

# Pollution Abatement and Control Expenditures, 1972-92

- Estimates for 1992
- Revised Estimates for 1972-91

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**R**EAL SPENDING for pollution abatement and control (PAC) increased 5.1 percent in 1992, in contrast to a 0.7-percent decrease in 1991 (table 1). Prices of PAC goods and services, as measured by the PAC fixed-weighted price index, increased 2.0 percent after increasing 2.6 percent in 1991.

Over nine-tenths of all PAC spending is for pollution abatement (PA); the rest comprises two components—regulation and monitoring expenditures and research and development expenditures. Real PA expenditures increased 5.4 percent in 1992 after a 0.9-percent decrease in 1991. Real spending for regulation and monitoring decreased 2.1 percent, following a 1.1-percent increase. Real spending for research and development decreased 2.6 percent after an 8.5-percent increase.<sup>1</sup>

1. The expenditures discussed in this article are for goods and services that U.S. residents use to produce cleaner air and water and to manage solid

In addition to the estimates for 1992, this article presents revised estimates of PAC expenditures for 1972-91. The revised estimates do not sub-

waste and are classified by function (for example, research and development), sector (for example, business), and type (for example, air). PA, which is the principal function, directly reduces pollutant emissions by preventing the generation of pollutants, by recycling the pollutants, or by treating the pollutants prior to discharge; regulation and monitoring is a government activity that stimulates and guides action to reduce pollutant emissions; research and development by business and government not only supports abatement but also helps increase the efficiency of regulation and monitoring.

The estimates of PAC spending cover most, but not all, PAC activities, which are defined as those resulting from rules, policies and conventions, and formal regulations restricting the release of pollutants into common-property media, primarily air and water. The estimates exclude (1) PAC activities that do not use productive resources (for example, plant closings due to PAC, delays in plant construction, curtailments in the use of chemicals in manufacturing and agriculture, and discontinuation of selected product lines) and (2) PAC activities that do use productive resources but that are nonmarket activities (for example, volunteer litter removal).

For the purpose of concise presentation, solid waste management—which includes the collection and disposal of solid waste and the alteration of production processes to generate less solid waste—is categorized as solid waste PAC in the tables in this article. These estimates mainly cover spending for collection and disposal by means acceptable to Federal, State, and local authorities; in the text, they are referred to as "solid waste disposal" spending.

Table 1.—Constant-Dollar Spending for Pollution Abatement and Control: Summary for Recent Years

	Millions of constant (1987) dollars										Percent change from preceding year					
	Level					Change from preceding year					1988	1989	1990	1991	1992 <sup>P</sup>	
	1987	1988	1989	1990	1991	1992 <sup>P</sup>	1988	1989	1990	1991						1992 <sup>P</sup>
<b>Pollution abatement and control</b> .....	<b>77,649</b>	<b>81,465</b>	<b>81,664</b>	<b>83,901</b>	<b>83,348</b>	<b>87,594</b>	<b>3,816</b>	<b>199</b>	<b>2,237</b>	<b>-553</b>	<b>4,246</b>	<b>4.9</b>	<b>0.2</b>	<b>2.7</b>	<b>-0.7</b>	<b>5.1</b>
Pollution abatement .....	74,349	78,030	78,128	80,706	80,002	84,328	3,681	98	2,578	-704	4,326	5.0	.1	3.3	-9	5.4
Personal consumption .....	11,075	12,067	10,438	8,657	6,755	7,019	992	-1,629	-1,781	-1,902	264	9.0	-13.5	-17.1	-22.0	3.9
Motor vehicle emission abatement devices .....	8,799	10,039	9,467	8,460	6,755	7,019	1,240	-572	-1,007	-1,705	264	14.1	-5.7	-10.6	-20.2	3.9
Operation of these devices .....	2,276	2,028	971	197	0	0	-248	-1,057	-774	-197	0	-10.9	-52.1	-79.7		
Business .....	45,432	47,805	48,782	51,881	52,658	55,994	2,373	977	3,099	777	3,336	5.2	2.0	6.4	1.5	6.3
On capital account .....	14,354	14,854	14,795	16,622	17,260	18,233	500	-59	1,827	638	973	3.5	-4	12.3	3.8	5.6
Motor vehicle emission abatement .....	4,926	5,791	5,226	5,276	5,268	5,244	865	-565	50	-8	-24	17.6	-9.8	1.0	-2	-5
Plant and equipment .....	7,312	7,285	7,866	9,742	10,708	11,572	-27	581	1,876	966	864	-4	8.0	23.9	9.9	8.1
Other .....	2,116	1,778	1,703	1,604	1,284	1,417	-338	-75	-99	-320	133	-16.0	-4.2	-5.8	-19.9	10.4
On current account .....	31,078	32,951	33,987	35,259	35,398	37,760	1,873	1,036	1,272	139	2,362	6.0	3.1	3.7	4	6.7
Motor vehicle emission abatement .....	1,613	1,437	737	218	0	0	-176	-700	-519	-218	0	-10.9	-48.7	-70.4		
Plant and equipment .....	19,861	21,321	22,251	23,282	22,350	23,710	1,460	930	1,031	-932	1,360	7.4	4.4	4.6	-4.0	6.1
Public sewer systems <sup>1</sup> .....	7,792	8,269	8,803	9,430	10,251	10,934	477	534	627	821	683	6.1	6.5	7.1	8.7	6.7
Cost recovered .....	-1,473	-1,778	-1,609	-1,697	-1,404	-1,531	-305	169	-88	293	-127	20.7	-9.5	5.5	-17.3	9.0
Other .....	3,285	3,702	3,805	4,026	4,201	4,647	417	103	221	175	446	12.7	2.8	5.8	4.3	10.6
Government .....	17,842	18,158	18,908	20,169	20,589	21,315	316	750	1,261	420	726	1.8	4.1	6.7	2.1	3.5
Public sewer system fixed capital <sup>2</sup> .....	10,035	9,629	9,412	9,822	9,340	9,305	-406	-217	410	-482	-35	-4.0	-2.3	4.4	-4.9	-4
Other .....	7,807	8,529	9,496	10,347	11,249	12,010	722	967	851	902	761	9.2	11.3	9.0	8.7	6.8
Regulation and monitoring .....	1,519	1,643	1,657	1,636	1,654	1,619	124	14	-21	18	-35	8.2	.9	-1.3	1.1	-2.1
Research and development .....	1,781	1,792	1,879	1,560	1,692	1,648	11	87	-319	132	-44	.6	4.9	-17.0	8.5	-2.6

<sup>P</sup> Preliminary.

1. Spending to operate public sewer systems is classified in the national income and product accounts as business spending.

2. Consists of government enterprise purchases of fixed capital (primarily for the construction of public sewer

systems), which is classified in the national income and product accounts as government spending.

NOTE.—The entries in this table are key components from tables 7 and 8; the "other" entries are consolidations of detail from those tables.

stantially alter the overall picture of PAC spending throughout the economy (chart 3). The revised current-dollar estimates primarily incorporate revisions in estimates of nonmanufacturing spending for solid waste disposal, of residential business spending to install septic systems and laterals (that is, connectors to public sewer systems) for water PA, of manufacturing spending to operate air PA plant and equipment, and of private spending for research and development for air PA. The revised constant-dollar estimates reflect the current-dollar revisions and, to a lesser extent, improvements in price indexes, especially those affecting septic systems cleaning for water PA and the operation of electric utility air and water PA facilities.

The first section of this article examines real PAC spending and PAC prices in 1992. The second section describes trends in the estimates of PAC expenditures. The third section discusses the sources and the size of the revisions for 1972–91, and the fourth discusses the sources used in preparing the estimates.

**Recent estimates**

**Real PAC spending in 1992.**—Real PAC spending increased \$4.2 billion, or 5.1 percent, to \$87.6 billion in 1992 after a 0.7-percent decrease in 1991 (table 1, with detail in table 7).

All major types of PAC—air, water, and solid waste—contributed to the growth in real spending. The largest increase was for solid waste disposal, which rose 9.4 percent to \$29.2 billion in 1992 after increasing 4.9 percent in 1991. The 1992 increase was attributable to growth in business spending to operate PA plant and equipment, primarily within nonmanufacturing establishments, and in State and local government spending for solid waste disposal. Air PAC rose 3.9 percent in 1992, following a 6.2-percent decrease. The increase reflected growth in business spending for PA plant and equipment, primarily by electric utilities. Water PAC increased 3.0 percent, following a decrease of 1.3 percent. The increase was mainly in business spending to operate PA plant and equipment, primarily within manufacturing establishments, and in government spending to construct public sewer systems. (See table 8 for detail on business and government spending for air and water PA.)

Within PA spending, all sectors—personal, business, and government—increased in 1992. Personal consumption increased for the first time since 1988, up 3.9 percent, or \$0.3 billion, after a decrease of 22.0 percent in 1991. Purchases of

motor vehicle emission abatement devices (for example, catalytic converters) increased in 1992, reflecting higher unit sales of vehicles.

Business PA expenditures increased 6.3 percent, or \$3.3 billion. Spending for PA capital—that is, capital-account expenditures—increased 5.6 percent, reflecting purchases of PA plant and equipment. Spending for operation of PA capital—that is, current-account expenditures—increased 6.7 percent, largely reflecting operation of PA plant and equipment within manufacturing and nonmanufacturing establishments and of public sewer systems.<sup>2</sup>

Government PA expenditures increased 3.5 percent, or \$0.7 billion. The increase was mainly for State and local government spending for solid waste disposal.

**PAC prices in 1992.**—The fixed-weighted price index for total PAC spending increased 2.0 percent in 1992, following a 2.6-percent increase in 1991 (table 2). Prices for air and water PAC increased less in 1992 than in 1991, and prices for solid waste disposal increased about the same in both years.

**Real PAC spending in 1993.**—According to the information available by May 1994, real PAC spending is expected to have increased in 1993 at the same rate as in 1992. The increase reflects growth in business spending to purchase and operate PA plant and equipment, business spending to operate public sewer systems, and

2. Operation of PA capital refers to operation, maintenance, and minor repairs of PA capital.

**Table 2.—Percent Change in Spending and Prices for Pollution Abatement and Control**

	1972–92 average annual growth rate	Change from preceding year				
		1988	1989	1990	1991	1992 <sup>P</sup>
<b>Total:</b>						
Current dollars .....	9.5	7.9	4.3	6.3	2.1	7.5
1987 dollars .....	3.3	4.9	.2	2.7	–.7	5.1
Fixed-weighted price index .....	5.8	2.9	4.0	3.7	2.6	2.0
<b>Air:</b>						
Current dollars .....	7.7	7.7	–6.7	–3.5	–3.7	5.7
1987 dollars .....	1.6	5.4	–9.6	–5.6	–6.2	3.9
Fixed-weighted price index .....	5.4	2.3	3.6	3.7	2.4	1.4
<b>Water:</b>						
Current dollars .....	8.8	2.1	7.0	10.3	.4	4.5
1987 dollars .....	2.8	–.6	3.2	7.5	–1.3	3.0
Fixed-weighted price index .....	5.8	2.7	3.7	2.5	2.1	1.5
<b>Solid waste:</b>						
Current dollars .....	12.9	18.6	15.0	12.7	8.4	13.2
1987 dollars .....	6.2	13.8	9.4	6.8	4.9	9.4
Fixed-weighted price index .....	6.3	4.2	5.1	5.6	3.4	3.5

<sup>P</sup> Preliminary.

State and local government spending for solid waste disposal.

**Trends in real PAC spending, 1972-92**

Total PAC spending increased at a 3.3-percent average annual rate during 1972-92; it increased faster (4.5 percent) during 1972-80 and slower (2.4 percent) during 1980-92.<sup>3</sup> During 1972-80, real spending for PAC as a percent of gross domestic product increased from 1.5 percent in 1972 to 1.8 percent in 1975, before slipping to 1.7 percent during 1979-80. During 1980-92, this ratio was relatively constant, averaging 1.7 percent. The 1972-92 estimates of real spending are presented by sector in table 3 and by type in table 4.

3. The first year for which estimates are available is 1972; 1980 begins a period in which PAC spending has tended to parallel changes in the economy (as measured by gross domestic product) more closely than before.

**Real spending by sector.**—During 1972-92, real PAC spending increased \$41.6 billion. Business spending accounted for \$25.3 billion of the increase, government spending for \$12.7 billion, and personal consumption spending for \$3.6 billion (chart 1).

Within business PAC spending, most of the dollar increase was in current-account spending, which declined only during 1980-82. Current-account spending increased at an average annual rate of 4.3 percent during 1972-80 and 3.8 percent during 1980-92 (table 3). Capital-account spending increased at an average annual rate of 1.2 percent during 1972-80 and 1.4 percent during 1980-92; significant declines during 1980-83 were followed by a limited recovery that gained momentum after 1989. The declines for business PAC in the early 1980's were due to relatively weak general business conditions. PAC spending may

**Table 3.—Constant-Dollar Spending for Pollution Abatement and Control, by Sector, 1972-92**

	Percent		Millions of constant (1987) dollars											
	1972-80 average annual growth rate	1980-92 average annual growth rate	1972	1973	1974	1975	1976	1977	1978	1979	1980			
<b>Pollution abatement and control</b> .....	<b>4.5</b>	<b>2.4</b>	<b>46,032</b>	<b>49,683</b>	<b>52,098</b>	<b>57,246</b>	<b>60,139</b>	<b>61,703</b>	<b>64,680</b>	<b>65,878</b>	<b>65,590</b>			
Personal consumption .....	9.8	-3	3,450	4,543	4,950	6,172	6,736	7,158	7,426	7,165	7,297			
Motor vehicle emission abatement devices ...	21.1	3.6	994	1,425	1,394	2,528	3,199	3,606	3,795	4,001	4,602			
Operation of these devices .....	1.2	.....	2,456	3,118	3,555	3,644	3,536	3,552	3,631	3,164	2,694			
Business .....	3.0	3.0	31,686	33,482	33,881	34,270	35,995	38,424	40,000	41,154	40,173			
On capital account .....	1.2	1.4	14,138	14,830	15,039	15,001	15,315	15,822	15,620	16,140	15,512			
Motor vehicle emission abatement .....	23.9	6.0	469	711	840	1,374	1,623	1,902	2,172	2,498	2,609			
Plant and equipment .....	0	-7	10,664	10,865	11,226	11,626	11,509	11,392	10,667	10,889	10,635			
Other .....	-3.5	-3.8	3,005	3,254	2,973	2,001	2,183	2,528	2,781	2,753	2,268			
On current account .....	4.3	3.8	17,548	18,651	18,842	19,269	20,680	22,602	24,380	25,015	24,661			
Motor vehicle emission abatement .....	7.3	.....	1,177	1,578	1,990	2,157	2,146	2,240	2,361	2,230	2,068			
Plant and equipment .....	4.8	3.6	10,641	10,832	10,644	11,112	12,382	13,661	14,763	15,353	15,469			
Public sewer systems <sup>1</sup> .....	6.0	6.6	3,197	3,510	3,614	3,722	4,032	4,399	4,763	4,997	5,100			
Other <sup>2</sup> .....	-2.8	6.0	2,533	2,732	2,594	2,278	2,120	2,302	2,493	2,436	2,024			
Government .....	6.6	2.2	10,898	11,658	13,267	16,803	17,409	16,122	17,254	17,558	18,121			
Public sewer system fixed capital <sup>3</sup> .....	9.8	-7	4,801	5,136	6,451	9,426	9,945	8,456	9,508	9,710	10,148			
Other <sup>4</sup> .....	3.4	5.0	6,097	6,522	6,816	7,377	7,464	7,666	7,746	7,848	7,973			
			Millions of constant (1987) dollars											
			1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 <sup>P</sup>
<b>Pollution abatement and control</b> .....	<b>63,613</b>	<b>61,714</b>	<b>63,836</b>	<b>68,913</b>	<b>72,813</b>	<b>77,487</b>	<b>77,649</b>	<b>81,465</b>	<b>81,664</b>	<b>83,901</b>	<b>83,348</b>	<b>87,594</b>		
Personal consumption .....	8,472	8,494	9,990	11,040	11,935	12,831	11,075	12,067	10,438	8,657	6,755	7,019		
Motor vehicle emission abatement devices ...	5,893	5,834	7,105	8,186	8,961	9,710	8,799	10,039	9,467	8,460	6,755	7,019		
Operation of these devices .....	2,579	2,660	2,885	2,855	2,973	3,121	2,276	2,028	971	197	0	0		
Business .....	39,010	37,615	38,461	41,635	43,874	46,088	46,552	48,928	49,917	52,716	53,658	56,948		
On capital account .....	15,241	13,968	13,106	15,099	15,189	14,953	14,354	14,854	14,795	16,622	17,260	18,233		
Motor vehicle emission abatement .....	3,306	3,170	3,807	5,057	5,282	5,152	4,926	5,791	5,226	5,276	5,268	5,244		
Plant and equipment .....	10,209	9,397	7,309	7,852	7,711	7,475	7,312	7,285	7,866	9,742	10,708	11,572		
Other .....	1,726	1,401	1,990	2,190	2,196	2,326	2,116	1,778	1,703	1,604	1,284	1,417		
On current account .....	23,770	23,647	25,355	26,537	28,686	31,135	32,198	34,074	35,122	36,094	36,398	38,714		
Motor vehicle emission abatement .....	2,040	2,064	2,147	2,130	2,156	2,179	1,613	1,437	737	218	0	0		
Plant and equipment .....	14,839	14,069	15,369	16,289	17,482	19,098	19,861	21,321	22,251	23,282	22,350	23,710		
Public sewer systems <sup>1</sup> .....	5,297	5,616	5,959	6,149	6,550	7,285	7,792	8,269	8,803	9,430	10,251	10,934		
Other <sup>2</sup> .....	1,594	1,898	1,880	1,969	2,498	2,573	2,932	3,047	3,331	3,164	3,797	4,070		
Government .....	16,131	15,605	15,385	16,238	17,003	18,568	20,022	20,471	21,310	22,529	22,936	23,628		
Public sewer system fixed capital <sup>3</sup> .....	8,270	7,679	7,063	7,791	8,124	8,807	10,035	9,629	9,412	9,822	9,340	9,305		
Other <sup>4</sup> .....	7,861	7,926	8,322	8,447	8,879	9,761	9,987	10,842	11,898	12,707	13,596	14,323		

<sup>P</sup> Preliminary.  
 1. Spending to operate public sewer systems is classified in the national income and product accounts as business spending.  
 2. For this table, private purchases for research and development are included with business pollution abatement spending on current account.

3. Consists of government enterprise purchases of fixed capital (primarily for the construction of public sewer systems), which is classified in the national income and product accounts as government spending.  
 4. For this table, government regulation and monitoring and government research and development are included with "other" government pollution abatement spending.



also have been affected by intensified review of regulatory rules and of enforcement initiatives.

Within government PAC spending, most of the dollar increase occurred during 1972–80 in spending for public sewer system construction and during 1988–92 in “other” government spending, mostly for regulation and monitoring and for research and development. Spending for public sewer system construction, one of the most cyclically sensitive PAC components, increased at an average annual rate of 9.8 percent during 1972–80 and decreased at a 0.7-percent rate during 1980–92.

Within personal consumption PAC spending, most of the dollar increase in spending was for purchases of motor vehicle emission abatement devices, which increased at an average annual rate

of 21.1 percent during 1972–80 and 3.6 percent during 1980–92. These yearly purchases generally moved upward through 1988 and downward thereafter. Spending to operate these devices increased during 1972–80 at an average annual rate of 1.2 percent, leveled during 1980–86, and declined sharply to zero by 1991.<sup>4</sup>

*Real spending by type.*—The overall increase in real PAC spending during 1972–92 was accounted for by a \$41.5 billion increase in pollution abatement. Among the other PAC components, a \$0.7 billion increase for regulation and monitoring was mostly offset by a \$0.6 billion decline for research and development. The increase for pollution abatement included \$7.5 billion for air PA,

4. For a discussion of spending for operation of emission abatement devices on motor vehicles, see the box on page 33 of the June 1992 SURVEY OF CURRENT BUSINESS.

CHART 1

Real Expenditures for Pollution Abatement and Control by Sector, 1972–92

Billion 1987 \$

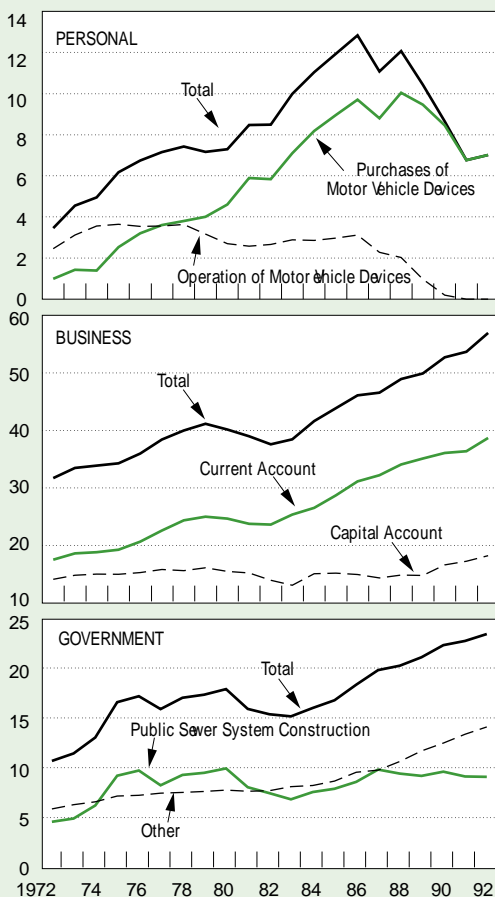
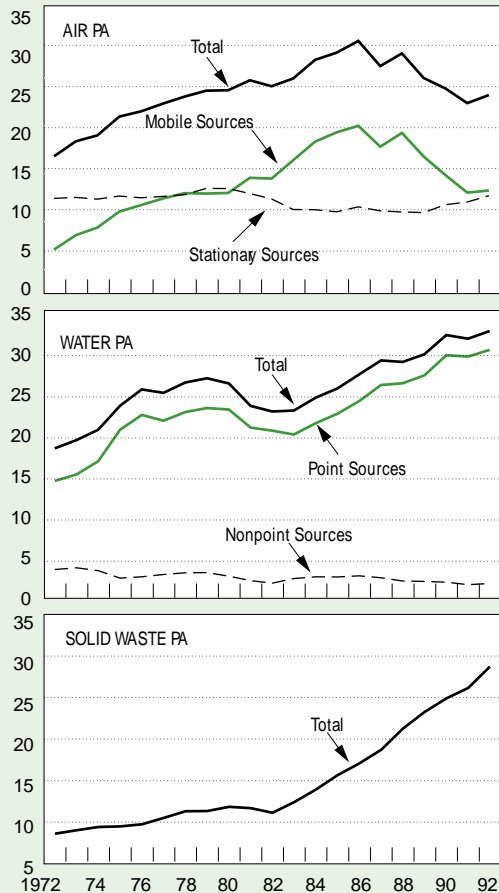


CHART 2

Real Expenditures for Pollution Abatement by Type, 1972–92

Billion 1987 \$



Note.—Expenditure categories above are the same as those shown in table 4. U.S. Department of Commerce, Bureau of Economic Analysis



\$14.3 billion for water PA, and \$20.1 billion for solid waste disposal (chart 2).<sup>5</sup>

Air PA spending increased at an average annual rate of 5.1 percent during 1972–80 and declined at a 0.2-percent rate during 1980–92 (table 4). Within air PA spending, most of the dollar increase was in spending to abate emissions from mobile sources (cars and trucks only). Mobile sources spending increased until 1986 and generally declined thereafter. For all years except 1973 and 1974, purchases of motor vehicle emission abatement devices contributed the most to the increases in mobile source spending. Stationary sources spending, the other component of air PA spending, was relatively level during 1972–92. This spending increased at an average annual rate of 1.3 percent during 1972–80, mainly reflecting spending to operate industrial facilities, and decreased at an average annual rate of 0.6 percent during 1980–92, mainly reflecting spending to purchase industrial facilities.

Water PA spending increased at an average annual rate of 4.5 percent during 1972–80 and 1.8 percent during 1980–92. The majority of water PA spending consists of spending to abate pollution emissions from point sources. Within point source spending, most of the increases during 1972–92 came from growth in the construction and operation of public sewer systems. Spending to abate pollution emissions from nonpoint sources declined for most years, decreasing at an

average annual rate of 2.8 percent during 1972–80 and 2.7 percent during 1980–92.

Solid waste disposal spending increased at an average annual rate of 4.0 percent during 1972–80 and 7.7 percent during 1980–92. It increased each year except for 1981 and 1982, and the increases after 1982 typically were strong. During 1972–80, increases were mainly in purchases of industrial facilities to dispose of solid waste generated from their own plant and equipment. Since 1982, “other” solid waste spending has steadily increased, contributing to the strong increases in total spending for solid waste disposal. The increases in “other” solid waste spending were mainly due to State and local government spending and to business spending. State and local government spending for solid waste disposal rose for all years except 1974, 1976, and 1979. Business spending to collect and dispose of solid waste from residential customers who subscribe to such a service increased for all years except 1976, 1980, and 1981.

**Sources and size of revisions**

The revisions in PAC spending for 1972–91 are statistical in origin; definitions, concepts, and coverage were not changed. Revisions in current-dollar estimates resulted from changes in estimation methodology—that is, new source data and/or estimating procedures—and the incorporation of revised data from regularly used sources. Revisions in constant-dollar estimates reflect the current-dollar revisions and improved combinations of price indexes used for deflation. Table 5 shows revisions in annual rates of change for

**Table 5.—Pollution Abatement and Control and Its Major Components: Revisions in Average Annual Rates of Change for Selected Periods**  
[Percent]

	1972-91						1972-80						1980-91					
	Current dollars			Constant dollars			Current dollars			Constant dollars			Current dollars			Constant dollars		
	Previously published	Revised	Revision	Previously published	Revised	Revision	Previously published	Revised	Revision	Previously published	Revised	Revision	Previously published	Revised	Revision	Previously published	Revised	Revision
<b>Pollution abatement and control</b>	<b>9.2</b>	<b>9.6</b>	<b>0.4</b>	<b>3.0</b>	<b>3.2</b>	<b>0.2</b>	<b>14.8</b>	<b>14.9</b>	<b>0.1</b>	<b>4.8</b>	<b>4.5</b>	<b>-0.3</b>	<b>5.4</b>	<b>5.9</b>	<b>0.5</b>	<b>1.7</b>	<b>2.2</b>	<b>0.5</b>
Pollution abatement .....	9.3	9.8	.5	3.1	3.3	.2	15.0	15.1	.1	4.9	4.6	-.3	5.4	6.1	.7	1.8	2.4	.6
Regulation and monitoring .....	8.8	8.9	.1	2.8	2.9	.1	17.1	17.1	0	8.7	8.7	0	3.1	3.4	.3	-1.4	-1.1	.3
Research and development .....	7.4	4.8	-2.6	1.0	-1.5	-2.5	9.9	9.9	0	.8	.8	0	5.7	1.3	-4.4	1.1	-3.2	-4.3
<b>By sector:</b>																		
Personal consumption .....	9.3	9.4	.1	3.5	3.6	.1	21.9	21.8	-.1	9.8	9.8	0	.9	1.1	.2	-.9	-.7	.2
Business .....	9.0	9.3	.3	2.7	2.8	.1	13.4	13.5	.1	3.4	3.0	-.4	5.9	6.4	.5	2.2	2.7	.5
Government .....	9.9	10.4	.5	3.6	4.0	.4	15.8	15.6	-.2	6.7	6.6	-.1	5.8	6.7	.9	1.3	2.2	.9
<b>By major type:</b>																		
Air .....	8.0	7.8	-.2	1.6	1.5	-.1	17.0	16.7	-.3	4.9	4.7	-.2	2.0	1.8	-.2	-.6	-.7	-.1
Water .....	9.1	9.0	-.1	2.9	2.8	-.1	14.2	14.2	0	4.5	4.5	0	5.5	5.4	-.1	1.8	1.6	-.2
Solid waste .....	11.6	12.9	1.3	4.9	6.0	1.1	13.2	12.7	-.5	5.0	4.2	-.8	10.5	13.0	2.5	4.9	7.4	2.5

5. For air PA, the Clean Air Act classifies sources of pollutants as mobile (for example, automobiles) or stationary (for example, factories). For water PA, the Federal Water Pollution Control Act classifies sources of pollutants as point (for example, factories) or nonpoint (for example, highway construction projects).

the current- and constant-dollar estimates for selected periods.

**Current-dollar revisions.**—Revisions were minimal for 1972–78, downward for 1979–84, and upward for 1985–91 (chart 3). For 1973–78, the current-dollar estimates were revised within a fairly small range—down at most 0.5 percent in 1974 and up at most 0.2 percent in 1978. For 1979–91, they were revised down as much as 4.0

percent in 1981 and up as much as 3.7 percent in 1991.

For 1972–80, downward revisions mainly reflected nonmanufacturing spending for solid waste disposal, and upward revisions mainly reflected spending for the installation of septic systems and laterals (that is, connectors to public sewer systems). For 1981–84, downward revisions were mainly in air PAC for manufacturing spending to operate PA plant and equipment and for private research and development. For 1985–91, upward revisions were mainly due to spending to dispose of solid waste by nonmanufacturing businesses, residential customers, and State and local governments. For 1990 and 1991, downward revisions were sizable for public sewer system construction spending.

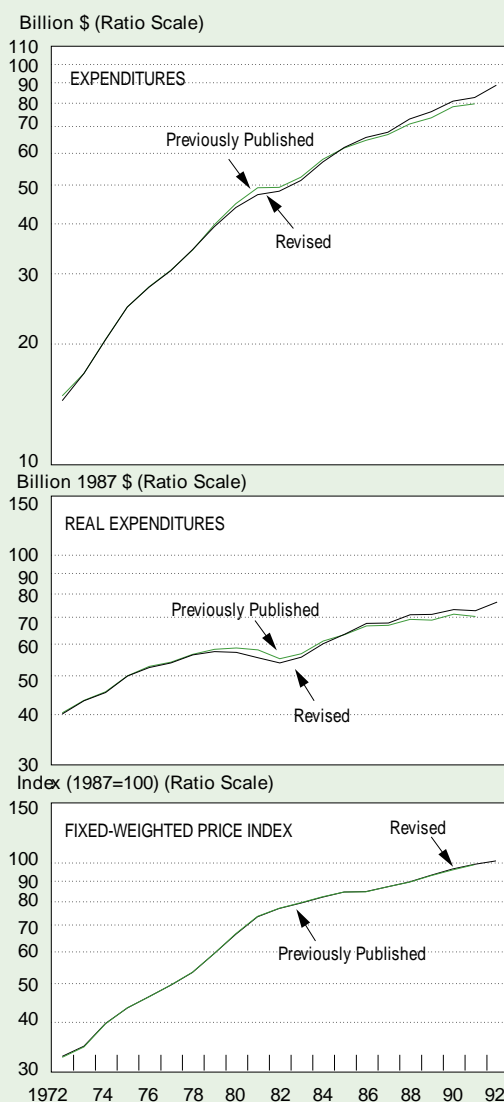
Estimates of spending for solid waste disposal were revised to reflect new source data (for example, new estimates of private contract services purchased by manufacturing establishments) from the Pollution Abatement Costs and Expenditures Survey published by the Bureau of the Census and increased use of refuse-industry payroll data published by the Bureau of Labor Statistics (BLS). The moderate to large size of revisions reflects the incorporation of these source data and related estimation improvements.

Estimates of private research and development for pollution abatement were revised to incorporate new data from the National Science Foundation (NSF) for 1984, 1989, and 1990. For this component of PAC spending, large downward revisions resulted for 1983 forward. The new data for 1984 indicated spending at a lower level and, when combined with the new data for 1989, confirmed that the sketchy information previously available had tended to overstate spending growth. The new data for 1990 indicated a decline in spending in that year, rather than an increase as previously published. Because spending for research and development is a relatively small PAC component, the sizable revision in this series had little effect on the estimates of total PAC.

Estimates of septic system and lateral purchases (and spending for cleaning of septic systems) were revised to incorporate refined estimates of average installation cost (and septic system cleaning cost) and newly available information from the 1990 Decennial Census of Housing by the Census Bureau. Telephone interviews with selected installers (and cleaners) updated the average cost estimates, and the decennial census data updated

CHART 3

Expenditures, Real Expenditures, and Fixed-Weighted Price Index for Pollution Abatement and Control, 1972–92



Note.—Pollution Abatement Control (PAC) expenditures consist of expenditures for the direct abatement of pollution (PAC) for regulation and monitoring, and for research and development.

U.S. Department of Commerce, Bureau of Economic Analysis

the estimates of growth in housing units with septic systems and laterals.

*Constant-dollar revisions.*—The constant-dollar revisions mainly reflect the current-dollar revisions just discussed. Spending estimates affected by revisions in the price measures include those for septic system cleaning (included in table 8 in current-account spending for residential systems maintenance) and the operation of electric utility air and water pollution abatement facilities (included in table 8 in current-account spending for plant and equipment operation). The PAC fixed-weighted price index was revised only slightly for most years; the largest revision, 0.5 percent, was for 1990.

On the whole, the revised constant-dollar estimates do not appear to have substantially altered the view of PAC spending throughout the economy (chart 3). The revised PAC estimates show a pattern of growth similar to that shown by the previously published estimates: Paralleling the enactment of major new environmental legislation and strengthening of the Federal role in environmental protection, real PAC spending rose throughout the 1970's; it dropped with the economy in the early 1980's and generally rose thereafter. During 1972-91, PAC spending increased at an average annual rate of 3.2 percent for the revised series and 3.0 percent for the previously published series (table 5). The slightly faster rate of growth in the revised series mainly reflects the substantially higher growth in solid waste disposal spending estimates for 1980-91 (a 7.4-percent average annual rate for the revised series, compared with a 4.9-percent rate for the previously published series). Most of the growth in solid waste disposal spending was due to State and local government spending and to nonmanufacturing business spending.

**Sources of the estimates**

Some estimates of PAC expenditures are based directly on data from surveys or censuses; others are prepared by indirect methods. PAC estimates derived from direct sources account for about two-thirds of the revised total PAC spending; the remainder is based on other sources that provide more general survey information and on assumptions made to utilize this information. Table 6 shows the breakdown of PAC spending by type of estimate for 1992.

*Surveys.*—The most important direct sources are the Pollution Abatement Costs and Expenditures (PACE) Survey (for capital and operating

spending by manufacturing establishments) and surveys of government finances (for government spending to operate sewer systems and for solid waste disposal) and of new construction put in place (for government spending to construct sewer systems). These key surveys, as well as the Structures and Equipment Expenditures Survey—Supplement for Pollution Abatement (for electric utilities and, to a lesser extent, mining and petroleum enterprises), are all conducted by the Census Bureau. In addition, BEA collects data on Federal agency funding for PAC and information from the Environmental Protection Agency (EPA) regional offices on State and local government spending for regulation and monitoring. Finally, BEA relies on the Energy Information Agency of the U.S. Department of Energy to collect data on PA operating spending by electric utilities from its Steam-Electric Plant Operation and Design Report.

For 1992, the Census Bureau, in collaboration with BEA, redesigned its PACE survey. Categories of spending that previously were not distinguished from more general categories were developed, and new categories were added.

*Other sources.*—About two-fifths of PAC spending derived by indirect methods is for nonmanufacturing and residential customers' spending for solid waste disposal privately contracted for (or subscribed). Data sources provide only sketchy information on purchases of solid waste disposal services by customer types (for example, nonmanufacturing demand for services) and on waste flows subject to contract service by refuse companies; therefore, the relationship between

**Table 6.—Pollution Abatement and Control Expenditures for 1992, by Type of Estimate**

	Percent of PAC expenditures
<b>Surveys</b> .....	<b>65</b>
Government Finances, BOC .....	24
Pollution Abatement Costs and Expenditures (MA-200), BOC .....	22
Value of New Construction Put in Place, BOC .....	10
Federal Funding for Pollution Control, BEA .....	7
Structures and Equipment Expenditures Survey—Supplement for Pollution Abatement, BOC .....	2
Steam-Electric Plant Operation and Design Report, DOE .....	2
<b>Other sources</b> .....	<b>35</b>
Nonmanufacturing and residential customers' spending for solid waste disposal .....	15
Motor vehicle emission abatement .....	13
Nonmanufacturing operation and maintenance for pollution abatement	3
Residential systems water pollution abatement investment and operation .....	2
Nonmanufacturing plant and equipment, air and water .....	1
Electric utilities—extra cost of cleaner fuel .....	0
All other .....	1

BOC Bureau of Census  
 BEA Bureau of Economic Analysis  
 DOE Department of Energy



purchasers' and suppliers' data is difficult to determine. The indirect method used compares a variety of data sources to discern and reconcile, to the extent possible, this relationship. This process of comparison, fitting, and reconciliation is aided by taking into account information for manufacturing establishments (which also purchase services from refuse companies) as well as for nonmanufacturing and residential customers. It relies heavily on the following information: (1) Refuse-industry (that is, supplier) payroll data from BLS, (2) PACE survey data on manufacturing purchases on private contract, and (3) partial information on waste flows by type (that is, information about demand) and disposal services provided (that is, information about supply) from EPA one-time studies, refuse company annual reports, and trade association contacts and reports.

Most of the remainder of PAC spending is attributable to indirect estimation of spending for motor vehicle emission abatement devices and their operation (fuel consumption penalty, maintenance cost, and fuel price penalty). Information on unit sales of motor vehicles is from the American Automobile Manufacturers Association of the United States, Inc., and the dollar value per emission abatement device at time of purchase is derived from selected BLS information. Components of operating spending are based on information from a variety of sources, including studies by EPA (for the fuel consumption penalty and maintenance cost for pre-1975 model year vehicles), data from BLS (for the prices of unleaded and leaded gasoline and the amount of unleaded gasoline purchases to which the fuel price penalty applies), and data from R.L. Polk, Inc. (for the inventory, or stock, of motor vehicles by model year). Factors for the allocation of spending between consumers and business are developed by BEA.

Nonmanufacturing operation and maintenance spending for PA (excluding electric utilities) is estimated in relation to nonmanufacturing air and water PA plant and equipment (P&E) stocks that are being operated. The key assumption is that the ratio of operating spending to stocks for manufacturing establishments can be applied to the stocks of nonmanufacturing establishments to determine operating expenses. These nonmanufacturing PA P&E stocks (excluding electric utilities) are estimated using a perpetual inventory method. Nonmanufacturing PA P&E spending es-

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timates, the starting point for use of the perpetual inventory method, are derived using a variety of data sources, including the PA supplement to the structures and equipment survey mentioned earlier, an environmental protection expenditures survey by the American Petroleum Institute, the *Census of Mineral Industries*, and information about relationships between company-based and establishment-based data.

Estimates of residential systems water PA spending consist of purchases of septic systems and laterals and spending for cleaning septic systems. Data sources for these estimates include surveys of housing conducted by the Census Bureau; related construction activity indicators, such as housing permits and housing starts; and information from telephone contacts with technical experts about the cost of installing and cleaning PA residential systems.

The extra cost of cleaner fuel used by electric utilities that adopt a fuel-switching strategy to lessen emissions is estimated primarily from information on the cost and quality of oil and coal that utilities consume, which is reported by the Energy Information Agency of the U.S. Department of Energy in its *Electric Power Monthly*.

Notable among the remaining sources is the indirect method to estimate private purchases for research and development (R&D) PA spending. This method uses data on total R&D spending from the Industrial Research and Development Survey by the NSF to extrapolate R&D spending for PAC types. Newly available NSF data providing partial coverage of PAC for 1984, 1989, and 1990 has reduced reliance on extrapolation.


Tables 7 and 8 follow. 





Table 7.—Expenditures for Pollution Abatement and Control by Sector and Type in Current and Constant Dollars and Selected Fixed-Weighted Price Indexes, 1972-92—Continued

Line	1990					1991					1992 <sup>P</sup>				
	Total <sup>1</sup>	Air	Water	Solid waste	Other and unallocated <sup>2</sup>	Total <sup>1</sup>	Air	Water	Solid waste	Other and unallocated <sup>2</sup>	Total <sup>1</sup>	Air	Water	Solid waste	Other and unallocated <sup>2</sup>
Millions of dollars															
1	92,873	28,049	36,441	29,368	-987	94,799	27,019	36,585	31,837	-643	101,954	28,560	38,222	36,046	-873
2	89,317	26,592	35,509	28,789	-1,573	90,918	25,312	35,593	31,248	-1,235	98,136	26,889	37,162	35,496	-1,411
3	9,238	9,238				7,394	7,394				7,896	7,896			
4	8,943	8,943				7,394	7,394				7,896	7,896			
5	295	295				0	0				0	0			
6	57,492	17,064	23,430	18,920	-1,922	59,618	17,610	23,580	19,997	-1,569	64,825	18,667	25,067	22,804	-1,712
7	17,904	9,820	5,720	2,364		19,043	11,128	5,395	2,520		20,508	12,095	5,332	3,081	
8	39,588	7,244	17,710	16,556	-1,922	40,574	6,482	18,185	17,476	-1,569	44,318	6,571	19,735	19,723	-1,712
9	31,077	7,083	7,438	16,556		30,912	6,320	7,116	17,476		34,009	6,411	7,875	19,723	
10	10,435	161	10,272		2	11,233	162	11,069		2	12,022	160	11,860		2
11	-1,924				-1,924	-1,571				-1,571					-1,714
12	22,587	289	12,079	9,870	349	23,906	308	12,013	11,252	334	25,414	327	12,095	12,692	300
13	1,391	71	734	304	281	1,417	73	753	341	250	1,215	75	656	281	203
14	10,161	13	514	9,565	68	11,547	16	537	10,911	83	13,086	22	556	12,411	97
15	11,035	205	10,831			10,942	219	10,723			11,113	230	10,883		
16	1,784	476	649	408	250	1,868	533	677	427	231	1,848	526	741	401	180
17	877	133	307	191	245	900	175	301	201	223	842	185	290	191	176
18	907	343	342	217	5	968	358	376	226	8	1,006	341	451	210	5
19	1,772	982	284	171	336	2,013	1,174	315	162	362.1	1,971	1,144	320	149	358
20	945	749	95	16	85	1,176	932	118	20	106	1,311	896	114	19	102
21	777	231	151	151	244	790	240	160	139	250	803	247	178	127	252
22	51	2	38	4	7	47	2	36	3	6	37	1	28	3	4
Millions of constant (1987) dollars															
23	83,901	26,000	33,355	25,427	-880	83,348	24,384	32,921	26,669	-627	87,594	25,329	33,919	29,176	-829
24	80,706	24,687	32,509	24,905	-1,395	80,002	22,903	32,050	26,171	-1,123	84,328	23,900	32,993	28,713	-1,279
25	8,657	8,657				6,755	6,755				7,019	7,019			
26	8,460	8,460				6,755	6,755				7,019	7,019			
27	197	197				0	0				0	0			
28	51,881	15,772	21,437	16,367	-1,695	52,658	15,877	21,432	16,751	-1,402	55,994	16,596	22,478	18,448	-1,529
29	16,622	9,155	5,323	2,144		17,260	10,082	4,950	2,227		18,233	10,782	4,794	2,658	
30	35,259	6,618	16,114	14,222	-1,695	35,398	5,795	16,482	14,524	-1,402	37,760	5,814	17,685	15,790	-1,529
31	27,362	6,464	6,675	14,222		26,384	5,644	6,216	14,524		28,192	5,664	6,738	15,790	
32	9,594	154	9,439		2	10,418	150	10,266		2	11,099	151	10,946		2
33	-1,697				-1,697	-1,404				-1,404	-1,531				-1,531
34	20,169	258	11,073	8,538	300	20,589	271	10,618	9,421	279	21,315	285	10,514	10,265	251
35	1,228	62	656	269	241	1,220	63	652	296	209	1,041	64	565	242	170
36	8,864	11	524	8,269	59	9,770	14	562	9,125	70	10,734	18	613	10,023	81
37	10,077	185	9,892			9,599	195	9,404			9,540	203	9,337		
38	1,636	446	597	372	220	1,654	488	608	363	195	1,619	467	660	339	152
39	771	117	270	168	216	761	148	255	170	188	709	156	245	161	148
40	865	330	327	204	4	893	340	354	193	6	909	311	416	179	4
41	1,560	866	249	150	295	1,692	992	263	135	302	1,648	961	266	124	298
42	835	662	84	14	75	1,000	792	101	17	90	954	756	96	16	86
43	681	203	132	133	214	654	199	133	115	207	664	204	147	105	208
44	43	1	33	3	6	39	2	29	3	5	30	1	23	2	3
Selected fixed-weighted price indexes															
45	111.0	109.9	109.2	115.6	111.7	113.9	112.5	111.5	119.5	102.1	116.2	114.1	113.2	123.7	101.8
46	111.0	109.8	109.2	115.7	112.7	113.8	112.3	111.4	119.5	110.1	116.2	114.0	113.1	123.7	110.1
47	109.9	109.9				112.4	112.4				114.5	114.5			
48	111.1	109.7	109.2	115.7	113.4	113.5	112.3	110.2	119.5	111.9	115.8	113.5	111.7	123.9	112.0
49	107.5	107.4	107.0	110.3		110.1	110.4	108.4	113.1		112.0	112.2	110.5	115.9	
50	112.7	112.3	110.0	116.4	113.4	115.1	114.4	110.7	120.3	111.9	117.5	115.0	112.1	124.9	112.0
51	111.5	112.1	109.1	115.6	116.2	115.5	113.8	113.3	119.4	119.6	118.2	114.5	115.4	123.5	119.9
52	109.0	106.7	108.5	109.5	114.0	113.4	108.8	111.7	119.1	118.5	115.1	111.9	113.2	120.1	119.0
53	113.5	113.1	113.9	114.0	113.8	118.9	117.7	119.5	120.3	119.9	119.5	118.6	120.0	120.6	120.2
Millions of dollars															
54	Addendum: Business capital consumption allowances: <sup>5</sup>														
55	16,123					11,267					11,545				
56	13,701					10,064					10,173				

<sup>P</sup> Preliminary.

1. Includes spending for air and water pollution abatement and control and expenditures for solid waste collection and disposal by means acceptable to Federal, State, and local governments. Excludes agricultural production except feedlot operations.

2. "Other" includes spending for abatement and control of noise, radiation, and pesticide pollution; "unallocated" includes business spending not assigned to media.

3. Durables consists of purchases of motor vehicle emission abatement devices.

4. Nondurables consists of spending to operate motor vehicle emission abatement devices.

5. Capital consumption allowances facilitate the conversion of expenditures to a cost basis.

NOTE.—Expenditures are attributed to the sector that performs, rather than pays for, the air or water pollution abatement or the solid waste collection and disposal.

Table 8.—Business and Government Expenditures for Air and Water Pollution Abatement in Current and Constant Dollars, 1972–92

	Total <sup>1</sup>														
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	Millions of dollars														
<b>Business (line 6)</b> .....	<b>9,020</b>	<b>10,399</b>	<b>12,548</b>	<b>14,391</b>	<b>16,100</b>	<b>18,231</b>	<b>20,184</b>	<b>23,418</b>	<b>25,735</b>	<b>27,904</b>	<b>28,479</b>	<b>29,075</b>	<b>31,973</b>	<b>33,227</b>	<b>34,199</b>
On capital account (line 7) .....	5,207	5,902	6,794	7,601	8,205	8,928	9,529	10,731	11,258	12,069	11,598	11,125	13,027	12,987	13,277
Motor vehicle emission abatement .....	220	334	416	747	939	1,160	1,429	1,779	2,011	2,706	2,699	3,325	4,546	4,901	4,982
Plant and equipment <sup>2</sup> .....	3,954	4,263	5,103	5,901	6,135	6,347	6,412	7,096	7,606	8,017	7,772	6,051	6,478	6,065	6,158
Residential systems <sup>3</sup> .....	1,030	1,302	1,268	946	1,123	1,412	1,683	1,852	1,637	1,344	1,124	1,747	1,999	2,018	2,135
Agricultural business <sup>4</sup> .....	3	3	7	7	8	8	5	4	3	3	3	2	3	3	3
On current account (line 8) .....	3,813	4,497	5,754	6,790	7,895	9,304	10,656	12,687	14,477	15,835	16,881	17,950	18,946	20,240	20,922
Private (line 9) .....	2,662	3,155	4,120	4,886	5,676	6,697	7,603	9,166	10,399	11,135	11,568	12,145	12,719	13,519	13,564
Motor vehicle emission abatement .....	420	603	925	1,106	1,172	1,316	1,477	1,803	2,262	2,536	2,513	2,581	2,555	2,631	2,094
Plant and equipment <sup>2</sup> .....	2,034	2,327	2,955	3,533	4,228	5,081	5,800	7,008	7,749	8,185	8,612	9,090	9,642	10,321	10,909
Residential systems <sup>3</sup> .....	209	225	240	256	274	296	322	351	384	408	436	468	513	559	553
Agricultural business <sup>4</sup> .....	(*)	1	1	2	2	3	4	5	5	6	6	7	9	8	8
Government enterprise (line 10) .....	1,151	1,342	1,634	1,895	2,220	2,607	3,053	3,521	4,078	4,700	5,313	5,805	6,227	6,721	7,358
Publicly owned electric utilities .....	26	33	62	53	66	69	83	118	161	153	153	161	165	161	154
Public sewer systems <sup>5</sup> .....	1,124	1,308	1,571	1,842	2,153	2,537	2,970	3,403	3,917	4,547	5,159	5,642	6,059	6,557	7,201
Other .....	(*)	1	1	(*)	1	(*)	1	1	(*)	1	2	2	2	3	3
<b>Government (line 12)</b> .....	<b>2,261</b>	<b>2,598</b>	<b>3,513</b>	<b>5,282</b>	<b>5,882</b>	<b>5,497</b>	<b>6,639</b>	<b>7,613</b>	<b>8,494</b>	<b>7,602</b>	<b>7,509</b>	<b>7,583</b>	<b>8,424</b>	<b>9,363</b>	<b>10,146</b>
Federal (line 13) .....	131	181	252	358	362	385	406	450	369	305	325	579	607	823	795
Federal except highways .....	126	176	248	353	357	379	400	442	362	293	316	572	599	816	788
Highway erosion abatement .....	2	5	4	5	5	6	7	9	7	12	8	8	8	7	6
State and local (line 14) .....	171	171	189	211	205	189	218	257	299	286	277	294	351	403	440
State and local except highways .....	(*)	(*)	(*)	1	1	1	(*)	(*)	(*)	(*)	(*)	4	14	12	14
Highway erosion abatement .....	171	171	189	210	204	188	218	257	299	286	276	290	337	391	426
Government enterprise fixed capital (line 15) .....	1,959	2,246	3,072	4,713	5,316	4,924	6,015	6,906	7,825	7,011	6,908	6,709	7,466	8,137	8,912
Publicly owned electric utilities .....	92	97	128	159	174	237	232	291	397	444	501	487	409	373	337
Public sewer systems <sup>5</sup> .....	1,867	2,149	2,945	4,553	5,142	4,687	5,783	6,615	7,429	6,567	6,407	6,222	7,057	7,765	8,575
	Millions of constant (1987) dollars														
<b>Business (line 28)</b> .....	<b>25,727</b>	<b>27,096</b>	<b>27,311</b>	<b>28,059</b>	<b>29,627</b>	<b>31,239</b>	<b>32,140</b>	<b>33,341</b>	<b>32,271</b>	<b>31,557</b>	<b>30,677</b>	<b>30,591</b>	<b>32,690</b>	<b>33,317</b>	<b>34,899</b>
On capital account (line 29) .....	13,431	13,940	14,093	14,171	14,444	14,778	14,670	15,028	14,430	14,113	12,936	12,152	13,844	13,530	13,564
Motor vehicle emission abatement .....	469	711	840	1,374	1,623	1,902	2,172	2,498	2,609	3,306	3,170	3,807	5,057	5,282	5,152
Plant and equipment <sup>2</sup> .....	10,033	10,057	10,362	10,874	10,715	10,424	9,795	9,856	9,630	9,157	8,446	6,444	6,706	6,180	6,241
Residential systems <sup>3</sup> .....	2,923	3,166	2,881	1,914	2,097	2,442	2,698	2,670	2,189	1,648	1,318	1,900	2,078	2,065	2,168
Agricultural business <sup>4</sup> .....	6	6	10	10	10	10	6	4	2	3	2	2	3	3	3
On current account (line 30) .....	12,297	13,156	13,218	13,888	15,183	16,460	17,470	18,313	17,841	17,445	17,742	18,440	18,846	19,787	21,335
Private (line 31) .....	8,954	9,499	9,462	10,057	11,018	11,936	12,568	13,154	12,557	11,993	11,973	12,321	12,537	13,081	13,889
Motor vehicle emission abatement .....	1,177	1,578	1,990	2,157	2,146	2,240	2,361	2,230	2,068	2,040	2,064	2,147	2,130	2,156	2,179
Plant and equipment <sup>2</sup> .....	7,301	7,430	6,965	7,384	8,347	9,158	9,657	10,360	9,914	9,371	9,326	9,584	9,808	10,319	11,101
Residential systems <sup>3</sup> .....	475	491	505	514	523	534	547	559	572	579	579	586	592	597	601
Agricultural business <sup>4</sup> .....	(*)	1	2	2	3	4	4	5	5	5	5	5	7	8	9
Government enterprise (line 32) .....	3,343	3,657	3,756	3,831	4,165	4,524	4,901	5,159	5,284	5,452	5,768	6,118	6,309	6,706	7,446
Publicly owned electric utilities .....	145	145	139	109	132	125	137	161	184	154	151	157	158	153	159
Public sewer systems <sup>5</sup> .....	3,197	3,510	3,614	3,722	4,032	4,399	4,763	4,997	5,100	5,297	5,616	5,959	6,149	6,550	7,285
Other .....	1	2	3	1	1	1	1	1	(*)	1	2	2	3	3	3
<b>Government (line 34)</b> .....	<b>5,983</b>	<b>6,365</b>	<b>7,756</b>	<b>10,983</b>	<b>11,447</b>	<b>9,941</b>	<b>10,891</b>	<b>11,178</b>	<b>11,541</b>	<b>9,550</b>	<b>9,031</b>	<b>8,653</b>	<b>9,332</b>	<b>9,816</b>	<b>10,450</b>
Federal (line 35) .....	380	480	591	780	731	717	695	686	504	377	385	661	676	875	834
Federal except highways .....	363	466	581	768	718	704	684	674	494	360	372	651	665	867	827
Highway erosion abatement .....	17	14	10	12	13	13	11	13	10	17	13	10	11	8	7
State and local (line 36) .....	576	521	460	496	480	393	344	386	397	394	423	409	445	436	467
State and local except highways .....	(*)	1	1	1	2	1	(*)	(*)	(*)	(*)	(*)	4	16	13	14
Highway erosion abatement .....	576	520	459	495	478	392	344	386	397	394	423	404	429	423	453
Government enterprise fixed capital (line 37) .....	5,027	5,364	6,705	9,708	10,237	8,832	9,852	10,106	10,641	8,780	8,224	7,583	8,212	8,505	9,149
Publicly owned electric utilities .....	227	228	254	282	292	376	344	396	493	510	545	520	421	381	342
Public sewer systems <sup>5</sup> .....	4,801	5,136	6,451	9,426	9,945	8,456	9,508	9,710	10,148	8,270	7,679	7,063	7,791	8,124	8,807

See footnotes at end of table.



Table 8.—Business and Government Expenditures for Air and Water Pollution Abatement in Current and Constant Dollars, 1972–92—Continued

Table with 19 columns: 1987 (Total, Air, Water), 1988 (Total, Air, Water), 1989 (Total, Air, Water), 1990 (Total, Air, Water), 1991 (Total, Air, Water), and 1992\* (Total, Air, Water). Rows include Business (line 6) and Government (line 12) expenditures in current dollars, followed by Business (line 28) and Government (line 34) expenditures in constant dollars. Total values are provided for each year, and detailed breakdowns are given for major categories.

\* Preliminary.

\* Less than \$500,000.

1. Consists of air and water pollution abatement expenditures only.

2. Consists of manufacturing companies and of privately and cooperatively owned electric utilities and other non-manufacturing companies.

3. Consists of private septic systems and sewer connections linking household plumbing to street sewers.

4. Feedlot operations only; see footnote 1 to table 7.

5. Public sewer systems consist of treatment plants, collection sewers, interceptor sewers, pumping stations, and dry-waste disposal plants. Spending to operate public sewer systems is classified in the national income and product accounts as business spending. Government enterprise purchases of fixed capital (primarily for construction of public sewer systems) is classified in the national income and product accounts as government spending.

NOTE.—Line numbers refer to those in table 7.