.4	3.5	3.5	2.4	1.5	1.6	0.1	6.3	(D)	6	
New Orleans, La.....	20.7	0.6	0.6	(2)	20.0	8.6	8.2	3.2	4.7	2.9	0.5	11.9	3.6	3	
New York, N.Y.-N.J.....	51.7	8.1	7.2	0.9	43.6	14.8	8.9	19.9	4.5	7.0	0.5	31.6	2.9	5	
Newark, N.J.....	55.8	3.3	2.7	0.6	52.4	12.1	28.6	11.6	8.4	9.5	0.9	33.5	5.0	5	
Newport News-Hampton, Va.....	9.0	1.5	1.5	-	7.5	3.1	2.7	1.7	1.2	2.0	0.1	4.2	(D)	2	
Norfolk-Virginia Beach-Portsmouth, Va.-N.C.....	5.9	1.3	1.1	0.2	4.6	1.1	1.7	1.7	1.0	1.1	0.1	2.5	0.1	14	

See footnotes at end of table.



Table 3C Pollution Abatement Operating Costs and Related Statistics, by Standard Metropolitan Statistical Area (SMSA) for Establishments With 20 or More Employees: 1978—Continued

(Millions of dollars)

Standard metropolitan statistical area	Total operating costs	Payment to Government units			Other operating costs								Cost re-covered	Standard error of estimates (percent)
		Total	Public sewage use	Solid waste collection and disposal	Total	By form of abatement			By kind of cost					
						Air	Water	Solid waste	De-precia-tion	Labor	Equip-ment leasing	Ma-terials, supplies, services, and other		
Northeast Pennsylvania.....	6.0	1.1	1.0	0.1	4.9	1.6	1.4	1.9	1.0	1.0	0.1	2.9	0.1	16
Osaha, Neb.-Iowa.....	7.0	1.8	1.3	0.5	5.2	1.7	1.7	1.8	1.1	1.5	0.1	2.6	1.6	10
Parkersburg-Marietta, Va.-Ohio.....	19.2	0.3	0.3	(Z)	18.9	6.4	8.7	3.8	4.2	3.5	0.2	11.1	0.8	5
Parkersburg-Clifton-Passaic, N.J.....	5.7	0.8	0.7	0.1	4.9	1.3	1.6	2.0	0.9	0.7	(Z)	3.3	0.1	17
Pensacola, Fla.....	13.6	0.2	0.1	0.1	13.4	8.5	3.7	1.2	4.5	2.0	(Z)	6.9	(D)	3
Peoria, Ill.....	24.0	1.6	1.4	0.2	22.4	12.2	7.2	3.0	6.5	4.7	0.1	11.2	(D)	5
Petersburg-Colonial Heights-Hopewell, Va.....	9.4	1.7	1.6	0.1	7.8	3.4	3.4	1.0	3.4	1.1	(Z)	3.1	(D)	1
Philadelphia, Pa.-N.J.....	176.0	10.5	10.0	0.5	165.5	92.4	52.5	20.6	21.7	28.0	0.8	115.0	20.8	2
Pine Bluff, Ark.....	6.6	(Z)	(Z)	-	6.6	3.2	2.8	0.6	1.4	1.6	(Z)	3.5	4.2	3
Pittsburgh, Pa.....	171.7	4.1	3.5	0.6	167.7	108.1	34.7	24.8	32.9	32.2	1.8	100.8	18.7	1
Portland, Ore.-Wash.....	25.8	2.7	2.2	0.4	23.1	12.0	7.4	3.8	7.6	4.9	0.1	10.5	9.5	9
Poughkeepsie, N.Y.....	6.3	0.1	0.1	-	6.2	0.3	4.5	1.4	0.7	3.2	0.1	2.2	(D)	15
Providence-Warwick-Pawtucket R.I.-Mass.-Conn.....	10.6	2.0	1.9	0.1	8.6	1.9	3.4	3.2	1.7	1.6	0.1	5.1	1.4	8
Raleigh-Durham, N.C.....	5.0	1.0	0.9	0.1	4.0	1.1	1.7	1.2	0.6	0.9	(Z)	2.5	0.6	11
Reading, Pa.....	14.2	1.0	0.9	0.1	13.3	6.6	5.0	1.7	2.6	2.8	0.4	7.5	1.7	17
Richmond, Va.....	14.5	0.8	0.8	(Z)	13.7	1.6	8.1	3.9	2.2	3.8	0.1	7.7	4.2	8
Riverside-San Bernardino-Ontario, Calif.....	36.9	2.0	1.4	0.6	34.9	22.8	6.6	5.5	4.3	8.1	0.3	22.1	8.1	3
Rochester, N.Y.....	32.8	3.2	3.0	0.2	29.6	3.8	14.7	11.0	6.0	5.8	0.1	17.8	(D)	3
Rockford, Ill.....	6.7	1.6	1.6	(Z)	5.0	1.5	1.6	1.9	0.7	1.1	0.2	3.1	0.2	8
Sacramento, Calif.....	5.5	2.0	1.7	0.2	3.5	1.3	0.8	1.3	0.9	1.3	(Z)	1.3	0.5	13
St. Louis, Mo.-Ill.....	85.8	7.4	6.9	0.4	78.4	43.1	17.3	18.0	13.3	21.5	0.7	42.9	13.8	3
Salt Lake City-Ogden, Utah.....	18.8	0.5	0.4	0.2	18.3	14.0	2.8	1.5	4.7	4.4	0.3	8.8	(D)	3
San Diego, Calif.....	7.5	1.9	1.5	0.3	5.6	1.3	1.1	3.2	0.4	0.7	(Z)	4.5	0.1	7
San Francisco-Oakland, Calif.....	125.6	5.3	3.8	1.5	120.3	53.6	45.6	21.1	13.0	21.8	1.2	84.3	27.1	1
San Jose, Calif.....	20.8	5.1	3.5	1.6	15.7	8.1	3.8	3.8	2.9	4.5	0.1	8.3	3.8	4
Seattle-Everett, Wash.....	20.1	3.3	2.3	1.0	16.7	5.0	6.5	5.2	4.7	3.5	0.2	8.4	6.2	6
Shreveport, La.....	5.7	0.3	0.3	0.1	5.3	2.8	1.6	0.9	1.3	0.8	0.7	2.5	1.6	13
Spokane, Wash.....	7.5	0.1	(Z)	0.1	7.5	3.6	0.8	3.1	1.7	2.9	0.1	2.8	(D)	9
Stockton, Calif.....	7.4	2.8	2.6	0.2	4.7	1.8	1.4	1.5	1.4	0.7	(Z)	2.5	2.3	10
Syracuse, N.Y.....	13.6	1.6	1.5	0.1	12.0	3.4	4.3	4.3	2.2	3.6	1.1	5.2	1.1	4
Tacoma, Wash.....	23.3	1.0	0.6	0.3	22.3	17.3	3.0	2.1	3.2	3.6	-	15.6	2.5	3
Tampa-St. Petersburg, Fla.....	18.3	1.9	1.6	0.3	16.3	6.7	3.5	6.1	2.7	2.3	0.1	11.3	5.0	9
Terre Haute, Ind.....	12.7	0.6	0.6	-	12.1	2.0	8.5	1.6	2.7	2.5	0.3	6.6	1.3	19
Toledo, Ohio-Mich.....	33.9	3.6	3.4	0.1	30.4	16.3	9.0	5.1	5.4	5.9	0.3	18.8	9.0	7
Trenton, N.J.....	5.7	0.7	0.6	0.1	5.0	2.3	1.3	1.4	0.6	1.5	0.1	2.9	(Z)	10
Tucson, Ariz.....	6.7	(Z)	(Z)	(Z)	6.7	6.3	0.3	0.1	3.2	1.0	(Z)	2.5	(D)	15
Tulsa, Okla.....	13.1	0.3	0.2	0.1	12.9	6.8	3.5	2.5	2.0	2.8	0.1	8.1	4.9	8
Vineland-Millville-Bridgeton, N.J.....	5.3	0.6	0.6	(Z)	4.7	1.2	2.5	1.1	0.7	1.2	(Z)	2.9	(D)	10
Wheeling, W. Va.-Ohio.....	11.0	0.7	0.7	(Z)	10.2	4.9	4.7	0.9	2.3	1.8	0.1	6.1	1.0	17
Wilmington, Del.-N.J.-Mo.....	102.4	3.1	2.9	0.2	99.4	41.5	42.4	15.8	15.0	25.0	0.2	59.2	13.0	2
Wilmington, N.C.....	10.9	(Z)	(Z)	(Z)	10.9	2.3	4.9	3.6	2.4	2.7	-	5.7	6.2	4
York, Pa.....	11.1	1.2	1.0	0.2	9.8	2.8	4.4	2.6	2.2	1.8	0.1	5.8	0.3	9
Youngstown-Warren, Ohio.....	26.1	2.1	2.1	(Z)	23.9	9.7	9.9	4.3	2.9	8.6	0.7	11.8	0.2	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. No SMSA totals are shown where GAC is less than \$5.0 million or the standard error is 20 or greater.

- Represents zero.

(D) Withheld to avoid disclosing operations of individual companies.

(Z) Represents less than \$50,000.

Table 4A. Quantities of Pollutants Removed and Related Statistics, by Industry for Establishments With 20 or More Employees: 1978

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

SIC code	Industry	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent)
		Operating costs		Quantity of pollutants removed				Operating costs <sup>1</sup>		Quantities of solid waste removed	
		All establishments	Estab-lishments reporting quantities abated	Particu-lates	Sulfur oxides	Nitrogen oxides, hydro-carbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All estab-lishments	Estab-lishments reporting quantities abated		
	All industries <sup>2</sup> .....	2,527.4	2,470.4	40,137.9	8,717.0	12,894.5	1,265.1	1,219.2	1,195.1	160,753.3	2
20	Food and kindred products.....	69.4	62.0	969.6	70.4	224.0	9.2	99.4	93.7	13,392.4	4
201	Meat products.....	4.0	3.0	21.2	5.3	0.6	0.6	15.8	14.7	1,619.7	2
2011	Meatpacking plants.....	3.1	2.3	11.4	5.3	(D)	0.6	8.8	8.1	960.8	1
2013	Sausages and other prepared meats.....	0.4	0.3	0.1	(Z)	(D)	-	3.4	3.2	463.9	5
2016	Poultry dressing plants.....	0.4	0.3	9.0	(Z)	(Z)	-	2.5	2.4	136.4	8
202	Dairy products.....	1.0	0.7	7.6	(D)	(D)	-	9.6	8.9	1,044.6	4
2022	Cheese, natural and processed.....	0.2	0.1	1.3	(D)	(D)	-	4.1	3.1	260.1	16
2026	Fluid milk.....	0.1	(Z)	2.3	(D)	(D)	-	3.5	3.9	546.4	6
203	Preserved fruits and vegetables.....	5.0	4.0	(D)	2.1	7.4	1.7	21.5	20.3	2,932.4	3
2032	Canned specialties.....	1.6	1.6	3.8	(D)	(D)	(D)	2.3	2.3	150.2	2
2033	Canned fruits and vegetables.....	0.2	0.1	(D)	(D)	(D)	(Z)	8.4	7.6	1,240.7	6
2035	Pickles, sauces, salad dressings.....	0.1	(Z)	(D)	-	-	-	1.4	1.1	55.8	12
2037	Frozen fruits and vegetables.....	2.2	1.5	20.5	0.2	6.2	(D)	3.8	3.8	992.0	8
2038	Frozen specialties.....	0.6	0.5	(D)	(D)	(Z)	-	3.9	3.7	192.8	7
204	Grain mill products.....	25.0	23.8	379.0	(D)	-	1.5	8.7	8.5	759.6	6
2041	Flour, other grain mill products.....	5.9	5.3	116.7	-	-	-	0.9	0.9	49.3	15
2043	Cereal breakfast foods.....	2.4	2.0	31.2	-	-	-	1.3	1.3	84.2	2
2046	Wet corn milling.....	12.6	12.6	84.0	(D)	-	0.3	1.4	1.2	179.5	1
2047	Dog, cat, and other pet food.....	0.9	0.8	7.5	-	-	-	1.9	1.9	197.2	8
205	Bakery products.....	0.5	0.4	(D)	(D)	(D)	-	5.4	4.8	342.7	6
2051	Bread, cake, and related products.....	0.1	0.1	0.2	(D)	(D)	-	3.8	3.4	174.6	9
206	Sugar, confectionery products.....	8.1	7.3	250.0	24.1	0.2	(D)	12.8	11.6	4,445.3	7
2061	Raw cane sugar.....	1.8	1.8	113.4	(D)	(D)	-	3.5	3.5	3,047.5	18
2062	Cane sugar refining.....	1.3	0.8	(D)	(D)	-	-	1.1	1.0	123.0	1
2063	Beet sugar.....	3.0	3.0	120.7	0.5	-	-	2.3	2.3	1,100.6	11
2065	Confectionery products.....	1.5	1.4	3.7	22.0	(D)	(D)	5.2	4.2	107.5	18
2075	Soybean oil mills.....	6.7	6.6	166.3	-	203.1	-	1.3	1.1	65.1	7
2079	Shortening and cooking oils.....	0.6	0.5	2.9	8.0	-	-	2.1	2.1	102.3	3
208	Beverages.....	8.8	8.6	43.1	9.0	2.6	0.4	13.6	13.4	1,341.2	2
2082	Malt beverages.....	5.2	5.2	15.8	0.7	2.4	-	4.8	4.8	305.8	1
2086	Bottled and canned soft drinks.....	(Z)	(Z)	-	-	(Z)	-	6.1	5.9	283.4	8
209	Misc. foods, kindred products.....	5.3	4.9	24.8	0.1	4.6	3.9	7.8	7.5	674.0	5
2095	Roasted coffee.....	3.5	3.4	4.9	(D)	(D)	(D)	1.3	1.3	124.3	3
2099	Food preparations, n.e.c.....	1.6	1.4	18.0	(D)	(D)	(D)	4.6	4.4	442.2	7
21	Tobacco products.....	6.0	5.9	58.8	(D)	(D)	0.7	2.7	2.6	182.2	2
2111	Cigarettes.....	3.1	3.1	51.6	(D)	(D)	-	2.0	2.0	140.7	1
22	Textile mill products.....	19.0	17.7	81.6	4.0	16.6	2.0	21.9	21.3	1,180.0	4
2211	Weaving mills, cotton.....	3.6	3.5	7.8	(D)	(D)	(D)	1.5	1.5	232.3	8
2221	Weaving mills, manmade fiber, silk.....	1.3	1.1	13.7	(D)	2.1	0.4	2.3	2.1	112.3	10
225	Knitting mills.....	2.2	2.1	1.2	0.2	(D)	0.2	4.1	3.9	202.7	8
2257	Circular knit fabric mills.....	1.1	1.0	0.8	0.1	(D)	0.2	1.4	1.4	46.8	17
226	Textile finishing, except wool.....	2.5	2.4	37.3	(D)	2.5	0.3	3.0	2.8	154.6	12
2262	Finishing plants, manmade fiber, silk.....	0.7	0.6	(D)	(D)	2.2	-	1.6	1.6	70.8	11
227	Floor covering mills.....	0.1	0.1	0.6	(D)	(D)	(D)	2.2	2.2	93.5	7
2272	Tufted carpets and rugs.....	0.1	0.1	0.5	(D)	(D)	(D)	1.7	1.7	82.6	8
229	Miscellaneous textile goods.....	5.2	4.8	8.4	0.3	8.7	-	5.2	5.2	269.2	12
24	Lumber and wood products.....	27.7	25.6	1,434.2	9.0	18.4	4.0	43.7	41.2	6,662.0	5
2411	Logging camps, log contractors.....	0.7	0.6	(D)	-	-	-	5.1	4.7	801.1	12
242	Sawmills and planing mills.....	10.9	10.0	401.5	(Z)	(D)	(D)	15.9	15.3	3,620.9	10
2421	Sawmills, planing mills, general.....	9.6	8.6	373.5	(Z)	(D)	(D)	14.8	14.4	3,506.2	10
243	Millwork, plywood, structural members.....	8.6	7.9	865.4	9.0	10.3	(D)	10.2	9.7	1,308.1	8
2431	Millwork.....	2.5	2.0	147.9	9.0	(D)	(Z)	2.5	2.5	156.6	18
2436	Softwood veneer and plywood.....	5.1	5.0	666.1	(Z)	9.2	0.2	4.4	4.2	939.5	10
245	Wood buildings and mobile homes.....	0.1	0.1	1.8	-	(D)	-	5.1	4.3	125.8	10
249	Miscellaneous wood products.....	7.2	6.8	162.2	-	(D)	-	6.5	6.4	665.4	13
2499	Wood products, n.e.c.....	3.5	3.1	126.8	-	0.3	-	4.8	4.7	490.0	15
25	Furniture and fixtures.....	9.1	7.3	292.9	0.1	5.1	0.1	13.3	11.9	704.9	7
251	Household furniture.....	7.5	5.8	267.7	-	2.6	(D)	8.2	8.0	536.5	7
2511	Wood household furniture.....	5.9	4.4	233.9	-	1.3	(D)	3.0	3.0	253.4	11
26	Paper and allied products.....	158.4	151.4	6,156.6	393.0	82.2	109.9	105.6	102.9	10,946.9	2
2611	Pulpmills.....	20.6	20.6	727.3	45.6	0.2	10.7	6.9	5.9	564.3	9
2621	Papermills, except building paper.....	62.3	61.2	1,869.2	189.4	6.1	54.7	49.1	48.9	5,429.1	1
2631	Paperboard mills.....	62.8	58.8	3,384.3	142.0	31.1	42.9	22.3	22.0	3,328.0	5
264	Misc. converted paper products.....	7.4	7.1	70.1	13.9	40.9	(D)	15.9	15.2	974.8	4
2641	Paper coating and glazing.....	3.6	3.5	(D)	13.7	39.7	(Z)	5.9	5.7	228.2	7
2647	Sanitary paper products.....	1.2	1.2	37.7	(Z)	0.1	-	3.3	3.3	367.2	5
265	Paperboard containers and boxes.....	2.6	2.4	3.8	2.0	4.0	(D)	10.0	9.3	405.6	10
2653	Corrugated and solid fiber boxes.....	0.5	0.3	1.4	0.4	(Z)	-	4.3	4.1	204.2	12
27	Printing and publishing.....	7.9	6.4	3.9	-	35.0	(D)	22.5	19.7	879.0	6
2711	Newspapers.....	0.3	0.1	(Z)	-	(Z)	(D)	3.8	3.4	144.8	6
275	Commercial printing.....	7.0	5.8	(D)	-	30.0	(D)	9.8	9.1	381.8	6
2752	Commercial printing, lithographic.....	2.2	1.2	(D)	-	0.9	-	6.3	5.9	232.9	8
28	Chemicals and allied products.....	398.8	384.2	4,029.9	1,171.4	1,758.3	610.9	280.2	278.6	48,303.2	2
281	Industrial inorganic chemicals.....	91.6	85.9	1,586.3	583.0	123.6	101.8	59.6	59.1	8,362.8	9
2812	Alkalies and chlorine.....	8.2	7.1	233.6	(D)	(D)	22.9	6.8	6.8	966.1	5
2816	Inorganic pigments.....	13.0	12.7	109.8	(D)	(D)	22.0	9.9	9.8	445.8	4
2819	Industrial inorganic chemical, n.e.c.....	69.9	65.7	1,242.9	531.7	104.7	56.9	42.5	42.1	6,943.0	13

See footnotes at end of table.

Table 4A. Quantities of Pollutants Removed and Related Statistics, by Industry for Establishments With 20 or More Employees: 1978—Continued

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

SIC code	Industry	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent)
		Operating costs		Quantity of pollutants removed				Operating costs <sup>1</sup>		Quantities of solid waste removed	
		All establishments	Estab-lishments reporting quantities abated	Particu-lates	Sulfur oxides	Nitrogen oxides, hydro-carbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All estab-lishments	Estab-lishments reporting quantities abated		
											GAC
	Chemicals and allied products--Continued										
282	Plastics materials, synthetics.....	52.1	51.1	592.6	18.1	201.6	75.7	31.7	31.6	1,841.3	1
2821	Plastics materials and resins.....	31.3	30.4	256.4	11.3	146.0	71.8	18.8	18.7	868.9	2
2822	Synthetic rubber.....	5.1	5.1	(D)	(D)	(D)	0.1	2.1	2.1	138.7	3
2823	Cellulosic manmade fibers.....	1.9	1.9	(D)	(D)	(D)	(D)	0.8	0.8	250.1	1
2824	Organic fibers, noncellulosic.....	13.8	13.7	196.4	(D)	28.2	(D)	9.9	9.9	583.7	1
283	Drugs.....	13.7	13.0	34.3	13.1	(D)	4.7	18.6	18.4	737.5	3
2833	Medicinals and botanicals.....	6.2	5.8	13.0	6.7	1.4	1.2	6.7	6.7	232.1	4
2834	Pharmaceutical preparations.....	7.5	7.2	21.3	6.4	(D)	3.5	11.2	11.1	487.7	5
284	Soaps, cleaners, toilet goods.....	7.3	5.8	73.8	(D)	(D)	46.6	7.5	7.4	331.4	5
2841	Soap and other detergents.....	5.6	4.5	61.8	0.3	(Z)	46.3	2.7	2.7	127.3	8
2843	Surface active agents.....	1.4	1.0	(D)	(D)	(D)	0.3	1.3	1.3	49.6	12
2851	Paints and allied products.....	2.3	2.0	41.2	0.1	7.3	0.9	10.5	10.1	242.7	7
286	Industrial organic chemicals.....	151.3	146.7	599.1	298.4	996.5	237.1	108.2	108.0	3,908.2	1
2865	Cyclic crudes and intermediates.....	23.1	22.9	66.8	22.8	257.3	62.4	20.7	20.7	659.8	3
2869	Industrial organic chemicals, n.e.c.....	127.4	123.1	517.9	275.6	739.2	174.4	86.9	86.7	3,182.2	1
287	Agricultural chemicals.....	61.9	61.6	865.8	256.0	85.2	142.6	32.7	32.7	32,665.7	3
2873	Nitrogenous fertilizers.....	12.6	12.6	193.4	(D)	58.8	13.9	3.3	3.3	935.5	7
2874	Phosphatic fertilizers.....	30.4	30.4	632.6	244.9	12.7	108.9	17.5	17.5	31,211.3	3
2879	Agricultural chemicals, n.e.c.....	16.8	16.7	18.8	7.1	13.7	18.4	11.6	11.6	502.8	5
289	Miscellaneous chemical products.....	18.7	18.0	236.7	(D)	258.4	1.5	11.4	11.3	713.6	8
2892	Explosives.....	2.5	2.4	21.4	(D)	7.6	0.3	0.8	0.8	62.6	12
2899	Chemical preparations, n.e.c.....	4.9	4.7	167.6	(D)	(D)	0.7	6.4	6.3	432.1	9
29	Petroleum and coal products.....	636.4	633.8	650.3	4,168.8	9,515.7	21.4	57.0	55.7	3,585.0	1
2911	Petroleum refining.....	620.9	619.7	231.9	4,164.8	9,441.2	21.4	47.5	46.4	1,962.0	1
295	Paving and roofing materials.....	11.7	11.2	332.9	1.0	6.7	(Z)	7.1	7.1	1,583.2	11
2952	Asphalt felts and coatings.....	8.0	7.6	73.7	1.0	6.7	(Z)	6.7	6.7	1,149.7	11
299	Misc. petroleum, coal products.....	3.8	2.9	85.5	2.9	67.7	(Z)	2.4	2.3	39.8	18
30	Rubber, misc. plastics products.....	17.7	17.1	130.8	8.3	41.7	9.8	43.2	42.3	2,056.1	3
3011	Tires and inner tubes.....	4.4	4.4	60.5	(D)	6.1	(D)	9.2	9.2	505.6	7
3069	Fabricated rubber products, n.e.c.....	3.2	3.1	12.1	0.6	(D)	0.5	5.6	5.5	322.0	1
3079	Miscellaneous plastics products.....	9.2	8.7	54.3	1.4	18.9	8.5	25.5	24.5	1,050.0	10
31	Leather and leather products.....	1.4	1.4	4.7	(D)	(D)	-	6.6	6.3	289.9	16
314	Footwear, except rubber.....	0.3	0.3	0.9	-	(Z)	-	2.2	2.2	79.7	13
32	Stone, clay, glass products.....	163.7	163.2	17,161.6	126.6	24.0	8.9	54.3	54.0	12,742.0	4
3211	Flat glass.....	5.1	5.1	(D)	2.5	-	-	2.7	2.7	254.0	12
322	Glass, pressed or blown.....	8.2	8.2	23.6	(D)	(D)	0.9	7.5	7.5	658.8	5
3221	Glass containers.....	2.5	2.5	16.8	(D)	(D)	(D)	3.9	3.9	330.0	5
3229	Pressed and blown glass, n.e.c.....	5.6	5.6	6.7	(D)	(D)	(D)	3.6	3.6	328.8	7
3241	Cement, hydraulic.....	80.0	80.0	13,481.6	68.4	1.2	-	7.3	7.3	4,531.9	8
327	Concrete, gypsum, plaster products.....	19.3	19.3	2,686.9	43.9	(D)	5.9	12.0	11.9	3,156.5	12
329	Misc. nonmetallic mineral products.....	44.3	44.3	763.7	4.5	17.0	1.9	18.3	18.2	3,242.2	8
3292	Asbestos products.....	4.6	4.6	71.6	(Z)	(D)	(D)	2.5	2.5	214.2	10
3296	Mineral wool.....	20.8	20.8	166.0	3.1	1.9	0.9	9.1	9.1	496.6	8
33	Primary metal industries.....	809.7	804.3	8,141.5	2,662.4	979.2	347.5	179.0	177.6	46,067.5	3
331	Blast furnace, basic steel products.....	433.7	433.5	5,448.0	106.3	(D)	24.1	116.9	116.8	26,962.3	1
3312	Blast furnaces and steel mills.....	408.4	408.3	4,881.5	103.7	(D)	(D)	109.9	109.9	25,854.3	1
3313	Electrometallurgical products.....	23.9	23.9	372.2	-	-	-	1.3	1.3	511.6	4
3315	Steel wire and related products.....	0.6	0.5	0.6	1.5	0.8	(D)	2.2	2.2	100.3	14
3316	Cold finishing of steel shapes.....	0.7	0.7	(D)	(D)	(D)	(D)	2.6	2.5	458.9	6
332	Iron and steel foundries.....	104.7	103.2	1,628.0	(D)	823.4	150.3	32.6	32.2	9,986.7	4
3321	Gray iron foundries.....	89.5	88.2	1,217.3	(D)	822.3	(D)	25.8	25.4	8,043.4	4
3325	Steel foundries, n.e.c.....	8.0	7.7	254.1	(D)	0.4	(D)	4.8	4.8	1,427.3	8
333	Primary nonferrous metals.....	232.7	230.8	940.9	2,150.0	(D)	131.5	12.6	12.3	8,207.8	1
3331	Primary copper.....	89.6	89.6	314.5	1,515.3	(D)	(D)	3.0	2.9	6,771.5	2
3332	Primary lead.....	13.5	13.5	(D)	-	-	16.9	(D)	(D)	(D)	(X)
3333	Primary zinc.....	25.3	25.3	90.1	413.4	(D)	(D)	(D)	(D)	(D)	(X)
3334	Primary aluminum.....	70.7	70.3	395.5	(D)	(D)	70.6	5.7	5.7	458.1	2
3339	Primary nonferrous metal, n.e.c.....	33.6	32.0	(D)	(D)	(D)	(D)	2.9	2.9	194.1	4
3341	Secondary nonferrous metals.....	17.1	16.9	73.6	0.3	(D)	25.1	2.8	2.8	245.8	11
335	Nonferrous rolling and drawing.....	16.8	15.7	31.5	(D)	32.8	14.1	11.2	10.8	492.0	2
3351	Copper rolling and drawing.....	3.9	3.8	6.6	(D)	(D)	(D)	1.8	1.8	56.7	4
3353	Aluminum sheet, plate, and foil.....	4.4	3.8	9.8	(D)	1.6	-	4.1	4.0	179.5	1
3356	Nonferrous rolling and drawing, n.e.c.....	3.7	3.6	8.2	(D)	0.8	(D)	1.4	1.4	66.5	7
3357	Nonferrous wiredrawing, insulating.....	3.7	3.5	3.4	0.4	28.7	0.1	2.6	2.5	98.9	7
336	Nonferrous foundries.....	3.6	3.5	5.5	(Z)	0.2	2.2	2.1	2.0	121.9	14
3361	Aluminum foundries.....	1.4	1.4	1.9	-	(D)	(D)	1.4	1.4	86.8	8
34	Fabricated metal products.....	42.1	37.9	226.2	8.1	72.3	12.5	52.7	49.4	1,992.2	15
341	Metal cans, shipping containers.....	10.6	9.8	1.4	(D)	23.7	1.3	5.1	5.0	242.3	6
3411	Metal cans.....	8.8	8.4	0.4	(D)	22.5	1.3	4.2	4.2	229.6	4
342	Cutlery, handtools and hardware.....	4.6	4.5	11.2	(D)	1.0	0.4	6.6	6.5	161.1	4
3429	Hardware, n.e.c.....	3.9	3.9	8.3	(D)	0.7	0.1	5.3	5.2	116.6	4
343	Plumbing, heating, except electric.....	2.2	2.1	34.5	(Z)	4.5	0.1	3.1	3.0	332.5	10
344	Fabricated structural metal products.....	3.1	2.6	10.3	(Z)	1.9	(D)	8.5	7.7	260.8	10
3443	Fabricated platenwork, boiler shop.....	0.8	0.7	2.4	-	(D)	(D)	2.4	2.2	69.4	13
345	Screw machine products, bolts, etc.....	0.4	0.2	(D)	0.5	0.1	6.0	2.7	2.6	101.0	10
3452	Bolts, nuts, rivets, and washers.....	0.4	0.2	(D)	0.5	0.1	6.0	2.3	2.2	81.6	11
346	Metal forgings and stampings.....	7.9	7.0	(D)	1.3	3.2	2.5	12.6	12.2	371.4	6
3465	Automotive stampings.....	2.4	2.3	(D)	(Z)	0.3	(D)	7.1	6.9	172.1	5
3469	Metal stampings, n.e.c.....	1.6	1.5	1.7	(D)	1.9	(Z)	2.9	2.7	70.4	14

See footnotes at end of table.

Table 4A. Quantities of Pollutants Removed and Related Statistics, by Industry for Establishments With 20 or More Employees: 1978—Continued

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

SIC code	Industry	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent)
		Operating costs		Quantity of pollutants removed				Operating costs <sup>1</sup>		Quantities of solid waste removed	
		All establishments	Establishments reporting quantities abated	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All establishments	Establishments reporting quantities abated		
	Fabricated metal products--Continued										GAC
347	Metal services, n.e.c.	4.6	3.8	14.1	(D)	37.2	(D)	2.9	2.2	78.4	18
348	Ordnance and accessories, n.e.c.	2.1	1.7	2.4	0.8	0.1	(D)	4.6	4.0	84.5	12
349	Misc. fabricated metal products	6.6	6.1	38.8	0.3	0.5	1.8	6.7	6.2	360.3	11
3494	Valves and pipe fittings	3.9	3.7	28.6	0.3	0.4	0.4	2.5	2.4	187.9	10
35	Machinery, except electrical	41.0	37.6	252.2	34.9	18.7	9.7	63.0	60.7	3,410.2	12
351	Engines and turbines	9.5	9.3	32.2	(D)	(D)	(D)	5.2	5.0	415.2	1
3511	Turbines, turbine generator sets	4.2	4.1	(D)	(D)	(D)	(D)	0.8	0.8	38.0	1
3519	Internal combustion engines, n.e.c.	5.3	5.2	(D)	(D)	(D)	(D)	4.4	4.2	377.1	2
352	Farm and garden machinery	6.3	6.1	50.9	(D)	(D)	0.1	5.9	5.8	428.8	2
3523	Farm machinery and equipment	6.3	6.1	50.7	(D)	(D)	0.1	5.2	5.2	405.3	2
353	Construction, related machinery	8.3	7.6	48.2	(D)	0.3	0.4	12.7	12.1	705.1	3
3531	Construction machinery	5.7	5.6	41.1	(D)	0.2	(D)	8.4	8.0	494.6	3
3533	Oilfield machinery	1.4	1.0	4.6	-	(Z)	(D)	2.0	2.0	97.6	11
354	Metalworking machinery	1.9	1.5	33.1	(D)	(Z)	0.2	4.9	4.6	353.1	9
355	Special industry machinery	3.1	2.6	3.3	0.2	(D)	(D)	5.3	5.0	132.8	5
3551	Food products machinery	0.3	0.3	0.3	(D)	-	(D)	0.6	0.5	15.0	11
3559	Special industry machinery, n.e.c.	1.9	1.8	1.9	-	(D)	(D)	3.2	3.2	65.1	7
356	General industrial machinery	3.8	3.4	39.8	(D)	0.3	0.9	7.8	7.5	572.4	5
357	Office and computing machines	2.1	2.0	0.6	0.1	5.9	(D)	5.6	5.1	387.8	3
3573	Electronic computing equipment	1.3	1.2	0.3	(Z)	(D)	(D)	3.5	3.0	333.4	2
358	Refrigeration and service machines	3.1	2.7	14.4	5.6	5.3	0.2	13.1	13.0	242.2	2
3585	Refrigeration, heating equipment	2.8	2.5	14.0	5.6	5.3	(D)	11.7	11.7	215.0	2
359	Misc. machinery, except electrical	2.9	2.3	29.8	-	(D)	0.6	2.7	2.6	172.8	19
36	Electric, electronic equipment	30.7	27.8	185.9	19.0	41.5	16.0	46.2	44.0	1,777.0	2
361	Electric distributing equipment	0.7	0.7	(D)	(D)	(D)	0.1	2.1	2.0	108.4	4
362	Electrical industrial apparatus	7.9	7.6	53.2	0.1	(D)	1.6	5.6	5.4	212.7	4
3621	Motors and generators	0.8	0.6	1.2	(Z)	0.2	(D)	2.1	2.0	60.1	4
3624	Carbon and graphite products	6.7	6.7	(D)	0.1	(D)	(D)	1.0	1.0	73.1	7
363	Household appliances	4.9	4.6	69.6	(D)	(D)	(D)	7.3	7.0	225.7	2
3632	Household refrigerators, freezers	1.4	1.4	9.4	(D)	(D)	-	2.5	2.5	57.3	1
364	Electric lighting, wiring equipment	3.7	3.3	23.8	(D)	1.4	1.4	6.0	5.5	433.7	7
365	Radio, TV receiving equipment	0.8	0.7	7.1	(D)	3.7	(Z)	3.2	3.1	83.4	5
3651	Radio and TV receiving sets	0.5	0.4	6.9	(D)	(D)	(Z)	2.6	2.5	68.6	4
366	Communication equipment	3.7	3.3	7.4	1.3	(D)	(D)	8.4	8.1	210.4	2
3661	Telephone and telegraph apparatus	2.5	2.5	(D)	(D)	(D)	(D)	2.5	2.5	117.3	3
3662	Radio and TV communication equipment	1.1	0.8	(D)	(D)	0.9	(D)	5.9	5.6	93.1	2
367	Electronic components, accessories	3.2	2.2	(D)	0.1	8.4	0.8	9.4	8.8	255.7	6
3674	Semiconductors, related devices	1.3	0.9	2.2	0.1	(D)	0.6	3.6	3.3	126.5	7
3679	Electronic components, n.e.c.	1.2	0.8	(D)	-	7.6	-	2.5	2.3	60.7	12
369	Misc. electrical equipment, supplies	5.9	5.3	13.5	(D)	0.5	7.9	4.2	4.2	247.0	5
3691	Storage batteries	4.4	4.3	4.8	(D)	0.1	5.5	1.1	1.1	43.9	8
3694	Engine electrical equipment	0.8	0.8	(D)	(D)	0.3	(D)	1.7	1.7	155.8	5
37	Transportation equipment	77.3	75.7	293.1	38.5	37.8	(D)	93.1	91.4	5,242.2	1
371	Motor vehicles and equipment	63.9	63.0	246.2	(D)	(D)	(D)	64.5	63.6	3,356.1	1
3711	Motor vehicles and car bodies	43.3	43.0	126.9	(D)	(D)	0.3	35.0	34.5	1,496.0	1
3714	Motor vehicle parts, accessories	19.8	19.3	113.9	(D)	(D)	(D)	26.5	26.2	1,605.7	1
372	Aircraft and parts	5.7	5.2	7.8	3.4	2.5	3.0	9.6	9.5	408.4	3
3721	Aircraft	1.5	1.2	1.4	(D)	(D)	(D)	4.8	4.8	141.5	1
3724	Aircraft engines and engine parts	2.7	2.6	5.4	(D)	(D)	(D)	3.1	3.1	200.5	5
3728	Aircraft equipment, n.e.c.	1.5	1.4	1.1	(D)	0.2	0.3	1.7	1.7	66.5	9
373	Ship, boat building, repairing	3.4	3.3	13.3	(D)	0.7	0.2	11.0	10.7	818.9	6
3731	Ship building and repairing	3.2	3.2	12.7	(D)	(D)	(D)	9.4	9.2	743.6	6
3743	Railroad equipment	2.1	2.0	22.9	(D)	1.1	-	2.3	2.3	182.9	4
376	Guided missiles, space vehicles	1.8	1.6	0.4	(D)	0.1	0.1	2.8	2.8	147.2	1
3761	Guided missiles, space vehicles	1.4	1.3	0.2	(D)	0.1	0.1	1.9	1.8	107.5	1
38	Instruments, related products	7.3	6.6	25.4	1.9	18.0	2.1	21.6	20.8	400.5	2
382	Measuring, controlling devices	0.5	0.3	1.3	(D)	0.1	0.1	2.8	2.6	66.4	5
384	Medical instruments, supplies	0.8	0.7	0.9	(Z)	(D)	(D)	2.6	2.3	64.8	13
3861	Photographic equipment and supplies	5.6	5.4	(D)	(D)	17.6	(D)	14.0	13.9	219.5	1
39	Misc. manufacturing industries	4.0	3.6	38.7	0.2	5.1	0.4	12.4	11.8	440.3	4
399	Miscellaneous manufactures	2.3	2.1	9.9	(D)	3.3	-	6.0	5.6	241.2	5

Note: Totals may not agree precisely with detail because of independent rounding. See appendix A explanation of terms. No data cells are shown where GAC is less than \$5.0 million or the standard error is 20 or greater.

- Represents zero. (D) Withheld to avoid disclosing operations of individual companies. (S) Data suppressed because did not meet publications standards. This included cells where GAC was less than \$5.0 million or the standard error was 20 or greater. (Z) Represents less than \$50,000 or less than 50 short tons.

<sup>1</sup>The operating costs for solid waste collection/disposal, includes both payments to governmental units for solid waste collection/disposal and other operating costs for solid waste, as reported independently in table 3.

<sup>2</sup>Excludes Major Industry Group 23, Apparel and Other Textile Products.

Table 4B. Quantities of Pollutants Removed and Related Statistics, by State and Major Industry Group for Establishments With 20 or More Employees: 1978

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

SIC code	State and major industry group	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent)
		Operating costs		Quantity of pollutants removed				Operating costs <sup>1</sup>		Quantities of solid waste removed	
		All establishments	Establishments reporting quantities abated	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All establishments	Establishments reporting quantities abated		
	United States <sup>2</sup> .....	2,527.4	2,470.4	40,137.9	8,717.0	12,894.5	1,265.1	1,218.2	1,185.1	160,753.3	1
26	Maine.....	4.9	4.8	496.8	-	(D)	0.8	10.2	10.1	1,018.3	4
	Paper and allied products.....	3.9	3.9	(D)	-	(D)	0.8	7.5	7.5	531.1	3
26	New Hampshire.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Paper and allied products.....	1.0	1.0	(D)	(D)	(D)	-	0.9	0.9	189.7	4
	Vermont.....	(S)	(S)	(S)	-	(S)	(S)	(S)	(S)	(S)	(X)
26	Massachusetts.....	15.4	13.6	126.6	21.3	21.8	2.0	18.7	17.4	1,402.4	6
	Paper and allied products.....	1.0	1.0	1.0	14.3	1.5	-	1.9	1.9	180.0	18
28	Chemicals and allied products.....	1.4	1.4	3.7	0.3	(D)	0.8	1.9	1.9	73.3	16
38	Instruments, related products.....	0.5	0.5	0.6	(D)	0.1	(Z)	3.1	3.1	22.8	3
	Rhode Island.....	1.7	1.0	0.4	(D)	(D)	-	2.9	2.8	105.6	9
28	Connecticut.....	14.0	13.5	28.1	7.4	6.7	(D)	11.8	11.1	542.0	5
	Chemicals and allied products.....	3.6	3.5	(D)	(D)	1.6	(D)	2.0	2.0	101.4	4
33	Primary metal industries.....	2.6	2.6	12.5	0.1	(D)	(D)	1.0	1.0	87.5	15
34	Fabricated metal products.....	1.7	1.7	(D)	(D)	(D)	0.1	1.3	1.2	47.8	12
37	Transportation equipment.....	1.2	1.2	(D)	(D)	(D)	-	0.8	0.8	70.3	4
20	New York.....	65.5	63.8	1,481.4	85.7	202.2	148.2	74.8	71.0	4,276.1	9
	Food and kindred products.....	0.9	0.7	35.0	(D)	4.0	(D)	6.9	6.7	356.4	8
26	Paper and allied products.....	3.2	3.2	92.6	(D)	5.2	(D)	4.8	4.5	294.5	5
28	Chemicals and allied products.....	11.9	11.7	132.9	2.9	(D)	42.1	12.4	12.2	865.0	4
32	Stone, clay, glass products.....	4.6	4.6	834.1	0.2	(D)	0.2	2.5	2.4	501.3	9
33	Primary metal industries.....	17.7	17.5	312.3	4.0	1.3	9.1	5.7	5.7	1,140.1	4
34	Fabricated metal products.....	1.4	1.3	5.4	(D)	-	(D)	4.3	4.2	59.3	8
35	Machinery, except electrical.....	2.0	1.8	16.6	(D)	(D)	(D)	9.1	8.5	134.5	1
36	Electric, electronic equipment.....	2.9	2.3	19.7	(Z)	10.7	3.0	6.8	6.5	235.7	5
37	Transportation equipment.....	13.9	13.9	(D)	(D)	(D)	(D)	3.9	3.8	333.8	1
38	Instruments, related products.....	3.2	3.1	(D)	(D)	(D)	0.1	9.2	9.1	160.7	1
20	New Jersey.....	89.0	86.0	301.8	325.7	304.8	36.8	42.1	41.1	2,391.6	4
	Food and kindred products.....	4.5	4.2	7.4	0.4	0.4	0.6	3.5	3.4	253.6	13
26	Paper and allied products.....	1.2	0.7	1.7	(Z)	(D)	-	1.6	1.5	72.1	16
28	Chemicals and allied products.....	26.7	25.5	81.6	40.1	39.1	34.7	15.6	15.3	468.4	1
29	Petroleum and coal products.....	25.2	25.2	18.6	276.7	186.8	-	2.1	2.1	77.3	1
32	Stone, clay, glass products.....	8.6	8.6	143.0	5.3	(D)	-	3.5	3.5	693.7	16
33	Primary metal industries.....	11.1	10.9	41.9	2.4	(D)	(D)	1.5	1.5	310.1	5
34	Fabricated metal products.....	2.6	2.4	2.6	-	4.5	(D)	1.8	1.7	44.4	6
37	Transportation equipment.....	1.7	1.7	(D)	(D)	-	0.1	2.0	2.0	166.7	11
20	Pennsylvania.....	255.9	253.2	3,459.1	481.5	465.9	23.3	75.2	73.1	11,365.1	1
	Food and kindred products.....	3.8	3.1	22.9	24.5	(D)	-	4.3	3.9	337.0	4
26	Paper and allied products.....	4.2	4.0	97.7	(D)	(D)	(D)	6.0	5.9	495.2	4
28	Chemicals and allied products.....	14.9	14.2	67.4	13.6	30.1	(D)	6.7	6.7	329.7	7
29	Petroleum and coal products.....	51.9	51.9	38.4	120.9	(D)	(D)	2.1	2.1	132.3	1
30	Rubber, misc. plastics products.....	1.6	1.6	4.1	4.1	1.5	2.5	2.8	2.8	101.4	14
33	Primary metal industries.....	141.8	141.5	1,407.3	265.4	20.8	2.7	30.8	30.7	8,321.2	1
34	Fabricated metal products.....	3.3	3.0	16.3	(D)	2.0	(D)	3.3	2.5	136.4	13
35	Machinery, except electrical.....	6.4	6.3	62.0	(D)	(D)	1.1	2.7	2.6	317.4	12
36	Electric, electronic equipment.....	4.0	3.9	21.0	(D)	1.9	3.4	3.1	3.0	174.6	7
37	Transportation equipment.....	2.6	2.5	7.1	(D)	(D)	(D)	2.1	1.9	114.6	3
20	Ohio.....	164.7	158.4	2,818.5	87.0	815.0	29.4	75.4	73.8	7,910.5	1
	Food and kindred products.....	3.0	2.8	16.5	2.5	0.2	(D)	3.6	3.5	317.5	4
26	Paper and allied products.....	3.5	3.5	85.4	(D)	6.8	-	2.6	2.6	507.7	6
28	Chemicals and allied products.....	15.3	12.5	122.4	3.2	13.5	13.0	9.1	8.7	474.6	7
29	Petroleum and coal products.....	11.6	11.6	97.8	50.8	547.8	(Z)	3.4	3.4	175.8	8
30	Rubber, misc. plastics products.....	4.3	4.2	54.5	(D)	16.3	0.6	7.5	7.5	311.5	4
32	Stone, clay, glass products.....	9.3	9.3	863.0	3.2	(D)	(D)	6.5	6.5	720.3	9
33	Primary metal industries.....	97.0	95.3	1,462.4	12.8	(D)	5.0	13.8	13.8	4,214.7	2
34	Fabricated metal products.....	6.0	5.2	25.8	(D)	3.2	5.4	8.1	7.9	241.0	7
35	Machinery, except electrical.....	2.3	2.0	19.0	5.0	(D)	(D)	4.6	4.3	211.6	6
36	Electric, electronic equipment.....	2.7	2.6	32.5	(D)	(D)	(D)	3.4	3.3	298.2	6
37	Transportation equipment.....	9.1	9.0	34.9	(D)	(D)	(D)	9.7	9.5	331.2	3
20	Indiana.....	139.6	137.6	2,978.2	156.6	282.3	8.3	49.5	49.0	9,783.6	1
	Food and kindred products.....	2.8	2.6	32.0	(D)	4.8	-	2.3	2.1	126.0	10
28	Chemicals and allied products.....	5.2	4.3	56.9	(D)	(D)	(D)	5.4	5.4	456.5	3
29	Petroleum and coal products.....	19.0	19.0	66.6	(D)	(D)	-	0.5	0.5	184.7	1
32	Stone, clay, glass products.....	5.5	5.5	1,735.3	2.4	(D)	-	2.2	2.2	1,225.9	16
33	Primary metal industries.....	94.1	93.8	990.8	8.8	14.4	(D)	19.1	19.0	6,278.7	1
34	Fabricated metal products.....	2.2	2.0	4.1	(D)	0.9	(D)	3.0	3.0	144.1	19
35	Machinery, except electrical.....	1.7	1.5	11.0	-	-	-	1.7	1.7	113.3	8
36	Electric, electronic equipment.....	3.9	3.9	22.7	1.2	2.5	(D)	4.9	4.9	149.3	2
37	Transportation equipment.....	3.6	3.4	19.6	(D)	(D)	1.3	4.5	4.4	814.0	2
20	Illinois.....	126.1	124.0	1,700.3	532.1	1,035.9	40.0	73.4	70.4	6,831.7	2
	Food and kindred products.....	11.1	11.4	176.9	(D)	(D)	0.6	10.6	10.3	780.2	5
26	Paper and allied products.....	0.8	0.7	(D)	0.6	(D)	-	3.2	3.2	194.4	10
27	Printing and publishing.....	3.6	2.9	(D)	-	(D)	-	2.9	2.8	175.3	14
28	Chemicals and allied products.....	17.3	17.2	117.8	37.2	196.2	16.2	13.6	13.5	1,779.0	5
29	Petroleum and coal products.....	28.8	28.6	44.0	401.3	726.2	-	3.5	2.8	252.9	1
30	Rubber, misc. plastics products.....	1.2	1.2	2.0	-	0.5	0.8	2.6	2.6	86.6	8
33	Primary metal industries.....	41.4	41.4	853.0	(D)	6.5	19.1	7.4	7.3	1,784.6	1
34	Fabricated metal products.....	3.8	3.4	7.7	0.9	7.2	2.5	5.5	5.2	169.6	11
35	Machinery, except electrical.....	7.0	6.4	24.8	(D)	(D)	0.2	10.5	10.1	504.1	2
36	Electric, electronic equipment.....	1.0	0.9	1.2	(D)	0.2	0.4	3.8	3.6	157.5	3
37	Transportation equipment.....	2.2	2.2	13.7	(D)	(D)	-	2.7	2.6	94.5	4

See footnotes at end of table.

Table 4B. Quantities of Pollutants Removed and Related Statistics, by State and Major Industry Group for Establishments With 20 or More Employees: 1978—Continued

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

SIC code	State and major industry group	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent)  GAC
		Operating costs		Quantity of pollutants removed				Operating costs <sup>1</sup>		Quantities of solid waste removed	
		All establishments	Establishments reporting quantities abated	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All establishments	Establishments reporting quantities abated		
	Michigan.....	108.9	103.5	2,744.2	(D)	559.8	(D)	85.3	83.8	8,638.5	3
20	Food and kindred products.....	0.4	0.2	3.9	-	-	-	2.8	2.5	281.1	7
28	Chemicals and allied products.....	8.7	8.6	200.8	(D)	8.4	1.9	11.4	11.4	611.8	4
29	Petroleum and coal products.....	5.7	5.7	0.5	(D)	(D)	-	0.2	0.1	8.5	3
32	Stone, clay, glass products.....	7.0	7.0	1,350.8	-	0.4	-	2.8	2.8	895.0	14
33	Primary metal industries.....	56.6	56.5	870.7	396.4	394.4	(D)	21.0	21.0	4,401.7	1
34	Fabricated metal products.....	1.3	1.1	(D)	(D)	0.1	1.4	4.3	4.0	163.0	6
35	Machinery, except electrical.....	3.7	3.2	8.6	(D)	(D)	0.1	4.2	3.9	131.6	6
37	Transportation equipment.....	19.0	18.9	139.8	(D)	(D)	(D)	28.0	27.7	1,460.9	1
	Wisconsin.....	23.2	21.3	364.9	22.9	15.0	19.1	31.6	30.6	3,632.4	4
20	Food and kindred products.....	1.2	1.2	31.6	(D)	(D)	(D)	3.3	3.0	462.8	6
26	Paper and allied products.....	6.9	5.7	164.0	16.5	(D)	(D)	8.9	8.9	1,035.3	6
35	Machinery, except electrical.....	2.5	2.4	28.2	0.1	0.2	(D)	3.1	3.1	299.6	3
	Minnesota.....	20.6	19.5	151.8	(D)	(D)	(D)	15.3	15.0	1,052.6	9
20	Food and kindred products.....	2.9	2.4	26.5	(D)	(D)	-	3.6	3.5	256.3	9
26	Paper and allied products.....	1.2	1.2	(D)	-	-	-	2.1	2.1	235.4	1
29	Petroleum and coal products.....	11.7	11.7	(D)	(D)	(D)	-	0.4	0.4	38.5	4
	Iowa.....	20.1	19.5	566.5	2.8	142.4	(D)	13.4	12.9	1,723.9	2
20	Food and kindred products.....	9.2	8.8	80.0	(D)	126.4	(D)	3.7	3.5	321.1	3
28	Chemicals and allied products.....	1.6	1.6	26.4	(D)	(D)	(D)	2.0	2.0	648.8	4
35	Machinery, except electrical.....	3.8	3.7	(D)	(D)	(D)	(D)	3.9	3.9	412.4	2
	Missouri.....	40.5	39.8	1,531.0	142.8	(D)	6.4	21.7	20.9	1,133.9	4
20	Food and kindred products.....	1.9	1.8	42.9	(D)	(D)	(D)	2.6	2.5	164.6	5
28	Chemicals and allied products.....	11.3	11.2	25.3	14.4	(D)	5.2	5.2	5.2	130.4	7
29	Petroleum and coal products.....	4.5	4.5	1.3	(D)	(D)	-	0.6	0.6	47.0	16
33	Primary metal industries.....	8.0	8.0	68.6	(D)	0.2	0.2	1.1	1.1	134.9	3
37	Transportation equipment.....	6.2	5.9	9.0	(D)	(D)	-	3.9	3.9	168.3	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.....	3.4	3.3	18.2	1.1	7.6	2.1	4.8	4.4	683.7	6
20	Food and kindred products.....	1.4	1.3	3.3	0.6	(D)	-	2.4	2.0	532.8	6
	Kansas.....	14.0	13.8	585.0	(D)	276.4	2.7	9.3	9.1	789.2	7
28	Chemicals and allied products.....	1.7	1.7	12.2	(D)	(D)	1.6	0.8	0.8	36.3	6
32	Stone, clay, glass products.....	6.9	6.9	510.3	(D)	(D)	-	2.0	2.0	422.9	13
	Delaware.....	34.8	34.8	49.9	(D)	(D)	9.8	14.8	14.7	311.5	3
28	Chemicals and allied products.....	11.9	11.9	(D)	18.3	(D)	(D)	9.3	9.3	181.7	6
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	-	(D)	(D)	(D)	(X)
	Maryland.....	25.0	24.5	863.6	20.9	8.4	7.0	37.5	36.9	1,914.7	3
20	Food and kindred products.....	0.8	0.8	3.7	(D)	(D)	(D)	1.6	1.2	60.9	13
26	Paper and allied products.....	0.9	0.9	(D)	(D)	-	0.7	0.6	0.6	136.9	9
28	Chemicals and allied products.....	5.5	5.4	(D)	(D)	(D)	(D)	4.4	4.4	211.2	3
33	Primary metal industries.....	(D)	(D)	(D)	(D)	0.1	(D)	(D)	(D)	(D)	(X)
	District of Columbia.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Virginia.....	26.6	26.0	756.1	46.3	21.8	75.3	20.2	19.9	1,532.6	7
22	Textile mill products.....	0.5	0.5	(D)	(D)	(D)	-	1.3	1.3	71.4	3
26	Paper and allied products.....	8.1	8.1	332.5	(D)	-	(D)	3.2	3.2	423.2	4
28	Chemicals and allied products.....	6.4	6.3	152.3	5.2	(D)	49.0	5.2	5.2	283.9	3
37	Transportation equipment.....	1.6	1.6	(D)	(D)	(D)	-	2.7	2.7	156.6	4
	West Virginia.....	53.4	52.5	576.6	44.0	20.9	31.9	24.8	24.6	2,978.6	1
28	Chemicals and allied products.....	15.9	15.8	226.0	41.8	20.8	30.9	10.7	10.7	432.6	2
33	Primary metal industries.....	32.6	32.6	223.7	(D)	(D)	(D)	11.8	11.8	2,286.5	1
	North Carolina.....	32.1	30.0	590.9	6.3	19.3	18.8	23.3	22.8	2,674.2	4
20	Food and kindred products.....	0.3	0.2	(D)	-	(D)	-	1.1	1.1	47.9	7
21	Tobacco products.....	3.1	3.1	24.0	(D)	(D)	0.6	0.7	0.7	86.3	1
22	Textile mill products.....	6.1	5.8	32.4	(D)	1.1	1.2	4.9	4.7	408.1	8
25	Furniture and fixtures.....	3.6	2.5	151.5	-	1.2	(D)	1.1	1.1	98.7	14
26	Paper and allied products.....	6.8	6.8	229.2	(D)	-	(D)	2.5	2.5	945.0	3
28	Chemicals and allied products.....	2.6	2.5	81.4	3.1	(D)	5.4	4.3	4.3	407.9	5
	South Carolina.....	24.2	23.7	825.6	5.1	25.9	13.8	15.3	14.7	1,128.2	10
22	Textile mill products.....	0.8	0.8	14.7	-	(D)	0.3	2.7	2.6	163.0	8
28	Chemicals and allied products.....	6.5	6.2	60.8	1.9	10.1	5.6	4.7	4.7	243.9	2
	Georgia.....	29.3	28.8	871.6	23.1	9.8	13.4	16.7	16.4	1,991.3	3
20	Food and kindred products.....	0.5	0.4	16.8	-	-	(D)	2.0	1.8	106.7	6
26	Paper and allied products.....	16.3	16.3	717.6	(D)	-	(D)	4.0	3.9	961.1	3
28	Chemicals and allied products.....	3.7	3.7	15.5	(D)	6.0	5.4	1.5	1.5	54.2	8
32	Stone, clay, glass products.....	3.5	3.5	90.6	(D)	0.7	-	1.2	1.2	93.2	16
	Florida.....	48.7	45.6	1,653.3	222.7	21.8	82.9	22.1	21.1	20,968.6	2
20	Food and kindred products.....	3.0	3.0	41.2	0.5	6.2	1.6	2.9	2.6	661.2	4
26	Paper and allied products.....	14.7	14.7	450.7	(D)	-	(D)	3.1	2.8	115.0	1
28	Chemicals and allied products.....	25.9	23.6	464.7	199.6	(D)	77.2	9.3	9.3	19,415.2	2
	Kentucky.....	42.3	41.2	531.8	43.5	245.8	68.9	20.5	20.2	1,588.7	2
20	Food and kindred products.....	1.5	1.1	9.6	1.2	0.1	-	1.2	1.0	48.1	15
26	Paper and allied products.....	7.9	7.9	67.4	-	2.8	(D)	2.2	2.2	93.4	8
28	Chemicals and allied products.....	8.5	8.5	214.6	8.1	59.2	(D)	5.6	5.6	324.4	4
29	Petroleum and coal products.....	3.2	3.2	(D)	(D)	(D)	-	0.3	0.3	16.7	1
33	Primary metal industries.....	11.0	10.4	118.9	-	(D)	(D)	0.9	0.8	584.0	1
35	Machinery, except electrical.....	1.8	1.8	(D)	(D)	(D)	0.6	1.3	1.3	59.7	6
36	Electric, electronic equipment.....	2.8	2.8	(D)	(D)	0.2	0.1	1.7	1.6	104.2	3

See footnotes at end of table.

**Table 4B. Quantities of Pollutants Removed and Related Statistics, by State and Major Industry Group for Establishments With 20 or More Employees: 1978—Continued**

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

SIC code	State and major industry group	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent)
		Operating costs		Quantity of pollutants removed				Operating costs <sup>1</sup>		Quantities of solid waste removed	
		All establishments	Establishments reporting quantities abated	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All establishments	Establishments reporting quantities abated		
											GAC
	Tennessee.....	41.6	40.4	1,171.3	38.7	90.5	42.5	24.0	23.6	4,174.7	3
20	Food and kindred products.....	1.2	1.1	25.0	(D)	(D)	3.7	1.6	1.6	104.6	9
26	Paper and allied products.....	1.3	1.3	169.2	(D)	(D)	(D)	2.0	2.0	167.6	10
28	Chemicals and allied products.....	26.6	25.8	608.1	30.3	(D)	29.7	11.0	10.9	1,671.3	4
33	Primary metal industries.....	6.5	6.5	39.7	-	37.6	(D)	1.0	0.9	1,613.9	11
	Alabama.....	67.1	65.9	1,212.6	77.3	(D)	44.5	24.5	23.9	3,281.7	3
26	Paper and allied products.....	12.0	12.0	382.1	37.4	-	13.5	3.3	3.3	651.7	1
28	Chemicals and allied products.....	10.3	9.3	92.1	18.6	0.9	25.5	7.9	7.9	455.2	1
33	Primary metal industries.....	36.7	36.7	288.3	(D)	(D)	5.1	6.2	6.2	1,587.1	8
	Mississippi.....	36.2	36.0	467.1	(D)	27.1	(D)	10.0	9.7	2,183.9	6
24	Lumber and wood products.....	2.6	2.5	24.1	-	6.8	-	1.2	1.1	411.4	16
26	Paper and allied products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
28	Chemicals and allied products.....	3.8	3.8	(D)	(D)	(D)	(D)	1.7	1.7	1,165.6	1
29	Petroleum and coal products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Arkansas.....	17.7	17.3	569.8	31.9	26.7	4.5	11.2	10.9	2,520.8	10
20	Food and kindred products.....	0.3	0.2	13.9	-	(D)	-	1.9	1.8	80.4	5
26	Paper and allied products.....	4.9	4.9	229.3	(D)	-	(D)	1.5	1.5	601.6	1
	Louisiana.....	88.5	86.9	1,331.6	303.6	1,167.2	56.5	41.1	40.7	9,250.4	1
20	Food and kindred products.....	2.1	2.0	75.9	(D)	-	0.2	2.0	2.0	327.1	14
26	Paper and allied products.....	4.3	3.9	1,017.4	52.5	1.3	(D)	1.6	1.5	554.3	2
28	Chemicals and allied products.....	30.4	29.8	188.9	(D)	204.0	46.9	30.7	30.5	7,897.9	2
29	Petroleum and coal products.....	42.5	42.2	11.3	210.2	942.7	(D)	3.0	3.0	224.1	1
33	Primary metal industries.....	7.7	7.4	16.8	-	(D)	(D)	0.8	0.7	78.7	7
	Oklahoma.....	14.3	13.7	209.2	83.3	(D)	21.3	7.0	6.9	464.6	9
29	Petroleum and coal products.....	7.5	7.5	3.9	(D)	(D)	(D)	1.1	1.1	35.3	1
	Texas.....	354.6	351.7	2,675.2	1,495.4	4,145.0	164.2	124.0	123.2	9,368.6	3
20	Food and kindred products.....	1.7	1.3	34.0	(D)	1.0	1.0	4.9	4.7	588.8	4
26	Paper and allied products.....	9.5	9.4	369.5	(D)	(D)	(D)	12.5	12.5	272.1	2
28	Chemicals and allied products.....	79.8	78.6	364.3	172.7	922.3	83.3	61.6	61.6	5,208.4	8
29	Petroleum and coal products.....	201.5	201.3	34.8	1,178.2	3,115.8	(D)	23.4	23.3	881.7	1
32	Stone, clay, glass products.....	10.3	10.3	1,448.0	28.8	2.6	6.2	2.0	2.0	683.0	17
33	Primary metal industries.....	46.5	46.5	363.9	(D)	101.1	41.7	4.4	4.4	1,069.6	4
34	Fabricated metal products.....	1.2	1.1	3.8	(Z)	0.9	-	2.0	1.9	65.6	16
35	Machinery, except electrical.....	0.8	0.4	1.2	-	0.1	(D)	3.5	3.5	105.6	6
37	Transportation equipment.....	0.8	0.6	0.7	-	1.3	(Z)	2.6	2.6	70.0	9
	Montana.....	11.8	11.8	269.5	(D)	159.7	(D)	1.2	1.2	358.1	4
29	Petroleum and coal products.....	4.4	4.4	(D)	(D)	159.6	(D)	0.2	0.2	10.7	1
33	Primary metal industries.....	5.5	5.5	(D)	(D)	-	-	-	-	-	1
	Idaho.....	11.9	11.8	321.5	(D)	(D)	(D)	5.4	5.2	3,891.4	7
28	Chemicals and allied products.....	6.2	6.2	(D)	11.7	(D)	(D)	3.0	3.0	2,866.8	1
	Wyoming.....	(S)	(S)	(S)	(S)	(S)	-	(S)	(S)	(S)	(X)
	Colorado.....	20.0	19.9	792.6	2.6	3.8	0.7	6.4	6.2	1,269.3	6
28	Chemicals and allied products.....	(D)	(D)	(D)	(D)	0.1	(D)	(D)	(D)	(D)	(X)
33	Primary metal industries.....	(D)	(D)	(D)	0.2	-	0.1	(D)	(D)	(D)	(X)
	New Mexico.....	(D)	(D)	(D)	(D)	0.6	(D)	(D)	(D)	(D)	(X)
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	-	(D)	(D)	(D)	(X)
	Arizona.....	58.7	58.4	307.0	1,396.0	(D)	(Z)	4.8	4.6	6,121.7	15
33	Primary metal industries.....	46.3	46.3	203.9	946.9	(D)	-	1.9	1.8	5,454.4	1
	Utah.....	18.5	18.4	230.5	(D)	(D)	(D)	3.1	3.1	1,077.1	3
33	Primary metal industries.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)
	Nevada.....	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(X)
	Washington.....	61.5	61.0	962.9	151.4	202.5	40.6	20.3	19.4	2,982.8	2
20	Food and kindred products.....	0.6	0.6	51.4	-	2.3	(D)	2.0	1.9	531.6	10
24	Lumber and wood products.....	2.0	2.0	43.8	(Z)	0.2	(D)	6.9	6.3	1,394.7	11
26	Paper and allied products.....	8.3	8.1	202.8	79.5	(D)	2.9	1.8	1.8	306.6	1
29	Petroleum and coal products.....	9.0	9.0	96.4	(D)	(D)	-	0.7	0.7	16.7	4
33	Primary metal industries.....	32.5	32.5	106.3	(D)	(D)	36.0	4.1	4.1	410.5	2
	Oregon.....	24.8	24.4	1,002.7	59.1	8.0	9.8	20.6	20.1	2,045.4	4
24	Lumber and wood products.....	4.1	3.9	573.5	9.0	2.4	(Z)	6.8	6.4	1,208.2	12
26	Paper and allied products.....	8.3	8.3	267.2	(D)	0.2	(D)	8.3	8.3	361.2	6
33	Primary metal industries.....	8.2	8.2	45.9	(D)	0.2	3.9	2.0	2.0	169.4	5
	California.....	245.5	238.7	2,364.1	1,059.0	1,252.5	36.2	92.6	88.0	9,547.4	1
20	Food and kindred products.....	5.8	4.2	52.3	0.8	1.1	(D)	13.5	12.9	2,268.0	4
24	Lumber and wood products.....	2.9	2.2	344.2	-	(Z)	3.7	6.8	6.6	1,356.5	15
26	Paper and allied products.....	6.2	6.1	83.9	0.1	11.3	(D)	4.8	4.7	242.6	6
28	Chemicals and allied products.....	14.7	13.5	78.7	(D)	16.1	5.6	16.3	16.2	471.1	6
29	Petroleum and coal products.....	151.6	150.9	81.3	1,047.0	1,135.5	(D)	9.8	9.5	640.3	1
30	Rubber, misc. plastics products.....	1.4	1.4	4.3	0.2	1.5	0.1	3.8	3.6	128.1	10
32	Stone, clay, glass products.....	25.4	25.4	1,474.2	5.4	0.5	0.3	5.3	5.3	1,423.8	8
33	Primary metal industries.....	17.5	17.1	199.1	1.4	27.5	0.1	6.0	5.9	1,975.4	9
34	Fabricated metal products.....	7.3	6.4	7.0	(D)	37.4	0.5	2.9	2.4	68.0	10
35	Machinery, except electrical.....	1.4	1.1	3.6	0.1	(D)	(D)	2.8	2.7	384.3	5
36	Electric, electronic equipment.....	1.9	1.5	17.8	(Z)	8.4	(D)	3.6	3.3	5.3	9
37	Transportation equipment.....	7.4	7.2	10.3	(Z)	3.1	1.4	9.6	9.3	323.9	3

See footnotes at end of table.

**Table 4B. Quantities of Pollutants Removed and Related Statistics, by State and Major Industry Group for Establishments With 20 or More Employees: 1978—Continued**

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

SIC code	State and major industry group	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent) GAC <sup>1</sup>
		Operating costs		Quantity of pollutants removed				Operating costs <sup>2</sup>		Quantities of solid waste removed	
		All establishments	Establishments reporting quantities abated	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All establishments	Establishments reporting quantities abated		
26	Alaska.....	0.3	0.3	(D)	(D)	(D)	-	1.0	0.9	90.8	3
	Paper and allied products.....	(D)	(D)	(D)	(D)	-	-	(D)	(D)	(D)	(X)
	Hawaii.....	1.0	1.0	36.9	(D)	(D)	-	3.5	3.5	2,625.2	16

Note: Totals may not agree precisely with detail because of independent rounding. See appendix A for explanation of terms. Selected major industry groups (two-digit) for which all data, if shown, would be withheld to avoid disclosure have been omitted. No cells are shown where GAC is less than \$5.0 million or the standard error is 20 or greater.

- Represents zero. (S) Data suppressed because did not meet publication standards. This included cells where GAC was less than \$5.0 million or the standard error was 20 or greater. (D) Withheld to avoid disclosing operations of individual companies. (Z) Represents less than \$50,000 or less than 50 short tons.

<sup>1</sup>The operating costs for solid waste collection/disposal includes both payments to governmental units for solid waste collection/disposal and other operating costs for solid waste, as reported independently in table 3.

<sup>2</sup>Major Industry Group 23, Apparel and Other Textile Products, was not included in the survey and therefore is excluded from the U.S. and State totals.



Table 4C. Quantities of Pollutants Removed and Related Statistics, by Standard Metropolitan Statistical Area (SMSA) for Establishments With 20 or More Employees: 1978

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

Standard metropolitan statistical area	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent)
	Operating costs		Quantity of pollutants removed				Operating costs <sup>1</sup>		Quantities of solid waste removed	
	All establishments	Establishments reporting quantities abated	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All establishments	Establishments reporting quantities abated		
GAC.										
Akron, Ohio.....	2.8	2.7	51.3	(D)	0.8	0.2	4.3	4.3	221.9	6
Albany-Schenectady-Troy, N.Y.....	4.2	4.2	(D)	(2)	24.5	(D)	3.7	3.6	448.4	4
Allentown-Bethlehem-Easton, Pa.-N.J.....	44.0	43.9	1,315.3	78.3	(D)	0.6	5.6	5.6	602.5	5
Amarillo, Tex.....	2.7	2.7	(D)	(D)	1.7	(D)	0.6	0.6	51.2	15
Anaheim-Santa Ana-Garden Grove, Calif.....	2.0	1.9	8.1	(2)	8.1	0.7	4.2	4.1	181.9	11
Ann Arbor, Mich.....	1.4	1.4	(D)	(D)	(D)	1.4	2.6	2.6	141.9	5
Appleton-Oshkosh, Wis.....	2.4	2.4	33.7	0.4	(D)	(D)	3.9	3.9	331.2	11
Atlanta, Ga.....	3.8	3.7	18.3	0.3	0.7	5.8	4.5	4.3	179.8	6
Augusta, Ga.-S.C.....	5.6	5.6	50.9	(2)	(D)	(D)	3.8	3.8	327.6	7
Baltimore, Md.....	15.7	15.6	574.7	9.5	6.4	2.9	34.1	33.9	1,285.8	3
Baton Rouge, La.....	33.1	33.1	81.1	(D)	449.5	14.7	9.1	9.1	1,422.1	2
Beaumont-Port Arthur-Orange, Tex.....	63.3	63.3	71.1	302.3	1,239.2	33.8	18.2	18.2	485.6	1
Billings, Mont.....	4.5	4.5	2.5	(D)	149.5	(D)	0.3	0.3	36.2	1
Binghamton, N.Y.-Pa.....	0.7	0.7	(D)	(D)	(D)	0.1	2.3	2.3	69.0	3
Birmingham, Ala.....	19.5	19.4	438.8	-	(D)	(D)	4.3	4.2	750.3	6
Boston, Mass.....	5.5	5.2	65.6	3.1	11.1	0.7	9.9	9.3	492.9	6
Bridgeport, Conn.....	3.6	3.6	8.9	0.1	0.3	(D)	1.8	1.8	95.9	6
Buffalo, N.Y.....	26.0	25.6	349.7	30.1	74.5	(D)	20.7	20.6	1,402.4	2
Canton, Ohio.....	4.9	4.3	40.9	(D)	(D)	(D)	1.4	1.4	349.3	3
Cedar Rapids, Iowa.....	3.4	3.4	28.2	(D)	0.7	(D)	1.0	1.0	58.5	5
Charleston, S.C.....	4.8	4.7	480.8	4.6	3.0	(D)	1.2	1.2	193.6	13
Charleston, W. Va.....	9.1	9.0	135.7	(D)	7.9	21.3	4.8	4.8	217.7	2
Charlotte-Gastonia, N.C.....	1.1	1.0	11.2	(D)	0.1	(D)	1.7	1.7	211.3	8
Chattanooga, Tenn.-Ga.....	3.6	3.6	20.8	(D)	38.0	4.3	2.0	2.0	156.4	11
Chicago, Ill.....	60.8	59.4	702.1	330.8	711.0	9.3	46.5	44.8	3,331.3	2
Cincinnati, Ohio-Ky.-Ind.....	7.8	7.7	98.0	8.8	(D)	0.3	8.8	8.6	493.9	6
Cleveland, Ohio.....	46.2	45.8	350.0	5.5	(D)	11.0	14.3	14.1	1,884.0	2
Columbus, Ohio.....	6.2	4.3	182.5	1.7	4.4	(D)	3.4	3.2	229.5	12
Corpus Christi, Tex.....	22.2	22.2	59.9	116.7	221.4	(D)	3.4	3.4	1,444.6	1
Dallas-Fort Worth, Tex.....	9.9	9.6	923.7	27.2	4.6	12.4	9.5	9.2	627.0	8
Davenport-Rock Island-Moline, Iowa-Ill.....	3.1	3.0	105.4	(D)	(D)	(D)	2.4	2.4	194.2	8
Dayton, Ohio.....	7.2	6.9	356.0	4.6	14.7	(D)	6.2	6.1	381.6	4
Denver-Boulder, Colo.....	8.2	8.1	12.2	(D)	3.5	0.4	4.7	4.7	389.7	9
Detroit, Mich.....	63.9	62.9	1,027.6	(D)	(D)	0.4	48.4	47.9	3,861.2	1
El Paso, Tex.....	11.4	11.4	74.9	(D)	(D)	-	0.5	0.4	339.3	4
Erie, Pa.....	0.7	0.7	30.8	(D)	(D)	0.3	1.4	1.4	211.3	7
Eugene-Springfield, Oreg.....	2.3	2.2	(D)	-	0.1	-	1.5	1.5	263.3	9
Evansville, Ind.-Ky.....	3.4	3.3	50.7	(D)	(D)	(D)	3.1	3.1	143.3	1
Flint, Mich.....	6.7	6.7	(D)	(D)	(D)	(D)	4.6	4.5	411.0	18
Fort Wayne, Ind.....	3.3	3.2	13.4	(2)	(D)	(D)	2.7	2.6	193.7	18
Galveston-Texas City, Tex.....	22.8	22.8	(D)	(D)	439.3	0.2	7.7	7.7	310.9	1
Gary-Hammond-East Chicago, Ind.....	105.5	104.6	1,370.7	(D)	(D)	(D)	18.4	18.3	6,236.8	1
Grand Rapids, Mich.....	1.5	1.5	17.8	1.4	1.6	0.5	3.5	3.5	196.2	10
Green Bay, Wis.....	0.7	0.6	39.6	(D)	-	-	1.7	1.7	259.3	6
Greensboro-Winston-Salem-High Point, N.C.....	7.9	7.2	128.4	(D)	1.8	0.9	3.4	3.3	225.3	9
Greenville-Spartanburg, S.C.....	1.2	1.2	1.9	(D)	5.8	0.4	3.3	3.1	299.7	8
Hamilton-Middletown, Ohio.....	12.3	12.3	66.1	(D)	0.5	-	1.3	1.3	157.7	2
Harrisburg, Pa.....	4.6	4.5	36.9	-	(D)	(D)	0.9	0.9	85.3	4
Hartford, Conn.....	1.3	1.3	4.5	(D)	(D)	(D)	1.4	1.2	92.6	12
Houston, Tex.....	162.3	161.8	320.5	614.9	1,701.0	52.5	63.7	63.5	3,527.7	6
Huntington-Ashland, W. Va.-Ky.-Ohio.....	11.4	11.4	161.7	(D)	138.5	1.2	2.3	2.3	734.7	4
Indianapolis, Ind.....	6.3	6.3	98.7	4.3	(D)	(D)	5.5	5.4	694.0	3
Jacksonville, Fla.....	11.3	11.2	274.0	(D)	1.5	(D)	3.7	3.5	308.3	2
Jersey City, N.J.....	5.8	4.8	3.8	1.5	4.6	0.2	2.2	2.2	226.4	7
Kalamazoo-Portage, Mich.....	1.7	1.7	(D)	(D)	(D)	0.4	3.3	3.3	246.1	5
Kansas City, Mo.-Kans.....	19.0	18.8	262.5	(D)	(D)	(D)	9.2	9.1	625.8	3
Knoxville, Tenn.....	3.6	3.6	20.7	1.3	(D)	11.2	1.3	1.3	69.7	6
Lafayette-West Lafayette, Ind.....	1.4	1.4	(D)	-	(D)	(D)	2.0	2.0	152.4	4
Lake Charles, La.....	6.4	5.8	25.9	(D)	41.8	(D)	4.1	4.0	199.0	2
Lakeland-Winter Haven, Fla.....	15.6	15.2	323.4	133.2	6.2	67.1	3.3	3.2	9,388.6	3
Lancaster, Pa.....	2.6	2.6	56.7	0.1	2.1	0.8	2.5	2.5	215.9	6
Lansing-East Lansing, Mich.....	2.3	2.3	(D)	(D)	(D)	(D)	3.8	3.6	113.6	4
Lima, Ohio.....	2.5	2.5	7.4	0.6	(D)	-	2.7	2.7	113.3	6
Little Rock-North Little Rock, Ark.....	2.5	2.5	125.5	-	0.5	(D)	1.5	1.5	1,505.3	16
Lorain-Elyria, Ohio.....	8.3	8.3	241.4	(D)	(D)	(D)	4.1	4.1	365.1	3
Los Angeles-Long Beach, Calif.....	126.1	123.1	316.3	570.2	846.5	18.4	31.9	29.3	2,057.1	2
Louisville, Ky.-Ind.....	14.9	14.8	543.6	16.0	98.3	(D)	7.5	7.4	557.3	3
Memphis, Tenn.-Ark.-Miss.....	5.5	4.7	20.2	2.2	(D)	0.3	6.0	6.0	178.5	7
Milwaukee, Wis.....	7.6	7.5	49.7	(D)	2.0	0.2	7.5	7.2	624.1	15
Minneapolis-St. Paul, Minn.-Wis.....	16.1	15.8	80.9	(D)	(D)	(D)	8.7	8.5	444.4	5
Mobile, Ala.....	5.1	5.0	(D)	16.5	(D)	(D)	4.5	4.3	424.6	6
Nashville-Davidson, Tenn.....	2.6	2.5	(D)	(D)	(2)	1.7	3.8	3.8	170.2	3
Nassau-Suffolk, N.Y.....	0.6	0.4	0.4	(2)	0.3	-	3.3	3.3	89.6	6
New Brunswick-Perth Amboy-Sayreville, N.J.....	37.6	37.1	69.1	(D)	8.6	2.0	5.9	5.8	378.8	3
New London-Norwich, Conn.-R.I.....	3.5	3.5	(D)	(D)	(D)	-	2.4	2.3	89.9	6
New Orleans, La.....	8.6	8.6	9.8	(D)	(D)	0.1	3.3	3.1	158.2	3
New York, N.Y.-N.J.....	14.8	13.7	69.5	2.3	(D)	2.9	20.8	18.2	691.5	5
Newark, N.J.....	12.1	11.6	64.2	(D)	85.5	22.4	12.3	11.9	813.6	5
Newport News-Hampton, Va.....	3.1	3.1	(D)	(D)	(D)	(D)	1.7	1.7	145.4	2
Norfolk-Virginia Beach-Portsmouth, Va.-N.C.....	1.1	1.1	8.1	(D)	(D)	47.4	1.9	1.9	96.1	14

See footnotes at end of table.

Table 4C. Quantities of Pollutants Removed and Related Statistics, by Standard Metropolitan Statistical Area (SMSA) for Establishments With 20 or More Employees: 1978—Continued

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

Standard metropolitan statistical area	Air pollution abatement						Solid waste collection/disposal			Standard error of estimates (percent) GAC
	Operating costs		Quantity of pollutants removed				Operating costs <sup>1</sup>		Quantities of solid waste removed	
	All establishments	Establishments reporting quantities abated	Particulates	Sulfur oxides	Nitrogen oxides, hydrocarbons, and carbon monoxide	Heavy metals, radioactive and toxic substances, and other	All establishments	Establishments reporting quantities abated		
Northeast Pennsylvania.....	1.6	1.5	31.6	0.3	(D)	(D)	2.1	2.0	151.7	16
Omaha, Nebr.-Iowa.....	1.7	1.7	9.8	(D)	(D)	(Z)	2.3	2.2	131.1	10
Parkersburg-Marietta, Va.-Ohio.....	6.4	6.4	(D)	(D)	(D)	0.6	3.9	3.8	289.8	5
Paterson-Clifton-Passaic, N.J.....	1.3	1.2	0.7	0.5	2.4	0.2	2.2	1.9	45.1	17
Pensacola, Fla.....	8.5	6.4	(D)	(D)	(D)	-	1.2	1.2	110.0	3
Peoria, Ill.....	12.2	12.2	(D)	11.2	0.1	-	3.1	3.1	532.5	5
Petersburg-Colonial Heights-Hopewell, Va.....	3.4	3.4	40.1	(D)	(D)	(D)	1.1	1.1	86.9	1
Philadelphia, Pa.-N.J.....	92.4	91.0	448.7	142.1	519.8	13.8	21.1	19.8	1,398.9	2
Pine Bluff, Ark.....	3.2	3.2	(D)	-	-	(D)	0.6	0.5	143.7	3
Pittsburgh, Pa.....	108.1	107.6	914.0	266.0	25.8	0.7	25.4	25.1	6,419.5	1
Portland, Oreg.-Wash.....	12.0	11.6	149.3	30.2	17.1	7.1	4.2	4.1	406.3	9
Poughkeepsie, N.Y.....	0.3	0.3	0.1	-	(D)	(D)	1.4	0.9	121.3	15
Providence-Warwick-Pawtucket, R.I.-Mass.-Conn.....	1.9	1.3	0.6	0.1	0.2	(Z)	3.3	3.2	119.0	8
Raleigh-Durham, N.C.....	1.1	1.1	3.7	(D)	1.6	0.1	1.3	1.3	43.3	11
Reading, Pa.....	6.6	6.6	140.6	34.2	8.4	3.6	1.8	1.7	125.7	17
Richmond, Va.....	1.6	1.5	29.6	-	(D)	(D)	4.0	4.0	105.7	8
Riverside-San Bernardino-Ontario, Calif.....	22.8	22.7	959.6	(D)	38.3	3.3	6.1	6.0	2,237.8	3
Rochester, N.Y.....	3.8	3.7	52.5	(D)	(D)	(D)	11.2	11.2	380.8	3
Rockford, Ill.....	1.5	1.5	12.8	0.3	3.4	(D)	1.9	1.9	129.6	8
Sacramento, Calif.....	1.3	0.5	14.6	(D)	(D)	(D)	1.5	1.5	107.2	13
St. Louis, Mo.-Ill.....	43.1	42.6	822.5	267.7	184.3	21.7	18.4	17.3	743.8	3
Salt Lake City-Ogden, Utah.....	14.0	14.0	117.5	(D)	(D)	(D)	1.7	1.7	721.9	3
San Diego, Calif.....	1.3	1.1	2.1	(D)	(D)	(D)	3.6	3.5	211.6	7
San Francisco-Oakland, Calif.....	53.6	52.7	149.5	351.6	156.0	(D)	22.7	22.2	876.6	1
San Jose, Calif.....	8.1	7.8	(D)	(D)	2.8	0.1	5.4	4.9	390.7	4
Seattle-Everett, Wash.....	5.0	4.9	413.3	(D)	0.3	-	6.3	6.2	1,037.1	6
Shreveport, La.....	2.8	2.8	758.6	46.3	1.7	(D)	1.0	1.0	234.4	13
Spokane, Wash.....	3.6	3.6	82.0	-	(D)	(Z)	3.1	3.1	117.8	9
Stockton, Calif.....	1.8	1.7	64.7	(D)	0.4	-	1.7	1.6	198.4	10
Syracuse, N.Y.....	3.4	3.4	77.5	(D)	(D)	(D)	4.4	4.4	489.8	4
Tacoma, Wash.....	17.3	17.3	65.6	(D)	(D)	(D)	2.4	2.4	416.5	3
Tampa-St. Petersburg, Fla.....	6.7	6.5	561.5	(D)	(D)	(D)	6.5	6.3	9,598.7	9
Terre Haute, Ind.....	2.0	1.6	13.4	0.4	-	-	1.6	1.6	176.5	19
Toledo, Ohio-Mich.....	16.3	16.3	345.7	37.3	308.0	2.3	5.2	5.1	417.2	7
Trenton, N.J.....	2.3	2.1	18.2	0.2	(D)	(D)	1.5	1.5	42.7	10
Tucson, Ariz.....	6.3	6.3	53.0	(D)	-	(D)	0.1	0.1	122.1	15
Tulsa, Okla.....	6.8	6.8	47.5	(D)	33.4	17.7	2.6	2.5	209.3	8
Vineland-Millville-Bridgeton, N.J.....	1.2	1.2	2.1	(D)	(D)	(D)	1.1	1.1	122.7	10
Wheeling, W. Va.-Ohio.....	4.9	4.0	44.3	(D)	-	(D)	0.9	0.9	213.8	17
Wilmington, Del.-N.J.-Md.....	41.5	41.5	45.1	(D)	(D)	(D)	15.9	15.8	321.3	2
Wilmington, N.C.....	2.3	2.2	70.9	(D)	1.8	4.4	3.6	3.6	146.7	4
York, Pa.....	2.8	2.7	64.0	(D)	(D)	(D)	2.8	2.8	295.6	9
Youngstown-Warren, Ohio.....	9.7	9.7	247.4	(D)	1.5	(D)	4.4	4.3	843.4	3

Note: Totals may not agree precisely with detail because of independent rounding. See appendix A for explanation of terms. 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.

(D) Withheld to avoid disclosing operations of individual companies.

(Z) Represents less than \$50,000 or less than 50 short tons.

<sup>1</sup>The operating costs for solid waste collection/disposal, includes both payments to governmental units for solid waste collection/disposal and other operating costs for solid waste, as reported independently in table 3.

# Appendix A.

## Pollution Abatement Form and Instructions

**DUE DATE: 30 DAYS AFTER RECEIPT OF FORM**

Form Approved: O.M.B. No. 41-R2807

<p>FORM MA-200 (7-10-78)</p> <p>U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS</p> <p><b>SURVEY ON POLLUTION ABATEMENT COSTS AND EXPENDITURES - 1978</b></p>	<p><b>NOTICE</b> - 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><i>Please read</i> enclosed instructions before completing this report. All underlined items are explained in the instructions.</p>	<p><b>YOUR FILE COPY</b></p> <p><i>(Please correct any error in name and address including ZIP code)</i></p>							
<p><b>RETURN TO</b> Bureau of the Census 1201 East Tenth Street Jeffersonville, Indiana 47132</p>								
<p>Change of operating status <i>Mark (X) one if applicable</i></p> <p>This establishment has been:</p> <p><input type="checkbox"/> Idle                      <input type="checkbox"/> Closed</p> <p><input type="checkbox"/> Sold - <i>To whom?</i>      <input type="checkbox"/> Other - <i>Specify</i></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">Telephone</td> </tr> <tr> <td></td> <td style="width:15%;">Area code</td> <td style="width:20%;">Number</td> <td style="width:5%;">Extension</td> </tr> </table>				Name of person to contact regarding this report	Telephone			
Name of person to contact regarding this report	Telephone							
	Area code	Number	Extension					
<p><b>Item 1 - IF NO PAYMENTS TO GOVERNMENT, CAPITAL, OR CURRENT COST INCURRED</b></p> <p><i>Mark (X) in box for appropriate reason</i></p> <p>1. <input type="checkbox"/> No pollutants generated                      3. <input type="checkbox"/> All costs less than \$500</p> <p>2. <input type="checkbox"/> Cost included in rent, taxes, lease agreement, or removal without charge or payment (such as scavenger services)      4. <input type="checkbox"/> Other - <i>Specify</i></p>								
<p><b>Important</b> 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.</p>								
<p><b>Item 2 - CAPITAL EXPENDITURES FOR ABATEMENT OF AIR POLLUTANTS</b></p>		<p>Expenditures in 1978 <i>(Report in thousands of dollars)</i></p>						
		Item code	Mark (X) here if less than \$500 and greater than 0.					
		Millions (\$000)	Thousands (000)					
<p>a. Report your total expenditures in 1978 for new plant and equipment designed to abate air pollutants through <b>end-of-line techniques</b></p>		1010	<input type="checkbox"/>					
<p>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 processed to abate air pollutants?</p> <p><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.</p> <p><input type="checkbox"/> NO - Skip to c</p>		1040	<input type="checkbox"/>					
<p>c. <b>TOTAL AIR CAPITAL</b> (Sum of lines 2a and 2b) →</p>		1050	<input type="checkbox"/>					

# Appendix A – Continued

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.

- Examples**
- (1) Particulates . . . . . 50%
  - (2) Sulfur oxides . . . . . 00%
  - (3) Nitrogen oxides, etc. . . . . 35%
  - (4) Other – toxic substances . . . 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	%	
<b>TOTAL PERCENTAGE</b> →		<b>100%</b>	

## Item 3 – CAPITAL EXPENDITURES FOR ABATEMENT OF WATER POLLUTANTS

a. Report your total expenditures in 1978 for new plant and equipment designed to abate water pollutants through end-of-line techniques

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?

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.

NO – Skip to c

c. **TOTAL WATER CAPITAL** (Sum of lines 3a and 3b) →

Item code	Expenditures in 1978 (Report in thousands of dollars)		
	Millions (\$000)	Thousands (000)	Mark (X) here if less than \$500 and greater than 0.
2010	\$		<input type="checkbox"/>
2040	\$		<input type="checkbox"/>
2050	\$		<input type="checkbox"/>

## Item 4 – CAPITAL EXPENDITURES FOR SOLID WASTE DISPOSAL

Report your total expenditures in 1978 on new plant and equipment designed for the disposal of solid waste

3010	\$		<input type="checkbox"/>
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## Item 5 – COSTS RECOVERED THROUGH ABATEMENT ACTIVITIES

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. (Exclude the value of salable items such as scrap if the sale represents essentially an economic rather than a pollution decision.)

Item code	Costs covered in 1978 (Report in thousands of dollars)		
	Millions (\$000)	Thousands (000)	Mark (X) here if less than \$500 and greater than 0.
4010	\$		<input type="checkbox"/>

## Item 6 – PAYMENTS TO GOVERNMENT FOR POLLUTION REMOVAL

Total payments to governmental (Federal, State, county, local) units for –

a. Public sewage use

b. Municipal solid waste collection/disposal (If you report on this line, be sure to complete ITEM 9.)

Item code	Annual costs in 1978 (Report in thousands of dollars)		
	Millions (\$000)	Thousands (000)	Mark (X) here if less than \$500 and greater than 0.
5010	\$		<input type="checkbox"/>
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"/>
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# Appendix A – Continued

SPECIAL INSTRUCTIONS	b. Report your best estimate of percentage incurred by – KIND OF COST	Item code	Percentage of total annual costs in 1978 (Item 7a)
			%
Distribute total Operating and Maintenance cost (item code 6010) in terms of percent by <u>Kind of Cost</u> (7b) and <u>Form of Pollution Abated</u> (7c). Please give your best estimates.  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.	(1) Depreciation	7010	%
	(2) Labor	7020	%
	(3) Equipment leasing	7030	%
	(4) Materials, supplies, services, and other costs	7040	%
	(5) <b>TOTAL</b> (Sum of lines (1) through (4) should equal 100%) →		<b>100%</b>
<b>EXAMPLES</b>  <b>▶ Section b</b> (1) Depreciation . . . . . 10% (2) Labor . . . . . 40% (3) Equipment . . . . . 00% (4) Other . . . . . 50% <b>TOTAL . . . . . 100%</b>  <b>▶ Section c</b> (1) Air . . . . . 10% (2) Water . . . . . 30% (3) Solid . . . . . 60% <b>TOTAL . . . . . 100%</b>	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	8020	%
	(3) Solid wastes (including private contract service) (If you report on this line be sure to complete Item 9.)	8030	%
	(4) <b>TOTAL</b> (Sum of lines (1) through (3) should equal 100%) →		<b>100%</b>

Item 8 – AIR POLLUTANTS ABATED BY WEIGHT	Item code	Mark (X) here if less than ½ ton and greater than 0.	
		Tonnage abated in 1978	
On the basis of your best judgement, estimate the total tonnages of specific air pollutants abated during 1978 by new as well as previously installed pollution abatement facilities.			
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) – Specify			
_____	9040	Tons	<input type="checkbox"/>

Item 9 – SOLID WASTE DISPOSAL BY WEIGHT	Item code	Tonnage	
On the basis of your best judgement, estimate the tonnage of solid waste properly disposed during 1978, 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.	9510	Tons	<input type="checkbox"/>

Remarks – Suggestions for improvements in this questionnaire are solicited.

### CERTIFICATION OF SUBSTANTIAL ACCURACY OF REPORT

Signature of authorized person	Title	Address (Number, street, city, State, ZIP code)	Date

# Appendix A – Continued

MA-200(I)  
(12-19-78)

U.S. DEPARTMENT OF COMMERCE  
BUREAU OF THE CENSUS

## INSTRUCTIONS FOR POLLUTION ABATEMENT COSTS AND EXPENDITURES – 1978

### DEFINITIONS

- ▶ 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.
- ▶ **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 biological 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.

**NOTE:** If your establishment did not operate for a full year, please indicate the disposition by marking the appropriate box(es) in section pertaining to "Change in Operating Status."

If you have any questions regarding this report, please call (301) 763-1755.

### GENERAL INSTRUCTIONS

- ▶ Report data on a calendar year basis for 1978. However, if your establishment uses a fiscal year that ends between 10/31/78 and 2/28/79, fiscal year data will be acceptable.
- ▶ Answer all questions.
- ▶ If data based on book records are not available, carefully prepared estimates are acceptable.

<i>If the value figure for the year is --</i>	
5,600,000 dollars – report as	_ _ _ 5, 6 0 0
5,600 dollars – report as	_ _ _ , _ _ _ 6
560 dollars – report as	_ _ _ , _ _ _ 1
499 dollars – Mark box (less than \$500.00)	
Zero dollars – report as	_ _ _ _ _ → 0

- ▶ 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.

#### ▶ 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 1978 should answer only item 1, certify, 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 1978 is required to submit data for items 2-9 as applicable. See examples of Common Reporting Patterns on reverse side.

# Appendix A — Continued

## SPECIFIC INSTRUCTIONS

### CAPITAL EXPENDITURES FOR NEW PLANT AND EQUIPMENT FOR POLLUTION ABATEMENT — 1978

- ▶ **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.
- ▶ **Item 2c —** 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 2e —** 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 3c —** Same as item 2c, except that it refers to abatement of water pollutants.
- ▶ **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.

### COSTS RECOVERED THROUGH ABATEMENT ACTIVITIES — 1978

- ▶ **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.

### COSTS OF POLLUTION ABATEMENT

- ▶ **Item 6a —** 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 6b —** 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 7a —** Report the **annual operating costs and expenses** for pollution abatement incurred in 1978. 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 1978 regardless of the year the equipment was installed or the process initiated.

Do not reduce annual costs of abatement by subtracting the estimate of costs recovered (item 5).

Do not include payments to governmental units for public sewerage use (item 6a). Do not include payments to governmental units for solid waste collection/disposal (item 6b).

- ▶ **Item 7b —** Distribute the dollar figure reported in item 7a **IN TERMS OF PERCENTAGES**, between the kind of cost categories listed. The percents you report should add to 100 (item 7b(5)). **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.
- ▶ **Item 7c —** Distribute the dollar figure reported in item 7a **IN TERMS OF PERCENTAGES**, between the abated forms of pollution listed. The percents you report should add to 100 (item 7c(4)). If you abate air pollutants, be sure to complete item 8. If you collect/dispose of solid wastes, be sure to complete item 9.

# Appendix A – Continued

## TONNAGES OF POLLUTANTS REMOVED

► **Item 8** – Report the annual total tonnages of the listed air pollutants abated during 1978. The tonnages should include all air pollutants abated during 1978 by new as well as previously existing pollution abatement equipment. If this information is not available from records, report engineering estimates where possible.

► **Item 9** – 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.

► **REMARKS** – Please comment if you have any significant pollution abatement costs which are not covered by this questionnaire. Suggestions for improvements in this questionnaire are solicited.

<b>COMMON REPORTING PATTERNS</b>		Listed below are some of the most common reporting patterns for items 6 through 9. Refer to the descriptive header for the pattern most applicable to your situation.				
► <b>NOTE: Dollar figures are in thousands of dollars</b>						
Item	Item code	Solid waste collection by private contractor	Municipal trash collection and sewage	Company hauls to landfill and pays fees	Company costs for air pollution abatement with solid waste removal for air pollutant residue	Company costs for water pollution treatment with sludge removal
		(1)	(2)	(3)	(4)	(5)
Public sewage	5010	\$	\$ 10	\$	\$	\$
Public trash	5020	\$	\$ 20	\$ 5	\$	\$
Annual cost	6010	\$ 15	\$	\$ 25	\$ 60	\$ 30
Air	8010	%	%	%	80 %	%
Water	8020	%	%	%	%	75 %
Solid waste collection/disposal	8030	100 %	%	100 %	20 %	25 %
Particulates	9010	T/yr.	T/yr.	T/yr.	800 T/yr.	T/yr.
Sulfur oxides	9020	T/yr.	T/yr.	T/yr.	T/yr.	T/yr.
Nitrogen oxides Hydrocarbons Carbon monoxide	9030	T/yr.	T/yr.	T/yr.	T/yr.	T/yr.
Other	9040	T/yr.	T/yr.	T/yr.	T/yr.	T/yr.
Solid waste disposal	9510	500 T/yr.	700 T/yr.	1000 T/yr.	800 T/yr.	400 T/yr.

FORM MA-200(1) (12-19-78)



# Appendix B.

## Definitions of Standard Metropolitan Statistical Areas

(Titles and definitions of the two standard consolidated areas and the 263 standard metropolitan statistical areas in the United States established by the Office of Management and Budget as of August 15, 1973)

<b>Chicago, Ill.—Northwestern Indiana</b>	
Standard Consolidated Area .....	Consists of Chicago, Ill., SMSA, and Gary-Hammond-East Chicago, Ind., SMSA
<b>New York, N.Y.—Northeastern New Jersey</b>	
Standard Consolidated Area .....	Consists of New York, N.Y.-N.J., SMSA; Nassau-Suffolk, N.Y., SMSA; Newark, N.J., SMSA; Jersey City, N.J., SMSA; Paterson-Clifton-Passaic, N.J., SMSA; and New Brunswick-Perth Amboy-Sayreville, N.J., SMSA
<b>Abilene, Tex.</b> .....	Consists of Callahan, Jones, and Taylor Counties, Tex.
<b>Akron, Ohio</b> .....	Consists of Portage and Summit Counties, Ohio
<b>Albany, Ga.</b> .....	Consists of Dougherty and Lee Counties, Ga.
<b>Albany-Schenectady-Troy, N.Y.</b> .....	Consists of Albany, Montgomery, Rensselaer, Saratoga, and Schenectady Counties, N.Y.
<b>Albuquerque, N. Mex.</b> .....	Consists of Bernalillo and Sandoval Counties, N. Mex.
<b>Alexandria, La.</b> .....	Consists of Grant and Rapides Parishes, La.
<b>Allentown-Bethlehem-Easton, Pa.-N.J.</b> .....	Consists of Carbon, Lehigh, and Northampton Counties, Pa., and Warren County, N.J.
<b>Altoona, Pa.</b> .....	Coextensive with Blair County, Pa.
<b>Amarillo, Tex.</b> .....	Consists of Potter and Randall Counties, Tex.
<b>Anaheim-Santa Ana-Garden Grove, Calif.</b> .....	Coextensive with Orange County, Calif.
<b>Anchorage, Alaska</b> .....	Coextensive with Anchorage Census Division, Alaska
<b>Anderson, Ind.</b> .....	Coextensive with Madison County, Ind.
<b>Ann Arbor, Mich.</b> .....	Coextensive with Washtenaw County, Mich.
<b>Appleton-Oshkosh, Wis.</b> .....	Consists of Calumet, Outagamie, and Winnebago Counties, Wis.
<b>Asheville, N.C.</b> .....	Consists of Buncombe and Madison Counties, N.C.
<b>Atlanta, Ga.</b> .....	Consists of Butts, Cherokee, Clayton, Cobb, De Kalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Rockdale, and Walton Counties, Ga.
<b>Atlantic City, N.J.</b> .....	Coextensive with Atlantic County, N.J.
<b>Augusta, Ga.-S.C.</b> .....	Consists of Columbia and Richmond Counties, Ga., and Aiken County, S.C.
<b>Austin, Tex.</b> .....	Consists of Hays and Travis Counties, Tex.
<b>Bakersfield, Calif.</b> .....	Coextensive with Kern County, Calif.
<b>Baltimore, Md.</b> .....	Consists of Baltimore city, and Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties, Md.
<b>Baton Rouge, La.</b> .....	Consists of Ascension, East Baton Rouge, Livingston, and West Baton Rouge Parishes, La.
<b>Battle Creek, Mich.</b> .....	Consists of Barry and Calhoun Counties, Mich.
<b>Bay City, Mich.</b> .....	Coextensive with Bay County, Mich.
<b>Beaumont-Port Arthur-Orange, Tex.</b> .....	Consists of Hardin, Jefferson, and Orange Counties, Tex.
<b>Billings, Mont.</b> .....	Coextensive with Yellowstone County, Mont.
<b>Biloxi-Gulfport, Miss.</b> .....	Consists of Hancock, Harrison, and Stone Counties, Miss.
<b>Binghamton, N.Y.-Pa.</b> .....	Consists of Broome and Tioga Counties, N.Y., and Susquehanna County, Pa.
<b>Birmingham, Ala.</b> .....	Consists of Jefferson, St. Clair, Shelby, and Walker Counties, Ala.

## Appendix B – Continued

<b>Bloomington-Normal, Ill.</b> .....	Coextensive with McLean County, Ill.
<b>Boise City, Idaho</b> .....	Coextensive with Ada County, Idaho
<b>Boston, Mass.</b> .....	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.
<b>Bridgeport, Conn.</b> .....	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.
<b>Bristol, Conn.</b> .....	Consists of Bristol city and Burlington town in Hartford County, and Plymouth town in Litchfield County, Conn.
<b>Brockton, Mass.</b> .....	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.
<b>Brownsville-Harlingen-San Benito, Tex.</b> ....	Coextensive with Cameron County, Tex.
<b>Bryan-College Station, Tex.</b> .....	Coextensive with Brazos County, Tex.
<b>Buffalo, N.Y.</b> .....	Consists of Erie and Niagara Counties, N.Y.
<b>Burlington, N.C.</b> .....	Coextensive with Alamance County, N.C.
<b>Canton, Ohio</b> .....	Consists of Carroll and Stark Counties, Ohio
<b>Cedar Rapids, Iowa</b> .....	Coextensive with Linn County, Iowa
<b>Champaign-Urbana-Rantoul, Ill.</b> .....	Coextensive with Champaign County, Ill.
<b>Charleston, S.C.</b> .....	Consists of Berkeley, Charleston, and Dorchester Counties, S.C.
<b>Charleston, W. Va.</b> .....	Consists of Kanawha and Putnam Counties, W. Va.
<b>Charlotte-Gastonia, N.C.</b> .....	Consists of Gaston, Mecklenburg, and Union Counties, N.C.
<b>Chattanooga, Tenn.-Ga.</b> .....	Consists of Hamilton, Marion, and Sequatchie Counties, Tenn., and Catoosa, Dade, and Walker Counties, Ga.
<b>Chicago, Ill.</b> .....	Consists of Cook, Du Page, Kane, Lake, McHenry, and Will Counties, Ill.
<b>Cincinnati, Ohio-Ky.-Ind.</b> .....	Consists of Clermont, Hamilton, and Warren Counties, Ohio; Boone, Campbell, and Kenton Counties, Ky.; and Dearborn County, Ind.
<b>Cleveland, Ohio</b> .....	Consists of Cuyahoga, Geauga, Lake, and Medina Counties, Ohio
<b>Colorado Springs, Colo.</b> .....	Consists of El Paso and Teller Counties, Colo.
<b>Columbia, Mo.</b> .....	Coextensive with Boone County, Mo.
<b>Columbia, S.C.</b> .....	Consists of Lexington and Richland Counties, S.C.
<b>Columbus, Ga.-Ala.</b> .....	Consists of Columbus city, and Chattahoochee County, Ga., and Russell County, Ala.
<b>Columbus, Ohio</b> .....	Consists of Delaware, Fairfield, Franklin, Madison, and Pickaway Counties, Ohio

## Appendix B – Continued

<b>Corpus Christi, Tex.</b> .....	Consists of Nueces and San Patricio Counties, Tex.
<b>Dallas-Fort Worth, Tex.</b> .....	Consists of Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties, Tex.
<b>Danbury, Conn.</b> .....	Consists of Danbury city, and Bethel, Brookfield, New Fairfield, Newtown, and Redding towns in Fairfield County; and New Milford town in Litchfield County, Conn.
<b>Davenport-Rock Island-Moline, Iowa-Ill.</b> .....	Consists of Scott County, Iowa, and Henry and Rock Island Counties, Ill.
<b>Dayton, Ohio</b> .....	Consists of Greene, Miami, Montgomery, and Preble Counties, Ohio
<b>Daytona Beach, Fla.</b> .....	Coextensive with Volusia County, Fla.
<b>Decatur, Ill.</b> .....	Coextensive with Macon County, Ill.
<b>Denver-Boulder, Colo.</b> .....	Consists of Adams, Arapahoé, Boulder, Denver, Douglas, Gilpin, and Jefferson Counties, Colo.
<b>Des Moines, Iowa</b> .....	Consists of Polk and Warren Counties, Iowa
<b>Detroit, Mich.</b> .....	Consists of Lapeer, Livingston, Macomb, Oakland, St. Clair, and Wayne Counties, Mich.
<b>Dubuque, Iowa</b> .....	Coextensive with Dubuque County, Iowa
<b>Duluth-Superior, Minn.-Wis.</b> .....	Consists of St. Louis County, Minn., and Douglas County, Wis.
<b>El Paso, Tex.</b> .....	Coextensive with El Paso County, Tex.
<b>Elmira, N.Y.</b> .....	Coextensive with Chemung County, N.Y.
<b>Erie, Pa.</b> .....	Coextensive with Erie County, Pa.
<b>Eugene-Springfield, Oreg.</b> .....	Coextensive with Lane County, Oreg.
<b>Evansville, Ind.-Ky.</b> .....	Consists of Gibson, Posey, Vanderburgh, and Warrick Counties, Ind., and Henderson County, Ky.
<b>Fall River, Mass.-R.I.</b> .....	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.
<b>Fargo-Moorhead, N.D.-Minn.</b> .....	Consists of Cass County, N.D., and Clay County, Minn.
<b>Fayetteville, N.C.</b> .....	Coextensive with Cumberland County, N.C.
<b>Fayetteville-Springdale, Ark.</b> .....	Consists of Benton and Washington Counties, Ark.
<b>Fitchburg-Leominster, Mass.</b> .....	Consists of Shirley and Townsend towns in Middlesex County; and Fitchburg and Leominster cities and Lunenburg and Westminster towns in Worcester County, Mass.
<b>Flint, Mich.</b> .....	Consists of Genesee and Shiawassee Counties, Mich.
<b>Florence, Ala.</b> .....	Consists of Colbert and Lauderdale Counties, Ala.
<b>Fort Lauderdale-Hollywood, Fla.</b> .....	Coextensive with Broward County, Fla.
<b>Fort Myers, Fla.</b> .....	Coextensive with Lee County, Fla.
<b>Fort Smith, Ark.-Okla.</b> .....	Consists of Crawford and Sebastian Counties, Ark., and Le Flore and Sequoyah Counties, Okla.
<b>Fort Wayne, Ind.</b> .....	Consists of Adams, Allen, De Kalb, and Wells Counties, Ind.
<b>Fresno, Calif.</b> .....	Coextensive with Fresno County, Calif.
<b>Gadsden, Ala.</b> .....	Coextensive with Etowah County, Ala.
<b>Gainesville, Fla.</b> .....	Coextensive with Alachua County, Fla.
<b>Galveston-Texas City, Tex.</b> .....	Coextensive with Galveston County, Tex.
<b>Gary-Hammond-East Chicago, Ind.</b> .....	Consists of Lake and Porter Counties, Ind.
<b>Grand Rapids, Mich.</b> .....	Consists of Kent and Ottawa Counties, Mich.
<b>Great Falls, Mont.</b> .....	Coextensive with Cascade County, Mont.
<b>Green Bay, Wis.</b> .....	Coextensive with Brown County, Wis.
<b>Greensboro—Winston-Salem—High Point, N.C.</b> .....	Consists of Davidson, Forsyth, Guilford, Randolph, Stokes, and Yadking Counties, N.C.
<b>Greenville-Spartanburg, S.C.</b> .....	Consists of Greenville, Pickens, and Spartanburg Counties, S.C.

## Appendix B – Continued

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.
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.
Jersey City, N.J. ....	Coextensive with Hudson County, N.J.
Johnstown, Pa. ....	Consists of Cambria and Somerset Counties, Pa.
Kalamazoo-Portage, Mich. ....	Consists of Kalamazoo and Van Buren Counties, Mich.
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.
Kingsport-Bristol, Tenn.-Va. ....	Consists of Hawkins and Sullivan Counties, Tenn., and Bristol city, and Scott and Washington Counties, Va.
Knoxville, Tenn. ....	Consists of Anderson, Blount, Knox, and Union Counties, Tenn.
La Crosse, Wis. ....	Coextensive with La Crosse County, Wis.
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 Vegas, Nev. ....	Coextensive with Clark County, Nev.
Lawrence-Haverhill, Mass.-N.H. ....	Consists of Lawrence and Haverhill 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, Ky. ....	Consists of Bourbon, Clark, Fayette, Jessamine, Scott, and Woodford Counties, Ky.

## Appendix B – Continued

<b>Lima, Ohio</b> .....	Consists of Allen, Auglaize, Putnam, and Van Wert Counties, Ohio
<b>Lincoln, Nebr.</b> .....	Coextensive with Lancaster County, Nebr.
<b>Little Rock-North Little Rock, Ark.</b> .....	Consists of Pulaski and Saline Counties, Ark.
<b>Long Branch-Asbury Park, N.J.</b> .....	Coextensive with Monmouth County, N.J.
<b>Lorain-Elyria, Ohio</b> .....	Coextensive with Lorain County, Ohio
<b>Los Angeles-Long Beach, Calif.</b> .....	Coextensive with Los Angeles County, Calif.
<b>Louisville, Ky.-Ind.</b> .....	Consists of Bullitt, Jefferson, and Oldham Counties, Ky., and Clark and Floyd Counties, Ind.
<b>Lowell, Mass.-N.H.</b> .....	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.
<b>Lubbock, Tex.</b> .....	Coextensive with Lubbock County, Tex.
<b>Lynchburg, Va.</b> .....	Consists of Lynchburg city, and Amherst, Appomattox, and Campbell Counties, Va.
<b>Macon, Ga.</b> .....	Consists of Bibb, Houston, Jones, and Twiggs Counties, Ga.
<b>Madison, Wis.</b> .....	Coextensive with Dane County, Wis.
<b>Manchester, N.H.</b> .....	Consists of Manchester city, and Bedford and Goffstown towns in Hillsborough County; Allentown, Hooksett, and Pembroke towns in Merrimack County; and Derry and Londonderry towns in Rockingham County, N.H.
<b>Mansfield, Ohio</b> .....	Coextensive with Richland County, Ohio
<b>McAllen-Pharr-Edinburg, Tex.</b> .....	Coextensive with Hidalgo County, Tex.
<b>Melbourne-Titusville-Cocoa, Fla.</b> .....	Coextensive with Brevard County, Fla.
<b>Memphis, Tenn.-Ark.-Miss.</b> .....	Consists of Shelby and Tipton Counties, Tenn.; Crittenden County, Ark.; and DeSoto County, Miss.
<b>Meriden, Conn.</b> .....	Coextensive with Meriden city in New Haven County, Conn.
<b>Miami, Fla.</b> .....	Coextensive with Dade County, Fla.
<b>Midland, Tex.</b> .....	Coextensive with Midland County, Tex.
<b>Milwaukee, Wis.</b> .....	Consists of Milwaukee, Ozaukee, Washington, and Waukesha Counties, Wis.
<b>Minneapolis-St. Paul, Minn.-Wis.</b> .....	Consists of Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, Washington, and Wright Counties, Minn., and St. Croix County, Wis.
<b>Mobile, Ala.</b> .....	Consists of Baldwin and Mobile Counties, Ala.
<b>Modesto, Calif.</b> .....	Coextensive with Stanislaus County, Calif.
<b>Monroe, La.</b> .....	Coextensive with Ouachita Parish, La.
<b>Montgomery, Ala.</b> .....	Consists of Autauga, Elmore, and Montgomery Counties, Ala.
<b>Muncie, Ind.</b> .....	Coextensive with Delaware County, Ind.
<b>Muskegon-Muskegon Heights, Mich.</b> .....	Consists of Muskegon and Oceana Counties, Mich.
<b>Nashua, N.H.</b> .....	Consists of Nashua city, and Amherst, Hudson, Merrimack, and Milford towns in Hillsborough County, N.H.
<b>Nashville-Davidson, Tenn.</b> .....	Consists of Cheatham, Davidson, Dickson, Robertson, Rutherford, Sumner, Williamson, and Wilson Counties, Tenn.
<b>Nassau-Suffolk, N.Y.</b> .....	Consists of Nassau and Suffolk Counties, N.Y.
<b>New Bedford, Mass.</b> .....	Consists of New Bedford city, and Acushnet, Dartmouth, Fairhaven, and Freetown towns in Bristol County; and Lakeville, Marion, and Mattapoisett towns in Plymouth County, Mass.
<b>New Britain, Conn.</b> .....	Consists of New Britain city, and Berlin, Plainville, and Southington towns in Hartford County, Conn.
<b>New Brunswick-Perth Amboy-Sayreville, N.J.</b> .....	Coextensive with Middlesex County, N.J.

## Appendix B—Continued

<b>New Haven-West Haven, Conn.</b> . . . . .	Consists of Clinton and Killingworth towns in Middlesex County, 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.
<b>New London-Norwich, Conn.-R.I.</b> . . . . .	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.
<b>New Orleans, La.</b> . . . . .	Consists of Jefferson, Orleans, St. Bernard, and St. Tammany Parishes, La.
<b>New York, N.Y.-N.J.</b> . . . . .	Consists of Bronx, Kings, New York, Putnam, Queens, Richmond, Rockland, and Westchester Counties, N.Y., and Bergen County, N.J.
<b>Newark, N.J.</b> . . . . .	Consists of Essex, Morris, Somerset, and Union Counties, N.J.
<b>Newport News-Hampton, Va.</b> . . . . .	Consists of Hampton, Newport News, and Williamsburg cities, and Gloucester, James City, and York Counties, Va.
<b>Norfolk-Virginia Beach-Portsmouth, Va.-N.C.</b> . . . . .	Consists of Chesapeake, Nansemond, Norfolk, Portsmouth, Suffolk, and Virginia Beach cities, Va., and Currituck County, N.C.
<b>Northeast Pennsylvania</b> . . . . .	Consists of Lackawanna, Luzerne, and Monroe Counties, Pa.
<b>Norwalk, Conn.</b> . . . . .	Consists of Norwalk city, and Weston, Westport, and Wilton towns in Fairfield County, Conn.
<b>Odessa, Tex.</b> . . . . .	Coextensive with Ector County, Tex.
<b>Oklahoma City, Okla.</b> . . . . .	Consists of Canadian, Cleveland, McClain, Oklahoma, and Pottawatomie Counties, Okla.
<b>Omaha, Nebr.-Iowa</b> . . . . .	Consists of Douglas and Sarpy Counties, Nebr., and Pottawttamie County, Iowa
<b>Orlando, Fla.</b> . . . . .	Consists of Orange, Osceola, and Seminole Counties, Fla.
<b>Owensboro, Ky.</b> . . . . .	Coextensive with Daviess County, Ky.
<b>Oxnard-Simi Valley-Ventura, Calif.</b> . . . . .	Coextensive with Ventura County, Calif.
<b>Parkersburg-Marietta, W. Va.-Ohio</b> . . . . .	Consists of Wirt and Wood Counties, W. Va., and Washington County, Ohio
<b>Paterson-Clifton-Passaic, N.J.</b> . . . . .	Coextensive with Passiac County, N.J.
<b>Pensacola, Fla.</b> . . . . .	Consists of Escambia and Santa Rosa Counties, Fla.
<b>Peoria, Ill.</b> . . . . .	Consists of Peoria, Tazewell, and Woodford Counties, Ill.
<b>Petersburg-Colonial Heights-Hopewell, Va.</b> . . . . .	Consists of Colonial Heights, Hopewell, and Petersburg cities, and Dinwiddie and Prince George Counties, Va.
<b>Philadelphia, Pa.-N.J.</b> . . . . .	Consists of Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties, Pa.; and Burlington, Camden, and Gloucester Counties, N.J.
<b>Phoenix, Ariz.</b> . . . . .	Coextensive with Maricopa County, Ariz.
<b>Pine Bluff, Ark.</b> . . . . .	Coextensive with Jefferson County, Ark.
<b>Pittsburgh, Pa.</b> . . . . .	Consists of Allegheny, Beaver, Washington, and Westmoreland Counties, Pa.
<b>Pittsfield, Mass.</b> . . . . .	Consists of Pittsfield city, and Adams, Cheshire, Dalton, Lanesborough, Lee, Lenox and Stockbridge towns in Berkshire County, Mass.
<b>Portland, Maine</b> . . . . .	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
<b>Portland, Oreg.-Wash.</b> . . . . .	Consists of Clackamas, Multnomah, and Washington Counties, Oreg., and Clark County, Wash.
<b>Poughkeepsie, N.Y.</b> . . . . .	Coextensive with Dutchess County, N.Y.

# Appendix B – Continued

<p><b>Providence-Warwick-Pawtucket, R.I.-Mass.</b> .....</p>	<p>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.</p>
<p><b>Provo-Orem, Utah</b> .....</p>	<p>Coextensive with Utah County, Utah</p>
<p><b>Pueblo, Colo.</b> .....</p>	<p>Coextensive with Pueblo County, Colo.</p>
<p><b>Racine, Wis.</b> .....</p>	<p>Coextensive with Racine County, Wis.</p>
<p><b>Raleigh-Durham, N.C.</b> .....</p>	<p>Consists of Durham, Orange, and Wake Counties, N.C.</p>
<p><b>Reading, Pa.</b> .....</p>	<p>Coextensive with Berks County, Pa.</p>
<p><b>Reno, Nev.</b> .....</p>	<p>Coextensive with Washoe County, Nev.</p>
<p><b>Richland-Kennewick, Wash.</b> .....</p>	<p>Consists of Benton and Franklin Counties, Wash.</p>
<p><b>Richmond, Va.</b> .....</p>	<p>Consists of Richmond city, and Charles City, Chesterfield, Goochland, Hanover, Henrico, and Powhatan Counties, Va.</p>
<p><b>Riverside-San Bernardino-Ontario, Calif.</b> ...</p>	<p>Consists of Riverside and San Bernardino Counties, Calif.</p>
<p><b>Roanoke, Va.</b> .....</p>	<p>Consists of Roanoke and Salem cities, and Botetourt, Craig, and Roanoke Counties, Va.</p>
<p><b>Rochester, Minn.</b> .....</p>	<p>Coextensive with Olmsted County, Minn.</p>
<p><b>Rochester, N.Y.</b> .....</p>	<p>Consists of Livingston, Monroe, Ontario, Orleans, and Wayne Counties, N.Y.</p>
<p><b>Rockford, Ill.</b> .....</p>	<p>Consists of Boone and Winnebago Counties, Ill.</p>
<p><b>Sacramento, Calif.</b> .....</p>	<p>Consists of Placer, Sacramento, and Yolo Counties, Calif.</p>
<p><b>Saginaw, Mich.</b> .....</p>	<p>Coextensive with Saginaw County, Mich.</p>
<p><b>St. Cloud, Minn.</b> .....</p>	<p>Consists of Benton, Sherburne, and Stearns Counties, Minn.</p>
<p><b>St. Joseph, Mo.</b> .....</p>	<p>Consists of Andrew and Buchanan Counties, Mo.</p>
<p><b>St. Louis, Mo.-Ill.</b> .....</p>	<p>Consists of St. Louis city, and Franklin, Jefferson, St. Charles, and St. Louis Counties, Mo.; and Clinton, Madison, Monroe, and St. Clair Counties, Ill.</p>
<p><b>Salem, Oreg.</b> .....</p>	<p>Consists of Marion and Polk Counties, Oreg.</p>
<p><b>Salinas-Seaside-Monterey, Calif.</b> .....</p>	<p>Coextensive with Monterey County, Calif.</p>
<p><b>Salt Lake City-Ogden, Utah</b> .....</p>	<p>Consists of Davis, Salt Lake, Tooele, and Weber Counties, Utah</p>
<p><b>San Angelo, Tex.</b> .....</p>	<p>Coextensive with Tom Green County, Tex.</p>
<p><b>San Antonio, Tex.</b> .....</p>	<p>Consists of Bexar, Comal, and Guadalupe Counties, Tex.</p>
<p><b>San Diego, Calif.</b> .....</p>	<p>Coextensive with San Diego County, Calif.</p>
<p><b>San Francisco-Oakland, Calif.</b> .....</p>	<p>Consists of Alameda, Contra Costa, Marin, San Francisco, and San Mateo Counties, Calif.</p>
<p><b>San Jose, Calif.</b> .....</p>	<p>Coextensive with Santa Clara County, Calif.</p>
<p><b>Santa Barbara-Santa Maria-Lompoc, Calif.</b> ..</p>	<p>Coextensive with Santa Barbara County, Calif.</p>
<p><b>Santa Cruz, Calif.</b> .....</p>	<p>Coextensive with Santa Cruz County, Calif.</p>
<p><b>Santa Rosa, Calif.</b> .....</p>	<p>Coextensive with Sonoma County, Calif.</p>
<p><b>Sarasota, Fla.</b> .....</p>	<p>Coextensive with Sarasota County, Fla.</p>
<p><b>Savannah, Ga.</b> .....</p>	<p>Consists of Bryan, Chatham, and Effingham Counties, Ga.</p>
<p><b>Seattle-Everett, Wash.</b> .....</p>	<p>Consists of King and Snohomish Counties, Wash.</p>
<p><b>Sherman-Denison, Tex.</b> .....</p>	<p>Coextensive with Grayson County, Tex.</p>
<p><b>Shreveport, La.</b> .....</p>	<p>Consists of Bossier, Caddo, and Webster Parishes, La.</p>
<p><b>Sioux City, Iowa-Nebr.</b> .....</p>	<p>Consists of Woodbury County, Iowa, and Dakota County, Nebr.</p>

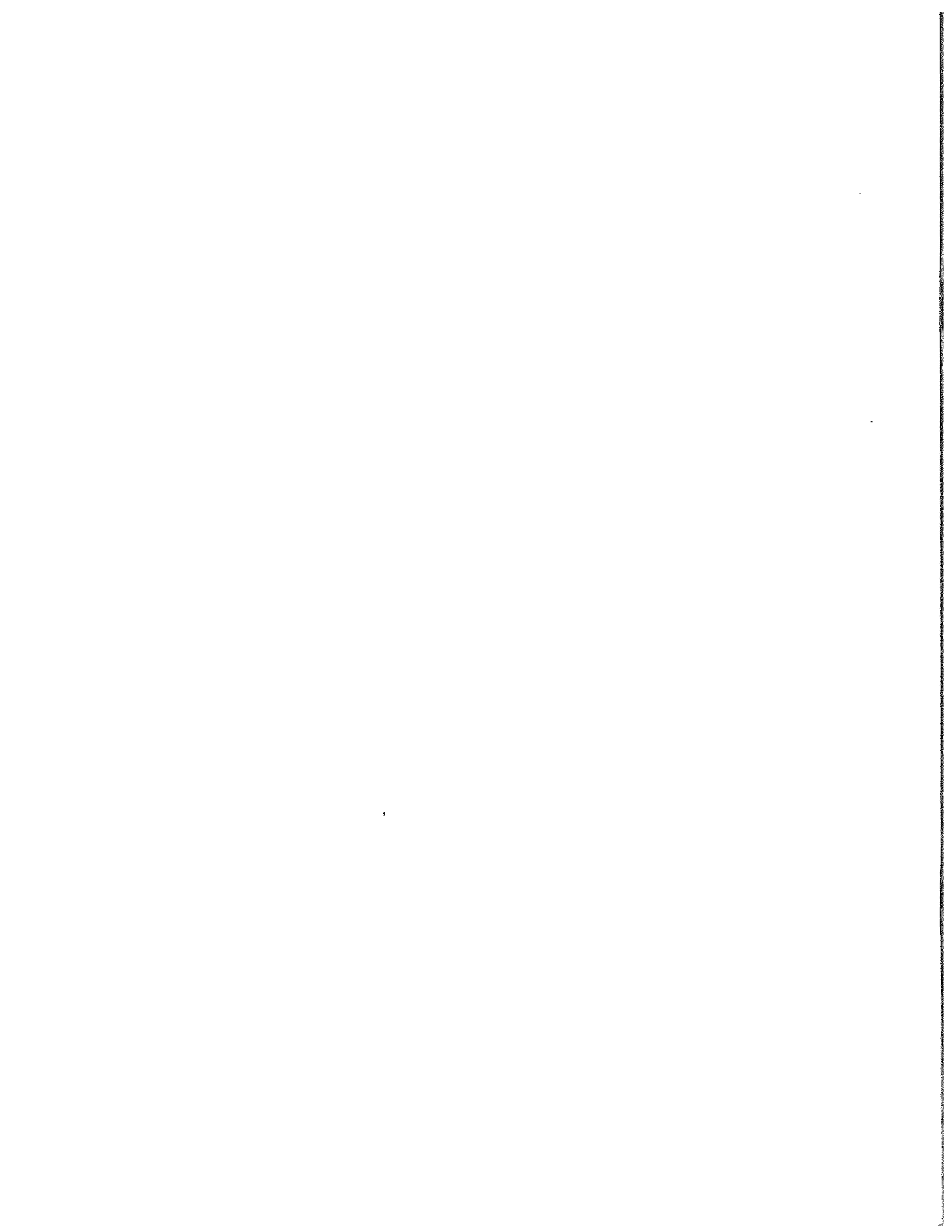
## Appendix B – Continued

Sioux Falls, S.D. ....	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, East- hampton, Granby, Hadley, Hatfield, South Hadley, and South- hampton 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.-Ark. ....	Consists of Bowie County, Texas, 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, and Falls Church 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.



## Appendix B – Continued

<b>Wichita Falls, Tex.</b> .....	Consists of Clay and Wichita Counties, Tex.
<b>Williamsport, Pa.</b> .....	Coextensive with Lycoming County, Pa.
<b>Wilmington, Del.-N.J.-Md.</b> .....	Consists of New Castle County, Del.; Salem County, N.J.; and Cecil County, Md.
<b>Wilmington, N.C.</b> .....	Consists of Brunswick and New Hanover Counties, N.C.
<b>Worcester, Mass.</b> .....	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.
<b>Yakima, Wash.</b> .....	Coextensive with Yakima County, Wash.
<b>York, Pa.</b> .....	Consists of Adams and York Counties, Pa.
<b>Youngstown-Warren, Ohio</b> .....	Consists of Mahoning and Trumbull Counties, Ohio



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