UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: February 25, 1977

SUBJECT: Changes to Book

Tom Friedkin

FROM: Tom Friedkin
Director, Budget Operations Division (PM-225)

TO: Recipients of 1978 Congressional Narrative

As you know, changes have been made to the 1978 budget narrative as a result of President Carter's review.

It is not feasible to redo the entire book in order to incorporate these changes. I am therefore enclosing a set of changes, just as they were provided to the Hill, for you to incorporate into the book(s) which you have previously received from this office.

In some cases, pages may be entirely replaced; in others, one side of the page must only be crossed through since the other side did not change.

Thank you for your cooperation in ensuring that all books previously distributed are now corrected.

ENVIRONMENTAL PROTECTION AGENCY

JUSTIFICATION OF APPROPRIATION ESTIMATES FOR COMMITTEE ON APPROPRIATIONS, FISCAL YEAR 1978

Environmental Protection Agency

1978 Budget Estimates

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ENVIRONMENTAL PROTECTION AGENCY

Budget Summary

The Environmental Protection Agency's 1978 budget proposal provides for a decrease of $9.9 million and is presented under six operating appropriations. A summary of each area and the major changes for 1978 follow.

1. Abatement and Control programs provide for development and implementation of environmental standards, monitoring and surveillance of pollution, pollution control planning, financial and technical assistance to State and local pollution control agencies, assistance to other Federal agencies to minimize adverse impact of their activities on the environment, and training of personnel engaged in pollution control activities.

Funds budgeted for the air program increase by $4.6 million. This is primarily the result of an increase of $2.5 million for control agency grants as well as a number of other small increases. The water quality abatement and control program shows a reduction of $72.6 million in 1978. Assistance to areawide water quality management planning agencies funded under Section 208 of the Federal Water Pollution Control Act, decreases by $78.6 million due to the nonrecurring request for a 1977 supplemental appropriation. An additional decrease arises from $15 million appropriated in 1977 for the Clean Lakes program which will not be required in 1978. These decreases are partially offset by increases totalling $21.5 million including $2.9 million for contract support of 208 programs, $400 thousand to implement the Chesapeake Bay program, $4.7 million to improve management of the wastewater treatment plant construction grants program, $10 million to initiate the loan guarantee program, $1.1 million for effluent guidelines development, and $2.4 million for control agency support grants.

The water supply program shows an increase of $6.6 million primarily as a result of an increase of $6.5 million in State grants. An increase of three positions and $1.0 million will provide additional support to standards and regulations development, and the increase of 20 positions and $200 thousand will be used to assist States to implement the underground injection control program and the public water systems supervision program, to federally implement the public water systems supervision program in two States not accepting responsibility, and to control hazardous wastes disposal into pits, ponds, and lagoons. These increases are offset by a number of small decreases.

Solid waste abatement and control will increase by $16.1 million from the current 1977 operating plan. This increase provides for continuation of mandatory resource recovery and conservation studies initiated in 1977 and support of the Interagency Resource Conservation Committee. It also provides for additional evaluations of resource recovery systems which complement research and development in this area. In addition, necessary technical assistance will be provided to the States in order to assure successful implementation of the requirements under the recently enacted Resource Conservation and Recovery Act of 1976. Funds will also be available under this request for State grants.

Resources for the toxic substances abatement and control program increase significantly in FY 1978. The increase of 174 positions and $16.6 million is to support continued implementation of the Toxic Substances Control Act which became law October 11, 1976. In FY 1978, the major substantive provisions of the new law will become fully operative. EPA efforts will concentrate on the publications of a final inventory list of existing chemicals; the premarket review of approximately 1,000 new chemicals, data-gathering and assessment on both these new and old chemicals to determine the need for testing and/or regulation; development of the necessary testing requirements; and the development of appropriate regulations to protect human health and the environment.

Other changes in the abatement and control program are an increase of $2.5 million in the interdisciplinary program for additional environmental impact statement preparation, negative declarations related to construction grants, new source discharge permits and selected regulatory programs; and an increase of $400 thousand in the noise program for labeling activities and analysis of the economic impact of proposed noise standards and regulations. An increase of $10 million to support the annualization of 1977 supplemental positions is also requested but is not yet allocated by media.

2. Enforcement program responsibilities are in the areas of air pollution control, water quality, water supply, solid waste, pesticides, toxic substances, and noise. The EPA enforcement program is conducted in cooperation with, and in support of, State and community enforcement programs. Major increases totalling $11.8 million are planned for enforcement in 1978. The air enforcement increase will provide for additional contractual outputs related primarily to nonattainment problems, particularly new source reviews. A major initiative to eliminate illegal marketing and use of pesticides will be undertaken in 1978. Grants in aid to States for pesticides enforcement will be increased by $4 million in 1978 to establish additional and more comprehensive Federal/State cooperative enforcement agreements. Twenty additional positions and $1.4 million will be used to conduct comprehensive pesticide use investigations and establish additional enforcement activities required by FIFRA. Additional increases totalling $2.6 million are included for solid waste, toxic substances, and noise enforcement.

3. Research and Development programs produce the scientific information and technical tools on which to base national policy and effective control strategies in the regulation, prevention, and abatement of environmental pollution. In the energy related area, these programs provide for development of a scientific basis to ensure (1) protection of human health, (2) environmental protection necessary to facilitate the use of domestic energy supplies, (3) implementation of energy systems initiatives without delays caused by inadequate and insufficient environmental impact data, and (4) the concurrent development of appropriate control technologies and emerging energy systems to minimize control costs and environmental impact. Overall, R&D will increase by $1.1 million, principally because of new requirements under the recently enacted solid waste legislation.

4. Agency and Regional Management provides for agencywide program direction and management carried on at EPA headquarters and in the regional offices; it also covers a variety of common service or support functions which serve agencywide needs. A decrease of $1.4 million is budgeted for management and support activities primarily due to the non-recurring request for a 1977 pay cost supplemental. This will permit additional legal services required by the toxic substances legislation; studies aimed at evaluating the effectiveness of the technical assistance which EPA provides to State and local governments and areawide planning activities carried out under Section 208 of the FWPCA; improved coordination of agencywide statistical activities; for civil rights compliance activities as related to the construction grants program; and provide for payment of additional lease costs associated with replacing existing space which does not meet health and safety requirements or must be vacated because of expiration of leases.

5. Buildings and Facilities activities provide for the design and construction of new EPA facilities as well as necessary repairs and improvements to Federal installations which are occupied by EPA. A decrease of $1 million is possible because repair and improvement projects planned for FY 1978 are being limited to only those required to correct health and safety deficiencies at various EPA laboratories. However, this decrease in repair projects is partially offset by a project involving the construction of new laboratory building at our Gulf Breeze, Florida, research installation which will replace an existing structure which is not adequate for hazardous research activities.

6. Scientific Activities Overseas (Special Foreign Currency Program) supports cooperative research and demonstration programs in other countries, using excess currencies available. The 1977 level of $5 million will be maintained in 1978.

Construction Grants are made to local public agencies for construction of municipal waste water treatment facilities to assist States and localities in attaining and maintaining water quality standards. The FY 1978 budget request contains $4.5 billion for waste water treatment plant construction grants. The Agency is proposing a 10 year program commitment totalling $45 billion along with several proposals which would assure directing Federal support to construction of those facilities most critical to reducing pollutant discharges from municipal waste water systems and bringing the Federal funding support requirement to a managable level. Fiscal year 1978 will be the second year of the 10 year program.

A $4.5 billion supplemental appropriation will be requested in FY 1977 for construction grants to those States which will use up their share of the $18 billion presently authorized by the Federal Water Pollution Control Act before FY 1978 funds become available.

Summary

Budget Authority, Contract Authority, Obligations, Outlays, End-of-Year Employment
By Appropriation
(dollars in-thousands)

	Actual 1976	Budget Estimate 1977	Current Estimate 1977 b/	Revised Estimate 1978 b/
Abatement and Control				
Budget authority.....	$375,283	$329,544	$384,388*	$431,453
Obligations.....	323,177	330,519	445,000*	435,573
Outlays.....	311,672	260,000	414,000*	481,400
Contract authority.....	65,000	45,000	49,182	...
End-of-year employment.....	3,941	4,241	4,697	4,697
Enforcement				
Budget authority.....	52,263	56,561	56,331	70,837
Obligations.....	48,865	56,561	56,432	70,837
Outlays.....	51,264	56,000	57,000	72,500
End-of-year employment.....	1,560	1,595	1,680	1,680
Research and Development a/				
Budget authority.....	265,421	256,449	259,496	263,047
Obligations.....	217,294	240,488	305,606	262,247
Outlays.....	235,883	280,000	294,000	267,500
End-of-year employment.....	1,857	1,802	1,800	1,800
Agency and Regional Management				
Budget authority.....	71,583	67,538	72,890*	72,846
Obligations.....	60,754	67,538	72,890*	72,846
Outlays.....	65,498	66,000	73,000*	75,700
End-of-year employment.....	1,992	1,795	1,857	1,857
Buildings and Facilities				
Budget authority.....	2,969	2,100	2,100	1,142
Obligations.....	636	2,186	5,047	1,142
Outlays.....	554	2,000	3,000	2,500
Construction Grants				
Budget authority.....	...	...	680,000 b/	...
Contract authority.....	...	...	...	...
Obligations.....	137,384	...	524,094 b/	240,000
Contract authority.....	4,141,844	6,076,420	5,594,657	1,000,000
Outlays.....	662,905	400,000	650,000 b/	340,000
Contract authority.....	1,765,664	3,370,000	3,730,000	4,530,000

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978
Scientific Activities Overseas				
Budget authority.....	4,000	6,000	5,000	5,000
Obligations.....	3,261	6,000	5,834	5,000
Outlays.....	3,726	5,000	4,000	4,500
Operations, Research and Facilities				
Obligations.....	11,071	3,600	6,500	2,077
Outlays.....	20,803	16,000	20,000	8,000
End-of-year employment.....	20	...	...	...
Revolving Fund				
Obligations.....	455	500	500	500
Outlays.....	-214	-50	-40	...
Trust Funds				
Budget authority.....	13	...	...	...
Obligations.....	12	...	20	53
Outlays.....	15	...	20	28
Reimbursements				
Obligations.....	4,625	6,000	6,800	6,800
End-of-year employment.....	111	117	116	116
Consolidated Working Fund				
Obligations.....	73	...	...	...
Outlays.....	161	...	53	...
Total, Environmental Protection Agency				
Budget authority.....	771,532	718,192	1,460,205*b/	844,325 b/
Contract authority.....	...	...	...	...
Obligations.....	857,607	713,392	1,428,723*b/	1,097,075
Contract authority.....	4,141,844	6,076,420	5,594,657	1,000,000
Outlays.....	1,352,267	1,084,950	1,515,033*b/	1,252,128 b/
Contract authority.....	1,830,664	3,415,000	3,779,182	4,530,000
End-of-year employment.....	9,481 c/	9,550	10,150	10,150

NOTE: Excludes comparative transfer of Environmental Impact Statement activities from Agency and Regional Management to Abatement and Control:

Budget authority.....	8,872
Obligations.....	3,416
Outlays.....	3,416
End-of-year employment..	123

All subsequent tables and text include this comparative transfer.

d-of-year employment = permanent positions.

a/ Includes Energy Research and Development appropriation

Budget authority.....	100,550	96,973
Obligations.....	83,436	88,333
Outlays.....	65,687	120,000
End-of-year employment..	143	123

* Includes proposed supplemental for pay raise costs of $2 million for Agency and Regional Management, and $4 million for Abatement and Control. All subsequent tables and narrative exclude this proposed supplemental.

b/ Excludes proposed funds for 1977 supplemental needs and proposed 1978 legislation:

Construction Grants:		
Budget authority.....	4,500,000	4,500,000
Obligations.....	400,000	4,100,000
Outlays.....	50,000	290,000
Abatement and Control:		
Budget authority.....	74,000	
Obligations.....	74,000	
Outlays.....	14,000	

c/ Excludes 69 vacancies.

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Summary of Budget Authority, Contract Authority, Obligations, Outlays and End-of-Year Employment
By Media
(dollars in thousands)

	Actual 1976	Budget Estimate 1977	Current Estimate 1977 c/	Revised Estimate 1978
Air				
Budget authority	$144,938	$142,824	$147,805	$154,257
Obligations	110,710	139,082	177,536	153,118
Outlays	164,983	148,720	164,000	168,063
End-of-year employment	1,670	1,763	1,829	1,829
Water Quality				
Budget authority	238,014	178,237	219,095	218,319
Obligations	216,250	176,598	256,411	219,380
Outlays	198,849	138,655	275,000	307,244
Contract authority	65,000	45,000	49,182	...
End-of-year employment	3,156	3,132	3,209	3,209
Water Supply				
Budget authority	32,578	43,754	44,595	53,636
Obligations	25,584	42,594	51,874	54,460
Outlays	10,423	29,480	33,154	34,991
End-of-year employment	245	298	327	327
Solid Wastes				
Budget authority	15,660	15,737	15,762	37,367
Obligations	15,404	16,346	20,053	36,862
Outlays	18,543	13,200	17,200	22,678
End-of-year employment	172	183	230	230
Pesticides				
Budget authority	43,706	39,807	39,723	45,986
Obligations	36,523	39,862	41,354	45,983
Outlays	38,882	34,880	37,200	45,391
End-of-year employment	962	952	998	998
Radiation				
Budget authority	6,343	4,901	5,381	5,645
Obligations	6,221	4,991	7,667	5,619
Outlays	7,492	5,270	6,400	5,930
End-of-year employment	229	204	214	214
Noise				
Budget authority	10,250	10,285	10,277	10,882
Obligations	5,625	10,345	14,313	10,805
Outlays	5,817	9,045	9,200	10,387
End-of-year employment	83	95	101	101

	Actual 1976	Budget Estimate 1977	Current Estimate 1977[c]	Revised Estimate 1978
Interdisciplinary				
Budget authority	36,829[a]	36,020	37,771	40,051
Obligations	26,956	36,390	36,763	39,676
Outlays	15,534	26,500	36,200	30,100
End-of-year employment	326[a]	350	344	344
Undistributed				
Budget authority	...	...	...	...
Obligations	...	...	...	...
Outlays	...	...	...	...
End-of-year employment	...	...	...	...
Toxic Substances				
Budget authority	8,006	7,367	7,271	28,005
Obligations	5,491	8,188	10,083	27,128
Outlays	5,289	5,100	6,100	21,437
End-of-year employment	36	52	314	314
Energy				
Budget authority	100,000	96,427	96,362	96,427
Obligations	83,037	87,787	115,680	101,062
Outlays	65,687	120,000	106,000	101,000
End-of-year employment	143	123	123	123
Program Management and Support				
Budget authority	65,515	67,195	72,173	74,762
Obligations	60,950	65,385	71,304	74,564
Outlays	67,320	65,150	70,546	72,882
End-of-year employment	459	486	488	488
Agency and Regional Management				
Budget authority	62,711[a]	67,538	70,890	72,846
Obligations	57,339	67,538	70,890	72,846
Outlays	65,498	66,000	71,000	76,997
End-of-year employment	1,869[a]	1,795	1,857	1,857
Buildings and Facilities				
Budget authority	2,969	2,100	2,100	1,142
Obligations	636	2,186	5,047	1,142
Outlays	554	2,000	3,000	2,500
Construction Grants[c]				
Budget authority	...	...	680,000	...
Contract authority	...	...	...	...
Obligations	187,384	...	524,094	240,000
Contract authority	4,141,844	6,076,420	5,594,657	1,000,000
Outlays	662,905	400,000	650,000	340,000
Contract authority	1,765,664	3,370,000	3,730,000	4,530,000

	Actual 1976	Budget Estimate 1977	Current Estimate 1977 c/	Revised Estimate 1978
Scientific Activities Overseas				
Budget authority.....	4,000	6,000	5,000	5,000
Obligations.....	3,261	6,000	5,834	5,000
Outlays.....	3,726	5,000	4,000	4,500
Operations, Research and Facilities				
Obligations.....	11,071	3,600	6,500	2,077
Outlays.....	20,803	16,000	20,000	8,000
End-of-year employment.....	20	...	...	...
Revolving Fund				
Obligations.....	455	500	500	500
Outlays.....	-214	-50	-40	...
Trust Funds				
Budget authority.....	13	...	...	...
Obligations.....	12	...	20	53
Outlays.....	15	...	20	28
Reimbursements				
Obligations.....	4,625	6,000	6,800	6,800
End-of-year employment.....	111	117	116	116
Consolidated Working Fund				
Obligations.....	73	...	...	...
Outlays.....	161	...	53	...
Total, Environmental Protection Agency				
Budget authority.....	771,532	718,192	1,454,205*	844,325
Obligations.....	857,607	713,392	1,422,723*	1,097,075
Contract authority.....	4,141,844	6,076,420	5,594,657	1,000,000
Outlays.....	1,352,267	1,084,950	1,509,033*	1,252,128
Contract authority.....	1,830,664	3,415,000	3,779,182	4,530,000
End-of-year employment.....	9,481 b/	9,550	10,150	10,150

a/ Includes comparative transfer of EIS from Agency and Regional Management to Interdisciplinary:

Budget authority.....	8,872
Obligations.....	3,416
Outlays.....	3,416
End-of-year employment...	123

b/ Excludes 69 vacancies.

Summary

Budget Authority, Contract Authority, Obligations, Outlays, End-of-Year Employment
By Appropriation
(dollars in thousands)

	Actual 1976	Budget Estimate 1977	Current Estimate 1977 b/	Revised Estimate 1978 b/
Abatement and Control				
Budget authority	$375,283	$329,544	$384,388*	$438,029
Obligations	323,177	330,519	445,000*	442,149
Outlays	311,672	260,000	414,000*	481,400
Contract authority	65,000	45,000	49,182	...
End-of-year employment	3,941	4,241	4,324	4,982
Enforcement				
Budget authority	52,263	56,561	56,331	68,115
Obligations	48,865	56,561	56,432	68,115
Outlays	51,264	56,000	57,000	72,500
End-of-year employment	1,560	1,595	1,618	1,546
Research and Development a/				
Budget authority	265,421	256,449	259,496	260,583
Obligations	217,294	240,488	305,606	259,783
Outlays	235,883	280,000	294,000	267,500
End-of-year employment	1,357	1,802	1,798	1,664
Agency and Regional Management				
Budget authority	71,583	67,538	72,890 *	71,456
Obligations	60,754	67,538	72,890 *	71,456
Outlays	65,498	66,000	73,000 *	75,700
End-of-year employment	1,992	1,795	1,824	1,842
Buildings and Facilities				
Budget authority	2,969	2,100	2,100	1,142
Obligations	636	2,186	5,047	1,142
Outlays	554	2,000	3,000	2,500
Construction Grants				
Budget authority	...	...	680,000 b/	...
Contract authority	...	...	...	...
Obligations	187,384	...	524,094 b/	240,000
Contract authority	4,141,844	6,076,420	5,594,657	1,000,000
Outlays	662,905	400,000	650,000 b/	340,000
Contract authority	1,765,664	3,370,000	3,730,000	4,530,000
Scientific Activities Overseas				
Budget authority	4,000	6,000	5,000	5,000
Obligations	3,261	6,000	5,834	5,000
Outlays	3,726	5,000	4,000	4,500
Operations, Research and Facilities				
Obligations	11,071	3,600	6,500	2,077
Outlays	20,803	16,000	20,000	8,000
End-of-year employment	20	...	...	...

Excludes proposed funds for 1977 supplemental needs and proposed 1978 legislation:

Construction Grants:		
Budget authority.....	4,500,000	4,500,000
Obligations.....	400,000	4,100,000
Outlays.....	50,000	290,000
Water Quality:		
Budget authority.....	69,000	
Obligations.....	69,000	
Outlays.....	10,000	
Undistributed:		
Budget authority.....	5,000	
Obligations.....	5,000	
Outlays.....	4,000	

*Excludes proposed $6 million supplemental for pay raise costs; distributed by media is undetermined. Subsequent tables and narrative also exclude this proposed amount.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978
Revolving Fund				
Obligations	455	500	500	500
Outlays	-214	-50	-40	...
Trust Funds				
Budget authority	13	...	...	...
Obligations	12	...	20	53
Outlays	15	...	20	28
Reimbursements				
Obligations	4,625	6,000	6,800	6,800
End-of-year employment	111	117	116	116
Consolidated Working Fund				
Obligations	73	...	...	...
Outlays	161	...	53	...
Total, Environmental Protection Agency				
Budget authority	771,532	718,192	1,460,205*b/	844,325b/
Contract authority	...	...	...	...
Obligations	857,607	713,392	1,428,723*b/	1,097,075b/
Contract authority	4,141,844	6,076,420	5,594,657	1,000,000
Outlays	1,352,267	1,084,950	1,515,033*b/	1,252,128b/
Contract authority	1,830,664	3,415,000	3,779,182	4,530,000
End-of-year employment	9,481c/	9,550	9,680 d/	10,150

NOTE: Excludes comparative transfer of Environmental Impact Statement activities from Agency and Regional Management to Abatement and Control:

Budget authority	8,872
Obligations	3,416
Outlays	3 416
End-of-year employment	123

All subsequent tables and text include this comparative transfer.

End-of-year employment = permanent positions.

a/ Includes Energy Research and Development appropriation

Budget authority	100,550	96,973
Obligations	83,436	88,333
Outlays	65,687	120,000
End-of-year employment	143	123

* Includes proposed supplemental for pay raise costs of $2 million for Agency and Regional Management, and $4 million for Abatement and Control. All subsequent tables and narrative exclude this proposed supplemental.

b/ Excludes proposed funds for 1977 supplemental needs and proposed 1978 legislation:

Construction Grants:		
Budget authority	4,500,000	4,500,000
Obligations	400,000	4,100,000
Outlays	50,000	290,000
Abatement and Control:		
Budget authority	74,000	
Obligations	74,000	
Outlays	14,000	
(Supplemental positions under review)		

c/ Excludes 69 vacancies.

d/ Excludes 470 positions proposed for 1977 supplemental.

V (Revised 2/24/77)

Summary of Budget Authority, Contract Authority,
Obligations, Outlays and End-of-Year Employment
By Media
(dollars in thousands)

	Actual 1976	Budget Estimate 1977	Current Estimate 1977 c/	Revised Estimate 1978
Air				
Budget authority	$144,938	$142,824	$147,805	$152,777
Obligations	110,710	139,082	177,536	151,638
Outlays	164,983	148,720	164,000	166,300
End-of-year employment	1,670	1,763	1,776	1,713
Water Quality				
Budget authority	238,014	178,237	219,095	216,039
Obligations	216,250	176,598	256,411	217,100
Outlays	198,849	138,655	275,000	305,270
Contract authority	65,000	45,000	49,182	...
End-of-year employment	3,156	3,132	3,076	2,937
Water Supply				
Budget authority	32,578	43,754	44,595	53,154
Obligations	25,584	42,594	51,874	53,978
Outlays	10,423	29,480	33,154	34,454
End-of-year employment	245	298	296	327
Solid Wastes				
Budget authority	15,660	15,737	15,762	36,533
Obligations	15,404	16,346	20,053	36,028
Outlays	18,543	13,200	17,200	21,900
End-of-year employment	172	183	215	215
Pesticides				
Budget authority	43,706	39,807	39,723	45,204
Obligations	36,523	39,862	41,354	45,201
Outlays	38,882	34,880	37,200	44,700
End-of-year employment	962	952	958	973
Radiation				
Budget authority	6,343	4,901	5,381	5,645
Obligations	6,221	4,991	7,667	5,619
Outlays	7,492	5,270	6,400	5,930
End-of-year employment	229	204	204	204
Noise				
Budget authority	10,250	10,285	10,277	10,789
Obligations	5,625	10,345	14,313	10,712
Outlays	5,817	9,045	9,200	10,300
End-of-year employment	83	95	96	103
Interdisciplinary				
Budget authority	36,829 a/	36,020	37,771	39,756
Obligations	26,956	36,390	36,763	39,381
Outlays	15,534	26,500	36,200	30,100
End-of-year employment	326 a/	350	371	340

	Actual 1976	Budget Estimate 1977	Current Estimate 1977 c/	Revised Estimate 1978
Undistributed **				
Budget authority	...	...	...	15,000
Obligations	...	...	...	15,000
Outlays	...	...	...	14,000
End-of-year employment	...	...	...	452
Toxic Substances				
Budget authority	8,006	7,367	7,271	24,258
Obligations	5,491	8,188	10,083	23,381
Outlays	5,289	5,100	6,100	17,940
End-of-year employment	36	52	143	322
Energy				
Budget authority	100,000	96,427	96,362	96,427
Obligations	83,037	87,787	115,680	101,062
Outlays	65,687	120,000	106,000	101,000
End-of-year employment	143	123	123	123
Program Management and Support				
Budget authority	65,515	67,195	72,173	71,145
Obligations	60,950	65,385	71,304	70,947
Outlays	67,320	65,150	70,546	69,506
End-of-year employment	459	486	482	483
Agency and Regional Management				
Budget authority	62,711a/	67,538	70,890	71,456
Obligations	57,339	67,538	70,890	71,456
Outlays	65,498	66,000	71,000	75,700
End-of-year employment	1,869a/	1,795	1,824	1,842
Buildings and Facilities				
Budget authority	2,969	2,100	2,100	1,142
Obligations	636	2,186	5,047	1,142
Outlays	554	2,000	3,000	2,500
Construction Grants c/				
Budget authority	...	...	680,000	...
Contract authority	...	...	...	...
Obligations	187,384	...	524,094	240,000
Contract authority	4,141,844	6,076,420	5,594,657	1,000,000
Outlays	662,905	400,000	650,000	340,000
Contract authority	1,765,664	3,370,000	3,730,000	4,530,000
Scientific Activities Overseas				
Budget authority	4,000	6,000	5,000	5,000
Obligations	3,261	6,000	5,834	5,000
Outlays	3,726	5,000	4,000	4,500
Operations, Research and Facilities				
Obligations	11,071	3,600	6,500	2,077
Outlays	20,803	16,000	20,000	8,000
End-of-year employment	20	...	...	...
Revolving Fund				
Obligations	455	500	500	500
Outlays	-214	-50	-40	...

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978
Trust Funds				
Budget authority	13	...	...	...
Obligations	12	...	20	53
Outlays	15	...	20	28
Reimbursements				
Obligations	4,625	6,000	6,800	6,800
End-of-year employment	111	117	116	116
Consolidated Working Fund				
Obligations	73	...	...	...
Outlays	161	...	53	...
Total, Environmental Protection Agency				
Budget authority	771,532	718,192	1,454,205*	844,325
Obligations	857,607	713,392	1,422,723*	1,097,075
Contract authority	4,141,844	6,076,420	5,594,657	1,000,000
Outlays	1,352,267	1,084,950	1,509,033*	1,252,128
Contract authority	1,830,664	3,415,000	3,779,182	4,530,000
End-of-year employment	9,481 b/	9,550	9,680***	10,150

a/ Includes comparative transfer of EIS from Agency and Regional Management to Interdisciplinary:

Budget authority	8,872
Obligations	3,416
Outlays	3,416
End-of-year employment	123

b/ Excludes 69 vacancies.

c/ Excludes proposed funds for 1977 supplemental needs and proposed 1978 legislation:

Construction Grants:		
Budget authority	4,500,000	4,500,000
Obligations	400,000	4,100,000
Outlays	50,000	290,000
Water Quality:		
Budget authority	69,000	
Obligations	69,000	
Outlays	10,000	
Undistributed:		
Budget authority	5,000	
Obligations	5,000	
Outlays	4,000	
(Supplemental positions under review)		

*Excludes proposed $6 million supplemental for pay raise costs; distribution by media is undetermined. Subsequent tables and narrative also exclude this proposed amount.

** Undistributed funds related to new positions.

*** Excludes 470 positions for the 1977 supplemental.

Summary of Increase or Decrease
Budget Authority and End-of-Year Employment
(dollars in thousands)

	Current Estimate 1977 [a]	Revised Estimate 1978	Increase + Decrease -
Abatement and Control			
Budget authority.....	$380,388	$431,453	+$51,065
End-of-year employment.....	4,697	4,697	...
Enforcement			
Budget authority.....	56,331	70,837	+14,506
End-of-year employment.....	1,680	1,680	...
Research and Development			
Budget authority.....	259,496	263,047	+3,551
End-of-year employment.....	1,800	1,800	...
Agency and Regional Management			
Budget authority.....	70,890	72,846	+1,956
End-of-year employment.....	1,857	1,857	...
Buildings and Facilities			
Budget authority.....	2,100	1,142	-958
Scientific Activities Overseas			
Budget authority.....	5,000	5,000	...
Reimbursements			
End-of-year employment.....	116	116	...
Subtotal			
Budget authority.....	774,205	844,325	+70,120
End-of-year employment.....	10,150	10,150	...
Construction Grants			
Budget authority.....	680,000	...)	
Proposed supplemental.....	400,000	...)	+3,420,000
Proposed legislation.....	...	4,500,000)	

	Current Estimate 1977[a]	Revised Estimate 1978	Increase - Decrease +
Total, Environmental Protection Agency			
Budget authority.....	1,454,205	844,325)	
Proposed supplemental.....	400,000	...)	+3,490,120
Proposed legislation.....	...	4,500,000)	
End-of-year employment.....	10,150	10,150	...

End-of-year employment = permanent positions.

a/ Excludes proposed funds for 1977 supplemental needs:

Abatement and Control:	
Budget authority.....	74,000
Construction Grants:	
Budget authority.....	4,100,000

Summary of Increase or Decrease
Budget Authority and End-of-Year Employment
(dollars in thousands)

	Current Estimate 1977 a/	Revised Estimate 1978	Increase + Decrease -
Abatement and Control			
Budget authority	$380,388	$438,029	$57,641
End-of-year employment	4,324	4,982	+658
Enforcement			
Budget authority	56,331	68,115	+11,784
End-of-year employment	1,618	1,546	-72
Research and Development			
Budget authority	259,496	260,583	+1,087
End-of-year employment	1,798	1,664	-134
Agency and Regional Management			
Budget authority	70,890	71,456	+566
End-of-year employment	1,824	1,842	+18
Buildings and Facilities			
Budget authority	2,100	1,142	-958
Scientific Activities Overseas			
Budget authority	5,000	5,000	...
Reimbursements			
End-of-year employment	116	116	...
Subtotal			
Budget authority	774,205	844,325	+70,120
End-of-year employment	9,680	10,150	+470
Construction Grants			
Budget authority	680,000	...)	
Proposed supplemental	400,000	...)	+3,420,000
Proposed legislation	...	4,500,000)	
Total, Environmental Protection Agency			
Budget authority	1,454,205	844,325)	
Proposed supplemental	400,000	...)	+3,490,120
Proposed legislation	...	4,500,000)	
End-of-year employment	9,680	10,150	+470

End-of-year employment = permanent positions.

a/ Excludes proposed funds for 1977 supplemental needs:

Abatement and Control:	
Budget authority	
(Supplemental positions under review	74,000
Construction Grants:	
Budget authority	4,100,000

Summary of Increase or Decrease
Budget Authority and End-of-Year Employment
(dollars in thousands)

	Current Estimate 1977	Estimate 1978	Increase + Decrease -
Abatement and Control			
Budget authority	$380,388	$394,698	+$14,310
End-of-year employment	4,324	4,530	+206
Enforcement			
Budget authority	56,331	68,748	+12,417
End-of-year employment	1,618	1,546	-72
Research and Development			
Budget authority	259,496	261,287	+1,791
End-of-year employment	1,798	1,664	-134
Agency and Regional Management			
Budget authority	70,890	71,860	+970
End-of-year employment	1,824	1,842	+18
Buildings and Facilities			
Budget authority	2,100	1,142	-958
Scientific Activities Overseas			
Budget authority	5,000	5,000	...
Reimbursements			
End-of-year employment	116	116	...
Subtotal			
Budget authority	774,205	802,735	+28,530
End-of-year employment	9,680	9,698	+18
Construction Grants			
Budget authority	680,000	...)	
Proposed supplemental	400,000	...)	+3,420,000
Proposed legislation	...	4,500,000)	
Total, Environmental Protection Agency			
Budget authority	1,454,205	802,735)	
Proposed supplemental	400,000	...)	+3,448,530
Proposed legislation	...	4,500,000)	
End-of-year employment	9,680	9,698	+18

End-of-year employment = permanent positions.

Liquidation of Contract Authority
(in thousands of dollars)

	1976	TQ	1977	1978
Construction Grants.....	$800,000	$800,000	$3,800,000	$5,000,000
Abatement and Control (Areawide Waste Treatment Management Grants).....	65,000	19,000	49,182	...
Total.....	865,000	819,000	3,849,182	5,000,000

Air

SECTION TAB

Air

	Ford Submission Pos.	Ford Submission Amount (dollars in thousands)	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount (dollars in thousands)
Abatement and Control:	824	$39,066	852	$94,585
Air Quality and Stationary Source Planning and Standards..	199	11,130	199	11,130
Emissions Standards and Technology Assessment.....	(101)	(5,817)	(101)	(5,817)
Energy and Pollutant Strategies Development.....	(32)	(2,138)	(32)	(2,138)
State Programs Guidelines and Regulations Development...	(66)	(3,175)	(66)	(3,175)
Mobile Source Standards and Guidelines.....	49	4,520	54	4,520
Mobile Source Standards and Guidelines.....	(49)	(4,520)	(54)	(4,520)
State Program Resource Assistance.....	8	4,526	15	59,526
Control Agency Resource Supplementation.....	...	(3,000)	...	(58,000)
Training.....	(8)	(1,526)	(15)	(1,526)
Air Quality Strategies Implementation	235	4,720	251	4,905
Federal Activities EIS/Review.....	(34)	(741)	(34)	(741)
Air Quality Management Implementation.....	(201)	(3,979)	(217)	(4,164)
Mobile Source Certification and Testing.....	181	7,618	181	7,952
Certification Review.....	(72)	(2,416)	(72)	(2,657)
Laboratory and Data Analysis Support.....	(109)	(5,202)	(109)	(5,295)
Trends Monitoring and Progress Assessment.....	152	6,552	152	6,552
Ambient Air Quality Monitoring.....	(46)	(1,426)	(51)	(1,426)
Mobile Sources Monitoring.....	(13)	(1,449)	(8)	(1,449)
Air Quality and Emissions Data Analysis and Progress Assessments.....	(93)	(3,677)	(93)	(3,677)

	Ford Submission Pos.	Ford Submission Amount (dollars in thousands)	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount (dollars in thousands)
Enforcement:	489	19,107	512	19,477
Stationary Source Enforcement	371	14,780	391	15,150
Stationary Source Enforcement	(371)	(14,780)	(391)	(15,150)
Mobile Source Enforcement	118	4,327	121	4,327
Mobile Source Enforcement	(118)	(4,327)	(121)	(4,327)
Research and Development:	400	39,604	465	(40,195)
Health and Ecological Effects	245	26,648	290	27,028
Health Effects	(180)	(15,756)	(217)	(16,052)
Ecological Process and Effects	(24)	(1,000)	(34)	(1,084)
Transport and Fate of Pollutants	(41)	(9,892)	(39)	(9,892)
Industrial Processes	40	5,000	38	5,000
Mineral, Processing and Manufacturing Industries	(40)	(5,000)	(38)	(5,000)
Monitoring and Technical Support	115	7,956	137	8,167
Characterization and Measurement Methods Development	(54)	(5,695)	(56)	(5,737)
Measurement, Techniques and Equipment Standardization	...	(265)	(4)	(299)
Technical Support	(61)	(1,996)	(77)	(2,131)

AIR

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$63,552	$83,139	$89,458	$94,066 ~~$89,060~~	+4608 ~~$50,392~~
Permanent Positions..	787	815	824	824	...
Transition Quarter...	44,721	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	11,353	13,743	14,341	19,107	+4,766
Permanent Positions..	432	477	492	489	-3
Transition Quarter...	4,315	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	35,806	45,942	44,006	39,604	-4,402
Permanent Positions..	451	471	460	400	-60
Transition Quarter...	19,294	N/A	N/A	N/A	N/A
Total, Air Program:					
Appropriation.....	110,711	142,824	147,805	152,777 ~~97,777~~	+4972 ~~-50,028~~
Permanent Positions..	1,670	1,763	1,776	1,713	-63
Transition Quarter...	68,330	N/A	N/A	N/A	N/A
Outlays.....	164,983	148,720	164,000	~~138,600~~ 166,300	~~-25,400~~ +2,300
Authorization Levels.	163,195	219,621	15,000[a]	15,000*	

a/ Funds in FY 1977 are considered authorized by virtue of Appropriation Act.
*Authorization pending for remaining funds.

OVERVIEW AND STRATEGY

The Clean Air Act authorizes a national program of air pollution research, regulation, and enforcement activities. Under the Act, primary responsibility for the prevention and control of air pollution rests with State and local governments, with the program directed at the Federal level by the Environmental Protection Agency (EPA). EPA's role is to conduct research and development programs, set national environmental goals, provide assistance to the States, and ensure that the standards and regulations are effectively enforced.

The environmental standards are the National Ambient Air Quality Standards (NAAQS). These standards set forth the allowable concentration in air of pollutants which affect human health and public welfare. The health and other effects of pollutants are delineated in criteria documents which are the basis for the standards. National Ambient Air Quality Standards have been set for total suspended particulates, sulfur dioxide, nitrogen dioxide, carbon monoxide, photochemical oxidants, and hydrocarbons. Two types of standards are set: primary standards to protect human health and secondary standards to protect the public welfare (prevention of damage to property, animals, vegetation, crops, visibility, etc.). Controlling emissions to meet standards is handled through two major types of activities: (1) States carry out State Implementation Plans (SIPs) which control pollution primarily by prescribing specific emission limitations or control actions for types of polluters, and (2) EPA controls emissions from new motor vehicles and selected stationary sources.

(Revised 2/24/77)

AIR

PROGRAM HIGHLIGHTS

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			(dollars in thousands)		
Abatement and Control:					
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Permanent Positions..	787	815	824	824	...
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Transition Quarter...	19,294	N/A	N/A	N/A	N/A
Total, Air Program:					
Appropriation.....	110,711	142,824	147,805	97,777	-50,028
Permanent Positions..	1,670	1,763	1,776	1,713	-63
Transition Quarter...	68,330	N/A	N/A	N/A	N/A
Outlays.....	164,983	148,720	164,000	138,600	-25,400
Authorization Levels.	163,195	219,621	15,000 a/	15,000*	

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The attainment of the National Ambient Air Quality Standards (NAAQS) has been the main objective of the air program under the Clean Air Act. The combined Federal-State-local effort at controlling air pollution has achieved a notable degree of success in reducing air pollutant emission levels and in improving ambient air quality across the Nation. However, it is clear that the standards have not been attained in many areas of the Nation. (Nonattainment is defined as the standards being exceeded at one or more monitoring sites in the AQCR.) The following table summarizes the status of attainment of the NAAQS by Air Quality Control Regions (AQCRs):

	Pollutants				
	Total Suspended Particulates	Sulfur Dioxide	Photochemical Oxidants	Carbon Monoxide	Nitrogen Dioxide
Number of AQCRs Attaining NAAQS....	101	205	114	177	240
Number of AQCRs Not Attaining NAAQS....	146	41	131	68	3
Number of AQCRs of Indeterminate Status.....	...	1	2	2	4
All AQCRs.....	247	247	247	247	247

Although there are many AQCRs with ambient air quality levels exceeding standards, significant progress has been made in reducing pollutant levels and in attaining standards for the pollutants, predominantly associated with stationary sources. The concentration of particulates in the ambient air has decreased annually at an average rate of five percent through 1975. A review of the most recent sulfur dioxide ambient data shows that concentrations in urban areas have decreased an average of 30 percent since 1970. Fewer than 10 percent of all urban monitors are exceeding the sulfur dioxide standards.

Progress has also been documented for automotive related pollutants. Although carbon monoxide historical data are limited, available data in several States and major cities suggest a continuation in the general improvement noted in EPA trend reports. The average number of occasions in which eight hour concentrations exceed the carbon monoxide standard has declined, typically by 50 percent, in many of the urban areas of the States for which data are available. Historical data on oxidants (which are produced by the photochemical transformation in the atmosphere of hydrocarbons emitted from both stationary and mobile sources) exist for only a few urban areas. Los Angeles and San Francisco have shown notable improvements; the number of hours in excess of the oxidant standard has been reduced by as much as 50 percent since 1970 at many monitoring stations in these metropolitan areas. Nitrogen oxides emissions have increased nationally about 10 percent since 1970. Because of recent changes in measurement methodology for monitoring nitrogen dioxide, few areas have sufficient historical data to assess trends. However, valid data indicate that only a few areas of the country have ambient nitrogen dioxide concentrations in excess of the national standard.

The program emphasis for FY 1978 will continue to be on the attainment and maintenance of the National Ambient Air Quality Standards. Because the implementation of control actions is basically the responsibility of the State and local governments, it will be required that they take on increased responsibilities for air pollution control if the standards are to be attained, particularly in the case of motor vehicle related pollutants. The State control plans incorporate controls for motor vehicle related pollutants since reductions achieved as a result of the Federal motor vehicle control program are not sufficient to attain the standards for such pollutants in many areas.

In order to attain the standards, efforts are to concentrate on the implementation of State Implementation Plans, their reassessment, and revision if indicated. For maintenance of the standards, many SIPs will have to be revised to include the controls required to assure that the ambient air quality standards are not violated in the future. The governors of 45 States have been formally notified by EPA Regional Administrators that the SIPs for their States must be revised in order to attain and maintain the NAAQS. Plan revisions are necessary in 31 States for particulate matter; 12 States for sulfur dioxide; 22 States for carbon monoxide; 29 States for photochemical oxidants; and three States for nitrogen dioxide. The revised plans, containing revised or additional emission limitations, must be submitted to EPA by July 1977. By July 1978, SIPs must incorporate all other necessary regulatory measures such as improved transportation measures. The revised SIPs are to provide for the attainment of the NAAQS as expeditiously as practicable.

The nature and magnitude of the problems associated with attainment and maintenance of the NAAQS varies with the specific pollutant involved. Federal programs will be aimed at the formulation of methodologies for developing control strategies and the development of control systems as well as to the support of State and local programs.

Particulate matter problems are related in many cases to sources that are not generally controllable by the application of commonly available particulate emission controls. Examples of such sources are "fugitive dust" and "urban particulate background", which result from activities such as farming operations, construction, the abrasion of road surfaces, and atmospheric reactions involving pollutants emitted as gases. Development of control strategies for particulate air pollutants that take into account these problems will require the definition of sources, development of appropriate analytical tools (including, in some cases, measurement technology), and the identification of control technology. The FY 1978 program addresses these problems. For sulfur dioxide, the national problem is generally related to the need to minimize the impact on energy supplies of the specific control technologies that are to be applied for continued maintenance of the standards. The attainment of standards for this pollutant is relatively well in hand. Similarly, problems associated with carbon monoxide do not require extensive development work; implementation of available controls, rather than development of controls, seems to be required. The FY 1978 program is aimed at such implementation.

Problems associated with photochemically formed pollutants (i.e., photochemical oxidants and nitrogen dioxide) are related to lack of complete technical understanding of their formation. Nevertheless, it is clear that reductions in precursor (hydrocarbons and nitrogen oxides) emissions will lead to their control. Understanding of the atmospheric transformation and the impact that resulting pollutants have on public health and welfare is essential if adequate control strategies are to be developed. Implementation plans will be reassessed, as necessary, as to the adequacy of their control requirements in view of improved understanding of the transport and transformation processes.

Maintenance of the standards in the long-term will be facilitated by Federal programs that lead to the minimization of emissions from new sources (i.e., new motor vehicle emission standards and standards of performance for new stationary sources) and the assurance of continued low emissions performance for these sources during their useful lives. Program emphasis is on the control of new sources of pollutants that lead to photochemical pollutants formation (i.e., on sources of nitrogen oxides and hydrocarbons) and on programs designed to assure compliance of production and in-use vehicles with applicable emission standards. In addition, an expanded program for the control of emissions of synthetic organic chemical substances will result in the prevention of future problems associated with these substances as well as in the reduction of photochemical oxidants.

Development of the basic understanding of pollutant formation, transportation, and ultimate fate requisite for the development of control recommendations for dealing with newly identified environmental problems will be continued. Among these fall the effects that sulfates and nitrates may have on human health and welfare, including long-term impacts on terrestrial ecology. The definition of the impact on human health of many substances emitted to the atmosphere in small amounts, such as many trace metals, also requires attention. Emerging health problems may be averted if control programs are initiated in time.

Improving understanding of health and ecological effects and the transport and transportation of air pollutants is the responsibility of the research program. As a better scientific data base on the air pollutants now regulated becomes available, the research program is shifting emphasis to the identification of other airborne substances which may require regulation in the future. Areas receiving increased attention in FY 1978 include sulfates, carcinogens, and potentially toxic airborne substances.

Research will also continue in FY 1978 to provide a better data base for implementation of the NAAQS, such as the scheduled revision of the Criteria Documents, and for assessment of other potential problems, such as nitrates and trace metals. Research efforts will emphasize the development of an understanding of the formation of photochemical oxidants and nitrates, instrumentation development, and identification and quantification of pollutant emissions from various sources.

The stationary source enforcement program is directed toward supplementing State and local agency enforcement. The mobile source enforcement program is directed primarily toward achieving compliance with vehicle emissions standards and fuel regulations promulgated by EPA. In FY 1978, the stationary source program will concentrate on bringing major (Class A)* sources in nonattainment areas into compliance with State Implementation Plan requirements, and on the review of new sources. EPA assistance and guidance to States will be required to develop and implement new source review procedures including strategies to assess the impact on the air quality standards of potential new sources. EPA's new sources review policies are designed not to limit industrial growth but to ensure that industrial expansion and environmental protection are accomplished simultaneously. In FY 1978, the stationary source enforcement program will also develop and implement, with States and communities, strategies to control minor (Class B) sources.

Mobile source enforcement efforts in FY 1978 will be focused on the Selective Enforcement Audit assembly line testing program for light-duty vehicles and a pilot SEA program for motorcycles. This program will assure that production line vehicles are in compliance with emission to help assure compliance of in-use vehicles with emission standards.

In summary, the EPA program is aimed at supporting States and localities in their air pollution control efforts, at providing an adequate level of Federal activity in those areas for which the Federal Government has the primary responsibility (e.g., the setting of emissions standards for new sources) or where Federal activity would result in a high environmental payoff (e.g., enforcement actions against major air pollution sources in cases where States do not have the resources to take action), and at the development of air pollution control related knowledge and techniques supportive of the national air pollution control effort (e.g., control technology for NO_x, health effects of air pollutants).

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* Industrial air pollution sources have been divided into classes. Major (Class A) sources are those individually capable of emitting 100 tons/year or more of a pollutant assuming no controls; Minor (Class B) sources are those individually capable of emitting from 25 tons/year to 100 tons/year of a pollutant assuming no controls.

SUMMARY OF INCREASES AND DECREASES (in thousands of dollars)

1977 Air Program..... $147,805

Abatement and Control..... ~~-50,392~~ +4608

$2.450 million.

The net reduction for the air abatement and control program includes both increases and decreases for specific programs. The resource level will ~~decline~~ increase primarily as a result of the ~~transfer of $52,550,000 in~~ control agency support funds ~~to the Consolidated Grants media~~. Other decreases provide for a reduction in training (-$.4 million), a reduced effort in emission characterization and regulations development (-$.1 million), and reduced efforts in air quality management implementation (-$.9 million). Offsetting these decreases are several program increases: air quality planning and standards will increase by $1.9 million to provide more emphasis on setting New Source Performance Standards and in developing a better technical basis for improving air quality management methods and techniques; the mobile source program will increase by $1.2 million to provide for greater emission testing and implementation of fuel economy related requirements of the Energy Policy and Conservation Act; and $.4 million for improved technical guidance for State and local monitoring operations.

Enforcement..... +4,766

Of the requested increase, $4.3 million is for the stationary source enforcement program to be used primarily to handle nonattainment problems posed by Class A and B emitters and to solve complex sets of problems associated with industrial growth and expansion; $.5 million will be used in the mobile source enforcement program for the implementation of the SEA and recall programs.

Research and Development..... -4,402

Resource levels for the air research and development program will decrease $1.7 million in the health effects program; $.9 million in the ecological effects program; $.5 million in the monitoring and technical support area; and $1.3 million due to the completion of the BACER short-term effort.

1978 Air Program..... ~~97,777~~ 152,777

(Revised 2/24/77)

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request $152,776,700

An appropriation of ~~$97,776,700~~ is requested for 1978. This request, by appropriation account, is as follows:

Abatement and Control	~~$39~~ $94,065,700
Enforcement	19,107,000
Research and Development	39,604,000

$2,450,000

This represents ~~a decrease~~ an increase of ~~$50,028,500~~ $4,972,000 from the 1977 program and includes ~~the~~ an increase ~~transfer of $32,550,000 to the new consolidated grants media from~~ for control agency support grants; in the planning and standards activity, an increase of $1,498,600 is requested for accelerating the setting of national emission standards and for continued work on the synthetic organic chemicals industry, and an increase of $400,500 for improvements in air quality management methods and techniques; in the mobile source certification and testing activity, an increase of $1,200,200 is requested for the implementation of fuel economy related requirements and expanded light-duty truck and motorcycle emission standards and certification; an increase of $400,100 for ambient air quality and mobile sources monitoring; the air quality management implementation effort is being reduced by $851,800; a reduced effort in emission characterization and regulations development results in a decrease of $120,000; and a decrease of $370,000 in air training.

Also ~~offsetting the large decrease to~~ in the air media is a requested increase of $4,262,500 for stationary source enforcement to obtain contractor assistance to solve nonattainment problems posed by Class A and B emitters and to handle the complex sets of problems presented by industrial growth and expansion, and an increase of $503,400 for mobile source enforcement for SEA and recall programs.

Other decreases included in the budget request are $2,704,000 in the air health effects program for a reduction in research on criteria pollutants and pollutants generated by automotive catalytic converters; research on noncriteria pollutants and nonpesticide organics and inorganics will be slightly reduced. A decrease of $1,301,000 results from the completion of the short-term BACER effort, with $1 million being reprogrammed for the environmental carcinogens program to initiate retrospective epidemiology studies. A decrease of $910,000 in the ecological effects program results from phasing out work on acid rain, pollutant effects on soil and whole ecosystems and reducing mathematical modeling activities; a further decrease of $487,000 reduces the level of short-term technical assistance services to the Office of Air Quality Planning and Standards and to the Office of Enforcement, and termination of support for the continuous air monitoring project.

2. Changes from Original 1977 Budget Estimate

Changes from the budget are as follows:

	(in thousands of dollars)
Original 1977 estimate	$142,824
Congressional increases:	
Research	+551
Control agency grants	+4,000
Academic training	+1,370
Pay raise costs	+196
Transfer at NEIC	+100
Operating adjustments	+836
BACER reprogramming	+450
Office of Research and Development reprogramming	-2,522
Current 1977 estimate	147,805

(Revised 2-24-77)

Congressional add-ons to the 1977 budget request were made for "unspecified" research, $551,000, for air control agency support grants, $4,000,000, and for academic training, $4,000,000, of which $1,370,000 was allocated to the air program.

Pay raise cost funds were transferred from the Agency and Regional Management appropriation in accordance with the Committee's provision that the funds were to be transferred as needed, +$196,000.

As a result of a realignment of workload between stationary source enforcement and water quality enforcement at the Denver National Enforcement Investigation Center, $100,000 was transferred to the air program.

Operating adjustments are changes required to adjust the budget to actual operating conditions. In the process of applying the budget to the specific needs of each regional office, laboratory, and headquarters program office, it is often necessary to make adjustments to the planned budget. The $836,000 increase is the cumulative effect of these changes on air programs in 1977.

A reprogramming of $450,000 to support the stratospheric modification program, Biological and Climatic Effects Research (BACER), was made from the pesticides, energy, and interdisciplinary medias. The Committees have been notified of the BACER reprogrammings.

In applying the budget to actual operating conditions, the Office of Research and Development reprogrammed $2,522,000 from the air media. These funds were transferred to the interdisciplinary and program management medias. A proposal will be submitted to the Committee, as appropriate, for separate consideration for the research and development reprogramming.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations.....	$110,711	$177,536
Effect of congressional increases on research, control agency grants, and academic training.....	+3,200	...
Increase to control agency grants ~~Transfer to consolidated grants~~	...	~~-52,800~~ +750
Miscellaneous increases and decreases, as listed above.....	-893	...
Program increases and decreases.....	...	+3,083
Change in amount of carryover funds available.....	+64,518	-29,731
Total estimated obligations.....	177,536	~~97,988~~ 151,638
(From new obligation authority)....	(147,391)	~~(97,574)~~ (151,224)
(From prior year funds).....	(30,145)	(414)

(Revised 2/24/77)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

Increases provided by the Congress are expected to increase 1977 obligations by $3,200,000.

The ~~transfer of the~~ increase to the air control agency support grants ~~to the new consolidated grants media~~ is expected to ~~decrease~~ increase obligations by ~~$52,900,000~~. $750,000.

The increases and decreases to the 1977 budget estimate, as previously detailed, are expected to result in a decrease of $893,000.

Program increases and decreases requested in 1978 are estimated to have a net change of +$3,083,000 to 1978 obligations.

A major change is due to the amount of carryover funds available for obligation. Carryover funds effecting obligations after FY 1976 result in a change of +$64,518,000; obligations from carryover funds in 1977 are estimated to be $30,145,000. In 1978, obligations are expected to be $414,000, a decrease of $29,731,000.

(Revised 2-24-77)

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	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
PROGRAM LEVELS					
Number of sources subject to NSPS.....	1,145	4,000	1,155	1,385	+230
Number of States delegated NSPS enforcement authority.....	25	48	40	43	+3
Number of States delegated NESHAP enforcement authority.....	18	48	34	40	+6
Number of pollutants covered by hazardous pollutants standards.....	3	4	4	4	...
Number of engine families certified for conformity with emission standards...	372	300	406	479	+73
Number of source categories covered by NSPS.....	20	25	24	33	+9
Number of emission tests carried out for motor vehicle certification purposes.....	2,407	2,890	2,554	3,067	+513
Number of fuel economy tests carried out.....	680	1,810	175	175	...
Identified Class A source in U.S.....	21,930	20,000	23,000	26,000	+3,000
Identified Class B sources in U.S. having impact on nonattainment.....	2,830	10,200	2,830	75,000	+72,170
Sources subject to FEA prohibition orders.....	75	...	75	1,075	+1,000
Assembly Line testing test orders.....	...	20	15	23	+8
Certification and production inspection/ compliance.....	85	60	80	80	...
Combined fuels/vapor recovery inspections.....	27,666	20,000	25,000	9,000	-16,000
Recall investigations.....	15	115	20	25	+5

NSPS: New Source Performance Standards

NESHAP: National Emission Standards for Hazardous Air Pollutants

Abatement and Control

SECTION TAB

AIR

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Air Quality and Stationary Source Planning and Standards.....	$7,159	$8,058	$9,231	$11,130	+$1,899	A-13
Mobile Source Standards and Guidelines.....	5,261	4,320	4,639	4,520	-119	A-19
State Programs Resource Assistance.....	33,893	51,554	57,446	~~[illegible]~~ 59,526	~~[illegible]~~ +2080	A-22
Air Quality Strategies Implementation.....	5,387	5,676	5,572	4,720	-852	A-26
Mobile Source Certification and Testing.....	4,712	6,827	6,418	7,618	+1,200	A-31
Trends Monitoring and Progress Assessment.....	7,140	6,704	6,152	6,552	+400	A-36
Total.....	63,552	83,139	89,458	~~[illegible]~~ 94,066	~~[illegible]~~ +4608	
Permanent Positions						
Air Quality and Stationary Source Planning and Standards.....	193	181	199	199	...	
Mobile Source Standards and Guidelines.....	54	60	54	49	-5	
State Programs Resource Assistance.....	18	15	15	8	-7	
Air Quality Strategies Implementation.....	234	250	241	235	-6	
Mobile Source Certification and Testing.....	161	158	163	181	+18	
Trends Monitoring and Progress Assessment.....	127	151	152	152	...	
Total.....	787	815	824	824	...	

Purpose

The Abatement and Control appropriation encompasses air program activities related to the development of control strategies and control programs, and the implementation of such programs. This objective is accomplished in two basic ways. First, State and local actions are encouraged by the provision of assistance in all areas of technical and policy matters. Second, direct Federal action is taken in cases of State or local failure to act as required by the Clean Air Act. The activities under the three appropriations complement each other. Knowledge gained as a result of activities funded by research and development is translated into practical control programs by abatement and control activities; if required, these programs are ultimately enforced by EPA.

(Revised 2/24/77)

AIR

Abatement and Control

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Abatement and control activities in the air program are aimed at supporting the overall air program objectives of attaining and maintaining the NAAQS. Support of State and local programs is the highest priority objective under abatement and control, followed by the implementation of complementary Federal controls, i.e., New Source Performance Standards and motor vehicle emission controls. Lower emphasis must be placed on obtaining solutions for other important environmental problems, such as the control of pollutants with localized effects and the control of pollutants with no direct human health impact.

Supporting the primary air program objective are activities related to the revision of State Implementation Plans which are substantially inadequate for attaining and maintaining the standards, especially the plans for the control of particulate matter, carbon monoxide, and photochemical oxidants. The plans for the control of sulfur dioxide are generally adequate as attainment is, in most cases, well in hand. The plans for sulfur dioxide control may require revision, however, pursuant to State actions aimed at increasing the use of readily available higher sulfur content fuels and FEA conversion orders related to the Energy Supply and Coordination Act (ESECA).

The maintenance of the standards in the future (and, in many cases, their eventual attainment) will require long-range planning of controls with an ever increasing level of sophistication. The impact of air pollution control requirements on society, economic activity, and energy supplies will be minimized and air pollution control goals will be adequately considered along with other social goals only if improved planning processes are implemented. Program emphasis in FY 1978 will be on the development of analytical tools, data bases, and processes that will foster the planning, development, and implementation of control programs at the State and local level in order to alleviate the need for Federal intervention.

The abatement and control activities are categorized under the following subactivities:

Air Quality and Stationary Source Planning and Standards. This subactivity is related to (1) the development of nationwide control strategies for both regulated and unregulated pollutants, the reassessment and modification of these strategies, and the translation of decisions on appropriate control requirements into regulatory actions, and (2) the development of emissions standards for stationary sources of air pollution, and the requisite supportive analyses and technology assessments. Control strategies developed under this subactivity are translated into criteria for State action, e.g., State Implementation Plans, or directly into Federal control requirements, e.g., New Source Performance Standards.

Mobile Source Standards and Guidelines. This subactivity involves the setting of emissions standards for mobile sources (including the associated technical analyses and technology assessments) and the development of mobile source related technical procedures and guidelines applicable to the control of emissions from new and in-use vehicles. Under this subactivity, findings made in relation to the need for control of mobile source emissions under the research and development activities or under the air quality and stationary source planning and standards subactivity are translated into practical control programs applicable to appropriate classes of motor vehicles or to appropriate stages of motor vehicle's life, from design to the end of their useful lives.

State Programs Resource Assistance. This subactivity involves the provision of resources to support State and local governments' activities in implementing air pollution control programs, including vehicle inspection and maintenance. The primary responsibility for controlling air pollution rests on the States and localities. If these governments are to effectively implement air pollution control programs, thereby eliminating or reducing the need for direct Federal intervention, supplementation of State and local resources is required. Resource supplementation, similar to other Federal programs (e.g., the National Highway Traffic Safety Administration's State and community highway safety grants), complements the purpose of the activities carried out under the other subactivities of the abatement and control appropriation.

Air Quality Strategies Implementation. This subactivity is related to the implementation of regulatory requirements for which the Federal Government has primary responsibility, such as the consultation with, and overview of, air pollution control activities carried out by Federal facilities, the review of environmental impact statements prepared by other Federal agencies for air pollution impact, the implementation of air quality standards and control strategies in specific areas of the Nation, and the interaction with State and local governments in the implementation of air pollution control activities. These activities result in the implementation of the general control strategies (developed under the standards subactivities) at specific areas of the Nation, i.e., States and localities, through State and local control programs.

Mobile Source Certification and Testing. This subactivity includes the certification of prototype motor vehicles and engines for conformity with motor vehicle emissions standards developed under the mobile source standards and guidelines subactivity. This subactivity also includes laboratory and other associated support activities (including data analysis) involved in technology assessment, emissions characterization, test procedures development, and test procedure refinement for mobile sources.

Trends Monitoring and Progress Assessment. This subactivity includes the determination of ambient air quality and emission levels, determining their relationships, and assessing progress made towards the attainment of environmental goals. These data and assessments are used for judging the progress made in achieving legislative or regulatory program goals and providing guidance as to the need for reassessing, changing, or developing control strategies.

AIR

Abatement and Control

Air Quality and Stationary Source Planning and Standards

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
		(dollars in thousands)			
Appropriation					
Emissions Standards & Technology Assessment....	$3,222	$4,056	$4,318	$5,817	+$1,499
Energy & Pollutant Strategies Development...	1,845	1,918	2,138	2,138	...
State Programs Guidelines & Regulations Development.	2,092	2,084	2,775	3,175	+400
Total.....	7,159	8,058	9,231	11,130	+1,899
Permanent Positions					
Emissions Standards & Technology Assessment....	95	97	101	101	...
Energy & Pollutant Strategies Development...	32	29	32	32	...
State Programs Guidelines & Regulations Development.	66	55	66	66	...
Total.....	193	181	199	199	...

Budget Request

The resources requested for this budget subactivity are $11,130,000 and 199 positions. This reflects an increase of $1,498,600 over the FY 1977 level for emissions standards and technology assessment which will provide for emission testing and industry studies activities in order to increase the number of New Source Performance Standards (NSPS) which can be developed in 1978. Primary emphasis is on sources of HC and NO_x, pollutants for which long-term nationwide emissions will be favorably impacted if standards are set at an early date. The emphasis on the synthetic organic chemicals industry will be continued. A two-fold objective will be served by controlling emissions from this industry: New Source Performance Standards will significantly reduce emissions of photochemical precursors from this industry (contributing to the control of photochemical oxidants) and future problems related to the potentially toxic or carcinogenic nature of these substances will be prevented, avoiding the need for pollutant-specific controls in the future. In addition, an increase of $400,200 over the FY 1977 level in State programs guidelines and regulations development will provide for a greater emphasis on defining control technology for existing sources and on studies aimed at improving the technical basis for air quality management.

Program Description

This subactivity includes the setting of emission standards for stationary sources and all industry studies, cost studies, and other analyses which support the standard setting function. Also included is the setting of ambient air quality standards, the development and reassessment of nationwide control strategies needed to meet these standards, studies oriented toward the balancing of energy and environmental goals, the assessment of potential pollutants, the development of control strategies, analytical tools and guidelines, and the translation of all control strategies into regulatory actions.

Emissions Standards and Technology Assessments -- New Source Performance Standards are set for production processes within specifically designated industries, and for control of specific pollutants. An example is the standard for electric arc furnaces within the ferroalloy industry to control particulates. New Source Performance Standards provide the basis for controlling emerging industries, such as oil shale use and coal gasification, and are a major long-run tool to prevent significant deterioration and to maintain air quality. The standards define best available control technology (BACT) for specific production units of the industries studied; the technical data used for determination of BACT are documented and made available with the standards. These data are useful to State agencies who are frequently engaged in dialogues with industry on the subject of control technology.

The standard setting activity for stationary sources has been largely concerned with process emissions of TSP and SO_2. A study prepared in 1975 by the Argonne National Laboratory has shown that the standard setting activity, with a limited increase in resources, can have a greater impact on long-term nationwide emissions by changing its emphasis to control of sources of substantial hydrocarbon and nitrogen oxide emissions. The use of standards of performance to control new sources of hydrocarbons is now seen as the main regulatory program for maintenance of oxidant standards. The use of standards of performance to control nitrogen oxides is similarly seen as the preferred regulatory approach rather than the widespread use of State Implementation Plans.

Fugitive emissions have also emerged as a priority target for standard setting for both new and existing sources. New programs have been initiated to delineate emission factors and control technology for this previous federally unregulated source of pollution.

Energy and Pollutant Strategies Development -- National Ambient Air Quality Standards (NAAQS) have been set for six pollutants. Although most readily available control methods have been employed nationally, many regions have not attained standards and are not expected to attain them in the time frame envisioned by the Clean Air Act. This situation requires a reassessment of control strategies. Methodologies and criteria for control strategy development for large geographical areas and for specific areas must be developed. In addition, air pollution problems related to atmospheric transformations (e.g., nitrogen dioxide and nitrates formed from nitrogen oxide emissions, photochemical oxidants from hydrocarbons and nitrogen oxides, and sulfates from sulfur dioxide) are proving to affect large-scale geographical areas, i.e., multi-State areas, far exceeding the size of Air Quality Control Regions (AQCRs). New approaches to air pollution control for areas of this magnitude are required. In other cases (e.g., sulfur dioxide or carbon monoxide-related air quality problems), refinements and improvements in well-understood techniques may be in order for optimal effectiveness of control requirements. The current situation with respect to EPA involvement in energy projects such as the Clean Fuels Policy, the oil-to-coal conversion program and other aspects of ESECA has made it apparent that the availability of energy fuels information, in a readily useable form, is necessary to conduct these activities. The gathering and interpretation of energy information, and the subsequent analysis using this information have become significant tasks in themselves.

Control strategies for noncriteria pollutants are also required by the Clean Air Act. The regulatory pathway for controlling these pollutants may be any of a series of authorities provided by the Clean Air Act, e.g., Section 111 (NSPS) or Section 112, National Emissions Standards for Hazardous Air Pollutants (NESHAP). To control a pollutant via Section 112, the Administrator must make a determination that the pollutant "may cause or contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness". Thus far, NESHAP have been applied to control mercury, asbestos and beryllium from specific sources. During 1976 vinyl chloride was added to the list of hazardous pollutants controlled under Section 112 and the standards for asbestos and mercury will be expanded to include additional sources in FY 1977. Section 111 also allows the Agency to promulgate standards for control of noncriteria pollutants from not only new sources, but from existing sources as well. Sulfuric acid mist, fluorides and total reduced sulfur compounds are noncriteria pollutants regulated by NSPS. State plans to control existing sources will be initiated in FY 1977. Several multimedia pollutants such as cadmium, chromium, arsenic and mercury are now under review to identify specific environmental damages. The health effects and environmental damage of approximately 700 high volume industrial organic substances, presumed to be prevalent in the environment, are being assessed. The need for action, if any, will be determined and the regulatory pathway will be recommended at the conclusion of each assessment.

State Programs Guidelines and Regulations Development -- The currently identified need for the revision of the State Implementation Plans and the expected additional plan revisions for the maintenance of the Standards require that the most effective control strategies be utilized by the States and localities for the control of air pollution. The identification of these control strategies and the development of the control plans by the States and localities require a sophisticated and integrated program aimed at the development and dissemination of policy, procedures, and guidelines to be utilized by States in implementing plan revision and development actions. State guidelines for control of noncriteria pollutants emitted from sources covered by New Source Performance Standards for which regulations exist under Section 111(d) of the Clean Air Act are an example of the results of the EPA work. Other examples include special studies to identify technical barriers to the achievement of the standards (e.g., fugitive emissions, urban particulate background) and the documentation (for use by States) of the findings of these studies. In addition, analytical tools will be prepared for State and local agencies to aid in control strategy reassessment and development (EPA activities supportive of States in these tasks are described under the Air Quality Strategies Implementation subactivity).

EMISSIONS STANDARDS AND TECHNOLOGY ASSESSMENT

1976 Accomplishments

1976 resources included approximately $3.0 million of contract support for studies of the synthetic organic chemicals manufacturing industry, source emissions testing, studies of evaporative hydrocarbon emissions control, industry studies (including industrial boilers, coal gasification, petroleum refineries, and iron ore benefication), and cost and economic analyses associated with emission standards. New Source Performance Standards were promulgated for primary copper, lead and zinc smelters, coal cleaning plants, phosphate fertilizer plants (five processes), electric arc furnaces in iron and steel mills and feroalloy plants. Guidelines for the control of existing phosphate fertilizer plants under Section 111(d) were proposed. During FY 1976, a shift in emphasis to the control of hydrocarbons from that of particulates and sulfur dioxide was made.

In addition, work on the following standards related areas was completed in 1976: guidelines for the control of existing sulfuric acid plants under Section 111(d), sulfur recovery in petroleum refineries, kraft pulp mills, lignite-fired steam generators, coke ovens, grain elevators, opacity for basic oxygen furnaces in iron and steel mills. Preliminary work began on the examination of 600-700 processes in the synthetic organic chemicals manufacturing industries; the study will take about three years and will involve 200-300 compounds. A review of health effects and environmental damages of 20 high volume industrial organics was completed. As a result, a closer examination of benzene is being made to assess its potential as a community air pollution problem.

1977 Program

The development of emission standards and technology assessment has been allocated $4,318,400 and 101 positions. These resources include approximately $2.2 million in contract funds for continued studies of the synthetic organic chemicals industry, and emissions measurement and industry studies in support of emission standards setting. NSPS will be proposed for coke ovens (charging); grain elevators; fuel sulfur analysis for steam generators greater than 250 million BTUs per hour; combined combustion of refuse and fossil fuels; phosphate rock preparation; chloralkali plants (mercury cells); lime plants; lignite-fired steam generators; basic oxygen furnace in steel mills; electric arc furnaces in gray iron foundries; carbon black plants; dry cleaning; natural gas and oil production; steel mill sintering machines; stationary gas turbines; and nonmetallic minerals (20 processes). Guidelines will be proposed for the control of existing primary aluminum plants under Section 111(d). The following standards will be promulgated: gasoline marketing regulations; sulfur recovery in petroleum refineries; petroleum refineries (opacity reevaluation); and guidelines for the control of existing sulfuric acid plants and phosphate fertilizer plants under Section 111(d). Test methods used to determine compliance with standards of performance will be revised to incorporate the International System of Measurement and to correct minor inadequacies. Guideline documents for the determination of reasonably available control technology for existing sources of hydrocarbons will be issued for approximately 12 source categories in the surface coating industry, including: motor vehicle and light truck assembly; coil, fabric, machinery, paper and can coating; as well as other solvent using processes in adhesives, rubber, and pharmaceutical manufacturing.

1977 Explanation of Changes from Budget Estimate

There is an increase of $262 thousand over the budget estimate for this program element. This increase is due to a reprogramming of funds in order to provide a greater emphasis on development of New Source Performance Standards. The availability of funds resulted from cost savings in the operation of the Air Pollution Technical Information Center.

1978 Plan

The FY 1978 plan for this program element includes $5,817,000 and 101 positions. This represents an increase of $1,498,600 which will provide for accelerating the setting of national emission standards for sources of vapor-phase organic substances and nitrogen oxides, and for continued work on the synthetic organic chemicals industry, including the determination of the need for possible pollutant-specific controls for any of these substances that may be toxic or carcinogenic.

Work which will be completed or initiated in this area includes promulgation of New Source Performance Standards for grain elevators; combined refuse and fossil fuel combustion; phosphate rock preparation; kraft pulp mills; coke ovens (charging); lignite-fired steam generators; lime plants; chloralkali plants (mercury cells); and coal gasification. In addition, NSPS will be proposed for stationary internal combustion engines; guidelines for the control of existing kraft pulp mills under Section 111(d); coke ovens (pushing); solvent degreasing; asphalt roofing manufacturing plants; lead acid storage battery manufacturing; revisions to the standard for steam generators greater than 250 million BTU per hour heat input; petroleum refineries (11 processes); petroleum storage (two processes); petroleum transfer operations (three processes); and solvent end use applications (12 processes). Guidelines for the determination of reasonably available control technology will be prepared in conjunction with State Implementation Plan revisions. National Emission Standards for Hazardous Air Pollutants will be promulgated for asbestos from iron ore benefication plants.

ENERGY AND POLLUTANT STRATEGIES DEVELOPMENT

1976 Accomplishments

1976 resources included approximately $0.9 million for contract support for pollutant screening and control strategy evaluations, and economic analyses of control strategies and control plans.

An assessment of arsenic was made indicating that arsenic is not a widespread urban air pollution problem but may pose a community exposure problem around nonferrous ore smelters. Additional health and control technology studies for arsenic are underway. If warranted, regulatory steps may be taken at the completion of these studies. Many requirements of the Energy Supply and Environmental Coordination Act (ESECA) were completed. ESECA, however, was extended by the Energy Policy and Conservation Act (EPCA), continuing the overall planning and guidance program aimed at environmentally sound conversions to coal of major fuel burning installations, both utility and industrial. A report prepared in late calendar year 1975 indicated that the impact of gas curtailments and the burning of alternate fuels (especially coal) may signicantly effect air quality. The use of replacement fuels would result in an increase in both SO_2 and TSP emissions, with the increase in emissions occuring in areas already impacted by high air pollution levels. The Energy Data System (EDS) was developed as a tool for assessing air quality and energy impacts of environmental legislation. The system will store nationwide summaries of air quality data relating to fuel consumption and atmospheric emissions from power plants and large industrial fuel burners. The Agency's policy on atmospheric sulfates was developed and published.

1977 Program

The work on energy and pollutant strategies has been allocated $2,137,700 and 32 positions. These resources include an estimated $0.9 million in contract funds for pollutant and control strategy evaluations, energy related analyses, and economic assessments related to control strategy assessments. The program for a preliminary screening of some 700 organic chemicals as potential air contaminants is to be continued. Those chemicals determined to be of special concern will be further assessed to establish the need for regulatory action. A similar program is planned for inorganic materials with emphasis on toxic metals. An assessment of the need for a short-term ambient air quality standard for NO_2 is to be completed early in the fiscal year. Significant changes resulting from a review of the criteria documents will be reflected in the air quality standards and the strategies used for attainment and maintenance. A National Ambient Air Quality Standard for lead will be promulgated. Energy strategy studies are related to energy conversion, natural gas curtailment, supply and demand analyses, energy data base development and application, and studies regarding trends in energy/environmental problems. The program also includes the assessment of the environmental impact of power plant and industrial coal conversion. This involves (1) the technical feasibility, the time required for modification and the associated costs to convert or reconvert gas and/or oil fired power plants to coal and (2) the technical feasibility and the associated costs to retrofit these and other selected coal fired power plants with flue gas desulfurization systems. The results from these individual plant investigations will be used in both analysis and implementation of sulfur oxide control strategies and also to develop EPA strategies for the short and long-term reconversion of power plants from natural gas and fuel oil to coal.

1977 Explanation of Changes from Budget Estimate

An increase of $219,500 over the budget estimate for this program element is due to a reprogramming of funds in order to provide for more pollutant analyses. The availability of funds resulted from cost savings in the operations of the Air Pollution Technical Information Center.

1978 Plan

The FY 1978 plan for this program element includes $2,138,000 and 32 positions, representing no changes in resources in this program element from the 1977 level. Contract funds in FY 1978 approximate $0.9 million. It is anticipated that assessments will be completed for at least three potential pollutants and control strategies recommended. Work will continue on the screening of organic and inorganic chemicals. The strategy for attainment and maintenance of the suspended particulate standard will be completed with a view toward developing an Agency policy on fine particulates. Analyses will continue to be made of the impact on air quality of the various energy policies and the energy demands of air pollution regulatory action.

STATE PROGRAMS GUIDELINES AND REGULATIONS DEVELOPMENT

1976 Accomplishments

1976 resources included approximately $0.3 million of contract support for the development of guidance on the control of fugitive particulate emissions, and the control of nitrogen oxides.

Guidance on the implementation of EPA's tall stacks policy and Supplemental Control Systems (SCS) was issued to the States and regional offices; guidance on the development of revised control strategies for nitrogen oxides was prepared; policy and guidelines for implementation of ESECA's coal conversion-related requirements were issued (i.e., on regional limitation determinations, primary standard conditions specification, and significant risk); and the policy for the review and control of new sources seeking to locate in areas exceeding the standards was developed.

1977 Program

The development of State programs guidelines and regulations has been allocated $2,774,800 and 66 positions. These resources include an estimated $1.6 million in contract funds for the development of guidance on complex aspects of air pollution control. Work will concentrate on guidance for the control of particulate and hydrocarbon emission. Guidance will be developed on the effectiveness of fugitive dust controls; development of revised control strategies for particulates and photochemical oxidants; techniques for the management of other particulate air pollution problems; air quality improvements achievable through energy conservation; fine particulates control; development of a State and local hydrocarbon control program; the spatial and temporal distribution of pollutants and their reaction products; and methodologies to relate emissions to air quality. In addition, abatement and control strategies will be analyzed in order to determine technical inadequacies causing nonachievement of the ambient air quality standards; pollution source categories for which knowledge of the emission characteriestics is limited will be identified and emissions quantified; improved emission inventory techniques as well as documents to guide State and local inventory activities will be developed and will be developed additional emission factors for natural sources of hydrocarbon and other oxidant precursors.

1977 Explanation of Changes from Budget Estimate

An increase of $690,900 over the budget estimate for this program element is due to reprogramming aimed at consolidating into one program element activities related to developing an improved technical basis for air quality management which were being carried out under various program elements. These funds were transferred chiefly from the trends monitoring and progress assessment area within the air program.

1978 Plan

The FY 1978 plan for this program element include $3,175,000 and 66 positions. This represents an increase of $0.4 million which will provide for improvements in air quality management methods and techniques, particularly to aid control agencies in determining reasonably available control technology and to develop information on the techniques available to control the more complex aspects of air pollution, such as photochemical oxidants and fugitive dust. Contract funds in FY 1978 approximate $1.6 million.

Projects will be aimed at identifying barriers to the achievement of the ambient air quality standards and the studies and analyses for removing these barriers and improving the technical basis for the air quality management approach to air pollution. Such projects will include studies of long-range oxidant transport, sulfur dioxide to sulfate relationships, short-term to annual NO_2 relationships, fugitive dust and fugitive emissions, analysis to determine the reason for failures to meet TSP standards, HC reactivity evaluation and the impact of Federal auto standards on attainment of air quality standards.

AIR

Abatement and Control

Mobile Sources Standards and Guidelines

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Mobile Source Standards and Guidelines.....	$5,261	$4,320	$4,639	$4,520	-$119
Total.....	5,261	4,320	4,639	4,520	-119
Permanent Positions					
Mobile Source Standards and Guidelines.....	54	60	54	49	-5
Total.....	54	60	54	49	-5

Budget Request

The resources requested for this budget subactivity are $4,519,500 and 49 positions. This reflects a decrease of $119,000 and five positions from the FY 1977 appropriation.

Program Description

This subactivity includes the development of emission standards for mobile sources of air pollution (i.e., passenger motor vehicles, heavy-duty and light-duty trucks, motorcycles, and aircraft) and associated technical activities, such as technology assessments and emissions characterization. The control of all significant classes of motor vehicles is necessary if the National Ambient Air Quality Standards for carbon monoxide, photochemical oxidants, and nitrogen dioxide are to be attained and maintained in many areas of the Nation.

The development of standards for mobile sources involves a characterization and analysis process. First, air pollutant emissions from representative individual vehicles are determined. Follow-up work involves the characterization of the use of these vehicles and the characterization of emissions on the basis of vehicle samples representative of actual in-use vehicle populations. At this stage, the development of appropriate emissions sampling and testing procedures may have to be carried out. After the initiation of a regulatory action, further definition of issues raised during the regulatory process may be required. After a regulatory action has been completed, the reassessment of control requirements or procedures may be indicated; such reassessments may involve a process similar to that of new regulatory actions. An essential part of the reassessment process is the continuous assessment of new or improved technologies for potential changes in the nature and magnitude of air pollutant emissions and other related factors, e.g., fuel economy.

The various categories of mobile sources are at different stages of this generalized process for development of emission controls. Initial control actions for light-duty motor vehicles (automobiles) were taken in the past, with future actions related to this class of motor vehicles revolving around the statutory standards set by the Congress (under amendments to the Clean Air Act) and the associated administrative actions, such as the extension of the time by which the standards are to be applied or the assessment of the energy impacts of the standards set. The emissions standards for this class of vehicles will require future technology assessments to determine if changes in the standards are warranted by changing technology. The assessment of emissions of currently unregulated pollutants from automobiles may also be required due to changes in the technology used by manufacturers to meet emission standards which may result in emissions of toxic substances (e.g., sulfuric acid emissions from catalysts or hydrogen cyanide emissions from a specific type of catalyst). The results of the assessments may indicate the need for changes in the standards or additional regulatory action for preventing the emissions of substances that may turn out to present a health risk.

The controls for other motor vehicles are at the initial stages of implementation or are just reaching the levels of stringency comparable to the controls required of automobiles. As the emission standards are imposed on additional classes of motor vehicles and as the stringency of these standards increases, it is likely that the reassessments of the emissions standards as well as of the control technology used by the manufacturers (in terms of its energy as well as nonregulated pollutant impacts) will be required, in a fashion similar to the process experienced with automobiles. Therefore, it is expected that work of increasing complexity, involving additional classes of motor vehicles will have to be carried out for the foreseeable future.

MOBILE SOURCE STANDARDS AND GUIDELINES

1976 Accomplishments

1976 resources were allocated to the development and refinement of emissions standards for other than light-duty motor vehicles and to the assessment of the impacts on light-duty vehicles of the emissions standards already set; the assessment of the feasibility and energy impacts of the various proposals for emissions standards being considered by the Congress as amendments to the Clean Air Act; and the development of the regulations for implementation of the fuel economy testing and labeling responsibilities imposed on EPA by the Energy Policy and Conservation Act (EPCA). The level of resources included $1.4 million in contract funds. Contract funds supported work on the effects of ambient conditions on motor vehicle emissions levels; development of emissions standards for heavy-duty vehicles; assessment of the impact on emissions of a variety of control technologies; characterization of sulfuric acid emissions; and determination of operational characteristics of vehicles that lead to the formation of carbon monoxide "hot spots".

The motor vehicle emissions control technology assessment program was a major project for FY 1976. Sulfate and sulfuric acid emissions assessments constituted a significant element of this work. Work on this subject should continue through the next few years. Work has begun on: characterization of sulfuric acid emissions from a representative in-use vehicle population, and from heavy-and light-duty diesel engines; assessment of the impact on sulfuric acid emissions of catalyst modifications and control of oxygen in the catalyst; and assessments of catalysts with low sulfuric acid emission testing, and a protocol for manufacturers to use in generating data on sulfuric acid emissions from vehicles tested during the certification process.

Standard setting activity for FY 1976 included the promulgation of SST aircraft emission standards and a revised evaporative emission standard (based on a revised test) for light-duty vehicles as well as extensive work on exhaust emission standards for motorcycles and light-and heavy-duty trucks. Work on the development of an emission test for implementation of the warranty provisions of Section 207(b) of the Clean Air Act has reached a stage where regulation proposal should come in early 1977.

Work on fuel economy standards and labeling-related matters, also a major activity required by EPCA, resulted in regulatory requirements. The 1976 fuel economy labeling and fuel economy compliance regulations were promulgated, being applicable to the 1977 and 1978 model years, respectively. Work on fuel economy compliance and fuel economy retrofit regulations was also carried out.

1977 Program

The FY 1977 resource level for this program element is $4,639,500 and 54 positions. These resources will be directed at the setting of emissions standards and the assessment of the need for the control of additional sources of unregulated pollutants. These resources include approximately $3.1 million in contracts related to technology assessment, emissions characterization, emissions standards and associated procedures development, and technical support for State and local in-use vehicle emissions control programs. Work will concentrate on assessing manufacturer efforts towards meeting statutory standards as a continuation of the FY 1976 work. Special attention is being placed on the impact that evolving technologies have on the emissions of uncontrolled substances and the fuel economy of motor vehicles. Regulations will be promulgated for more stringent emissions controls for light-duty and for heavy-duty trucks. Work will continue on characterization of emissions from diesel engines, and unregulated emissions from catalysts (other than sulfuric acid and sulfates). The special effects of ambient temperatures on emissions will be assessed since evidence available to date indicates that normal variations in temperature result in large changes in motor vehicle emissions, a factor that is not accounted for by the current emission standards.

1977 Explanation of Changes from Budget Estimate

An increase of $318,900 over the budget estimate for this program element is due to the funding of a contract on assessment of the certification program from this element rather than from mobile source certification and testing. The difference is also due to increased contract effort to investigate high in-use emission levels.

1978 Plan

The FY 1978 plan for this program element includes $4,519,500 and 49 positions. This represents a decrease of $119,000 and five positions. This decrease will result in a reduced effort in emission characterization and regulations development. Contract funds in FY 1978 approximate $3.3 million for technology assessments, characterization of unregulated pollutants, development of emission control regulations, and support of State and local in-use vehicle control programs.

Characterization of unregulated pollutants for current and, more importantly, future control technologies must be implemented if EPA is to be aware of the types and quantities of pollutants which can be expected to result from the introduction of new technologies. In the vehicle emissions control area, a report on gaseous and particulate emissions from light-duty diesel fuels, as well as recommendations for their control, will be prepared.

Conduct of the sulfuric acid test program will continue through FY 1978 including a report on sulfuric acid control system durability and a report on gaseous and particulate emissions from light-duty diesel fuels. The results of these studies may indicate the need for setting emissions standards for pollutants not currently controlled.

In addition, the various fuel economy emissions standards are to be updated; a report on the characterization of emissions from malfunctioning catalyst-equipped vehicles is to be issued; the promulgation of 1983 aircraft retrofit regulations is to be completed; and the data on emissions reductions achievable by in-use vehicle inspection and maintenance programs will be updated.

AIR

Abatement and Control

State Programs Resource Assistance

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Control Agency Resource Supplementation.....	$32,334	$51,550	$55,550	$58,000 ~~$55,000~~	+2,450 ~~$52,550~~
Training.....	1,559	4	1,896	1,526	-370
Total.....	33,893	51,554	57,446	59,526 ~~4,326~~	+2080 ~~52,320~~
Permanent Positions					
Control Agency Resource Supplementation.....	...	...	...	...	...
Training.....	18	15	15	8	-7
Total.....	18	15	15	8	-7

Budget Request

The resources requested for this budget subactivity are $59,526,000 ~~$4,326,000~~ and eight positions. This reflects ~~a reduction of $52,320,000~~ and seven positions, primarily for the ~~transfer of~~ control agency grant funds ~~to the consolidated grant media.~~

Program Description

This activity includes the resources and assistance provided to support State and local governments' activities in implementing air pollution control programs. Support is provided as grants to control agencies, grants for demonstrating improvements in agency operations, services of contractors, assignment of personnel to State agencies, and training and technical information services provided to personnel of State and local agencies. For FY 1978, support of control agencies will be provided under the Consolidated Grants program.

A major task for control agencies in FY 1977 will be the development of revised SIPs in those AQCRs and interstate portions where the current SIP has been determined to be substantially inadequate. It is currently expected that there will be some 72 revisions for particulates. Ten revisions for sulfur dioxide, 40 for carbon monoxide, as many as 122 for oxidants, and one for nitrogen dioxide. This will be a major workload and will involve the agencies in special studies for specific pollutants, analysis of air quality data, increased emphasis on emission data, development of emission limitations, other regulation development, and increased source inspection frequency. States are required to adopt all revisions of emission limits involving reasonably available control technology by July 1, 1977. Other measures (e.g., control of transportation sources) must be adopted by July 1, 1978. In addition, the State and local agencies will have to place added emphasis on new source review programs if the standards are to be attained and maintained in the future.

(Revised 2/24/77)

AIR

Abatement and Control

State Programs Resource Assistance

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Control Agency Resource Supplementation.....	$32,334	$51,550	$55,550	$3,000	-$52,550
Training.....	1,559	4	1,896	1,526	-370
Total.....	33,893	51,554	57,446	4,526	-52,920
Permanent Positions					
Control Agency Resource Supplementation.....	...	...	...	...	...
Training.....	18	15	15	8	-7
Total.....	18	15	15	8	-7

Budget Request

The resources requested for this budget subactivity are $4,526,000 and eight positions. This reflects a reduction of $52,920,000 and seven positions, primarily for the transfer of control agency grant funds to the consolidated grant media.

Program Description

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Grants to State and local control agencies having a major role in carrying out State Implementation Plans have constituted the major form of EPA assistance. These funds support the full range of activities required of a control agency including ambient air quality monitoring, control plan development (including control regulations), source surveillance, enforcement actions against violators, and technical and administrative support functions. Grants assistance is supplemented by the provision of services of contractors for specific tasks identified by the States, localities or EPA as required for carrying out or revising the State Implementation Plan. Examples of this type of support are emission inventory development, dispersion modeling, source inspections, air quality monitoring, and control strategy development.

Resource assistance is further supplemented by the provision of training in specialized areas of air pollution control. Since July 1, 1976, the EPA Air Pollution Training Institute at Research Triangle Park, North Carolina, has been operated by contract with Northrop Services, Inc. The contractor is developing new courses, revising and updating instructional manuals and materials and conducting all laboratory courses at Research Triangle Park as well as supplying manuals and instructional materials for university field centers. A small EPA staff monitors the contract, maintains liaison with regional offices and State and local agencies, assesses changing training requirements, and ensures that those requirements are fulfilled. The EPA staff also works with regional university centers to develop State and local selfsufficiency in training by offering field courses closer to the agencies. Eventually as many as six to eight centers may be used.

CONTROL AGENCY RESOURCE SUPPLEMENTATION

1976 Accomplishments

1976 funds included approximately $3.0 million in contractor assistance in the areas of control strategy reassessment and revision; emission inventory improvement; air quality and source monitoring; and improvements in control agency technical procedures. The balance of funds were utilized to provide grant support to State and local agencies for air pollution control programs. A major accomplishment of State and local agencies in FY 1976 was the determination of the attainment status of all AQCRs. This work was done in connection with EPA's regional offices and involved detailed air quality and compliance analyses. This effort laid the groundwork for a program to develop revised SIPs and further enforcement in nonattainment areas. These areas will all require further study and a case-by-case determination of the appropriate mix of future control actions, i.e., SIP revisions and/or further compliance work. Ongoing compliance and enforcement work by State and local agencies has led to progress in reducing emissions. These agencies, together with EPA, have identified 22,000 Class A sources (sources capable of emitting over 100 tons of pollutant each year). By December 1975, some 87 percent of these sources were in final compliance or on a firm schedule leading to final compliance.

1977 Program

Control agency resource supplementation has been allocated $55,550,000. These funds include approximately $3 million for contractor assistance in the areas of control strategy reassessment and revision and other technical air pollution control work. The remaining $52.5 million are allocated for grant support of State and local air pollution control programs. States will have to (in addition to carrying out monitoring and enforcement programs) develop SIP revisions; continue priority work on programs associated with reviews of new and/or modified sources, new source performance standards, national emissions standards for hazardous air pollution sources; and proceed with compliance work in the nonattainment AQCRs.

State and local control efforts to date have been concentrated on obtaining compliance with particulate and SO_2 regulations at an estimated 22,000 Class A sources across the country. By the end of FY 1976, excellent results had been achieved--84 percent of Class A sources were complying with final emission limitations; an additional six percent were meeting increments in compliance schedules. The remaining 10 percent of Class A sources

still in violation are for the most part powerful and recalcitrant industries that will continue to require extensive resources to collect evidence, negotiate agreements and/or mount effective court actions if they are to be brought into compliance. Since compliance by these large volume polluters is known to be a major factor in both attaining and maintaining the primary NAAQS, States and localities will have to continue to concentrate on Class A violators. In addition, the control agencies will have to place more emphasis on compliance by Class B sources, particularly those in nonattainment areas. It is estimated that about 130,000 Class B sources exist in nonattainment areas.

1977 Explanation of Changes from Budget Estimate

The increase of $4 million over the budget estimate for this program element is due to a congressional add-on to the budget request.

1978 Plan

A total of $58.0 million is requested in 1978 for providing grants and contractor assistance to State and local air pollution control agencies.

Control agency resource supplementation will support the continued development of SIP revisions by State and local agencies; whereas in FY 1977 emphasis is on developing emission limitations, in FY 1978 the emphasis will be on other measures, such as control of transportation sources. This will present the agencies with problems of developing increasingly complex plans constrained by energy tradeoffs, extensive social and economic impacts, long-range transport of air pollutants, and other similarly complex issues. This will also involve the development of control strategies for nontraditional sources, such as industrial fugitive emissions and reentrainment of dust in urban environments. The compliance and enforcement priorities of the control agencies will continue to include compliance by the problem Class A sources and by Class B sources. A new factor will be added in FY 1978 as the agencies begin to seek compliance with emission limitations developed in FY 1977 as part of the SIP revision process.

TRAINING

1976 Accomplishments

Contract funds provided for operation of the training institute (beginning in July 1976) and course development work. Grants supported nine graduate training grants producing a total of 72 trainees, 70 full time equivalent fellowships and two speciality programs, i.e., the Environmental Management Institute and the Automotive Emission Control Training Program at Colorado State University. During FY 1976, two workshops were conducted by Colorado State University. The purpose of these programs was to provide training in auto emission control systems to some 40 master instructors who will return to their communities and train other instructors and practicing mechanics. The Air Pollution Training Institute conducted 66 courses, providing 1,442 students a total of 5,271 man-days of training. Fifty percent of the students were employees of State and local governments, 32 percent were EPA employees, and the remainder were from other Federal agencies, private industry, universities and foreign governments.

1977 Program

Training activities are allocated $1,896,000 and 15 positions. These resources include an estimated $1.5 million in grant and contract funds for the air pollution training program. Contract funds provide for continued operation of the training institute, short-term training courses given in the field by universities and course development work. Grant funds will support graduate and specialized training at academic institutions through university grants, fellowships and special projects. Short-term technical training will be provided to 1,470 students, totaling 6,000 man-days of training, in 63 courses. Fellowships will be provided to approximately 125 employees of State and local air pollution control agencies. University grants will be provided to an estimated seven institutions and two special projects will be funded.

still in violation are for the most part powerful and recalcitrant industries that will continue to require extensive resources to collect evidence, negotiate agreements and/or mount effective court actions if they are to be brought into compliance. Since compliance by these large volume polluters is known to be a major factor in both attaining and maintaining the primary NAAQS, States and localities will have to continue to concentrate on Class A violators. In addition, the control agencies will have to place more emphasis on compliance by Class B sources, particularly those in nonattainment areas. It is estimated that about 130,000 Class B sources exist in nonattainment areas.

1977 Explanation of Changes from Budget Estimate

The increase of $4 million over the budget estimate for this program element is due to a congressional add-on to the budget request.

1978 Plan

A total of $3 million is requested in 1978 for this program element for contractor assistance to State and local agencies to continue control strategy reassessment and revision, and other technical air pollutant control work.

Control agency resource supplementation will be provided under the Consolidated Grants program. These grant funds will support the continued development of SIP revisions by State and local agencies; whereas in FY 1977 emphasis is on developing emission limitations, in FY 1978 the emphasis will be on other measures, such as control of transportation sources. This will present the agencies with problems of developing increasingly complex plans constrained by energy tradeoffs, extensive social and economic impacts, long-range transport of air pollutants, and other similarly complex issues. This will also involve the development of control strategies for nontraditional sources, such as industrial fugitive emissions and reentrainment of dust in urban environments. The compliance and enforcement priorities of the control agencies will continue to include compliance by the problem Class A sources and by Class B sources. A new factor will be added in FY 1978 as the agencies begin to seek compliance with emission limitations developed in FY 1977 as part of the SIP revision process.

TRAINING

1976 Accomplishments

Contract funds provided for operation of the training institute (beginning in July 1976) and course development work. Grants supported nine graduate training grants producing a total of 72 trainees, 70 full time equivalent fellowships and two speciality programs, i.e., the Environmental Management Institute and the Automotive Emission Control Training Program at Colorado State University. During FY 1976, two workshops were conducted by Colorado State University. The purpose of these programs was to provide training in auto emission control systems to some 40 master instructors who will return to their communities and train other instructors and practicing mechanics. The Air Pollution Training Institute conducted 68 courses, providing 1,442 students a total of 5,271 man-days of training. Fifty percent of the students were employees of State and local governments, 32 percent were EPA employees, and the remainder were from other Federal agencies, private industry, universities and foreign governments.

1977 Program

Training activities are allocated $1,896,000 and 15 positions. These resources include an estimated $1.5 million in grant and contract funds for the air pollution training program. Contract funds provide for continued operation of the training institute, short-term training courses given in the field by universities and course development work. Grant funds will support graduate and specialized training at academic institutions through university grants, fellowships and special projects. Short-term technical training will be provided to 1,470 students, totaling 6,000 man-days of training, in 63 courses. Fellowships will be provided to approximately 125 employees of State and local air pollution control agencies. University grants will be provided to an estimated seven institutions and two special projects will be funded.

1977 Explanation of Changes from Budget Estimate

The increase of $1,892,000 over the budget estimate for this program element is a result of two actions. First, the Congress added on $4 million to our budget request for academic training. The allocation to the air program, of the $4 million, is $1,770,000. Second, the regional offices were increased $122,000 when applying the budget to actual operating conditions to support the positions allocated them in 1977.

1978 Plan

The FY 1978 plan for this program element includes $1,526,000 and eight positions. This represents a decrease of $370,000 and seven positions which will substantially reduce the identification of manpower needs by air pollution control agencies and workshops on national issues. Courses will be updated less frequently and the monitoring of training contracts will be significantly reduced. The resources will provide, however, for a continuation of direct training activities through contracts. Training will be provided to an estimated 1,900 students, totaling 7,500 man-days of training, in 80 courses. There are no funds requested for university grants, fellowships, or special projects.

AIR

Abatement and Control

Air Quality Strategies Implementation

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
	(dollars in thousands)				
Appropriation					
Federal Activities/EIS Review.....	$733	$677	$741	$741	...
Air Quality Management Implementation.....	4,654	4,999	4,831	3,979	-$852
Total.....	5,387	5,676	5,572	4,720	-852
Permanent Positions					
Federal Activities/EIS Reviews.....	40	38	34	34	...
Air Quality Management Implementation.....	194	212	207	201	-6
Total.....	234	250	241	235	-6

Budget Request

The resources requested for this budget subactivity are $4,720,000 and 235 positions. This reflects a decrease of six positions and $851,800 from the FY 1977 level.

Program Description

This subactivity includes the development of control strategies for areas of the country where States do not carry out their responsibilities; the incorporation of these control strategies into appropriate regulatory actions; the interaction with State and local governments in implementing air pollution control programs; evaluation of State and local control agencies and consultation with State and local control agencies on specific air pollution control problems; and management of State and local support resources and their allocation. It also involves EPA responsibilities in monitoring Federal facilities' air pollution control activities, in providing advice to other Federal agencies in their air pollution control activities, and reviewing the Environmental Impact Statements (EIS) prepared by other Federal agencies insofar as air pollution impacts are concerned.

Air Quality Management Implementation

High levels of activity are foreseen in the area of State Implementation Plan (SIP) reassessments, development, and execution. Many of these plans have proven to be inadequate for the attainment and maintenance of the NAAQS thus requiring redevelopment and additional implementation. During FY 1976, all State Implementation Plans were evaluated relative to their ability to attain and maintain the NAAQS. As a result of these evaluations, plan revisions have been requested in 45 States. EPA personnel will have to participate in the development of such plans and, in some cases, do the planning and execution of the plans.

Implementation plans requiring emission limitations representative of achievable control technology (as needed) must be developed by July 1, 1977, with subsequent implementation of those plans beginning in FY 1978. Implementation plans requiring other measures (generally referring to the control of transportation sources and land use measures) necessary for attainment must be developed during FY 1977 and FY 1978 with implementation beginning in FY 1979. Implementation of additional controls, e.g., NESHAPS, will require increased EPA activity.

Very complex control strategies will have to be developed and implemented for the control of particulates and those pollutants that are produced in atmospheric reactions, such as photochemical oxidants, and nitrogen dioxide. These pollutants are characterized by originating from many sources spread over wide geographical areas and by the transport, over large distances, of the air pollutant precursors, e.g., hydrocarbons and nitrogen oxides. In order to progress toward attainment of the suspended particulate standards, control plans will be developed and implemented that control fugitive emissions from various processes and control fugitive dust generated by man's activities, such as unpaved roads and construction. Such controls were not emphasized during earlier control efforts. In order to progress toward the attainment of the oxidant standards, control plans will be developed and implemented that require stationary source hydrocarbon controls over entire megalopolises of the east coast, midwest, and far west. Additional transportation control measures will also be required. The particulate and hydrocarbon controls to be implemented will require greater emphasis on public participation in their development. General public support will be required to make the control programs effective.

A particularly critical program will be that of reviewing new sources of pollution to assure that they will not cause air quality to deteriorate in areas already attaining the NAAQS or that they will not delay attainment (or aggravate current problems) in areas that have not yet attained the NAAQS. This will, in some cases, necessitate the use of best available emission control technology, selective source siting, and emission trade-offs. Such sophisticated siting and review analysis of new sources will require increased EPA and State activity.

Federal Activities/EIS Review

Also included are EPA activities related to the process of assuring Federal agency compliance with pollution control requirements and the review of Environmental Impact Statements (EIS). All Federal agencies are, under Executive Order 11752, to ensure that their facilities comply with Federal, State, interstate, and local substantive standards and limitations for the prevention and control of environmental pollution. EPA activities in relation to other Federal agencies include providing technical advice and assistance in air pollution control, monitoring their programs for achieving air quality standards, and reviewing compliance strategies. Activities also include the review, for air quality impact, of EIS's prepared by the other Federal agencies pursuant to the National Environmental Policy Act (NEPA). Equivalent reviews are carried out pursuant to Section 309 of the Clean Air Act.

FEDERAL ACTIVITIES/EIS REVIEW

1976 Accomplishments

In Federal facilities, the emphasis was on assuring compliance with State Implementation Plan requirements. The number of major Federal point sources in compliance with SIP requirements increased from 118 to 246. Only 82 major point sources remained out of compliance with SIP requirements and, of this number, 41 were under a consent declaration. The number of major Federal point sources in unknown compliance status declined from 208 to 59.

A total of 1,002 draft and 992 final EIS's, as well as 104 proposed Federal agency regulations and other proposed Federal actions, were reviewed for air quality impact. Emphasis was placed on predraft EIS liaison with other Federal agencies and on the timely completion of reviews and issuance of comments on draft EIS's. The fuel crisis accelerated energy proposals involving new source air emissions and shifts by power plants from burning oil and gas to coal, thus increasing EPA's EIS review. The Agency continued to achieve a high level of satisfactory modifications to those proposed Federal actions which had been rated as environmentally unsatisfactory or for which EPA had reservations concerning the potential environmental impact at the draft EIS stage.

1977 Program

Federal activities and Environmental Impact Statements review is allocated $741,100 and 34 positions under the FY 1977 program. In Federal facilities compliance, primary emphasis will be placed on effecting consent declarations for those sources known to be in violation of SIP requirements. In addition, the level of on-site inspection effort will be increased to ensure adherence to consent declarations by Federal facilities currently in violation with SIP standards, and to determine the compliance status of non-registered sources. Technical guidelines on air emissions selfmonitoring for Federal facilities will be issued.

No significant change in the overall level of EIS review activity from the previous year is expected. However, proposals for transporting, storing, and refining Alaskan oil and for construction of deep water ports will require unusually detailed EIS review. General program emphasis will be on pre-EIS liaison and on maintaining effective follow-up of those proposed Federal actions rated as environmentally unsatisfactory or causing significant environmental reservations at the draft EIS stage. EIS review guidelines on airport projects will be completed and issued.

1977 Explanation of Changes from Budget Estimate

The increase of $64,000 over the budget estimate is a result of two factors. The regional offices, when applying the budget to actual operating conditions in 1977, decreased this area in the amount of -$36,000; the funds were utilized in the trends monitoring and progress assessment area within the air program. Offsetting this decrease was a transfer of $100,000 from the program management media for increased support in Region V, Chicago.

1978 Plan

Federal activities and Environmental Impact Statements review will be allocated $741,100 and 34 positions in the FY 1978 plan, the same level as in 1977.

In Federal facilities compliance, primary emphasis will be on ensuring adherence to consent declarations by noncomplying facilities. Increased efforts will be directed toward improving the effectiveness and timeliness of air new source reviews and coordination with EIS review process.

No significant change in the level of EIS review activity from the current year is anticipated. The major emphasis will be on increased EPA assistance to other Federal agencies to integrate more effectively environmental planning with basic programmatic decision making processes on major energy, transportation, and other development projects that might otherwise cause severe air pollution or other environmental harm. Revised EIS review guidelines on highway projects will be issued.

AIR QUALITY MANAGEMENT IMPLEMENTATION

1976 Accomplishments

The main accomplishment during FY 1976 was the issuance of calls for SIP revisions, resulting from a finding that many plans were substantially inadequate to attain the standards. This finding was reached at the conclusion of a year long evaluation, and led to notification to the governors 45 States that SIP revisions were necessary in order to attain and/or maintain the NAAQS. Revisions are required for particulate matter in 31 States, sulfur dioxide in 12 States, carbon monoxide in 22 States, photochemical oxidants in 29 States, and nitrogen dioxide in three States.

In addition, in order to implement the prevention of significant deterioration of air quality policy, continuing reviews were made by EPA of potential new sources of pollution; a complex control strategy for the attainment and maintenance of the sulfur dioxide standards in the State of Ohio was promulgated; the Agency began implementing its policy concerning the use of supplementary control systems and tall stacks and on the issuance of variances (policies which may require SIP revisions); the impact of FEA issued prohibition orders (issued under the provisions of ESECA) on air quality were assessed; air pollution control agencies receiving grants assistance were evaluated as to their ability to carry out air pollution control tasks in areas such as monitoring, laboratory and engineering services, and enforcement, with commitments for the performance of high-priority program outputs obtained from these agencies; and significant progress was made in obtaining State commitments to the enforcement of New Source Performance Standards (25 States) and National Emission Standards for Hazardous Air Pollutants (18 States), with an additional 17 States in various stages of the delegation process by the end of the year.

1977 Program

The implementation of air quality management strategies has been allocated $4,830,700 and 207 positions. These resources include essentially no contract funds. Work during FY 1977 will concentrate on the development of State Implementation Plan revisions for the areas that were issued calls for plan revisions; the assessment of the plans for other areas where the attainment of the standards is in doubt or the adequacy of the State Implementation Plan is questionable; and the continued work related to the delegation of responsibilities to States and new source reviews where this responsibility resides with EPA.

The SIP revisions will require complex analyses and technical judgements to be made by the State, local, and EPA personnel, the coordination of many sources of expertise, meetings with the affected industries to determine the extent of the control capabilities and impacts (both economic and technical) of the contemplated control requirements, and public hearings on the proposed revisions to the SIP's. In addition, implementation actions and defense of EPA's requirements will have to continue for those controls that require implementation during FY 1977, e.g., the promulgated controls for sulfur dioxide in Ohio.

The requirements of ESECA (as extended by the Energy Policy and Conservation Act (EPCA)) will continue to require EPA review of the air quality impact of the prohibition orders issued by FEA. It is expected that approximately 170 utility units and an additional 560 major fuel burning installations will be affected by such orders during FY 1977. All of these potential conversions to the use of coal require EPA review and determinations, based on the constraints established by ESECA, prior to the prohibition orders becoming effective.

Work related to the evaluation of control agencies will continue; commitments from States to the performance of air pollution control tasks will be obtained. Delegations of the enforcement of the New Source Performance Standards and the National Emissions Standards for Hazardous Air Pollutants are expected to bring the total number of States to which enforcement of these standards has been delegated to 40 and 34 respectively.

1977 Explanation of Changes from Budget Estimate

The net decrease of $168,700 from the budget estimate results from the application of the budget to actual operating conditions. The transfers were applied within the air program.

1978 Plan

The FY 1978 plan includes $3,978,900 and 201 positions for the implementation of air quality management strategies. This represents a reduction of $851,800 and six positions. This level of resources includes essentially no funds for contracts. It is expected that the work during FY 1978 will represent a continuation of the development and adoption, by States, of the air pollution control plans required for attainment of the standards in the areas that have deficient State Implementation Plans. The six position decrease reflects a reduced effort by the regions in assisting States in the development of revised plans. Current plans envision the adoption of all control measures requisite for the attainment of standards by the end of FY 1978, with implementation of these measures during the 1979 to 1981 period. The FY 1978 program would concentrate on final development of the revised State control plans and the initiation of the process for adoption, by the sources, of the requisite controls. It is expected that significant workloads will be presented to the States, localities, and EPA in the development of the source-specific control requirements that will have to be developed pursuant to the adoption of control plans by the States.

Although it is expected that the States will make substantial progress in the adoption of control measures for the attainment of standards, it is clear that all reasonable control measures will not lead to the attainment of the standards in many areas of the Nation. Far reaching controls will have to be developed for these areas. It is expected that the development of these additional, complex, control plans and requirements will have been initiated during FY 1978. EPA regional offices will have to participate in the development of these plans, providing assistance to the States and localities, identifying areas that require the development of additional analytical procedures, and implementing the provisions of the expected amendments to the Clean Air Act, expecially those amendments that relate to the extension of the dates by which standards are to be attained. All of these actions will have to be accompanied by complex analyses of control requirements, control capabilities, and the reasonableness of the application of specific control requirements under the unique circumstances applicable to various sources and localities.

In addition, the activities related to the evaluation of State and local control programs will continue; commitments from States to the performance of air pollution control tasks will be obtained. Delegations of the enforcement of the New Source Performance Standards and the National Emissions Standards for Hazardous Air Pollutants are expected to be made for a total of 43 and 40 States, respectively.

AIR

Abatement and Control

Mobile Source Certification and Testing

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Certification Review.....	$1,243	$1,842	$1,607	$2,416	+$809
Laboratory and Data Analysis Support.....	3,469	4,985	4,811	5,202	+391
Total.....	4,712	6,827	6,418	7,618	+1,200
Permanent Positions					
Certification Review.....	56	55	59	72	+13
Laboratory and Data Analysis Support.....	105	103	104	109	+5
Total.....	161	158	163	181	+18

Budget Request

The resources requested for this subactivity are $7,618,200 and 181 positions. This reflects an increase of 18 positions and $1,200,200 over the FY 1977 level and includes resources to conduct the fuel economy labeling, compliance, and retrofit testing programs and finance the installation of the second phase of the real time system computer.

Program Description

Two distinct areas of activity are covered by this subactivity: (1) activities related to the engineering review of the data used to certify motor vehicles for compliance with emission standards and associated technical support, and (2) the operation of the Ann Arbor motor vehicle emissions testing laboratory, including data processing and analysis support, for both certification of motor vehicles and engines and the development of standards and guidelines. The certification process involves the submission to EPA of applications for certification; the development of emissions performance information by manufacturers and EPA on the basis of prototype vehicle testing; and the review of these data by EPA for the purpose of determining compliance with standards and approval/disapproval of certificates of conformity.

Manufacturers apply for certification by submitting an application for certification to EPA (Part I application) which describes the vehicles and engines the manufacturer plans to offer for sale. EPA reviews the manufacturer's application and determines what actions the manufacturer is to take to demonstrate compliance with emission standards. EPA reviews the application for acceptability of proposed procedures for mileage accumulation and emission testing, and the proposed maintenance procedures for the vehicles and engines.

EPA selects durability vehicles and engines (i.e., tested to determine emission control system durability to 50,000 miles for purposes of deriving deterioration factors) and emission data vehicles and engines (i.e., tested to determine typical engine class emissions) based on information supplied in the application for certification. During the testing of vehicles, EPA personnel carry out surveillance of manufacturers' testing. During site visits to manufacturers' facilities, EPA personnel also inspect the procedures and controls used by the manufacturers in their own test facilities to insure that these facilities and certification procedures comply with Federal requirements and that data submitted to EPA are obtained using valid procedures.

After completion of the testing program (including confirmatory testing at the EPA laboratory), manufacturers submit a Part II application, which summarizes the certification test results. Review of this application involves the final review of test data, the review of manufacturers' engineering reports, the calculation of the deterioration factors to ensure that emission levels do not exceed the applicable standards, and the final decision to certify an engine family. Certification review also involves the review of manufacturers' maintenance instructions to the ultimate purchaser, manufacturers' warranties, and manufacturers' service and technical bulletins.

After the issuance of the certificate of conformity, manufacturers are allow to submit requests for "running changes" to their certified products to reflect technological changes and changes in product lines. Review of "running changes" may involve, at EPA's discretion, additional testing at the manufacturer's facility or at the EPA facility. Since running changes are approved after the certificate of conformity has been issued and vehicles may be in production, their impact on changing emissions is monitored closely by EPA. It should be noted that each fiscal year motor vehicle manufacturers' full line of vehicles and engines undergoes the certification process. In general, each fiscal year covers the pre-manufacture certification of each model year, e.g., FY 1978 covers the certification of 1979 model year, with production changes, i.e., "running changes", processed in the following year, i.e., FY 1979.

Additional activity is required by the constant reevaluation of certification procedures. The automotive industry is characterized by constant engineering changes resulting from technological changes or the constraints imposed by the marketplace. All changes in vehicle and engine configurations which may affect emissions are reviewed and analyzed by EPA. Manufacturers, in order to evaluate the impact on emissions of proposed changes they wish to make, request interpretation from EPA of the Federal regulations, advisory circulars (used to document EPA approved procedures and policy that do not require regulatory action), and general policy. These activities are expected to increase in the future.

The changing nature of the emissions standards for light-duty motor vehicles (with congressional action expected to provide a phased scheduling of standards to the statutory levels for a manufacturer's full vehicle line by model year 1982), coupled with industry's certain attempts to meet the standards with a changing technology aimed at lowering costs and improving fuel economy, necessitates the continuation of the design verification function (by actual emissions testing) represented by the certification program. For FY 1978, workloads associated with the certification program are expected to increase due to the need to certify additional classes of motor vehicles that will be covered by emissions standards, such as an expanded class of light-duty trucks. The workloads are summarized in Tables 1-4.

Table 1
Summary of Certification Tests Carried Out at EPA by Model Years and Fiscal Years -- Light-Duty Vehicles*

Model Year	Total Number of Emission Tests	Tests by Fiscal Year FY 1976	TQ	FY 1977	FY 1978
1976	1903	1372			
1977	2893	1035	985	873	
1978	2566			1681	885
1979	3120				2182
Total		2407	985	2554	3067

* Assumes continuation of 1977 model year emission standards for the 1978 model year.

Table 2
Summary of Certification Tests Carried Out by EPA -- Heavy-Duty Engines

	Fiscal Years FY 1976	FY 1977	FY 1978
Number of Tests.....	8	10	54

Table 3
Summary of Number of Engine Families Certified and Number of Certificates of Conformity (in parentheses) Issued*

	FY 1976	FY 1977	FY 1978
Light-duty vehicles.....	346 (205)	272 (230)	299 (271)
Heavy-duty vehicles.....	131 (131)	131 (131)	131 (131)
Light-duty trucks.....	57 (36)	52 (45)	80 (77)

* Assumes continuation of 1977 model year emission standards for the 1978 model year.

Table 4
Summary of Running Changes

	FY 1976	FY 1977	FY 1978
Light-duty vehicles and trucks.....	1500	1800	1800
Heavy-duty engines.....	300	364	364

CERTIFICATION REVIEW

1976 Accomplishments

The testing workloads and motor vehicle certification accomplishments were summarized in the preceeding tables. Significant impacts on the certification and testing activities

AIR

Abatement and Control

Trends Monitoring and Progess Assessment

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Ambient Air Quality Monitoring.....	$1,010	$977	$1,126	$1,426	+$300
Mobile Sources Monitoring.....	2,140	1,384	1,349	1,449	+100
Air Quality & Emissions data Analysis & Progress Assessments.....	3,990	4,343	3,677	3,677	...
Total.....	7,140	6,704	6,152	6,552	+400
Permanent Positions					
Ambient Air Quality Monitoring.....	44	50	51	46	-5
Mobile Sources Monitoring.....	8	8	8	13	+5
Air Quality & Emissions Data Analysis & Progress Assessments.....	75	93	93	93	...
Total.....	127	151	152	152	...

Budget Request

The resources requested for this subactivity are $6,552,000 and 152 positions. This reflects an increase of $400,000 which will provide for expanding ambient air quality standards attainment-related field work and analyses.

Program Description

This subactivity covers the work related to determining ambient air quality levels and air pollution source emission levels, determining and analyzing their relationships, and assessing the progress made toward the attainment of environmental goals.

Ambient Air Quality Monitoring -- Activity in this program includes EPA's ambient air monitoring operations carried out by regional offices, the requisite associated laboratory support, and special field monitoring studies. Most ambient air quality and source monitoring is carried out by State and local agencies who provide these data to EPA. The regional offices oversee State monitoring efforts, develop and carry out quality control programs to assure the quality and consistency of State data, and process and evaluate data submitted to EPA by the States. Determination of attainment or non-attainment of the ambient air quality standards are made on the basis of these data.

It is expected that monitoring activities and data analyses will increase due to the need for continuously reassessing the SIPs in nonattainment areas as to their adequacy for attaining standards, and the need to develop revised control plans. In addition to SIPs (i.e., criteria pollutants and related monitoring), a limited program to acquire available State data on currently unregulated pollutants is also being carried out. These data aid in understanding relationships between sources and receptors of currently unregulated pollutants, and are used for making long-and short-term trends analyses supportive of decisions on the need for control.

This program element also includes efforts directed at improving State and local monitoring programs. Continuing efforts include the technical guidelines on monitoring developed by EPA headquarters for the use of regional offices and State and local agencies, such as guidance on the siting of ambient air quality monitors and on the appropriate size for monitoring networks. Adherence to these criteria should promote uniformity of siting, and ensure that the several objectives of the State and local networks are met.

Mobile Sources Monitoring -- Also included are activities aimed at determining mobile sources' emissions performance. These data are used to assess the effectiveness of control programs, to assess the need for additional or new controls, and to develop the basis for regulatory actions. In this program, vehicles in consumer use are tested in the condition in which they are received (i.e., without any consideration as to state of maintenance), in order to determine their emissions. The data are used to determine the average emissions that are to be expected from average in-use vehicle populations. Samples tested are generally defined by model year and are representative of diverse geographical areas. The data so obtained are used to calculate emission reductions to be required by control strategies developed for attainment and maintenance of NAAQS. The model year and type of vehicles to be tested each year varies. In general, a sample of about 180 vehicles, selected to be representative of the in-use vehicle population mix, are tested in six or seven locations in the country. The areas covered to date have been Chicago, Denver, Detroit, Houston, Los Angeles, Newark, Phoenix, St. Louis, and Wahington. Results are available from programs initiated in FY 1971-1974. Approximately 900 vehicles were tested by the FY 1971 and FY 1972 programs, covering 1957 through 1972 model year vehicles. The FY 1973 testing program covered 1,080, 1967 through 1974, model year vehicles. The FY 1974 testing program included 1,704, 1965 through 1975, model year vehicles in six cities. The FY 1975 testing program includes 2,220, 1967 through 1976, model year vehicles in seven cities.

Air Quality and Emissions Data Analysis and Progress Assessments -- Also included are the preparation of the annual and special reports on air quality and emission trends, special analyses on the status of attainment of the NAAQS, development and dissemination of new or improved techniques for data analysis, collection and analysis of emission data, and development and publication of emission factors. Diffusion models are validated, refined and applied to predict air quality levels around point sources and in urbanized (multisource) areas. Technical guidance and direct assistance in the application of diffusion models is provided by headquarters to the regional offices and State and local control agencies. Also included are the development, updating, and maintenance of systems for storage and retrieval of air quality and emissions data gathered by monitoring activities. The data systems are composed mainly of an inventory of point sources and their emissions, and a storage field for ambient air quality data. To assist the States in efficient and timely submission of data to EPA, continuing support is provided to the 30 State and local agencies using the Comprehensive Data Handling System.

resulted from the Energy Policy and Conservation Act (EPCA) passed in December 1975. EPCA has two separate impacts on EPA's mobile source certification testing program: testing for labeling and testing for calculation of manufacturer annual average fuel economy. Regulations were promulgated to implement the labeling provisions of EPCA. The regulations proposed to continue essentially the same level of testing as is currently used in the voluntary labeling program. The testing impact of the current program is the conduct of a highway test on all emission data vehicles (approximately 600 in FY 1976, all tested at EPA), a highway test on all running change vehicles tested before the mileage guide data cutoff data of September 15 (approximately 100 in FY 1976, with 30 tested at EPA), and a city and highway test on additional vehicles needed to plug data loopholes in the mileage guide (approximately 100 in FY 1976, with 50 tested at EPA).

1977 Program

The FY 1977 level of resources is $1,607,000 and 59 positions. These resources include no contract funds. The projected testing and certification workloads were summarized in the preceeding tables. The Energy Policy and Conservation Act (EPCA) will continue to impact the certification and testing program. Regulations, applicable to the 1978 model year, have been promulgated for the testing of vehicles for, and calculation of, compliance with fuel economy standards. The regulations require the testing of small numbers of vehicles needed to cover all base levels (individual vehicle groupings) and the testing of running changes which would not normally be tested for demonstration of emission standard compliance but which can be expected to have an impact on average fuel economy. For the 1978 model year, the number of extra vehicles to require testing is about 700. EPA currently plans to test about one-fourth of these in its own laboratory. Test vehicles will be chosen on the basis of checks to determine if manufacturer submitted data appear reasonable, and some random spot checking to ensure the integrity of manufacturer submitted data. The 25 percent level was chosen because it represents a minimum level of confirmatory testing while still providing a capability to check suspect data.

1977 Explanation of Changes from Budget Estimate

The decrease of $235,500 from the budget estimate for this program element is due chiefly to a transfer for the funding of a contract on assessment of the certification program to the mobile source standards and guidelines program element.

1978 Plan

The FY 1978 plan for this program element includes $2,416,000 and 72 positions. This level of resources includes an increase of $809,000 and 13 positions, which is related to the implementation of EPCA's fuel economy-related requirements, to the implementation of expanded light-duty truck emission standards, and to an in-depth review of certification procedures. The projected certification workloads are summarized in the preceeding tables.

LABORATORY AND DATA ANALYSIS SUPPORT

1976 Accomplishments

The workloads incurred in the testing program are summarized in the preceeding tables.

1977 Program

The FY 1977 level of resources is $4,811,000 and 104 positions. These resources include $2.3 million in contract funds for support of emission testing and data processing activities. The projected emission testing workloads associated with emissions certification and fuel economy compliance are summarized in the preceeding tables. It should also be noted that Sealed Housing for Evaporative Determination (SHED) tests will begin during FY 1977 on the 1978 model year vehicles. The SHED method is being instituted because it is estimated that over two-thirds of evaporative emissions go undetected with current Procedures.

1977 Explanation of Changes from Budget Estimate

The decrease of $173,600 from the budget estimate for this program element is due chiefly to delays in the procurement and installation of the first phase of the real time system computer; the funds were utilized in the mobile source standards and guidelines area within the air program.

1978 Plan

The FY 1978 plan for this program element includes $5,202,200 and 109 positions. This represents an increase of $391,200 and five positions which will provide for the emissions and fuel economy testing (and associated data processing and analysis) related to determinations of compliance with fuel economy standards established by EPCA, and for emissions testing related to certification of motorcycles and light-duty trucks. The projected emission testing workloads are summarized in the preceeding tables.

AMBIENT AIR QUALITY MONITORING

1976 Accomplishments

State and local monitoring activities were evaluated; field visits were carried out to determine the degree to which monitoring operations met EPA's criteria and are generating valid data; and State and local agency data on ambient air quality were processed. At the end of the year, 2,300 monitoring stations were reporting data for sulfur dioxide; 3,800 for total suspended particulates; 400 for carbon monoxide; 350 for photochemical oxidants; and 1,350 for nitrogen dioxide.

1977 Program

The development of ambient air quality data and field monitoring operations is allocated $1,126,300 and 51 positions. Essentially no contract funds are included in this allocation. Technical guidance and direction are to be provided to State and local agencies to ensure that State and local monitoring sites are operating properly and generating valid data. Data generated by States and localities will be edited and verified.

1977 Explanation of Changes from Budget Estimate

An increase of $149,800 over the budget estimate will result in improved technical guidance for State and local monitoring operations. The increase is due to reprogrammings within the air program.

1978 Plan

The development of ambient air quality data and field monitoring operations is allocated $1,426,300 and 46 positions. This represents an increase of $300,000 and a decrease of five positions. Essentially no contract funds are part of the planned resources. Technical guidance and direction are to be provided to State and local agencies' field monitoring and laboratory operations to ensure that State and local monitoring networks generate valid air quality data. However, the decrease in positions reflects reduced technical assistance to State and local offices in developing and implementing new quality assurance plans. It is expected that improvements in monitoring network design and operation, resulting from a reassessment of monitoring objectives and requirements, will be implemented.

MOBILE SOURCE MONITORING

1976 Accomplishments

1976 resources included approximately $1.9 million in contracts for testing in-use vehicle populations in order to determine their actual emission levels. Analyses of the data obtained from the FY 1972 and FY 1973 In-Use Compliance Testing Program were completed. These data identified classes of light-duty motor vehicles which had emission levels in excess of the applicable standards. Due to technical documentation problems, the Agency has not found it possible to use these data to support a recall of high emitting vehicle classes. The FY 1974 emission test program, covering 1,704, 1972 through 1975, model year vehicles, was completed; results will be used to update emission factors used to calculate motor vehicle emissions. In addition, an emission test program covering 2,200, 1967 through 1976, model year vehicles was initiated.

1977 Program

The monitoring of emissions from motor vehicles has been allocated $1,349,100 and eight positions. These resources include approximately $1.1 million in contracts for testing in-use vehicle populations in order to determine their actual emission levels. The results of the FY 1974 emission test program will be used for updating EPA's official publication

on emissions factors (AP-42), for the first time including data on emissions from in-use production vehicles that were equipped with catalysts. These data will permit an assessment to be made of in-use catalyst deterioration and the impact that such deterioration may have on new and in-use control strategies as well as stationary source control. The program will also provide improved data on heavy-duty vehicle emissions on the basis of actual measurements over a road route, and additional data on in-use catalyst equipped vehicles with more mileage than those covered by the FY 1976 revisions to AP-42. A report presenting updated emission factors for 1967 through 1976 model year light-duty trucks will also be provided. The format in which these emission factors are presented will be revised in order to facilitate the use of the data by State and local personnel responsible for planning transportation systems.

1977 Explanation of Changes from Budget Estimate

The decrease of $34,700 from the budget estimate is a result of applying the budget to actual operating conditions. The transfers were chiefly within the air program.

1978 Plan

The monitoring of emissions from motor vehicles that are in actual use will be allocated $1,449,200 and 13 positions in FY 1978. This represents an increase of $100,100 and five positions. The 1978 resources include approximately $1.1 million in contracts for the testing of in-use vehicle populations in order to determine their actual emission levels. The additional positions will allow increased surveillance of contractor testing to insure the validity of the test data which has presented significant problems in the past. Additional data on the performance of in-use catalyst-equipped vehicles will be generated. Additional data on emissions for heavy-duty and light-duty trucks will also be available. An updated report will also be issued on the emissions from 1967-1977 model year light-duty vehicles.

AIR QUALITY AND EMISSIONS DATA ANALYSIS AND PROGRESS ASSESSMENT

1976 Accomplishments

1976 resources included approximately $2.0 million in contract support for studies to validate and refine diffusion models and other simulation techniques used in assessing source-receptor relationships; assessments of national and regional air pollution control strategies for air quality standard attainment and maintenance; development of revised criteria and guidelines for the siting of air quality monitors; development of methods for determining and displaying populations exposed to air quality levels above the NAAQS; development of analytical techniques used in preparing EPA's annual Monitoring and Air Quality Trends Report and other special reports; and the provision of installation, training and troubleshooting services to State and local users of the Comprehensive Data Handling System (CDHS).

The Monitoring and Air Quality Trends Report, 1974 was completed and published. Analyses were performed on the status of attainment of the standards. In-depth studies of 14 metropolitan areas not currently meeting the standards for total suspended particulates were completed. Reports of these studies (and other studies concerned with resuspended particulates) will be released early in FY 1977. Preliminary efforts were made in developing systems for analyzing and quantifying the change in exposure that selected populations have experienced over time. These analyses show clearly that, although certain localities are still exposed to ambient levels above the NAAQS, the vast majority of people living in the large metropolitan areas are exposed to far less pollution than they were in 1970. In addition, a study of oxidant levels in rural areas indicated that hydrocarbons and other precursors transported from population centers contribute to the formation of elevated oxidant levels observed in areas well away from the population centers. A standardized air quality index was also developed. This index provides a mechanism for relating daily air quality values to standard descriptions of air quality that can be easily understood by the public.

Analyses of emission data from a number of source categories led to the issuance of Supplement No. 6 to publication AP-42, the compilation used for estimating current and projected air pollutant emissions as part of air pollution control strategies development. New or revised emission factors were presented for fuel oil combustion sources, opening burning, natural gas processing sources, woodworking sources and a number of agricultural process sources.

1977 Program

The assessment of environmental trends and progress of control programs has been allocated $3,676,500 and 93 positions. This level of resources includes approximately $2.1 million in contracts for identification and documentation of air quality monitoring sites to be used for long-term national trends; development and issuance of guidelines setting forth techniques and priorities for monitoring; development of additional analytical techniques for use in preparation of EPA's annual Monitoring and Air Quality Trends Report and special reports; evaluation of selected State ambient monitoring networks, primarily in nonattainment areas, to determine network adequacy and conformity with published siting guidance; validation and refinement of recently developed diffusion models and other simulation techniques; and assessments of national and regional air pollution control strategies for air quality standard attainment and maintenance.

The Monitoring and Air Quality Trends Report, 1975 will be published. During FY 1977, EPA will encourage State and local agencies and regional councils to use the standardized air quality index developed in FY 1976. An evaluation of the index using data from 20 cities is planned. A Federal-State program for collection and analyses of ambient data for nonregulated pollutants will be continued. Nationally, much of these data are collected by State and local agencies, but at this time these data are not available for national assessments of the need for control or for determining trends for these pollutants. Related to these types of assessments, the development of a rapid capability for obtaining air quality information for special studies is planned. During the year, the need for assessing the impacts of unregulated substances (past examples are lead, sulfates, vinyl chloride, hexachlorobenzene) can be expected to arise. The installation of automated air quality data handling systems (CDHS) in an additional three to five State and local control agencies will be completed. Criteria for the siting of ambient air quality monitors, presented in a regulatory guideline, will be proposed.

1977 Explanation of Changes from Budget Estimates

The decrease of $666,900 from the budget estimate is due to a reprogramming which grouped into one program element all the activities which were being carried out related to the development of an improved technical base for air quality management. These resources were transferred to the State Program Guidelines and Regulations element within the air program.

1978 Plan

The assessment of environmental trends and progress of control programs will be allocated $3,676,500 and 93 positions in the plan for FY 1978, the same level as in 1977. The level of resources includes approximately $2.0 million in contracts for continued development and issuance of new or revised guidelines setting forth techniques and priorities for monitoring; evaluation of selected State ambient monitoring networks to determine network adequacy and conformity with the monitor siting regulatory guideline; development of emission factors for additional categories of natural emissions, particularly for hydrocarbons and other oxidant precursors; validation and refinement of diffusion models and other simulation techniques; and assessments of national and regional air pollution control strategies for air quality standard attainment and maintenance.

Activities of the same nature as those described for FY 1976 and FY 1977 will be carried out. During FY 1978, the EPA regional offices will have to assess the adequacy of State Implementation Plans for attaining and maintaining the ambient air quality standards for the pollutants that require complex control strategies, such as photochemical

oxidants and particulates. The Monitoring and Air Quality Trends Report, 1976 will be published. Criteria for the siting of ambient air quality monitors will be promulgated. A complementary expansion in the overall emissions data base for nitrogen oxides is also contemplated in support of the need to reassess control strategies for these pollutants. Similarly, an expected expanded availability of air quality data will permit more precise assessments of control strategy potentials for attaining standards and will provide guidance to control strategy redevelopment activities. It is expected that the revisions of State Implementation Plans will require a high level of effort in the areas of diffusion modeling and other control strategy development related work.

Enforcement

SECTION TAB

AIR

Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977	Page
	(dollars in thousands)					
Appropriation						
Stationary Source Enforcement.....	$8,714	$9,841	$10,517	$14,780	+$4,263	A-44
Mobile Source Enforcement.....	2,639	3,902	3,824	4,327	+503	A-49
Total.....	11,353	13,743	14,341	19,107	+4,766	
Permanent Positions						
Stationary Source Enforcement.....	327	357	371	371	...	
Mobile Source Enforcement.....	105	120	121	118	-3	
Total.....	432	477	492	489	-3	

Purpose

The air enforcement program is directed toward achieving compliance with the standards and regulations established for stationary and mobile sources of air pollution under the provisions of the Clean Air Act. The stationary source enforcement program is undertaken to bolster and stimulate State enforcement of State Implementation Plans (SIP's), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAPS). The mobile source enforcement program is primarily a Federal effort directed toward achieving compliance with fuel and motor vehicle emission standards and regulations.

The Clean Air Act places the primary responsibility for development and enforcement of regulations limiting emission of air pollutants upon the States. EPA's primary objective regarding the stationary source enforcement program is to assist and to stimulate State enforcement programs. Activities under State Implementation Plans thus far have focused on enforcing applicable emission limitations for existing Class A sources of air pollution and on identifying the problems causing nonattainment of the primary health related standards in many areas of the country. This includes source identification, compliance status determinations, developing enforceable compliance schedules for sources not in final compliance, and assuring compliance with final emission limitations or increments of progress contained in compliance schedules.

In 1978, approximately the same level of resources will be directed at the remaining recalcitrant Class A violators and enforcement of standards for an estimated 75,000 Class B sources impacting nonattainment. Increased resources will also be applied toward dealing with about 1,000 additional combustion sources prohibited by FEA from burning oil. In addition, a large proportion of the increased resources will be used to develop and implement, with States and local governments, a comprehensive program to ensure that new industrial growth is balanced with environmental concerns. This effort will be achieved by implementing far-reaching programs for new source reviews, prevention of significant deterioration, and enforcement of new source performance standards. Efforts will also be directed toward maintaining compliance by those sources now on schedules or complying with final emission limits in order to ensure that advances made toward clean air goals are not lost.

The mobile source enforcement program is directed primarily toward achieving compliance with motor vehicle and fuel emission standards and regulations. In FY 1978, efforts in the program will be focused on programs aimed at reducing the failure of vehicles to meet emission standards. The program will implement the Selective Enforcement Audit assembly line testing program for light-duty vehicles and a pilot SEA program for motorcycles, a recall enforcement testing program, an increased level of recall investigative activity as a result of an expanded recall surveillance program, and enforcement field testing in support of SEA and recall.

AIR

Enforcement

Stationary Source Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Stationary Source Enforcement.....	$8,714	$9,841	$10,517	$14,780	+$4,263
Permanent Positions					
Stationary Source Enforcement.....	327	357	371	371	...

Budget Request

An appropriation of $14,780,000 is requested for FY 1978. This represents an increase of $4,262,500 over FY 1977, and maintains the same position level of 371 as currently estimated for FY 1977. The additional dollars will be used to obtain contractor assistance primarily to solve nonattainment problems posed by Class A and B emitters and to handle the complex sets of problems presented by industrial growth and expansion.

Program Description

The stationary source air enforcement program is designed to effectively utilize the enforcement authorities provided by the Clean Air Act and the Energy Policy and Conservation Act (EPCA) to ensure nationwide compliance with State Implementation Plans (SIPs), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAPS). EPA's stationary source enforcement program consists of ensuring compliance by all Class A sources, working with State and local agencies to deal with Class B sources, contributing to the resolution of attainment problems, encouraging States to request delegations of enforcement authority for NSPS and NESHAPS, and enforcing SIP, NSPS and NESHAPS requirements to support and stimulate State efforts.

The responsibility for enforcing State developed, EPA approved emission limitations is shared by EPA and the States. The Clean Air Act directs that States have primary responsibility for achieving clean air within their jurisdictions. When States do not enforce air pollution emission standards, however, the Act requires EPA to take action.

In accordance with the intent of the Act, the EPA air enforcement program is designed to ensure that all sources achieve compliance with applicable standards. EPA bolsters State air enforcement efforts by supporting State control agencies through control agency grants, providing specialized skill and expertise or special contractual efforts, and by taking enforcement actions against selected sources when the States cannot or will not enforce.

EPA has primary responsibility for the enforcement of the Federal emission standards it promulgates. However, both Section 111 (New Source Performance) and Section 112 (National Emission Standards for Hazardous Air Pollutants) provide for State enforcement of all or a portion of these standards. In accordance with the intent of Congress, EPA is placing a high priority on delegating enforcement authority for NSPS and NESHAPS to the States. After delegation, EPA actively monitors the enforcement of these standards.

1976 Accomplishments

- Completed update of inventory of Class A sources resulting in an increase in the number of identified sources from 19,360 to 21,954;

- Compliance achieved with standards or compliance schedules by about 90 percent of the Class A sources subject to SIPs--up from 84 percent at the end of 1975 despite a large increase in inventory; (of the 90 percent, 84 percent are in compliance with final emission limitations and six percent are in compliance with schedules);

- Increased the number of field surveillance actions undertaken (about 8,000 actions in 1976) by 36 percent over the 1975 level making possible the reduction in sources of unknown status;

- Reduced percentage of unknown sources by about 50 percent from 1,227 to 638; and

- Maintained high level of NSPS and NESHAPS compliance at 90 percent and 91 percent respectively.

Contract expenditures for FY 1976 totaled $1,885,000 including $1,465,000 for attainment of primary standards; $320,000 for maintenance of primary standards; and $100,000 for NESHAPS enforcement.

1977 Program

Major accomplishments during FY 1977 will be to:

- Continue to update Class A source inventory. This process is expected to identify an additional 1,000 sources;

- Increase level of compliance to about 95 percent in final compliance or on schedules;

- Complete nonattainment AQCR analyses in conjunction with positions assigned to Regions under Abatement and Control appropriation, and assist States in developing strategies and appropriate source inventories to alleviate nonattainment problems;

- Delegate major portions of NSPS and NESHAPS to nearly all States and ensure compliance levels of at least 95 percent; and

- Begin audits of State new source review programs, including evaluations of permits issued and make recommendations for changes.

The FY 1977 planned resource level for this activity is $10,517,500. In FY 1977, the position level will be 371 positions, with approximately 59 percent of these positions applied toward Class A source compliance, about 13 percent being applied to new source programs (New Source Review (NSR), New Source Performance Standards (NSPS), Prevention of Significant Deterioration (PSD)), about 16 percent to nonattainment strategies including compliance by Class B sources having an impact on attainment problems, 5 percent to energy environment coordination including ESECA with the remaining 7 percent allocated to enforcement of hazardous pollutant standards and noncriteria pollutant standards under Sections 112 and 111(d), respectively. FY 1977 planned contract expenditures, totalling $1,831,600, contain $1,802,600 for attainment and maintenance of primary standards; $17,400 for NESHAPS enforcement; and $11,600 for Section 111(d) source enforcement.

1977 Explanation of Changes from Budget Estimate

The net increase of $676,000 over the budget estimate is a result of several reprogrammings: An increase of $100,000 is the result of a realignment of workload between stationary source enforcement and water quality enforcement activities at the Denver National Enforcement Investigation Center. An increase of $78,000 was provided from the pay cost funds provided by Congress under the Agency and Regional Management appropriation. Regional reprogrammings of +$468,000 resulted from the application of the budget estimate to actual operating conditions. Finally, an adjustment of +$30,000 was made by headquarters offices due to shifting workload requirements.

1978 Plan

The FY 1978 budget for this activity is $14,780,000 and 371 positions, of which approximately 51 percent will be allocated to compliance by Class A sources, about 21 percent to new source programs, about 12 percent to nonattainment strategies, 10 percent to energy environment programs, and 6 percent to NESHAPS and noncriteria pollutant efforts.

The FY 1976 and 1977 programs emphasize the need to assess the attainment status of AQCRs and to develop and begin implementing plans to remedy deficiencies in areas that are not attaining the primary standards for one or more of the criteria pollutants. The Governors of 45 States have been notified by EPA that the SIPs for their States must be revised in order to attain and maintain the ambient air quality standards. Plan revisions are necessary in 31 States for particulates, in 12 States for sulfur dioxide, in 22 States for carbon monoxide, in 29 States for photochemical oxidants, and in three States for nitrogen dioxide. Additional calls for plan revisions are expected in the coming months. At the present time the best information available indicates that out of the total 247 AQCRs in the U.S., 146 AQCRs are not attaining the particulate standard, 41 are not attaining the sulfur dioxide standard, 68 are not attaining the carbon monoxide standard, 131 are not attaining the oxidant standard, and three are not attaining the nitrogen dioxide standard--indicating the potential need for many more SIP revisions. The revised plans incorporating emission limitations achievable with reasonably available control technology must be submitted to EPA by July 1977, and by July 1978 State plans must incorporate all other necessary regulatory measures for attaining and maintaining standards such as transportation controls. SIP revisions will require extensive input from enforcement personnel to ensure that ongoing enforcement activities are not disrupted or delayed by pending revisions, that any new provisions are achievable and enforceable, and that strategies are properly balanced to provide for industrial and economic growth in large and small industries

In addition, EPA personnel will work with States and local agencies to develop and begin implementing enforcement strategies in FY 1977 based upon these completed analyses. Following revision of plans, another round of enforcement will be required, directed at all sources for which new or revised emission limitations have been promulgated. By the beginning of FY 1978, full scale enforcement programs will be underway to correct existing attainment problems and to ensure that the many areas projected to be near maximum allowable ambient levels remain below the health-protective standards.

Enforcement efforts to date have been concentrated on obtaining compliance with particulate and SO_2 regulations by an estimated 22,000 Class A sources across the country. By the end of FY 1976, excellent results had been achieved--81 percent of the Class A sources were complying with final emission limitations and 6 percent were meeting increments in compliance schedules. However, those Class A sources still on schedules will require close surveillance during FY 1978 to ensure that they comply with scheduled increments. The 10 percent of Class A sources still in violation are for the most part powerful, recalcitrant industries that will continue to require extensive enforcement resources to collect evidence, negotiate agreements and/or mount effective court actions if they are to be brought into compliance. Since compliance by these large-volume polluters is known to be a major factor in both attaining and maintaining the primary NAAQS, enforcement will continue through FY 1978 to concentrate on Class A violators.

In many nonattainment areas of the country, the cumulative effect of Class B sources will be identified as a major contributor to nonattainment problems. An estimated 75,000 of the 130,000 Class B sources located in nonattainment AQCRs will be identified as having the potential to impact the NAAQS. Control of these sources will be especially important because compliance by Class B polluters will diminish the pressure to impose even tighter restrictions on existing Class A sources than are now in effect. Although EPA anticipates dealing with these polluters in groups and categories rather than individually as with Class A sources, and primarily through State and local agencies, development of strategies and assistance to State and local agencies in conducting effective enforcement programs to deal with this anticipated large number of Class B sources will necessitate an increase in Federal enforcement resources.

Implementing energy conservation programs is also closely bound with solving and preventing air quality problems. The Federal Energy Administration plans to issue orders prohibiting the burning of petroleum products to some 1,000 major fuel burning installations during the second half of FY 1977. Therefore, during FY 1978, EPA enforcement will have to renegotiate compliance methods and timetables with each of these sources as they convert to coal and will have to certify to FEA the date upon which these large sources can convert and still meet environmental standards. Close attention must be given to this program because a very real potential exists for these sources to cause nonattainment problems where none now exist or to exacerbate current air quality levels.

The concept of preventing backsliding from achieved levels of compliance applies to all stationary source enforcement programs. Failure to support an effective NAAQS maintenance program by ensuring the continued compliance of sources with either emission limitations or compliance schedule increments would to a substantial extent negate the efforts expended to date in bringing sources into compliance. EPA's enforcement program must maintain an effective "presence" through strong field surveillance efforts to assure continued compliance.

The most important issue facing stationary source enforcement in FY 1978 will be permitting new construction or expansion of industrial sources so that they neither prevent attainment, cause nonattainment or cause significant deterioration of current air quality.

Some States do not yet have adequate new source review programs laid out and many of those that do are not able to implement them to the extent needed to ensure both attainment and maintenance of ambient standards. Federal assistance and guidance to States will be required to develop and implement NSR procedures, including strategies to assess the impact on the standards of potential new sources, Uncontrolled industrial growth in areas marginally attaining standards would seriously jeopardize air quality gains made to date, and create difficult, if not impossible, reattainment problems. EPA's policy in this regard is not to limit growth but to act as a catalyst in ensuring that the goals of industrial expansion and environmental protection are accomplished in concert. Inherent in the review program for new construction will be the States' and EPA's ability to assist

industry in locating environmentally sound alternative construction sites. Control of hydrocarbon emissions from stationary sources in order to attain the NAAQS for oxidants is an excellent example of the problems facing the stationary source enforcement program. In many nonattainment areas for oxidants, such as Los Angeles and Houston-Galveston, the States and EPA will be faced with managing large, involved emission trade-off programs in order to permit new construction. Additional enforcement resources will be necessary to assure compliance with construction permits issued under NSR and to monitor State enforcement as appropriate to assure adequate State NSR programs. In undertaking a vastly expanded NSR program--basically a new effort in FY 1978--enforcement plans to conduct as many of the required functions as possible through contractor assistance.

Part of the long-term program to attain and maintain standards while allowing for growth involves ensuring the compliance of industrial sources with NSPS. Twenty-four categories of sources are currently regulated under NSPS and 15 additional categories of new sources will be subject to NSPS in FY 1978. This will result in a substantial increase in the number of regulated sources and will require additional enforcement resources above current levels.

Enforcing emission limitations for hydrocarbons, carbon monoxide, and nitrogen oxides at Class A sources and some Class B sources will be a cross cutting priority for all enforcement efforts in FY 1977 and FY 1978. Little progress has been made to date in reducing these emissions from stationary sources. A heightened enforcement effort is imperative with respect to hydrocarbon sources since they are major contributors to photochemical oxidant problems.

Contract funds requested for FY 1978, totalling nearly $6.1 million, will support enforcement case development--$1,750,000; compliance monitoring and field surveillance--$2,982,000; regional industrial technical and economic studies--$1,030,000; and national profiles and enforcement strategy studies--$300,000.

AIR

Enforcement

Mobile Source Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Mobile Source Enforcement....	$2,639	$3,902	$3,824	$4,327	+$503
Permanent Positions					
Mobile Source Enforcement....	105	120	121	118	-3

Budget Request

The FY 1978 mobile source enforcement budget request provides for a net decrease of three positions and an increase of $503,400 in contract funds. The three position decrease consists of a decrease of 19 positions in the fuels program and an increase of 16 positions in the Selective Enforcement Audit (SEA) and recall programs. The reprogramming of the fuels program positions will allow increases in higher priority Agency program areas, with 16 positions going into SEA and recall.

The increase in the Selective Enforcement Audit and recall programs will allow implementation of the Selective Enforcement Audit assembly line testing program for light-duty vehicles and a pilot SEA program for motorcycles, the implementation of a recall enforcement testing program, an increased level of recall investigative activity as a result of an expanded recall surveillance program, and enforcement field testing in support of SEA and recall. The increase of $503,400 in contract funds will provide for recall emission testing.

Program Description

The mobile source enforcement program is directed primarily toward achieving compliance with vehicle emission standards and fuel regulations promulgated by EPA under provisions of the Clean Air Act. The activities of the program include preventing introduction of uncertified new domestic and imported vehicles into commerce through inspection and investigation of foreign and domestic manufacturers' certification and production activities; conducting vehicle assembly line emission testing; enforcing the recall, warranty and tampering provisions of the Act; developing and enforcing Federal regulations regarding fuels and fuel additives, ensuring implementation and compliance with Stage I and Stage II vapor recovery requirements, inspection/maintenance requirements, and vehicle miles traveled (VMT) requirements of Transportation Control Plans.

1976 Accomplishments

Approximately $939,000 of 1976 resources were contracts utilized to support confirmatory recall testing, provide assistance to States for fuels sampling, provide assistance to States for inspection/maintenance, establish a home base at Sandusky, Ohio, for the Mobile Emissions Test Facility (METFac) and conduct antitampering support activities. During FY 1976, the mobile source enforcement program promulgated final Selective Enforcement Audit Regulations to assure compliance of vehicles on the production line with emission standards, began construction of the METFac in support of

SEA and recall activities, and conducted 85 inspections and 11 investigations of foreign and domestic automobile manufacturer certification and production compliance activities. Activities of the recall program during FY 1976 included conducting 15 recall investigations of suspect classes of vehicles, auditing recalls, establishing a public reporting system, developing defect reporting regulations, and initiating the development of a confirmatory testing capability. Efforts continued to develop regulations on the Section 207(a) and 207(b) warranty provisions of the Clean Air Act and to develop aftermarket parts guidelines. In FY 1976, mobile source enforcement continued its efforts to implement State inspection/maintenance programs and to assure compliance with VMT measures, and assured compliance with fuel additive regulations by conducting 27,666 inspections of gasoline retail service stations. In FY 1976, mobile source enforcement also proposed the enforcement provisions of the Stage II vapor recovery regulations and revised the lead phase-down schedule, and initiated enforcement of the lead phase-down regulations. In addition, approximately 15 tampering investigations and 30 imports investigations were conducted to assure compliance with antitampering and imports provisions of the Clean Air Act.

1977 Program

In FY 1977, the mobile source enforcement program will continue to carry out its responsibilities under Title I and Title II of the Clean Air Act and will emphasize programs aimed at reducing the failure of vehicles to meet emission standards. The FY 1977 mobile source enforcement resource level is $3,823,600 and 121 positions. Approximately $1,300,000 are contract funds to be used in support of recall emission testing, METFac and home base, statistical program support, antitampering publicity, survey, and vehicle testing; assistance to States and regions for implementation of inspection/maintenance programs; assistance to States for unleaded gasoline sampling and imports publicity. In FY 1977, the mobile source enforcement program will complete a pilot Selective Enforcement Audit Program for light-duty vehicles by issuing an estimated five test orders to manufacturers to test vehicles on the assembly line. The SEA program will be implemented under full authority of the regulations after January 1, 1977, with an estimated 10 test orders in the balance of FY 1977. This represents the first time that EPA will exercise its authority under the Clean Air Act to test production vehicles on the assembly line. Emphasis will also be placed on identifying suspect classes of vehicles exceeding applicable emission standards by conducting a recall emission testing program, conducting approximately 20 recall investigations, ordering an estimated two recalls, enforcing the defect reporting regulations, and conducting audits of ongoing recalls. In FY 1977, an enforcement field test capability will be developed through the completion of METFac (Mobile Enforcement Test Facility) and establishment of a permanent station for METFac at Sandusky, Ohio. In FY 1977, mobile source enforcement will also enforce manufacturer certification and production compliance procedures by conducting 80 inspections and 15 investigations, and will promulgate regulations dealing with the Section 207(a) and 207(b) warranty provisions of the Clean Air Act. In addition, mobile source enforcement will support implementation of inspection/maintenance programs and integrate Stage I vapor recovery inspections into the ongoing fuels inspection activity (20,000 unleaded and 5,000 Stage I vapor recovery inspections). Lead phase-down requirements will be monitored through review and evaluation of industry submittals and an estimated 40 imports investigations will be conducted.

1977 Explanation of Changes from Budget Estimate

The decrease of $78,000 from the budget estimate is a result of regional reprogrammings at the time the budget estimate was applied to actual operating conditions.

1978 Plan

The FY 1978 mobile source enforcement program budget request is 118 positions and $4,327,000. Approximately $1,827,400 of these resources will be contract funds to be utilized in support of recall, field testing, tampering, inspection/maintenance, vapor recovery, fuels, and imports activities. In FY 1978, the mobile source enforcement program will continue to place primary emphasis on the implementation of programs aimed at reducing the failure of vehicles to meet emissions standards.

In FY 1978, the Selective Enforcement Audit assembly line testing program for light-duty vehicles will be implemented, and a pilot SEA program for motorcycles will be initiated. This program will assure that new vehicles on the production line are in compliance with emission standards before being introduced into commerce.

The recall program will also be increased to assure compliance of in-use vehicles with emission standards. A recall enforcement testing program will be conducted on suspect classes of vehicles and will result in more effective determination of whether recall is appropriate. Recall investigation activity will increase in the recall surveillance program. The promulgation of the Selective Enforcement Audit regulations, the defect reporting regulations, and public reporting of investigations will all serve to identify a greater number of vehicles classes suspected of exceeding exhaust emission standards in-use.

In FY 1978, the fuels program will be reduced from 39 positions to a level of 20 positions nationwide. Sixteen positions of this 19 position reduction are being reprogrammed to the SEA and recall programs. Activities of the regional fuels program will be substantially reduced over FY 1977 levels and will include conducting 9,000 combined unleaded and Stage I vapor recovery inspections at service stations, and reviewing Stage II vapor recovery compliance reports. Headquarters activities in FY 1978 will consist of monitoring inspections and enforcement activities of the regional unleaded fuels and Stage I vapor recovery program, monitoring compliance of Stage II vapor recovery compliance reports and enforcement actions by regions, developing enforcement guidance for the regional unleaded Stage I and Stage II vapor recovery programs, and monitoring lead-usage reports and the status of refiner efforts to achieve compliance with the lead phase-down program.

In FY 1978, efforts will be continued to support existing inspection/maintenance programs. Inspection/maintenance programs not only serve to improve emissions from noncomplying vehicles in use, but data from existing inspection and maintenance programs will be used by recall and SEA programs to identify classes of vehicles exceeding standards and by the anti-tampering program to identify vehicles that have been subjected to tampering.

During FY 1978, the major activities for the mobile source enforcement program will be to:

- Issue 23 SEA test orders (21 light-duty vehicle, two motorcycle);
- Conduct 80 inspections and 15 investigations of auto manufacturers' certification and production activities;
- Implement Section 207(a) and (b) warranty regulations;
- Implement aftermarket parts guidelines;
- Conduct 25 recall investigations;
- Expand recall auditing, defect reporting and public reporting follow-up;
- Conduct recall enforcement testing program through contractor, home base, and METFac testing;
- Conduct 25 tampering investigations;
- Review enforceability of AQMP's and of TCP's for additional cities;
- Enforce unleaded gas and Stage I vapor recovery requirements through 9,000 combined fuels inspection tests;
- Enforce lead phase-down and Stage II vapor recovery requirements; and
- Conduct 40 imports investigations.

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Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977	Page
			(dollars in thousands)			
Appropriation						
Health and Ecological Effects.....	$23,425	$30,705	$30,563	$26,648	-$3,915	A-53
Industrial Processes.....	5,224	5,065	5,000	5,000	...	A-64
Monitoring and Technical Support.....	7,157	10,172	8,443	7,956	-487	A-66
Total.....	35,806	45,942	44,006	39,604	-4,402	
Permanent Positions						
Health and Ecological Effects.....	270	303	280	245	-35	
Industrial Processes.....	34	49	40	40	...	
Monitoring and Technical Support.....	147	119	140	115	-25	
Total.....	451	471	460	400	-60	

Purpose

The air research and development program is designed to furnish EPA with the knowledge to establish prudent environmental controls based upon known or potentially adverse health and ecological effects; to define, develop, and demonstrate systems for controlling stationary sources; and to evolve strategies for minimizing the emission of pollutants.

To achieve these ends, the program is structured to quantify the effects of air pollutants on man, animals, plants, and the general environment; develop predictive models for pollutant emission, transport, transformation, and removal, and verify these models by actual measurements; develop and standardize techniques for the monitoring of pollutants; and develop new and improved technology for preventing and controlling air pollution and demonstrate the cost effectiveness of such technologies.

AIR

Research and Development

Health and Ecological Effects

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Health Effects.....	$13,163	$19,237	$17,460	$15,756	-$1,704
Ecological Processes and Effects.....	1,680	1,164	1,910	1,000	-910
Transport and Fate of Pollutants.....	8,582	10,304	9,892	9,892	...
Stratospheric Modification.	...	...	1,301	...	-1,301
Total.....	23,425	30,705	30,563	26,648	-3,915
Permanent Positions					
Health Effects.....	192	187	205	180	-25
Ecological Processes and Effects.....	38	57	34	24	-10
Transport and Fate of Pollutants.....	40	59	41	41	...
Stratospheric Modification.	...	...	...	...	...
Total.....	270	303	280	245	-35

Budget Request

The 1978 budget request for health and ecological effects research is $26,648,000 and 245 positions, a decrease of $3,915,000 and 35 positions. The program provides for most major efforts contained in the 1977 program, although at a reduced level with one exception. The work on carcinogens will be increased from approximately $1 million to approximately $2 million by reprogramming from within the health program. The Agency is considering various options available for reducing personnel in the Health Effects Research Lab, Cincinnati, Ohio, and the Environmental Research Lab, Corvallis, Oregon. The two year stratospheric modification program funded with 1976 and 1977 funds will be completed.

Program Description

Research on air health and ecological effects provides the fundamental scientific basis upon which to establish and continually evaluate both primary and secondary ambient air quality standards. This is done in a number of program areas including health effects, ecological processes and effects, and transport and fate.

The health effects research program uses toxicological investigations, controlled human exposure studies, and epidemiological studies of targeted populations to address health research questions. Investigations focus on those air pollutants on which there is already evidence that they may or do adversely affect the public health. Scientific data is being developed on the effects of short-term exposures to NO_2; clarifying the health data base for oxidants; reviewing emerging data to determine the adequacy of existing pollutant standards; compiling a data base to evaluate and assess exposure-effect relationships of sulfates, nitrates and other particulates; assessing exposure-effect relationships of chronic, low-level exposure to trace metals and other nonpesticide substances which reach man in air; and collecting and analyzing information on the effects of automotive pollutant emissions on public health. In addition, an effort to discern the contribution of environmental carcinogens to the incidence of cancer in the general population is continuing.

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Research and Development

SECTION TAB

- Chromosomal aberrations were examined in college freshmen, half of whom in Los Angeles, a high oxidant area, and half of whom had entered colle residences elsewhere in the U.S. In that set of data, no evidence was a seasonal effect of oxidant air pollution on the frequency of aberrati consistently higher occurrence of aberrations was observed in the Los A residents as compared to the other group. This work expands our knowle risks associated with high oxidant levels and will help to elucidate pr suggestions of radiation-like effects of oxidants (measured as ozone) o

A major effort has been directed toward developing and utilizing in vitro s techniques for predicting the cytotoxicity, mutagenicity, and carcinogenicity o environmental pollutants. The screening systems developed so far are expected t valuable in assessing the myriad of potentially hazardous substances presently f the environment.

An improved monitoring methodology system has been deployed. This system i of measuring the exposure of selected populations to short-term, high levels of air pollutants, such as SO_2 and NO_2. This system permits the health researchers firsthand the relationships between observed acute adverse health effects and th term, high pollutant levels measured. The combination of these data is used to degree of protection provided to the public by current short-term exposure avera and to develop the data base for establishing new short-term standards.

Construction of the clinical health facility at Research Triangle Park Heal Laboratory is nearing completion. This facility will provide the capability to effects on human health of specific pollutants by means of human exposure studie out under controlled laboratory conditions. In addition, work has been in progr develop and apply non-invasive physiological techniques for human subjects. A s such techniques for sensitive measurements of cardiac parameters has resulted in improved methodology for assessing cardiac responses to pollutant exposures for has applied for a patent.

Among the scientific summaries prepared were those on nitrosamines, vinyl c arsenic, nitrogen oxides, vanadium, lead, and nickel. Draft reports were prepar and fuel additive toxicology, platinum, and palladium. In addition, as part of international cooperation on air pollution control, assistance was provided to t Health Organization in the form of reviews of its Criteria Reports.

A long-term study of animal exposure to mobile source pollutants was complet analyzed. Exposed groups, living in clean air for four years following terminati five years of experimental exposures exhibited pulmonary structural pathologic c supported by decrements in pulmonary physiologic function parameters. Emphysemat lesions were present in several experimental groups. This was a landmark study d the cause-effect relationship between chronic exposure to air pollution and the d of chronic, irreversible pulmonary disease, vis-a-vis, the usefulness and necessi long-term, chronic inhalation studies.

1977 Program

The 1977 resources level for air health research is $17,460,000 and 205 posi These resources include approximately $8,268,500 in contracts, $1,093,000 in gran $241,600 in interagency agreements.

The principal 1977 research objectives for the air health effects program in laying the foundation for the establishment of an exposure monitoring system to a of carcinogens in specific study areas; evaluating the effects of specific air po man such as oxides of sulfur and nitrogen, oxidants as measured by ozone, trace m carcinogens; expanding and refining data relating to health hazards associated wi automobile emissions; and determining the health effects of air pollutants, singl combination.

The 1977 air health effects research program includes: (1) assessing the acute health effects from short-term peak exposure to nitrogen oxides; (2) completing on-going clinical studies on ozone/oxidants to ascertain pulmonary dysfunction and alteration of immune response; (3) developing, through toxicologic studies, dose-response data on sulfuric acid, ammonium sulfate, and ammonium bisulfate; (4) developing clinical data on sulfates; (5) evaluating data on such trace metals as lead, cadmium, manganese and others; (6) beginning to establish a monitoring program to assess levels of carcinogens in specific study areas selected partly on the basis of cancer incidence rates; (7) expanding toxicology studies on carcinogens to fill identified research gaps; (8) refining and expanding knowledge on possible health hazards of emissions from motor vehicles, especially those equipped with emission control devices; (9) continuing assessment of health risks associated with fuel additives; and (10) examining the relationship between observed health effects and various pollutant particle sizes, especially those in the respirable range.

1977 Explanation of Changes from Budget Estimate

The $1,777,000 reduction from the original estimate represents (1) a congressional increase of $551,000 over the budget estimate which was subsequently reprogrammed to the BACER effort, (2) a redirection of $300,000 within the air program to support research on stratospheric modification (BACER) for which funds were not available, (3) a transfer of $746,000 to the air ecological processes and effects program to adjust the budget to actual operating conditions, and (4) a $731,000 reprogramming primarily into the program support media, contingent upon Committee approval, as appropriate.

1978 Plan

In 1978, the total health resources level will be $15,756,000 and 180 positions. These resources will include approximately $6,700,000 in contracts, $900,000 in grants, and $200,000 in interagency agreements.

In 1978, the air health effects research emphasis will continue to shift from criteria to noncriteria pollutants as on-going criteria pollutant research is completed. Sulfates, and to a lesser degree nitrates and respirable particulates, will receive main attention. Some efforts will continue to develop health effects data on nonpesticide organic and inorganic substances.

Criteria Pollutants--The total resource level for this activity is $4,536,000 and 64 positions. The criteria pollutant effort will be reduced by approximately $1,400,000 and 11 positions. The effort will be narrowed to providing data for completing revisions of the criteria documents. Work will be completed on collecting and analyzing field and laboratory data on the health effects of short-term exposure to nitrogen oxides. These data will be available as part of the criteria for short-term nitrogen oxides exposures. Work on carbon monoxide will be essentially discontinued in order to maintain the schedule for the revision of criteria documents. Clinical data obtained and analyzed on ozone will be evaluated in light of the oxidant emergency episode levels. The on-going field studies on oxidants should be nearing completion, and the resulting data will be evaluated in conjunction with the clinical data. Studies to obtain additional dose-response data, such as that for chronic exposures, will not be initiated. A minimum effort will continue on evaluating the acute and chronic health effects from exposure to combinations of criteria pollutants in order to determine the extent of additive or synergistic effects.

Noncriteria Pollutants--The total resource level for this activity is $3,700,000 and 37 positions. The research program in the noncriteria area will emphasize sulfates, with efforts on nitrates and other respirable particulates. It will be conducted at a level approximately $200,000 below the 1977 dollar level, with a reduction of seven positions. Sulfate research will concentrate on analyzing the toxicological and clinical results obtained in 1977 on sulfuric acid, ammonium sulfate, and ammonium bisulfate. This effort, coupled with that discussed under the transport and fate and measurement techniques and equipment development categories, may permit the Agency to reach a decision in the 1983-1985 period on whether these specific sulfates require regulatory action. Human exposure characterization for criteria and noncriteria pollutants will be reduced from the 1977 level.

Nonpesticide Inorganics and Organics--The total resource level for this activity is $1,220,000 and 27 positions. Efforts in the nonpesticide inorganics and organics area will continue at a slightly reduced level ($150,000 and three positions) and will emphasize collecting health effects data on such metals as cadmium and arsenic. Studies will continue, for example, on characterizing human body burdens of persons living in the vicinity of smelters. This information will be available for incorporation into such actions as those to control smelter emissions.

Carcinogens Program --The total resource level for this activity is $2,000,000 and six positions. Although many agencies in the Federal sector are involved in research on cancer and carcinogenic agents, only limited information is available both on the distribution and levels of potential environmental carcinogens and on the extent to which the public health may be at risk from such agents. EPA initiated a carcinogens program in 1976, the objective of which is to develop a systematic approach for assessing the contribution of environmental carcinogens to the occurrence of cancer in the general population. It should be noted that, as set forth in Reorganization Plan No. 3., EPA has a mandate to determine man's total environmental exposure to pollutants. Therefore, because of its unique technical capability to monitor and characterize environmental exposures, EPA can make a major contribution to national research efforts on cancer through its environmental carcinogens program. As an integral component, the program will consolidate and coordinate the many data bases which currently exist in other agencies. Ultimately, the principal thrust of this program is to identify the significance of environmental carcinogens to the occurrence of human cancer via an assessment of media transport, inter and intramedia transformation, improved measurement methodology, assessment of exposure levels, dose assessment, and retrospective estimation of exposure, all conducted under a rigorous quality assurance program, for both man made and natural carcinogens which may affect the general population.

In 1978, the environmental carcinogens program will continue to build on the developing data base. The shift of resources to increase the program by $1,000,000 and six positions will be used primarily to initiate retrospective epidemiology studies, the data from which will be applied eventually to the design of a cost-effective, pollutant oriented system to assess the contribution of environmental carcinogens to cancer occurrence and mortality.

Catalyst Program--The total resource level for this activity is $4,300,000 and 46 positions. The catalyst program will be reduced by approximately $950,000 and ten positions.

Based on emerging results from exposing subjects to ultrafine sulfuric acid mist and the field monitoring program to determine ambient concentrations of sulfuric acid and other emitted pollutants around heavily travelled freeways, resources will be deployed to address additional research needed on automotive-emitted sulfuric acid or will concentrate more on assessing the health effects from various trace metals emitted from autos using new fuel additives or improved control systems. Animal studies on whole exhaust emissions will continue, but at an in-house level reduced from that in 1977.

The 1978 plan calls for a total reduction in the health effects program of $1,704,000 and 25 positions. The funding reduction reflects a phasing down of work on criteria pollutants, (-$1,400,000) as the Agency's focus shifts to the noncriteria pollutant and carcinogens questions. Work in the noncriteria and nonpesticide organic and inorganic areas will be continued at a slightly reduced level with reductions of -$200,000 and -$150,000, respectively. As data is amassed on the health effects of oxidation catalyst generated pollutants, the catalyst program will be reduced by $950,000, and no new work will be initiated on diesel or three way catalysts. Part of the reduction in the above areas is to be used to increase the carcinogen program by $1,000,000.

ECOLOGICAL EFFECTS

1976 Accomplishments

The 1976 resources for ecological effects research included approximately $120,860 in contracts, $230,700 in grants, and $116,923 in interagency agreements. The following research results were achieved in 1976:

- A unique study was completed on the uptake and translocation of cadmium (Cd) fertilizers by representative root, leaf and seed crops. Results showed that uptake of cadmium contained in phosphatic fertilizers by radish, lettuce and peas grown on a coarse textured acid soil or from a calcareous silt loam soil was a linear function of the Cd concentration, at least over the range of 0.0 to 0.087 micrograms Cd per gram of soil. These uptakes may be of sufficient magnitude to be of biological significance to consumer organisms.

- It has been assumed by most researchers that long-term chronic SO_2 fumigations of conifers in their dormant period had no effect on plant growth. Preliminary estimates of a study to test this hypothesis indicate winter SO_2 fumigations do affect plant growth of one year old Douglas Fir and Ponderosa pine seedlings. A study is now under way to determine yield effects of short (3-6) hour SO_2 winter fumigations on winter wheat at different growth stages.

- Photochemical oxidant studies conducted on lettuce, table beets, and red clover to determine yield effects at five different levels of ozone have been completed and are being analyzed. Results obtained from exposing seedlings of nine western conifer species to an average of 10 parts per hundred million ozone for six hours per day for 20 weeks showed significant growth reductions (10-25 percent) in two species (Ponderosa pine and western white pine).

- Based on preliminary findings, considerable interest has developed in the measurement of ethylene evolution from plants as a sensitive indicator of pollution stress. Further work has shown that oxidizing pollutants such as ozone and chlorine gas act more effectively as ethylene generators than do sulfur dioxide and other non-oxidizing pollutants.

- The northeastern portion of the United States consistently receives precipitation which is 10-100 times more acidic than the average. Other areas are also impacted. The effects of this increase in the acidity of rain on terrestrial ecosystems is being studied. Early work has shown that acid rain effects are associated with decomposition processes, the germination and establishment of a wide variety of forest trees and the growth of agronomic crops.

- Decomposition in the soil is an essential biological process in which dead organic matter is remineralized to plant nutrients. Without this process, life as we know it would cease on this planet. It is becoming increasingly apparent that human activities are affecting this process. At least 12 toxic substances added at real world concentrations to soil microcosms were found to markedly decrease the decomposition process and to inhibit the reproductive capability of all soil invertebrates tested. The toxic substances include cadmium, selenium, cobalt, mercury, zinc, nickel, chromium, manganese, vanadium, lithium, lanthanum, and silver.

1977 Program

The 1977 resource level for ecological effects research is $1,910,000 and 34 positions. These resources include approximately $340,000 in contracts, $221,000 in grants, and $60,000 in interagency agreements.

The FY 1977 air ecological effects program includes: (1) development and strengthening of the scientific basis for air quality control strategies and for establishing secondary air quality standards for major air pollutants with emphasis on SO_2, O_3, NO_2 and for non-criteria pollutants (e.g., heavy metals, halogen compounds, etc.) upon agronomic, horticultural and forest ecosystems; (2) measurement of acute and chronic exposure effects on ecosystems; (3) determination of acute and chronic ecological effects of major air pollutants, singly and in combination, upon agronomic, horticultural, forest, and grassland ecosystems; (4) determination of the ecological effects of air pollutants within selected systems as a result of their transport, transformation, accumulation, and dispersal through biological, physical and chemical means; (5) development of population-dynamics models dealing with air pollutants and terrestrial plant and animal communities; (6) development and application of models describing transport pathways of airborne hazardous substances (e.g., particulates, heavy metals, etc.) to selected terrestrial plants and animals; and (7) determination of the effects of mercury as an air pollutant on agronomic and horticultural plants.

1977 Explanation of Changes from Budget Estimate

The $746,000 increase over the original estimate is a result of a transfer from air health effects to adjust the budget to actual operating conditions; no change in the nature or scope of the research described in the FY 1977 submission will occur.

1978 Plan

The air ecological effects program will be conducted at a level in 1978 of $1,000,000 and 24 positions, a decrease of $910,000 and 10 positions. The position reduction will occur at the Environmental Research Laboratory, Corvallis, Oregon.

In the ecological effects program, criteria pollutants will receive continuing attention through field, greenhouse, and laboratory studies on the effects of SO_2, O_3, and NO_2 on economically important crop and tree species. Long-term photochemical oxidant effects studies on forest ecosystems will emphasize component interactions and systems analyses at the San Bernadino forest study site. At the reduced level, work on acid rain and pollutant effects on soils will be terminated while mathematical modeling efforts will be sharply curtailed.

The 10 position reduction is part of an overall reduction in positions in the Office of Research and Development directed at conducting more research extramurally in order to increase positions for other Agency activities. The reduction will be effected at the Environmental Research Laboratory, Corvallis, Oregon. The decrease of $910,000 reflects phasing out of work in acid rain, pollutant effects on soils and whole ecosystems, and a reduction in mathematical modeling activities. Research in these areas has been targeted for reduction as it does not directly support secondary air quality standards development; consequently, resources will be redirected toward higher priority research areas.

TRANSPORT AND FATE OF POLLUTANTS

1976 Accomplishments

1976 resources included approximately $3,029,124 in contracts, $1,675,491 in grants, and $2,084,907 in interagency agreements.

- Since airborne sulfates may cause adverse health effects, a major study was conducted of the transport of SO_2 in polluted air masses. The transformation of SO_2 to sulfates in power plant plumes were tracked for 60-100 km and urban plumes for 250 km. The results support the theories of long-range transport of sulfates from large point sources and urban areas.

- EPA investigators participated in a field study (conducted at the Genera test track facility in Milford, Michigan) to assess sulfuric acid and su exposures produced by catalyst-equipped cars. Results showed that sulfa emitted by the cars was in the form of very small (0.02 um) particles o acid and remained in the acid form at least 20 meters downwind from the These results indicate the importance of measuring sulfuric acid concer attributable to mobile sources directly on roadways.

- A numerical model was developed for studying the ammoniation of sulfur emissions from cars. It had been thought that sulfuric acid concentr associated exposures were highly dependent upon background ammonia co Under worst case conditions the ammoniation process was found to be c by diffusion; maximum sulfuric acid concentrations were only depender variations in background ammonia. The degree of ammoniation on the worst case meterological situations, appeared to be relatively insen background ammonia concentrations.

- Two major field studies were conducted to assess the long-range tra oxidants and their precursors. Results showed that oxidants and th can be transported over long distances. No evidence was found tha by themselves produce oxidant levels above the national standard,

- A report on the problem of the possible depletion effects of halog pollutants on stratospheric ozone was written and submitted to th on Public Health and Environment. The report discusses the poten ozone depletion in the stratosphere and subsequent increases in a violet radiation from the sun reaching the earth's surface.

- A major study was conducted in the EPA wind tunnel to assess the buildings on the dispersion of effluents from nearby stacks. Th wind to a rectangular building was found to have a significant dispersion of pollutants released from building rooftops. The study can be used to refine ground level concentration estimate the conventional plume theory.

1977 Program

The 1977 resources level for air transport and fate research was positions. These resources include approximately $3,450,000 in contr in grants, and $2,405,000 in interagency agreements.

The 1977 program reflects increasing emphasis on the following areas:

(1) Atmospheric Sulfates: Uncertainty continues to exist con of atmospheric sulfate associated with human activity--its distribution and probable sources. The program on atmosph the chemistry and physics of atmospheric sulfates is desig these uncertainties, particularly with respect to the fol

- The role of photochemistry in the formation of sulfate

- The relative contribution of high vs. low level sulfu sources in producing concentrations of sulfates at gr

- The amount of visibility reduction associated with a sources of atmospheric sulfur.

(2) Halocarbons: Investigations are being made of man made and naturally occurring halocarbon impacts on stratospheric ozone with emphasis on tropospheric sources, dispersion, and reactions and stratospheric sinks.

(3) Air Quality Simulation Model Development (AQSM): Model development will shift from the urban scale to the development and evaluation of smaller scale highway models and larger scale (500-1000 km) models. Both of these models are needed to evaluate adequately the sulfates problem, while the larger scale models are required to evaluate in general the problem of long-range transport and transformation of pollutants.

(4) Photochemical Oxidants: Emphasis will be placed on determining the sources, distribution and atmospheric chemistry of photochemical oxidants. Special studies will be conducted to determine: the role of natural vs. man made sources; the impact of long-range transport and the inter-relationships of NO_x, HC/Oxidants; and specific hydrocarbon reactivities associated with precursors of oxidants.

1977 Explanation of Changes from Budget Estimate

The $412,000 reduction from the original estimate reflects a redirection of funds to the interdisciplinary media to increase technical support services. These funds became available subsequent to the preparation of the budget estimate through the deletion of selected portions of work planned under the Regional Air Pollution Study (RAPS).

1978 Plan

The 1978 resources level for air transport and fate will be $9,892,000 and 41 positions, the same level as in 1977. These resources include approximately $3,450,000 in contracts, $2,076,000 in grants, and $2,405,000 in interagency agreements.

The 1978 program is essentially a continuation of the 1977 plan and will continue to support and intensify research on determining the transport, transformation, and removal processes of regulated and important non-regulated pollutants with major effort focused on oxidants, sulfates, halocarbons and toxic organics.

In 1978 a new, highly focused field measurement program on the Sulfate Transport and Transformation in the Environment (STATE) representing a series of intensive field experiments to ascertain the nature and extent of long-range transport and transformation of sulfates, and nitrates, will be initiated. The STATE program, a comprehensive five year program is a necessary follow-on to the Regional Air Pollution Study (RAPS) program in St. Louis which was heavily supportive of research on air pollution on the urban scale and will be completed in 1977.

The STATE program is designed to acquire the data base necessary for the development of control strategies for the reduction of sulfur and nitrogen transformation products in the atmosphere. To obtain such information will require aerometric and meterological measurements on an areawide scale of 100-1000 km combined with vertical characterization (within the troposphere) to describe and predict pollutant concentrations at ground level. The field experiments will be conducted during the winter periods (including conditions of snow cover, steady precipitation) and the summer periods (including conditions of stagnation, shower precipitation).

The STATE field studies will address the following specific research objectives:

- Extent to which SO_x and NO_x rates of conversion and deposition are influenced by (1) sunlight, (2) ammonia, (3) catalysts, (4) humidity, (5) terrain and vegetation, and (6) meteorology;

- Contribution of natural sources of H_2S to ambient air concentrations of sulfates;

- Chemical and physical behavior of SO_2, sulfates, NO_x, and nitrates coming from large point sources, as opposed to area sources;

Construction Grants

SECTION TAB

WATER QUALITY

Construction Grants

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 197
New Authority.....	...	...	5,180,000	4,500,000	-680,000
Appropriation.....	...	...	(5,180,000)	(4,500,000)	(-680,000)
Contract Authority....	...	...	...	...	...
Funds Available.....	$7,394,312	$68,070	5,380,000	4,340,000	-1,040,000
Appropriation, at end of year.....	(127,806)	(68,070)	(4,380,000)	(4,340,000)	(-40,000)
Contract Authority, at end of year.....	(7,266,506)	...	(1,000,000)	(...)	(-1,000,000)
Obligations.....	4,329,228	6,076,420	6,518,751	5,540,000	-978,751
Appropriation.....	(63,336)	...	(924,094)	(4,540,000)	(+3,615,906)
Contract Authority....	(4,265,892)	(6,076,420)	(5,594,657)	(1,000,000)	(-4,594,657)
Outlays.....	2,428,569	3,770,000	4,430,000	5,190,000	+760,000
Appropriation.....	(662,905)	(400,000)	(700,000)	(660,000)	(-40,000)
Contract Authority....	(1,765,664)	(3,370,000)	(3,730,000)	(4,530,000)	(+800,000)
Liquidation of Contract Authority.....	800,000	4,100,000	3,800,000	5,000,000	+1,200,000

Summary of Budget Issues

An appropriation of $5 billion is requested for FY 1978 for the liquidation of obligations incurred pursuant to authority contained in Section 203 of the Federal Water Pollution Control Act, as amended. Also, in FY 1978, new budget authority of $4.5 billion is requested for the construction grants program as described under the Proposed Legislative Program discussion. A supplemental request for $4.5 billion for FY 1977 is also proposed, and described under the Proposed Legislative Program discussion. It is to have a reallocation date of September 30, 1979

The following table shows the expected obligation levels in fiscal years 1977 and 1978 resulting from these and existing authorizations:

Budget and Contract Authority	FY 1977 Obligations	FY 1978 Obligations	Balance to Carryover into FY 197
	(dollars in millions)		
Construction Grants:			
P.L. 92-500 ($18B)	$5,600	$1,000	...
Public Works Employment ($480M)	200	240	$40
FY 1977 New Authority ($4.5B)	400	3,500	600
FY 1978 Request ($4.5B)	...	800	3,700
Reimbursable Grants (Sec. 206(a):			
P.L. 93-207 ($1.9 B)	100	...	...
P.L. 94-378 ($200 M)	200	...	...
Total	$6,500	$5,540	$4,340

The above projections are based on the assumption that Congress will extend the reallotment date (Section 205(B) of FWPCA) applicable to the construction grant funds by one year. Thus, $1 billion of the remaining P.L. 92-500 funds are scheduled for obligation in FY 1978.

The $4.5 billion supplemental (FY 1977) and the $4.5 billion (FY 1978) new authority, together with the carryover funds, will provide obligation of $6.5 billion in FY 1977 and $5.5 billion in FY 1978. In line with the 10-year funding strategy, another $4.5 billion appropriation will be requested in FY 1979.

The following table shows the projected outlays from the obligations in FY 1977 and FY 1978 and all prior years.

OUTLAYS	FY 1977 Outlay Estimates	FY 1978 Outlay Estimates	Carryover To All Subsequent Yea
		(dollars in millions)	
P.L. 84-660.....	$260	$100	$170
P.L. 92-500.....	3,730	4,530	6,100
Public Works (P.L. 94-369)....	30	100	350
1977 New Authority ($4.5B).	50	300	4,150
1978 Request ($4.5B).....	...	20	4,480
Reimbursables (P.L. 93-207, 94-378).....	360	140	320
Total.....	$4,430	$5,190	$15,570

Proposed Legislative Program

A 10 year funding plan of $4.5 billion per year is recommended. This reflects EPA long-term strategy of providing level funding over an extended period of time to meet the most critical treatment needs as soon as practicable. The $4.5 billion is a level of funding which EPA believes can be effectively managed by EPA and the States and can be readily absorbed by the private sector and construction industry.

This plan is offered in conjunction with several amendments to the Federal Water Pollution Control Act (FWPCA) which EPA will submit. The FY 1977 Supplemental request of $4.5 billion is not contingent on the passage of these amendments.

The effect of the amendments are as follows:

- 75 percent funding for treatment plants, interceptors and infiltration/inflow correction. This does not represent a change.

- 60 percent funding for control of pollutant discharges attributable to stormwater in combined sewer systems. This reduces eligibility from 75% to 60% for this activity. The reduction was proposed in an attempt to lower the total cost of the program to be more within the reach of resources which could be made available.

- no funding for separate storm sewers, sewer replacement or rehabilitration (except to eliminate excessive infiltration) and new collection systems.

  The eligibility for these activities have been reduced from 75% to zero primarly due to the nominal pollution control effectiveness that can be gained. Both EPA and the States have placed low priority of these efforts with the result that few have reached the State priority lists and hence, even fewer have been funded to date.

- reserve capacities will be limited to the level required by the service area at the time the plant becomes operational.

  Previously the Agency funded reserve capacity up to the life of the facility, assuming one demonstrated it was cost effective at the time of construction rather than later. This part of the amendments will eliminate the eligibility for that portion of reserve capacity designed above that necessary at the time the plant becomes operational.

- provide funding only to the levels required to comply with the Federal effluent limitations based on alternatives to assure compliance with the Best Practical Waste Treatment Technology limitations currently applicable in Sections 302 or 307(a). However, where the grantee desires a more stringent effluent limitation than necessary to comply with the federally approved water quality standards and it can be demonstrated to equal the cost of the most efficient means of achieving the beneficial use objectives of the standards or guidelines, then that portion could become fundable.

  Many States' and commissions' standards are higher than those set by the Federal government. Therefore, the cost of planning design and construction to attain these levels will be limited to that necessary to meet only the Federal Standards unless it can be demonstrated to equal the cost of the most efficient means of achieving the beneficial use objectives of the Standard guidelines.

The Agency has laid out its long-term level funding strategy which will have the effect of evening out both obligations and outlays so that, state planning and local construction can be maximized without large scale hiring and firings caused by peak loading.

The following table represents our projected obligations thru 1982.

Obligations and Outlays for Supplemental and New Legislation

	FY 1977	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982
Obligations	400	4,300	4,900	4,700	4,500	4,500
Outlays....	50	320	1,440	3,090	4,590	4,790

Both obligations and outlays should stabalize in the early 1980's.

These categories according to the 1976 Needs Survey will require $45 billion to provide the Federal share for all funding requirements when the anticipated obligations from the original $18 billion is subtracted.

Program Description

This program provides grants to municipal, intermunicipal, State and interstate agencies to assist in financing the planning, design, and construction of municipal waste water treatment facilities. Amounts made available for obligation are allotted each State on the basis of needs formulas set forth in the Federal Water Pollution Control Act Amendments of 1972 and subsequent legislation. Within these allotments, grants are awarded on a priority basis for individual projects. Each project is currently eligible for 75 percent Federal assistance; amendments submitted by EPA would limit the treatment categories eligible for participation in the grant program.

The Federal Water Pollution Control Act Amendments of 1972 substantially altered methods of funding the construction grants program and the methods of providing assistance to individual projects. Under the amendments, both the percentages of Federal grants and the annual amount of monies authorized and appropriated were increased over levels previously available. Subsequent legislation is expected to provide additional funding and amend portions of the Act, but is not expected to substantially alter the scope nor intent of the current FWPCA.

Under the existing legislation, a three step approach to funding projects is required. The first step is development of the facilities plan, which includes a preliminary description of the project, a cost-effectiveness analysis of several alternatives, an environmental assessment, an infiltration/inflow evaluation, and identification of effluent discharge limitations. The second step is the development of design plans and specifications. The third and final step is to fund the actual construction of the treatment works. Grants are made for each of these steps, with funding of subsequent steps contingent on successful completion of prior steps and availability of funds. Payments against these obligations are made to the grantee as all or portions of each of these steps are completed.

Funding for the program includes both contract authority and budget authority. The initial $18 billion authorized under the FWPCA is contract authority. For obligations incurred under contract authority, payments cannot be made until funds are appropriated to liquidate contract authority. Future construction funds will be provided through new budget authority legislation.

1976 Accomplishments

During FY 1976, EPA awarded 3,976 new grants totalling $4.3 billion. Total outlays for the program reached $2.4 billion. This level exceeded the FY 1975 outlay level by almost $500 million, and was the highest level of payments in a single fiscal year since the program began.

At the end of FY 1976, the number of ongoing projects totalled 8,367 representing $14.4 billion in obligations. During FY 1976, 1,662 projects were completed.

1977 Program

A total of $6.5 billion in obligations is projected during FY 1977. This will include approximately 5,750 new awards totalling $6.2 billion for the planning, de-, and construction of treatment facilities. Approximately $300 million will be gated to reimburse projects eligible under Section 206(a) during FY 1977. By the end of the year, approximately 9,900 projects will be in various stages of preconstruction or construction activity. Total outlays for FY 1977 for all portions of the program are estimated to increase to $4.4 billion, a jump of $2.0 billion from FY 1976.

This level of activity assumes that the 10-year program described above is begun in FY 1977 and that the FWPCA is amended to allow current funds to remain available to the States for two years after the year of allocation.

In the event that the reallocation date is not extended, an additional billion dollars would have to be obligated before September 30, 1977, and there is a probability that a reallocation of funds would take place in a number of States. This is due to the fact that EPA and the States may not be able to obligate all the funds allocated to these States by September 30, 1977.

1977 Explanation of Changes from Budget Estimate

The change from the original budget estimate for new authority result from the requested Supplemental appropriation of $4.5 billion and two congressional initiatives: Public Works (P.L. 94-369) of $480 million and Section 206(a) of the FWPCA of $200 million. The obligations and outlays changes result from the two congressional initiatives just noted and slippage in FY 1976 and the Transition Quarter obligations. This is offset by $1.0 billion of obligations being d from FY 1977 to FY 1978.

1978 Program

In FY 1978, obligations totalling $5.5 billion and outlays of approximately $5.2 billion are projected. The new obligations will support approximately 5,850 new awards. Total projects in various stages of completion at the end of FY 1978 will number about 10,900. Additional budget authority of $4.5 billion is being requested. Carryover authority into FY 1979 for current and past appropriations will be $4,340 million.

The following table summarizes the FY 1978 program and compares the activity levels to the previous two years:

Item	FY 1976 Actual	FY 1977 Planned	FY 1978 Estimated
		(dollars in billions)	
Total obligations.....	$4.3	$6.5	$5.5
New Step 1 Awards.....	2,341	2,100	2,000
New Step 2 Awards.....	724	2,100	2,300
New Step 3 Awards.....	911	1,550	1,550
ive Projects.....	8,367	9,900	10,900
l Outlays.....	$2.4	$4.4	$5.2

The $6.5 billion in obligations projected in FY 1977 represents a peak resulting from the $9 billion FY 1976 allocation. The decrease of 1.0 billion in obligations from this peak in FY 1978 is the result of the Agency's determination that a $4.5 billion per year program is deemed more viable for long-term funding purposes. From fiscal years 1978 through 1987, the obligation level is expected to fall from $5.5 to a level of $4.5 billion per year.

Outlays, on the other hand, are expected to increase by approximately 760 million from fiscal years 1977 to 1978 as a result of the steadily increasing number of active projects

Additional positions will be applied to this program. These will be used for monitoring, reviewing, auditing and processing of applications and projects. The affect of this increase will be the speed up of the program as represented by the outlays shown above. These increases are essential to the integrity and good administration of the largest public works program in the Federal government. Even with this increase EPA's program is operated at a significantly lower level than other similar programs within the federal system.

Water Supply

SECTION TAB

WATER SUPPLY

	Ford Submission Pos.	Ford Submission Amount	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount
	(dollars in thousands)		(dollars in thousands)	
Abatement and Control:	229	$11,300	229	$38,282
Criteria, Standards, and Guidelines	71	7,800	74	7,967
Drinking Water Standards and Regulations Development.....	(46)	(3,300)	(49)	(3,411)
State Program Guidelines and Regulations Development.....	(25)	(4,500)	(25)	(4,556)
State Program Resource Assistance.....	...	...	...	26,500
Public Water Systems Supervision Program Grants.....	...	...	...	(20,500)
Underground Injection Control Grants....	...	...	...	(6,000)
Special Studies and Demonstration.....	...	...	...	...
Rural Water Associations Grants.....	...	...	...	...
Water Supply Training Grants.....	...	...	...	...
Strategy Implementation.....	158	3,500	155	3,815
Public Water Systems Supervision Program Implementation.....	(130)	(2,874)	(127)	(3,003)
Underground Injection Control Program Implementation.....	(28)	(626)	(28)	(812)
Enforcement:	7	154	7	154
Water Supply Enforcement.....	7	154	7	154
Water Supply Enforcement.....	(7)	(154)	(7)	(154)
Research and Development.....	91	15,200	91	15,200
Public Sector Activities.....	91	15,200	91	15,200
Public Sector Activities.....	(91)	(15,200)	(91)	(15,200)

WATER SUPPLY

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
PROGRAM HIGHLIGHTS					
Abatement and Control:				$37,800	$+6586
Appropriation.....	$17,042	$30,419	$31,214	~~$11,300~~	~~$19,914~~
Permanent Positions.....	152	209	203	229	+26
Transition Quarter.....	4,734	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	81	81	154	154	...
Permanent Positions.....	4	4	7	7	...
Transition Quarter.....	20	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	8,461	13,254	13,227	15,200	+1,973
Permanent Positions.....	89	85	86	91	+5
Transition Quarter.....	6,488	N/A	N/A	N/A	N/A
Total, Water Supply Program:				53,154	+8559
Appropriation.....	25,584	43,754	44,595	~~26,654~~	~~17,941~~
Permanent Positions.....	245	298	296	327	+31
Transition Quarter.....	11,638	N/A	N/A	N/A	N/A
Outlays.....	10,423	29,480	33,154	~~21,154~~ 34,454	~~12,080~~ +1300
Authorization Levels.....	54,500	78,500	78,500	*	

* Authorization Pending.

OVERVIEW AND STRATEGY

The safety of the Nation's drinking water supplies generally has been taken for granted by the American public. However, a 1969 community water supply study conducted by the Department of Health, Education, and Welfare covering 969 systems revealed that 36 percent of the tap water samples contained constituents that exceeded the 1962 Public Health Service Standards. Many systems evidenced physical deficiencies, including inadequate disinfection and clarification capacity and insufficient system pressure. In addition, plant operators were found to be poorly trained in fundamental microbiology. Many systems were not inspected regularly by State or local authorities.

Safety of the drinking waters is primarily the concern of State and local governments. However, the Congress has determined that the Federal Government shares in this responsibility, for the causes and effects of unhealthy drinking water are not confined within the borders of State or local jurisdictions. The solution to the problem is to be found in a cooperative effort in which the Federal Government assists, reinforces, and sets standards for State and local efforts.

The Public Health Service Act and the Interstate Quarantine Regulations provided the original statutory authority for the Federal water supply program. The Safe Drinking Water Act of 1974, an amendment to the Public Health Service Act, increased the Agency's authorities and responsibilities to improve the quality of drinking water and to protect the public health and welfare. The Act covers approximately 50,000 community water supplies, 200,000 noncommunity supplies and 200,000 facilities that utilize underground injection to dispose of contaminants such as industrial byproducts and municipal wastes.

(Revised 2-24-77)

WATER SUPPLY

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
PROGRAM HIGHLIGHTS					
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EPA is required to establish primary and secondary drinking water regulations specifying the maximum permissible bacteriological and chemical constitutent levels necessary to protect the public health and welfare. Interim primary drinking water regulations were promulgated in December 1975 and will be effective June 1977. Revised regulations are to be based upon a study conducted by the National Academy of Sciences which is expected to be completed early in 1977.

State participation is essential to the successful implementation of the Act. States will have primary enforcement responsibility for public water systems to ensure compliance with the national drinking water regulations. Should a State fail to seek primacy to satisfy the minimum State program regulations, EPA is required by the Act to establish and enforce a program of public water systems supervision in the State. The drinking water implementation regulations specifying the requirements for minimum State programs and State program grant regulations have been effective since January 1976. Based upon these requirements, 54 States and territories have expressed their intent to work toward the assumption of primacy by June 1977. In many instances, this will require action by State legislatures. The State primacy applications for FY 1977 are expected very shortly.

The Act also requires EPA to establish regulations for State underground injection control programs in order to protect underground sources of drinking water from contamination. EPA is required to designate those States for which an underground injection control program is necessary. Designated States are intended to have primary enforcement responsibility for this program and must satisfy the State program regulations to assume it. Should States fail to assume or qualify for this responsibility, EPA must implement this program and enforce the regulations. The underground injection control regulations were proposed in the Federal Register in August 1976. It is anticipated that they will be promulgated by mid-1977.

The program policy and strategy recognize that providing safe drinking water to all Americans cannot be achieved immediately. As such, the program regulations rely on a phased approach to implementation providing adequate time for a State to satisfy the monitoring, surveillance, public notification, reporting, and recordkeeping requirements. In addition, to permit the States to assume the primary role for assuring the safety of drinking water, participation by State representatives and responsible interest groups and citizens has been incorporated into the regulatory development process. Special attention has been given to protection of public health, economic impact, and building on existing State institutions in developing the regulations.

The major program emphasis for the coming budget year are threefold: (1) establish standards for organics and develop feasible treatment technology, (2) provide sufficient assistance to the States to encourage the maximum number to seek primary enforcement responsibility for public water systems supervision and underground injection control programs, and (3) implement a Federal program in those States that definitely refuse to seek primacy or are unable to assume primacy. The goal is to have the States and local governments assume the principal role in assuring safe drinking water with the Federal Government providing technical and financial support.

Water supply abatement and control is developing a coordinated program in which the research and development efforts will play a significant part in the development of regulations and the setting of standards. Research priorities will be implemented in consideration of needs and priorities of abatement and control activities. Research will continue to study the causes, diagnosis, treatment, control, and prevention of diseases and other impairment of health resulting directly or indirectly from contaminants in drinking water. The objectives are to develop criteria for drinking water constitutent limits with particular emphasis on organic, inorganic, and microbiological contaminants.

The products of research and development activities include: (a) improved methods to identify and measure the existence of contaminants; (b) improved methods to identify and measure the health effects of contaminants in drinking water; (c) new or improved methods of treating raw water to prepare it for drinking, so as to improve the efficiency of water treatment and remove contaminants from water; and (d) improved methods of protecting underground water sources of public water systems from contamination.

During FY 1978, research will concentrate on organics and the analytical and disinfection methods and treatment technology to address this problem. Research efforts will be specifically directed based on the recommendations of the National Academy of Sciences study to be completed in early 1977. Research will be conducted to develop and implement quality assurance procedures and protocols for water supply laboratories to assure that data are accurate and legally defensible. Resources for this effort are included under the interdisciplinary activity as part of a comprehensive quality assurance program for all environmental media.

Enforcement will be used to respond to emergency situations, examine State program applications for adequate enforcement provisions, and participate in the preparation of program guidance and the development of enforcement policies and implementation procedures. This program will also implement enforcement overview and back-up support to the public water systems program. This involves, where possible, the investigation of violations and the initiation of civil or criminal actions in States without primary enforcement responsibility.

SUMMARY OF INCREASES AND DECREASES	(in thousands of dollars)
1977 Water Supply Program.....	$44,595
Abatement and Control. ~~$6,586,000~~.....	~~-19,914~~ +6586
A net ~~decrease~~ increase of ~~$19,149,100~~ is a result of a ~~decrease~~ increase of ~~$20~~ $6.5 million ~~due to the inclusion of~~ for public water systems supervision grants and $4.0 million for underground injection control grants, ~~in the new consolidated grants proposal~~ a decrease of $1,080,000 due to the termination of the one-time rural water associations grant assistance and academic training; partially offset by an increase of $1,165,900 to provide additional contract funds relating to organics standards development, and program implementation, and salary support for additional personnel.	
Research and Development..... This increase is to conduct research based on the recommendations of the National Academy of Sciences study of drinking water contaminants. The increase will be used to determine occurrence and effects of potential carcinogens in drinking water, to develop monitoring and analytical methods, and to determine applicability of bench level carcinogen removal techniques at large scale. Epidemiological studies of the relationship of water hardness to heart disease and other problems will be conducted. Cost effective advanced treatment techniques will be evaluated at pilot plant level and large-scale system technology for inorganics removal will be adapted to small community water supply systems.	+1,973
1978 Water Supply Program Request.....	~~26,654~~ 53,154

(Revised 2-24-77)

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request $53,154,000

An appropriation of ~~$26,654,000~~ is requested for 1978. This request, by appropriation account, is as follows:

Abatement and Control	$37,800,000 ~~$11,300,000~~
Enforcement	154,000
Research and Development	15,200,000

This request represents an ~~decrease~~ increase of ~~$17,941,200~~ $8,559,000 from the 1977 water supply program and reflects ~~the transfer of~~ new increase for public water systems supervision grants ~~(-$15,000,000)~~ ($1,500,000) and underground injection control grants ~~(-$5,000,000)~~ ($1,000,000); ~~to the new consolidated program grants program;~~ a termination of the one-time rural water associations grant funding (-$315,000); nonrecurring training grant funds (-$765,000); an increase in contract funds and additional staff support relating to organics standards development and program implementation (+$1,165,900); and an increase to conduct research as recommended in the National Academy of Sciences study on drinking water contaminants (+$1,973,000).

2. Changes from Original 1977 Budget Estimate

Changes from the original budget are as follows:

	(in thousands of dollars)
Original 1977 estimate	$43,754
Transfer of Cincinnati NFIC functions	+30
Transfer within research and development activities	-27
Transfer to program management and support accounts	-324
Rural water associations grants	+315
Training grants	+765
Operating adjustments	+82
Current 1977 estimate	44,595

A small function and associated resources, $30,000, was shifted to the water supply program from the water quality program with the closing of the Cincinnati National Field Investigation Center.

A proposal will be submitted to the Committee, as appropriate, for separate consideration for a research and development reprogramming to the program management media to cover increased costs.

In the budget estimate, the program management for the water supply program was included within the water supply subactivities rather than within the program management media. In order to realign the management resources in the same fashion as other media, six positions and $324,000 were transferred to the program management and support media.

The 1977 Senate Report (94-974) directed that $315,000 be reprogrammed into this media to be used for providing grants to State associations of rural water districts. This reprogramming is now reflected in the current estimate.

(Revised 2/24/77)

The Congress added-on $4 million for academic training; initially, none of this add-on was allocated to the water supply program. The Committees have been requested to approve a distribution of these funds which would involve $1,465,000 distributed to universities and colleges for fellowships, institutional grants, and contracts for curriculum development. It is estimated that $765,000 of this effort will be in the water supply area.

Operating adjustments are changes required to adjust the budget to actual operating conditions. In the process of applying the budget to the specific needs of each regional office, laboratory, and headquarters program office, it is often necessary to make small adjustments to the planned budget. The $82,000 increase is the cumulative effect of these changes on water supply programs in 1977.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations	$25,584	$51,874
Additional cost of program increases	+10,309	+1,883
Increases and decreases to budget estimate as listed above	+595	...
~~Transfer to consolidated~~ increase for grants ~~media~~	...	~~17,300~~ +6,000
Program decreases	...	-1,000
Change in amount of carryover funds available	+15,386	~~7,279~~ -4,779
Total estimated obligations	51,874	~~28,170~~ 53,978
(From new obligation authority)	(43,028)	~~(26,611)~~ (49,911)
(From prior year funds)	(8,846)	~~(1,567)~~ (4067)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The 1977 budget included program increases over the 1976 level which are expected to result in an obligation increase of $10,309,000. Increases in 1978 relating to organics standards development and program implementation and the NAS study on drinking water contaminants is expected to result in a $1,883,000 increase to obligations.

The increases and decreases to the 1977 budget estimate, as detailed previously, result in a net change of +$595,000 to obligations in 1977.

The ~~transfer of~~ increases for the public water systems supervision grants and underground injection control grants ~~to the new consolidated grants media~~ results in an ~~decrease~~ increase of ~~$17.3 million~~ $6 million in obligations in 1978 in the water supply media.

The 1978 program decreases for the rural water associations grants and training grants is expected to decrease obligations by $1 million.

Carryover funds effecting obligations after FY 1976 result in a change of +$15,386,000; obligations in 1977 from carryover funds are expected to be $8,846,000. In 1978, these obligations are expected to decrease by ~~$7,279,000~~ $4,779,000 to a level of ~~$1,567,000~~ $4,067,000.

(Revised 2/24/77)

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Program decreases	...	-1,000
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WATER SUPPLY

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
PROGRAM LEVELS					
State applications for public water systems supervision grants.....	53	50	54	47[a/]	-7
States with primary enforcement responsibility for public water systems supervision programs.....	...	40	47	54	+7
State applications for underground injection control grants.....	...	...	19[b/]	19[c/]	...
States with primary enforcement responsibility for underground injection control programs.....	...	...	...	10	+10

a/ To be eligible for FY 1978 grants, a State must have been approved for primacy in FY 1977.

b/ Based on the assumption that 19 States are designated by the Administrator as requiring underground injection control programs. However, a State may petition the Administrator to be designated.

c/ Although the State program regulations require designated States to assume primacy within 270 days after the date of promulgation, the grant provisions extend grant eligibility of designated States to two years upon a formal declaration of intent to assume primacy. After the two year period, a designated State without primacy will not be eligible for grants.

Abatement and Control

SECTION TAB

WATER SUPPLY

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Criteria, Standards, and Guidelines....	$3,884	$4,973	$6,798	$7,800	+$1,002	WS-9
State Program Resource Assistance.....	10,907	20,000	21,080	26,500	+5420 ~~-21,080~~	WS-12
Strategy Implementation...	2,251	5,446	3,336	3,500	+164	WS-15
Total.....	17,042	30,419	31,214	~~11,300~~ 37,800	~~-19,914~~ +6586	
Permanent Positions						
Criteria, Standards, and Guidelines....	57	48	65	71	+6	
State Program Resource Assistance.....	...	...	...	...	...	
Strategy Implementation...	95	161	138	158	+20	
Total.....	152	209	203	229	+26	

Purpose

The Abatement and Control appropriation encompasses activities relating to the development of regulations and establishment of standards necessary to protect the public health and welfare, the development of control strategies and programs and the implementation of such programs as mandated by the Safe Drinking Water Act of 1974. These activities include the promulgation of primary and secondary drinking water regulations which include maximum contaminant levels, the establishment of minimum requirements for State public water systems supervision and underground injection control programs, and the Federal implementation of these programs if necessary.

EPA's water supply abatement and control activities are directed toward the goal of providing safe drinking water to all Americans through the attainment and maintenance of the primary drinking water regulations. The first program priority is to develop primary drinking water standards to protect the public from drinking water constituents which have an adverse health effect. This includes the establishment of standards relating to recent findings on organics, the economic analyses on public water systems supervision, and the development of feasible treatment technology. The second program priority is to assist the States in assuming the primary role in implementation of the public water systems supervision and the underground injection control programs. Also included are the establishment of programs on Indian reservations and the operation of a program covering interstate carriers as required by the Act. In addition, Federal implementation of both programs will be necessary in States without primacy.

(Revised 2/24/77)

The abatement and control activities are categorized under the following subactivities.

Criteria, Standards, and Guidelines. This subactivity is related to the development of drinking water standards and regulations and to the development of State program guidelines and regulations. This activity includes development of information from fundamental studies on health effects, control technology, and monitoring to determine the concentration of hazardous substances in the environment. These include microbiological contaminants (bacteria and virus) and toxic chemicals from natural and synthetic sources. Economic analyses associated with these activities are also included. Under this subactivity, the primary and secondary drinking water regulations are established and the minimum requirements for State programs for the public water systems supervision and underground injection control programs are established. In addition, guidance to the regions for program implementation is provided.

State Program Resource Assistance. This subactivty involves the provision of resources to support State activities in implementing the public water systems supervision and underground injection control programs as well as to provide training support in the water supply field. The primary responsibility for assuring the safety of the drinking water rests with the States. If the States are to effectively implement this responsibility and thereby eliminate or reduce the need for direct Federal involvement, Federal resource assistance is required. ~~In FY 1978, this program is included in the consolidated grants proposal.~~

Strategy Implementation. This subactivity is related to the implementation of regulatory requirements for which the Federal Government is responsible. This includes program oversight in States with primacy, as well as program implementation in States without primary enforcement responsibility, on Indian reservations, and for the interstate carrier conveyances programs. Other activities include technical assistance to States in the implementation of public water systems supervision programs and in the establishment of underground injection control programs; technical evaluations of petitions for designation of sole source aquifers; coordination with water quality management planning programs to ensure proper consideration of water supply activities; and technical and policy guidance relating to underground injection.

(Revised 2/24/77)

WATER SUPPLY

Abatement and Control

Criteria, Standards, and Guidelines

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Drinking Water Standards and Regulations Development	$2,143	$3,194	$2,298	$3,300	+$1,002
State Program Guidelines and Regulations Development....	1,741	1,779	4,500	4,500	...
Total.....	3,884	4,973	6,798	7,800	+1,002
Permanent Positions					
Drinking Water Standards and Regulations Development	57	32	43	46	+3
State Program Guidelines and Regulations Development....	...	16	22	25	+3
Total.....	57	48	65	71	+6

Budget Request

An appropriation of $7,800,000 and 71 positions is requested for FY 1978. This represents an increase of $1,002,000 and six positions over the FY 1977 appropriation. The funds will be used for contracts to determine exposure and health risks of some drinking water contaminants and to conduct assessments of the technological and economic feasibility of controlling these contaminants. Additional personnel will develop standards and program guidance documents necessary for implementation of the public water systems supervision and the underground injection control programs.

Program Description

The Safe Drinking Water Act requires EPA to assure the safety of drinking water through the establishment and enforcement of national drinking water regulations specifying maximum permissible bacteriological, chemical, and radiological constituent levels required to protect the public health and welfare. Interim primary regulations have been established which become effective in June 1977. Final standards will be established based upon a National Academy of Sciences study which will be completed in 1977. Currently, maximum contaminant levels for organics and the appropriate treatment techniques to control these contaminants are being developed. EPA is also responsible for establishing requirements for a minimum State program for public water systems supervision which would meet the Primary Drinking Water Regulations, and for underground injection control which would protect ground water sources of drinking water. This includes the development of program guidance documents and strategies for program implementation.

DRINKING WATER STANDARDS AND REGULATIONS DEVELOPMENT

1976 Accomplishments

Development of drinking water standards and regulations included approximately $2 million in contract support obligations and commitments, primarily for the National Academy of Sciences study, the conduct of economic analyses on the proposed regulations, and health assessments of various

contaminants in drinking water such as asbestos, viruses, hydrocarbons, etc. These activities are expected, where necessary, to result in the establishment of maximum contaminant levels for these constituents and the promulgation of revised primary drinking water regulations in FY 1977. Interim primary drinking water regulations were promulgated in December 1975 and become effective in June 1977. As a result of the discovery of organics in drinking water which may be harmful to man, EPA initiated a request for data to aid in the assessment of these contaminants. As data becomes available on human health effects, revised standards and regulations will be issued. Finally, an assessment of home water treatment was initiated.

1977 Program

$2.3 million of the 1977 appropriation has been allocated to this program element. Approximately $1 million of the 1977 estimate will be used for contracts to evaluate health effects of specific contaminants in drinking water, and to provide the capability to perform special studies in problem areas. The findings from projects funded in the prior fiscal year will be used to establish regulations and to set standards. The major outputs planned include the promulgation of revised primary drinking water regulations, the development of procedures relating to quality assurance and laboratory certification, and economic analysis on the regulations. Activities relating to the assessment of health risks, economic impact, and treatment techniques will continue.

1977 Explanation of Changes From Budget Estimate

The decrease of $896 thousand from the budget estimate was due to a transfer to other water supply program elements to initiate the rural water survey, for public information efforts to acquaint suppliers and citizens of the requirements of the Act and regulations, and to conduct economic analyses on the proposed regulations.

1978 Plan

The FY 1978 plan for this program element includes $3,300,000 and 46 positions, an increase of $1,002,000 and three positions over FY 1977. The increase is to provide additional contract funds for the development of standards and regulations, particularly to complete the basic assessment of exposure and health risk of as many as possible of the 157 environmental health hazard contaminants expected to be identified by the National Academy of Sciences study. Studies of the technological and economic feasibility of controlling these selected contaminants will be conducted. Furthermore, the groundwork for launching a major initiative to develop new approaches to water treatment technology will be developed. The results of these efforts will form the data base for establishing standards for as many as possible of the 157 contaminants presently being examined by the National Academy of Sciences. The additional positions will be used to develop standards for some of the contaminants posing a health hazard.

STATE PROGRAM GUIDELINES AND REGULATIONS DEVELOPMENT

1976 Accomplishments

The development of State program guidelines and regulations included $1.5 million in contract/grant obligations and commitments. Development grants totalling $251,000 were awarded to the States early in the fiscal year to assess current legislative and statutory authorities and ongoing activities in preparation for assumption of primary enforcement responsibility. Grants were awarded for the conduct of certain portions of the rural water survey, for the development of technical materials to be used by small water systems, and for disseminating information to the public. An interagency agreement with the Office of Education was negotiated for the purpose of designing an educational program to upgrade the training of present utility operators. All of these activities were initiated to encourage and assist the States to assume their full responsibility for assuring the safety of drinking water.

1977 Program

$4.5 million of the 1977 appropriation has been allocated to this program element. Approximately $3 million of the 1977 estimate will be used for grants and contracts. A substantial amount of the funds will be used to complete the rural water survey and to develop a data processing system for the underground injection control program. In addition, projects relating to economic studies of implementing the underground injection control regulations, training, and public information will be funded.

1977 Explanation of Changes From Budget Estimate

The increase of $2,721,000 over the budget estimate was necessary to support the conduct of the rural water survey, to undertake feasibility studies for the development of ADP systems for the public water systems supervision and underground injection control programs, and to conduct economic analyses State program regulations. The major portion of this transfer was from the water supply strategy implementation subactivity.

1978 Plan

The FY 1978 plan for this program element is $4,500,000 and 25 positions, an increase of three positions over FY 1977. Control strategies and programs will be developed for implementation in areas where the Federal Government will have primary enforcement responsibilities, principally in States that do not assume primary enforcement responsibility. Guidance documents to assist States in implementation of underground injection control programs will be prepared. Contract funds will be used to obtain information on ground water. Furthermore, as the primary drinking water regulations are revised, it may become necessary to amend implementation regulations to reflect revised program requirements for public water systems supervision and underground injection control programs.

WATER SUPPLY

Abatement and Control

State Program Resource Assistance

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Public Water Systems Supervision Program Grants.....	$6,907	$15,000	$15,000	...	-$15,000*
Underground Injection Control Grants.....	...	5,000	5,000	...	-5,000*
Special Studies and Demonstrations..	4,000	...	...	...	...
Rural Water Associations Grants.....	...	...	315	...	-315
Water Supply Training Grants.....	...	...	765	...	-765
Total.....	10,907	20,000	21,080	...	-21,080
Permanent Positions	...	...	...	...	...

* Transferred to consolidated grants program.

Budget Request

Funding for the public water systems supervision and underground injection control grants is included in the new consolidated grants media budget request.

Program Description

Under the Safe Drinking Water Act, the States are to have the primary responsibility for implementation of the public water systems supervision and the underground injection control programs. The Congress, however, recognized that the States would require financial assistance to develop and maintain State programs that would satisfy the minimum requirements of the regulations designed to protect the public health and to protect ground water sources of drinking water. Financial assistance is available to the States for implementation of the public water systems supervision program and the underground injection control program. For States to continue to receive grant funds, after one year in the case of public water systems and two years for underground injection control, they must have assumed primary enforcement responsibility for the programs. These assistance programs are a means to strengthen the cooperative relationship between the Federal and State governments. It is the intent that through this partnership and assistance, the States will be able to assume primary responsibility for assuring the safety of drinking water.

In addition, this subactivity includes financial assistance to support water supply special studies and demonstrations, academic training, and rural water associations.

WATER SUPPLY

Abatement and Control

State Program Resource Assistance

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
		(dollars in thousands)			
Appropriation					
Public Water Systems Supervision Program Grants.....	$6,907	$15,000	$15,000	20,500	$ +5,500 ~~-$15,000*~~
Underground Injection Control Grants.....	...	5,000	5,000	6,000	+1,000 ~~-5,000*~~
Special Studies and Demonstrations..	4,000	...	...	...	...
Rural Water Associations Grants.....	...	...	315	...	-315
Water Supply Training Grants.....	...	...	765	...	-765
Total.....	10,907	20,000	21,080	26,500	~~-21,080~~ +5420
Permanent Positions	...	...	...	...	...

~~* Transferred to consolidated grants program.~~

Budget Request

A total of $26,500,000 is requested in 1978, an increase of $5,420,000 over 1977.

~~Funding for the public water systems supervision and underground injection control grants is included in the new consolidated grants media budget request.~~

Program Description

Under the Safe Drinking Water Act, the States are to have the primary responsibility for implementation of the public water systems supervision and the underground injection control programs. The Congress, however, recognized that the States would require financial assistance to develop and maintain State programs that would satisfy the minimum requirements of the regulations designed to protect the public health and to protect ground water sources of drinking water. Financial assistance is available to the States for implementation of the public water systems supervision program and the underground injection control program. For States to continue to receive grant funds, after one year in the case of public water systems and two years for underground injection control, they must have assumed primary enforcement responsibility for the programs. These assistance programs are a means to strengthen the cooperative relationship between the Federal and State governments. It is the intent that through this partnership and assistance, the States will be able to assume primary responsibility for assuring the safety of drinking water.

In addition, this subactivity includes financial assistance to support water supply special studies and demonstrations, academic training, and rural water associations.

(Revised 2/24/77)

PUBLIC WATER SYSTEMS SUPERVISION PROGRAM GRANTS

1976 Accomplishments

The public water systems supervision grants allocation totalled $7.5 million, with obligations of $6.9 million. Fifty-three States applied for these grants and expressed their intention to assume primacy in one year. The uncommitted funds of $438,200 were reallocated to the 53 States on June 1, 1976.

1977 Program

Fifty-four States submitted applications for FY 1977 by October 22, 1976; 50 grant awards had been approved as of January 4, 1977.

1978 Plan

Grant funds of $20.5 million available under the public water systems supervision program will enable the States to increase their water supply staff levels to allow them to undertake surveillance activities, sanitary surveys, data collection and other activities relating to State public water systems supervision program primary enforcement responsibility, and particularly to an estimated 200,000 non-community systems that will be included in the monitoring regulations which are effective June 1979. The increased grant support is necessary to adequately support the States' first year of primacy for this program.

UNDERGROUND INJECTION CONTROL PROGRAM GRANTS

1976 Accomplishments

The underground injection control grants were not obligated due to the delay in proposing and promulgating the applicable State program regulations.

1977 Program

A total of $5 million was appropriated for this program element. The State program and grant regulations are expected to be promulgated in April 1977. All designated States must submit applications by May 1977; all other States petitioning the Administrator to amend the designations to include them are to submit their applications by August 1977. In FY 1977, 19 States are expected to be designated by the Administrator as requiring underground injection control programs.

1978 Plan

In FY 1978, grant funds of $6.0 million will enable the States to increase their personnel resources to establish a program that will enable them to satisfy the requirements for primary enforcement responsibility for the underground injection control program.

SPECIAL STUDIES AND DEMONSTRATIONS

1976 Accomplishments

A $4 million supplemental was appropriated in FY 1975 and obligated in FY 1976 for a demonstration project for removal of asbestos fibers from the drinking water of the city of Duluth, Minnesota.

RURAL WATER ASSOCIATIONS GRANTS

1977 Program

A total of $315,000 from the 1977 appropriation has been made available for grants to rural water associations. The Agency will also make available $685,000 from unobligated prior year funds.

1977 Explanation of Changes from Budget Estimate

The increase of $315 thousand over the budget estimate is a result of a reprogramming and establishment of this new program element in compliance with a FY 1977 congressional directive. Senate Report 94-974 concerning the FY 1977 budget request provided "$1,000,000 to be used for providing grants to State associations of rural water districts for the purpose of establishing training and technical assistance programs to assist rural water systems in complying with the provisions of the Safe Drinking Water Act. The Committee understands that EPA has $685,000 of transition quarter authority for underground water source protection programs which could be reprogramed for this purpose. The Committee directs such action. The Committee further directs the reprograming of the additional $315,000 from whatever source within this account that EPA so decides."

1978 Plan

Funds have not been requested for FY 1978.

PUBLIC WATER SYSTEMS SUPERVISION PROGRAM GRANTS

1976 Accomplishments

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1978 Plan

Funds have not been requested for FY 1978.

WATER SUPPLY TRAINING GRANTS

1977 Program

A total of $765,000 of the 1977 appropriation will be utilized for water supply training. $350,000 will be used to continue the institutional grant awards made in FY 1976 with grants assistance funds through the water quality manpower planning and training program. This program is intended to encourage graduate and undergraduate curricula in water supply technology, thus stimulating the flow of skilled personnel into State agencies. $300,000 will be provided to State agencies to allow them to select promising professionals in their employ for a year of graduate academic study, thus strengthening the technical capabilities of agency staffs. The remaining $115,000 will be used for curriculum development and other enabling activities to support State efforts to provide badly needed training to operators and other technicians in the water supply field.

1977 Explanation of Changes from Budget Estimates

The increase of $765,000 over the budget estimate represents a transfer of funds from the water quality media. The Congress added-on $4 million for academic training, $2.6 million of which was initially allocated to the water quality media. This transfer represents the application of the academic training funds to the media which will actually utilize the funds.

1978 Plan

No resources are requested in FY 1978.

WATER SUPPLY

Abatement and Control

Strategy Implementation

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Public Water Systems Supervision Program Implementation.....	$2,140	$5,279	$2,812	$2,874	+$62
Underground Injection Control Program Implementation.....	111	167	524	626	+102
Total.....	2,251	5,446	3,336	3,500	+164
Permanent Positions					
Public Water Systems Supervision Program Implementation.....	95	153	120	130	+10
Underground Injection Control Program Implementation.....	...	8	18	28	+10
Total.....	95	161	138	158	+20

Budget Request

An appropriation of $3.5 million and 158 positions is requested for FY 1978. This represents an increase of $164,000 and 20 positions over the FY 1977 level. The resources will be used to administer a program in the two States presently anticipated not to accept primacy for public water systems supervision, to provide technical assistance to States designated as requiring underground injection programs, and to study the control of hazardous wastes discharges into pits, ponds, and lagoons.

Program Description

The congressional intent of the Safe Drinking Water Act is that the States would be primarily responsible for assuring the safety of the drinking water. However, the Federal Government is to provide technical assistance to the States in the development of State programs satisfying the requirements for primary enforcement responsibility for the public water systems supervision and the underground injection control programs. These activities include the participation of EPA personnel in the preparation of program plans and grant applications, reviewing existing State programs, and assessing the adequacy of legislative and regulatory authorities. In the event that States are unable or unwilling to assume these responsibilities, EPA will develop control strategies and programs that will be administered by the Federal Government. This will require monitoring and surveillance activities, recordkeeping, and enforcement. In addition, EPA is required to establish and implement similar program activities on Indian reservations, Federal facilities, and interstate carrier conveyances.

PUBLIC WATER SYSTEMS SUPERVISION PROGRAM IMPLEMENTATION

1976 Accomplishments

Public water systems supervision strategy implementation resources are primarily located in EPA regional offices to provide the States with the necessary technical assistance to ensure that the maximum number of States will assume primary enforcement responsibility for public water systems supervision by April 1977. The activities provided included assistance in the preparation of State program plans and grant applications, review of current programs and the legislative and statutory authority, and the review and approval of plans and applications. These efforts contributed to the submission of program plans and grant applications from 53 States. These States and one other expressed their intent to assume primary enforcement responsibility for public water systems supervision within one year.

1977 Program

The public water systems supervision strategy implementation program has been allocated $2,812,000 and 120 positions. These resources will provide technical assistance to all States to ensure that the maximum number of States will assume primacy. Assistance will continue to those States that are not approved for primacy in April 1977 to enable them to qualify for primary enforcement responsibility during the fiscal year. During this year, EPA will establish programs on Indian reservations and Federal facilities, continue the interstate carrier program, and implement public water systems supervision programs in States without primary enforcement responsibility.

1977 Explanation of Changes from Budget Estimate

The decrease of $2,467,000 from the budget estimate was necessary to support contract activities in the criteria, standards, and regulations development subactivity. This reprogramming does not reduce EPA's technical assistance activities for FY 1977. The reprogrammed resources enable the national program manager to initiate and coordinate activities which are common to all regions in program implementation such as development and implementation of an ADP system for public water systems and underground injection control programs that satisfy the data requirements of the regulations, compilation of data on ground water quality and injection practices, development of a program for Federal implementation in States without primacy and for the completion of the rural water survey. The net impact of this action is supportive of the strategy implementation subactivity and contributes to uniform national program implementation.

1978 Plan

The FY 1978 plan for this program element is $2,874,000 and 130 positions, an increase of $62,000 and 10 positions. The public water system supervision implementation program resources will increase the State assistance program and will be used for the establishment and administration of the program in the two States that are presently anticipated not to accept primacy. In States without primacy, EPA will perform inventory and data management activities; implement a laboratory certification program; conduct sanitary surveys to determine compliance, problem areas and variances and exemptions; review planned constructions and respond to emergencies and imminent hazards situations.

UIC PROGRAM IMPLEMENTATION

1976 Accomplishments

Underground injection control strategy implementation resources were used to review data submitted in conjunction with requests for sole source designations. Since the underground injection control regulations were not proposed during the fiscal year, technical assistance activities were not initiated.

1977 Program

The underground injection control strategy implementation program has been allocated $524,000 and 18 positions. These resources will be used to assist States in the review of legislative and regulatory authorities, to assess current State programs, to participate, where necessary, in the preparation of State program plans and grant applications, and to review the submissions for primacy. It is anticipated that 10 of the 19 designated States will submit their program plans for primary enforcement responsibility.

1977 Explanation of Changes From Budget Estimate

The increase of $357,000 was required to establish a national ground water program with responsibility for protecting the underground sources of drinking water.

1978 Plan

The FY 1978 plan for this program element is $626,000 and 28 positions, an increase of $102,000 and 10 positions. Technical assistance will be provided to States in assessing existing statutory authorities and programs and in developing programs which satisfy the requirements for primacy. Five positions will be used to study the control of hazardous waste discharges into pits, ponds, and lagoons.

Enforcement

SECTION TAB

WATER SUPPLY

Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Water Supply Enforcement.....	$81	$81	$154	$154	...
Permanent Positions					
Water Supply Enforcement.....	4	4	7	7	...

Budget Request

An appropriation of $154,000 and 7 positions is requested in FY 1978 for water supply enforcement. This represents no change from FY 1977.

Program Description

The Safe Drinking Water Act of 1974, an amendment to the Public Health Service Act, provides the statutory authority for the Federal water supply enforcement program. The Act provides for assurance of the safety of drinking water through the establishment and enforcement of regulations, specifying the maximum levels of drinking water contaminants allowable, in order to protect the public health and welfare. The water supply Enforcement appropriation encompasses activities relating to the investigation and initiation of civil or criminal actions for violations of the national drinking water regulations in States without primary enforcement responsibility, to the monitoring of enforcement actions of States with primacy and to the initiation of Federal action when States have failed to act, and to emergency situation enforcement.

1976 Accomplishments

1976 resources provided assistance in the development of the drinking water implementation regulations and the preparation of an enforcement strategy relating to the implementation of the drinking water program. The allocated positions were also available to respond to emergency situations under the authorities granted in Section 1431 of the Safe Drinking Water Act.

1977 Program

In FY 1977, this subactivity has been allocated seven positions and $154,000 to support the water supply program. These resources will (1) respond to emergency situations under the authorities granted in Section 1431 of the Safe Drinking Water Act, (2) provide assistance to abatement and control in the development of regional guidance documents, (3) develop enforcement policies and provide assistance as requested in the implementation of regional programs, and (4) participate in review of the adequacy of compliance aspects of State program applications.

1977 Explanation of Changes From Budget Estimate

The increase of $73,000 is due to reprogramming within a regional office to establish a water supply enforcement capability.

1978 Plan

In FY 1978, seven positions and $154,000 are again requested to support the water supply program. These resources will again be used to respond to emergency situations, examine remaining State program applications for adequate enforcement provisions, and further participate in the preparation of program guidance and the development of enforcement policies and implementation procedures. Remaining resources will be used to implement enforcement overview and back-up support to the public water systems program. This involves, where possible, the investigation of violations and the initiation of civil or criminal actions in States without primary enforcement responsibility.

Research and Development

SECTION TAB

WATER SUPPLY

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Public Sector Activities.....	$8,461	$13,254	$13,227	$15,200	+$1,973
Permanent Positions					
Public Sector Activities.....	89	85	86	91	+5

Budget Request

It is requested that $15,200,000 and 91 positions be approved for the water supply research and development program. This is an increase of $1,973,000 and five positions over the 1977 resource level.

Program Description

The research, development, and demonstration in this program area is directed toward implementation of P.L. 92-523, the Safe Drinking Water Act. The water supply program activities include research, development, and field evaluations designed to provide a dependable and safe supply of drinking water. The program investigates the health effects resulting directly or indirectly from contaminants in drinking water and thereby supports the development of valid criteria for establishing standards for organic, inorganic and microbiological contaminants of drinking water. It also evaluates, improves, and develops the control technology necessary for economic attainment of drinking water standards. This involves both the adaptation of large-scale technology to small water supply systems and the development of new or special technologies. In addition, analytic methods are developed to assess the quality of drinking water and the effectiveness of water treatment processes to remove and reduce contaminants in water supplies.

Research, studies, and demonstrations are conducted relating to: (1) the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and other impairments of man resulting directly or indirectly from contaminants in waters, and (2) the provision of dependable safe supplies of water (Sec. 1442; P.L. 92-523). The activities can be grouped into four areas: health effects, treatment technology and systems management, identification and measurement, and ground water management. The products of these activities include: (a) data on the health effects of contaminants in drinking water; (b) new or improved methods of treating raw water to prepare it for drinking, so as to improve the efficiency of water treatment and remove contaminants from water; (c) improved methods to identify and measure the existence of contaminants in drinking water; and (d) improved methods of protecting underground sources of water from contamination.

Research is also conducted to develop and implement quality assurance procedures and protocols for water supply laboratories to assure that data is accurate and legally defensible. Resources for this program activity are included under the interdisciplinary subactivity, monitoring and technical support, as part of a comprehensive quality assurance program for all environmental media.

1976 Accomplishments

In 1976, approximately $4,500,000 were devoted to grants; $1,200,000 to contracts; and $320,000 to interagency agreements.

In the health effects area, results in 1976 included:

- Investigations of waterborne disease outbreaks in Puerto Rico and Washington;
- A report on relationship of human body burdens of lead to lead levels in finished water;

- Revision of "List of Organic Compounds Identified in U.S. Drinking Water";
- Completion, with the National Cancer Institutes, of a study showing chloroform to be a carcinogen in two mammalian species;
- An interim health risk assessment of chloroform in drinking water; and
- Suggested criteria for total trihalomethanes in drinking water.

In the treatment technology and systems management area, results in 1976 included:

- An interim treatment guide to control chloroform;
- Technical information on which to base the EPA Advance Notice for Proposed Rulemaking on organics;
- Completion of a report on best treatment processes for the removal of the inorganic contaminants in the primary drinking water standards;
- Completion of a study on the factors which influence the cost of water supply;
- Presentation of a seminar on a new method for removal of nitrates from water;
- Completion of a study on the migration of vinyl chloride from polyvinyl chloride pipe into distributed waters; and
- Completion of a study on various factors influencing ozone disinfection efficiency.

In the identification and measurement area, results in 1976 included:

- An analysis of methods for determining fibrous asbestiforms in water;
- Development of a preliminary interim procedure for determining asbestos in water (a uniform method); and
- Completion of an evaluation of plasma emission spectrometry for multielement analysis.

In the ground water program in 1976, results included:

- Completion of a study on the availability, use and contamination problems of ground water in Mississippi, Alabama, Georgia, Florida, North and South Carolina, and Virginia;
- Development of drilling techniques and sampling apparatus for the collection of aerobic and anaerobic bacteria and trace organics; and
- Completion of the Third National Ground Water Quality Symposium.

1977 Program

$13,227,000 and 86 positions have been allocated to this subactivity in 1977, of which approximately $7,000,000 is for grants; $2,100,000 for contracts; and $500,000 for interagency agreements.

Contaminants being addressed include organics, inorganics (including asbestos), and microbiological contaminants. Research on the long-range potential harmful effects from trace organics, because of their highly suspect carcinogenicity, receives the highest priority so approximately 45 percent of the total funds will be directed toward determining and controlling that problem. The second highest priority is the relationship of inorganic contaminants to health, so a large effort (about 20 percent) will be made in this area too. Microbiologic contaminant occurrence, monitoring, effects and control remain relatively high priority relative to public health, because outbreaks of waterborne disease still occur in the United States, especially in areas served by poorly operated distribution systems.

In the health effects area, $6,400,000 and 43 positions have been allocated. The largest emphasis is on determining the health effects of organics identified as prevalent in a national survey of water supplies, which will be completed in January 1977. That survey concentrated on analyzing 20 specific organic compounds selected because they (1) have been reported in some source on treated waters, (2) have a known or suspected toxicological effect, and (3) can be analytically quantified. As the results from the survey show which contaminants are prevalent in finished drinking water, the literature on the toxicity of these materials will be reexamined. Also to be developed in 1977 are: (1) preliminary data on the mutagenic and carcinogenic activity of organic mixtures from tap water, (2) comparative metabolism data on the halo-ethers to determine the most appropriate model for extrapolating health effects data from animal to man, (3) data on whether chlorobenzenes and bromobenzenes can influence the toxicity of other foreign organic compounds, and (4) data on the influence of sex difference and strain on the toxicity of chloroform.

Current and continuing studies are being conducted, in collaboration with other Federal agencies, to determine any relationship between cardiovascular disease and hypertension, and various inorganics in drinking water, including sodium, barium, cadmium, calcium, magnesium, lithium, iron, lead, zinc, copper, arsenic, selenium, and some corrosion products. Preliminary reports on sodium, barium, arsenic, and selenium are expected in 1977. Efforts to determine the carcinogenicity of asbestos when ingested continues. Outbreaks of waterborne disease are being investigated to identify preventive measures, and an attempt to determine infective dose levels of viruses for humans continues.

In the treatment technology and systems management area, $5,067,000 and 31 positions have been allocated. The lack of firm health effects data for organics does not relieve the Agency's responsibility to provide guidelines for economical treatment methods when reasonable doubt about the health effects exists and monitoring is not practical. Pilot plant and larger scale studies thus are continuing on the formation and removal of the four trihalomethanes that have been shown to occur widely where chlorination is practiced and that are potentially toxic. Unit processes such as granular activated carbon beds, powdered activated carbon, and macro-reticular resins are also being studied to determine their capabilities to remove specific organic contaminants within reasonable economic limits. Alternative disinfection processes, such as ozonation and chlorine dioxide are being evaluated to determine whether they avoid generation of these specific contaminants while maintaining disinfection efficiency. The contaminants have been selected for study based on the existing data collected in the 10 city National Organics Reconnaissance Survey. This list is being expanded to include additional compounds which may be discovered in the current Survey as candidates for future control.

Work on inorganics focuses on treatment technology that small water utilities can use, especially to reduce fluoride, arsenic, nitrates, and selenium. Field work and cost analysis efforts will be reported on in 1977. Also to be completed is a study of inorganic contamination during distribution through asbestos/cement pipes.

Several efforts on microbial contaminants will be completed in 1977. This includes investigations of the effects of various parameters on disinfection efficiency with emphasis on inactivation of viruses. Alternative, faster indicators of disinfection efficiency are also being sought. An evaluation of ultraviolet, ozone, chlorine dioxide, and chlorine as disinfectants for small systems will be completed.

In the identification and measurement area, $1,000,000 and one position have been allocated. Research proceeds along three lines to develop techniques for monitoring (1) general organic parameters (groups of compounds), (2) specific organics which are widely distributed and may have health significance, and (3) unit processes for organics removal effectiveness. Both short-term evaluations of current techniques and long-term improvement are being pursued.

For inorganics monitoring, multielement analysis techniques (both field and laboratory) are being emphasized, as well as continuing efforts to improve sample collection, shipping, storage, and preparation for asbestos fiber counting. Work is also continuing to improve and standardize asbestos fiber counting methods.

Methods for identifying and measuring microbial contaminants in water supplies are also being evaluated and improved. A search for organisms which will provide better indices of drinking water quality continues, as do efforts to gain a quicker measure of bacteriological quality. A tentative standard method for detection of entero-viruses is being evaluated and an interim report prepared. Efforts continue on the development of a method for isolation of the hepatitis A virus.

In the ground water management area, $760,000 and 11 positions have been allocated. The overall objective of this area is to determine ways of protecting underground water supplies from contamination. Work continues in three general areas during 1977. The major thrust is to develop control criteria for some 26 general avenues which have been identified for the introduction of pollutants to underground waters. Efforts continue in describing the subsurface environment as a receptor of pollutants by developing new drilling, sampling, and analytical technology directed primarily at organic and microbiological parameters. In order to address more immediate problems, work is directed toward the consequences of recharging ground water with treated municipal wastes.

1977 Explanation of Changes from Budget Estimate

The planned $27,000 reprogramming into program management, contingent upon Committee approval, as appropriate, is to cover increased program management costs.

1978 Plan

A total of $15,200,000 and 91 positions is requested for FY 1978, an increase of five positions and $1,973,000. In 1978, it is planned to allocate approximately $7,500,000 to grants; $3,000,000 to contracts; and $1,000,000 to interagency agreements.

Allocation of resources to the four research areas have been approximately the same for 1976 and 1977, except for treatment technology which received a 25 percent increase in 1977. These proportions will be maintained until after the National Academy of Sciences report is analyzed. In calendar year 1977, a review of the water supply research program will be held and mid-course corrections made.

The States, having primary enforcement responsibility, will be addressing questions on variances and exemptions from the primary drinking water regulations. Factors which will be considered in granting or denying requests for variances and exemptions include health effects, control methods, and cost. The research program will be directed toward establishing the scientific and technical base needed by the States to carry out these responsibilities under the primary provisions of the Act.

In the health ~~effects area~~, $7,000,000 ~~and 45 positions~~ is planned, an increase of $600,000 and two positions. Defensible health effects data for organic, inorganic, and microbiological contaminants of drinking water will continue to be developed through short- and long-term toxicological studies and comparative epidemiological studies. Current plans will be evaluated and redirected as necessary when the evaluation by the National Academy of Sciences of health effects of contaminated drinking water, as required by P.L. 93-523, is completed.

In the treatment technology and systems management area, $6,440,000 and 34 positions is planned, an increase of $1,373,000 and three positions. Studies will be continued or initiated on removal and inactivation of cadmium, lead, asbestos, nitrate, flouride, organic compounds, bacteria, and viruses. In continuing the 1977 program, EPA intends to continue development of techniques for preventing water quality deterioration while distributing drinking water. Technology applicable to small water supply systems will be emphasized.

There will be a substantial R&D effort to control organic contaminants in drinking water. Halogenated organics formation mechanisms in normal disinfection practices will be determined and control methods developed. Chlorine disinfection alternatives will be thoroughly studied to determine disinfection efficiencies and identify and evaluate any potentially harmful by-products. Candidate alternative disinfectants are chlorine dioxide, ozone, and ultraviolet light.

In the area of identification and measurement, $1,000,000 and one position is planned. Present plans for 1978 are that efforts in measurement and identification programs will focus on development of practical techniques to identify, measure, and determine sources of contaminants (particularly organic substances and microbial agents) in drinking water. Techniques will be designed for use by State and local officials responsible for safeguarding public drinking water supplies.

In the ground water area, $760,000 and 11 positions will be utilized. In 1978, studies will continue to provide waste disposal site-selection criteria and information on control of ground water pollution for protection of underground sources of drinking water.

The National Academy of Sciences report, due March 1977, may identify additional future research needs in the area of health effects of drinking water contamination. The report will also require consideration by EPA of the economic and technological feasibility of implementing the recommendations.

The 1978 increase of $1,973,000 and five positions is requested to implement recommendations in the forthcoming report by the National Academy of Sciences. It is expected that the increase will be used to determine occurrence and effects of potential carcinogens in drinking water, to develop monitoring and analytical methods, and to determine applicability of bench level carcinogen removal techniques. Epidemiological studies of the relationship of water hardness to heart disease and other problems will be conducted. Cost effective advanced treatment techniques will be evaluated at pilot plant level and large-scale system technology for inorganics removal will be adapted to small community water supply systems. The increased efforts will allow epidemiologic studies of greater scope; field evaluations of control and treatment technology at a level to produce definitive cost data; and a major cost reduction effort applied to small systems.

Solid Wastes

SECTION TAB

SOLID WASTE

	Ford Submission Pos.	Ford Submission Amount (dollars in thousands)	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount (dollars in thousands)
Abatement and Control:	188	$15,815	203	$28,556
Waste Management Practices, Procedures, Guidelines and Regulations	109	12,145	109	12,423
Hazardous Waste Management Guidelines and Regulations	(33)	(3,490)	(33)	(3,675)
Solid Waste Management Guidelines	(31)	(4,305)	(31)	(4,398)
State and Local Programs Guidelines and Regulations Development	(45)	(4,350)	(45)	(4,350)
Financial Assistance	...	...	...	12,000
State Program Resource Assistance	...	...	...	(12,000)
Local Program Resource Assistance	...	...	...	...
State/Local Training Assistance	...	...	...	...
Waste Management Strategies Implementation	56	1,480	71	1,943
Federal Guidelines Implementation	(9)	(270)	(9)	(270)
Solid Waste Management Program Implementation	(37)	(910)	(52)	(1,373)
Hazardous Waste Management Regulatory Strategy Implementation	(10)	(300)	(10)	(300)
Resource Conservation	23	2,190	23	2,190
Resource Conservation Strategy Development	(10)	(1,000)	(10)	(1,000)
Resource Conservation Strategy Implementation	(13)	(1,190)	(13)	(1,190)
Research and Development:	22	7,718	22	7,718
Public Sector Activities	22	7,718	22	7,718
Solid Waste Management	(22)	(7,718)	(22)	(7,718)
Enforcement:	5	1,000	5	1,093
Strategy Regulation Development	5	1,000	5	1,093
Solid Waste Enforcement	(5)	(1,000)	(5)	(1,093)

SOLID WASTE

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$12,594	$11,670	$11,664	~~$15,815~~ $27,815	~~+$4,151~~ $ +16,151
Permanent Positions....	144	161	188	188	...
Transition Quarter.....	3,046	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	...	...	...	1,000	+1,000
Permanent Positions....	...	...	5	5	...
Transition Quarter.....	...	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	2,811	4,066	4,098	7,718	+3,620
Permanent Positions....	28	22	22	22	...
Transition Quarter.....	2,240	N/A	N/A	N/A	N/A
Total, Solid Waste Program:					
Appropriation.....	15,405	15,736	15,762	~~24,533~~ 36,533	~~+8,777~~ +20,771
Permanent Positions....	172	183	215	215	...
Transition Quarter.....	5,286	N/A	N/A	N/A	N/A
Outlays.....	18.543	13,200	17,200	~~15,900~~ 21,900	~~-1,400~~ +4700
Authorization Levels...	13,534	20,949	37,000	~~140,241~~ 180,241	

OVERVIEW AND STRATEGY

Solid waste management, nationwide, presents a spectrum of problems from health and environmental hazards to inefficient and costly management practices. The basic solid waste management problem is improper land disposal practices. These practices cause adverse environmental and economic impacts such as ground and surface water pollution, air pollution, problems associated with uncontrolled dumping, decreased land values, and resource wastage. Aesthetic damages (e.g., litter) which have varying impacts on human health or animal life, are easily visualized and usually are the focus of public concern. However, problems associated with improper land disposal practices are not always visible and, therefore, not easily understood. For example, ground water contamination (which is not visible) from poorly sited or poorly operated land disposal sites does occur. Although good engineering practices for siting, constructing, and operating a land disposal site are understood, they unfortunately have not been applied by most regulatory and operating agencies.

Environmental problems exist for a number of interrelated reasons. The potential for ground water contamination from land disposal practices by leachates or effluents is not well quantified or understood. Some States do not regulate disposal effectively and most do not enforce regulations vigorously due to lack of resources. Municipalities do not always devote required resources to ensure environmentally sound disposal and efficient management. There are no clearly understood social and environmental costs for not following good solid waste management practices. Since litter and ugliness are typically the most obvious targets for popular displeasure, often municipalities manage disposal "cosmetically" but not environmentally, (i.e., no blowing paper, no odor, but allow leachate to seep into the ground water). Especially acute is the absence of a program to properly manage hazardous wastes from the industrial sector. Although potentially hazardous wastes are small in comparison to the total waste volume (10 million tons vs. 2,865 million tons), their potential impact on public health and safety and the environment may represent the greatest threat.

The lack of regulation in hazardous waste management (i.e., environmental standards strictly enforced) at the State level is due to the fact that recognition of the special nature of potentially hazardous wastes is relatively recent. Further, the complexity of the hazardous waste management cycle from the original generation to ultimate disposal requires more complex institutional approaches. Costs for proper disposal of wastes are higher than for unregulated dumping. In addition, public resistance to the siting of a new disposal site oftentimes forces the use of an unacceptable site.

(Revised 2/24/77)

SOLID WASTE

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$12,594	$11,670	$11,664	$15,815	+$4,151
Permanent Positions....	144	161	188	188	...
Transition Quarter.....	3,046	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	...	...	...	1,000	+1,000
Permanent Positions....	...	...	5	5	...
Transition Quarter.....	...	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	2,811	4,066	4,098	7,718	+3,620
Permanent Positions....	28	22	22	22	...
Transition Quarter.....	2,240	N/A	N/A	N/A	N/A
Total, Solid Waste Program:					
Appropriation.....	15,405	15,736	15,762	24,533	+8,771
Permanent Positions....	172	183	215	215	...
Transition Quarter.....	5,286	N/A	N/A	N/A	N/A
Outlays.....	18.543	13,200	17,200	15,800	-1,400
Authorization Levels...	13,534	20,949	37,000	140,241	

OVERVIEW AND STRATEGY

Solid waste management, nationwide, presents a spectrum of problems from health and environmental hazards to inefficient and costly management practices. The basic solid waste management problem is improper land disposal practices. These practices cause adverse environmental and economic impacts such as ground and surface water pollution, air pollution, problems associated with uncontrolled dumping, decreased land values, and resource wastage. Aesthetic damages (e.g., litter) which have varying impacts on human health or animal life, are easily visualized and usually are the focus of public concern. However, problems associated with improper land disposal practices are not always visible and, therefore, not easily understood. For example, ground water contamination (which is not visible) from poorly sited or poorly operated land disposal sites does occur. Although good engineering practices for siting, constructing, and operating a land disposal site are understood, they unfortunately have not been applied by most regulatory and operating agencies.

Environmental problems exist for a number of interrelated reasons. The potential for ground water contamination from land disposal practices by leachates or effluents is not well quantified or understood. Some States do not regulate disposal effectively and most do not enforce regulations vigorously due to lack of resources. Municipalities do not always devote required resources to ensure environmentally sound disposal and efficient management. There are no clearly understood social and environmental costs for not following good solid waste management practices. Since litter and ugliness are typically the most obvious targets for popular displeasure, often municipalities manage disposal "cosmetically" but not environmentally, (i.e., no blowing paper, no odor, but allow leachate to seep into the ground water). Especially acute is the absence of a program to properly manage hazardous wastes from the industrial sector. Although potentially hazardous wastes are small in comparison to the total waste volume (10 million tons vs. 2,865 million tons), their potential impact on public health and safety and the environment may represent the greatest threat.

The lack of regulation in hazardous waste management (i.e., environmental standards strictly enforced) at the State level is due to the fact that recognition of the special nature of potentially hazardous wastes is relatively recent. Further, the complexity of the hazardous waste management cycle from the original generation to ultimate disposal requires more complex institutional approaches. Costs for proper disposal of wastes are higher than for unregulated dumping. In addition, public resistance to the siting of a new disposal site oftentimes forces the use of an unacceptable site.

Acceptable and safe waste management of all wastes destined for land disposal results in the elimination of most site-related land and ground water pollution, litter and blight, improves values around disposal sites and offers the opportunity to reclaim and restore the land. Imposing higher costs on disposal operators has also created incentives for fiscal efficiency and environmentally acceptable practices. Resource conservation is indirectly aided by the application of good solid waste management practices. As disposal costs are raised, the economic incentives to recover energy and materials from solid waste increase.

Conservation through resource recovery and other means is a new activity and is not yet a selfevident waste management option. It is indirectly supported by environmental, health, and safety related upgrading of waste management. Institution of resource recovery systems (or other measures) requires new types of fiscal, marketing, management, legal, and technical approaches which municipalities are not familiar with and, therefore, are reluctant to undertake.

Municipal solid waste (MSW) is a source of energy which can provide environmental benefits. Technology is being demonstrated and some systems are sufficiently advanced to be developed to commercial application. Energy can be produced at prices which are competitive in the current energy market. Interest has been expressed by many industries and communities in building such systems. Furthermore, recovery of paper, glass, aluminum, and ferrous materials from MSW produces additional energy savings by providing resources for recycled products. Energy costs associated with the production of products from secondary materials are less than those produced with virgin resources.

The Resources Conservation and Recovery Act (RCRA) of 1976 (P.L. 94-580) enacted October 21, 1976, provides the basis for the program in FY 1977 and FY 1978. The RCRA, technically an amendment to the Solid Waste Disposal Act of 1965 as amended in 1970, in fact essentially replaces the old legislation. The Act requires a comprehensive Federal-State-local approach to all aspects of waste management, including resource conservation and recovery, land disposal of municipal and industrial wastes, and authorizes a new regulatory program for hazardous wastes.

The goals and objectives of RCRA are to: (1) promote the protection of health and the environment, and (2) conserve valuable material and energy resources. These goals and objectives are essentially identical to those stated in the current EPA Solid Waste Management Strategy, developed in 1974.

Activities mandated by RCRA, within specified time limits, include some 14 regulatory actions and 15 reports on various subjects. Specifically, Subtitle C, Hazardous Waste Management, requires EPA to promulgate within 18 months the following:

(1) criteria for identifying the characteristics of hazardous waste and for listing hazardous waste;

(2) regulations identifying the characteristics of and listing hazardous wastes;

(3) regulations establishing standards applicable to generators of hazardous waste;

(4) regulations establishing standards applicable to transporters of hazardous waste;

(5) regulations establishing performance standards applicable to owners and operators of hazardous waste treatment, storage or disposal facilities;

(6) regulations requiring operators of hazardous waste treatment, storage or disposal facilities to have a permit; and

(7) guidelines to assist States in the development of State hazardous waste programs.

In addition, Subtitle D, State or Regional Solid Waste Plans, requires EPA to:

(1) publish within 180 days, by regulation, guidelines for the identification of appropriate units for regional solid waste management planning;

(2) promulgate within one year from enactment, regulations containing criteria for determining which facilities shall be classified as sanitary landfills and which as open dumps;

(3) promulgate within 18 months regulations containing guidelines to assist in the development and management of State solid waste management plans;

(4) publish an inventory of all disposal facilities which are open dumps within one year after promulgating the criteria for classifying sites; and

(5) once a State has submitted its plan, approve or disapprove State solid waste management plans within six months.

Further, Section 1008 requires EPA to:

(1) publish within one year (and from time to time thereafter), suggested guidelines for solid waste management; provide minimum criteria to be used by the States to define those solid waste management practices which constitute the open dumping of solid or hazardous waste to be prohibited by this Act, and

(2) publish within two years, guidelines which describe levels of performance and methods of control providing for protection of public health and other listed factors.

Finally, the Act requires:

(1) an Annual Report to Congress on the progress of the implementation of RCRA and plans for the next year;

(2) publication of Reports to Congress on seven special studies by October 1, 1978;

(3) publication of Reports to Congress on four special studies by October 1979;

(4) submission to Congress of a study design for the Resource Conservation Committee Program within six months;

(5) submission to Congress of follow-up reports on Resource Conservation Committee Program every six months thereafter; and

(6) submission of a report to Congress on Alaska solid waste removal within one year.

Many other activities are mandated, but without explicit time limits. These include some 20 different items among which are the following:

(1) provide solid waste management technical assistance teams upon request to State and local governments;

(2) enforce compliance of hazardous waste regulations unless a State has an authorized program;

(3) promulgate regulations governing grants for State hazardous waste programs, State solid waste planning, State and local solid waste management program implementation, special communities, rural communities, etc.;

(4) prepare guidelines recommending practices for procuring products containing recycled materials;

(5) establish a management program for research, development, and demonstrations and conduct special studies and demonstration on energy and material recovery; and

(6) conduct training, surveys, and public education programs.

The law also mandates that not less than 20 percent of the amount appropriated under the general authorization shall be used only for purposes of Resource Recovery and Conservation Panels (solid waste management technical assistance teams). Furthermore, not less than 30 percent of the amount appropriated under the general authorization shall be used for purposes of carrying out the hazardous waste provisions of the Act.

Given the severe time deadlines mandated by RCRA, it is obvious that EPA must initiate high priority activities early in FY 1977. New priorities have been established which include the development of the hazardous waste and solid waste management mandatory guidelines and regulations; development of State programs; land disposal studies, guidelines, and evaluations; the establishment of an interagency on resource conservation and recovery incentives; the continuation of systems and technology evaluations in resource recovery and solid waste management; Federal facilities implementation of guidelines; and the provision of technical assistance to States and local communities in all areas of solid waste management (including hazardous waste, resource conservation and recovery).

The EPA solid waste enforcement program is authorized by the Resource Conservation and Recovery Act of 1976 (RCRA). This new legislation provides EPA with new regulatory authorities, particularly in the regulation of hazardous wastes.

Under the RCRA, a regulatory program is being implemented wherein criteria will be promulgated identifying hazardous wastes. RCRA requires EPA to establish record-keeping, labeling, containerization, and reporting requirements applicable to facilities which generate, transport, store, treat, or dispose of hazardous wastes. Facilities which store, treat, or dispose of hazardous wastes will be issued permits by EPA or by cooperating State agencies. A manifest system will be developed by regulation to log and track the movement of such hazardous wastes.

Procedures for the inspection and sampling of facilities which generate, transport, store, treat, or dispose of hazardous wastes will be developed. Guidelines will be promulgated which establish standards of evidence needed to support enforcement actions. Rules of practice governing the issuance of compliance orders and the conduct of hearings conducted in the assessment of administrative penalties or the suspension or revocation of permits will also be promulgated.

During FY 1978, the objectives of the research and development efforts in the solid waste program include (1) development of methodology and/or equipment to control the release into the environment of materials present in solid and hazardous waste which adversely affect public health and welfare; (2) evaluation, development, and demonstration of new or improved management techniques, and new or improved methods of collection, storage, transportation, and disposal; (3) evaluation, development, and demonstration of new or improved methods for the reduction, separation, processing, and recovery of resources, including energy; and (4) the establishment of technical bases to support the Agency's efforts in developing guidelines and regulations for solid and hazardous waste management, and the implementation of these guidelines and regulations by State and local governments and the private sector.

SUMMARY OF INCREASES AND DECREASES	(in thousands of dollars)
1977 Solid Waste Program.....	$15,762
Abatement and Control.....	+4,151

This increase will be utilized for such activities as the completion of hazardous waste standards and regulations, the undertaking of further studies for the disposal of municipal sludge leading to promulgation of guidelines and criteria, addressing problems associated with special wastes such as those from mines and agriculture, development of hazardous waste procedures for permit processing and monitoring programs for all State efforts, completion of regulations to upgrade or close open dumps, to produce guidelines for State use in the development and implementation of State solid waste management plans, continuation of mandatory resource recovery and conservation studies initiated in FY 1977, and providing for evaluations of resource recovery systems which complement Agency research and development efforts in this area.

The law also mandates that not less than 20 percent of the amount appropriated under the general authorization shall be used only for purposes of Resource Recovery and Conservation Panels (solid waste management technical assistance teams). Furthermore, not less than 30 percent of the amount appropriated under the general authorization shall be used for purposes of carrying out the hazardous waste provisions of the Act.

Given the severe time deadlines mandated by RCRA, it is obvious that EPA must initiate high priority activities early in FY 1977. New priorities have been established which include the development of the hazardous waste and solid waste management mandatory guidelines and regulations; development of State programs; land disposal studies, guidelines, and evaluations; the establishment of an interagency on resource conservation and recovery incentives; the continuation of systems and technology evaluations in resource recovery and solid waste management; Federal facilities implementation of guidelines; and the provision of technical assistance to States and local communities in all areas of solid waste management (including hazardous waste, resource conservation and recovery).

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Procedures for the inspection and sampling of facilities which generate, transport, store, treat, or dispose of hazardous wastes will be developed. Guidelines will be promulgated which establish standards of evidence needed to support enforcement actions. Rules of practice governing the issuance of compliance orders and the conduct of hearings conducted in the assessment of administrative penalties or the suspension or revocation of permits will also be promulgated.

During FY 1978, the objectives of the research and development efforts in the solid waste program include (1) development of methodology and/or equipment to control the release into the environment of materials present in solid and hazardous waste which adversely affect public health and welfare; (2) evaluation, development, and demonstration of new or improved management techniques, and new or improved methods of collection, storage, transportation, and disposal; (3) evaluation, development, and demonstration of new or improved methods for the reduction, separation, processing, and recovery of resources, including energy; and (4) the establishment of technical bases to support the Agency's efforts in developing guidelines and regulations for solid and hazardous waste management, and the implementation of these guidelines and regulations by State and local governments and the private sector.

SUMMARY OF INCREASES AND DECREASES	(in thousands of dollars)
1977 Solid Waste Program.....	$15,762
Abatement and Control.....	~~+4,131~~ +16,151
This increase will be utilized for such activities as the completion of hazardous waste standards and regulations, the undertaking of further studies for the disposal of municipal sludge leading to promulgation of guidelines and criteria, addressing problems associated with special wastes such as those from mines and agriculture, development of hazardous waste procedures for permit processing and monitoring programs for all State efforts, completion of regulations to upgrade or close open dumps, to produce guidelines for State use in the development and implementation of State solid waste management plans, continuation of mandatory resource recovery and conservation studies initiated in FY 1977, and providing for evaluations of resource recovery systems which complement Agency research and development efforts in this area, and an increase of $9 million for State programs.	

(Revised 2-24-77)

Enforcement..... +1,000

The increase will be used to develop policies and procedures for the inspection and sampling of facilities which generate or handle hazardous waste, to assist in development of hazardous waste procedures for permit processing, to develop guidance regarding standards of evidence and procedures for chain of custody, and to establish guidance and rules of practice governing enforcement actions against persons who violate the provisions or regulations of RCRA.

Research and Development..... +3,620

The increase will be used to expand the program in land application of sludges and the evaluation of resource recovery systems. Addressing land application of sludges, projects will be undertaken to define interim guidance on site monitoring plans, prepare technology state-of-the-art reports for an expanded technology transfer program, assess the material balances of persistent and potentially toxic organics of POTW influent and effluent streams, perform interpretive studies of the effects of plant uptake of metals and toxicants on public health, expand efforts to define "safe" loading rates for a broad spectrum of land application alternatives. Existing resource recovery systems will be evaluated for performance, cost and operational features in order to provide "state-of-the-art" information to Technical Assistance Teams giving guidance to States and municipalities under Section 2003 of P.L. 94-580. The evaluations will examine: environmental aspects; energy balance; product quality; system operability, maintainability and reliability; and economics. Considerable emphasis will be placed on the evaluation of preprocessing equipment which is a key to successful resource recovery system operations.

1978 Solid Waste Program..... ~~24,533~~ 36,533

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of ~~$24~~ $36,533,000 is requested for 1978. This request, by appropriation account, is as follows:

Abatement and Control.....	~~$15~~ $27,815,000
Enforcement.....	1,000,000
Research and Development.....	7,718,000

This represents an increase of ~~$8~~ $20,771,200 over the 1977 solid waste program. This increase is required to implement the recently enacted Resource Conservation and Recovery Act.

2. Changes from Original 1977 Budget Estimate

Changes from the original budget estimate are as follows:

	(in thousands of dollars)
Original 1977 estimate.....	$15,736
Operating adjustments.....	+26
Current 1977 estimate.....	15,762

There have been no major changes to the 1977 budget for the solid waste media. The net change of $26,000 results from adjustments required at the time the budget estimate was applied to actual operating conditions.

(Revised 2/24/77)

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations	$15,405	$20,052
Change in amount of carryover funds available	+4,647	-4,291
Increase in State Grant program	...	+11,850
1978 program increase	...	+8,417
Total estimated obligations	20,052	~~24,178~~ 36,028
(From new obligation authority)	(15,756)	~~(24,173)~~ (36,023)
(From prior year funds)	(4,296)	(5)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The amount of carryover funds effecting obligations after FY 1976 results in an increase of $4,647,000. Obligations in 1977 from carryover funds are expected to be $4,296,000; in 1978, obligations are expected to be $5,000, a decrease of $4,291,000.

The 1978 program increases required to implement the Resource Conservation and Recovery Act are estimated to increase 1978 obligations by $8,417,000.

The increase in State program resource assistance is expected to increase obligations by $11,850,000.

 (Revised 2/24/77)

- Impact of atmospheric photochemical processes as they affect the SO_2 and NO_x emitted from different sources;

- Mechanism and rate of formation of sulfates and nitrate aerosols and characteristics in different atmospheric regimes; and

- Decay rate of SO_2 from area sources as opposed to point sources, and in the combined urban plume.

The STATE program is specifically designed to be an integral part of the Agency's research and development program on atmospheric sulfates and is expected to play a major role in any regulatory decision regarding sulfates.

This program is being coordinated with the Electric Power Research Institute through its Sulfate Regional Experiment (SURE) program and with the Energy Research and Development Administration (ERDA), which is conducting a long-range modeling effort as part of its Multi-State Atmospheric Power Production Pollution Study.

STRATOSPHERIC MODIFICATION

1976 Accomplishments

During 1976, the Federal Council on Science and Technology (FCST), the functions of which are now carried out by the Federal Coordinating Committee for Science, Engineering and Technology (FCCSET), asked EPA to serve as lead agency for managing the short-term (FY 1976-1977) Federal interagency program of Biological and Climatic Effects Research (BACER). This program addresses the impacts of the reduction of stratospheric ozone. The outline and justification for this effort had been developed by a subcommittee of the Federal interagency task force on Inadvertant Modification of the Stratosphere (IMOS). The purpose of this short-term BACER program was to provide scientific information on the effects of stratospheric ozone depletion on the biosphere which would be necessary for regulatory and policy decisions anticipated during 1977 and 1978 on the control of certain uses of substances such as fluorocarbons.

In response to this request, and with the assistance of an interagency BACER Policy Advisory Group and three interagency technical task groups (including expert consultants from outside the Federal Government) EPA developed a detailed $4 million program plan to be executed primarily by "pass-through" of EPA funds to some six other Federal agencies. To carry out this program, EPA has reprogrammed $2.8 million of funds from other research and development activities, (which includes $1.5 million of prior year funds), and will redirect an additional $1.2 million from other Agency activities before the end of FY 1977. The Congress has been notified of reprogrammings for BACER.

The short-term BACER program is designed to include that research which has a high probability of producing meaningful results in time to be useful for regulatory decisions scheduled for early 1978 on control of uses of fluorocarbons and other substances which are considered essential. This will include uses, such as refrigeration, for which the benefits to society are sufficient to require a careful and quantitative balancing of these benefits versus the effects of ozone reduction in order to achieve controls which reflect the overall public interest. Earlier scheduled, e.g. April 1977, regulatory decisions on "nonessential" uses of fluorocarbons are much less dependent upon quantitative data on the effects of ozone reduction.

Short-term BACER, therefore, is directed toward those scientific issues for which the uncertainity of knowledge can be significantly reduced within 12-18 months of research. These issues include: the range of effects of increased ultraviolet radiation upon plants and other components of significant agricultural systems; improved quantification of the relationship between ultraviolet radiation and the incidence of human skin cancer (both melanoma and nonmelanoma); the occurrence and potential significance of deleterious effects from increased ultraviolet radiation on key components of natural terrestrial and aquatic ecosystems; the adaptation and standardization of instrumental methods for measuring and experimentally producing ultraviolet radiation so that measurement and experimental data obtained in the past, present and future can be assessed for validity and compared with other data; and reassessment of the most recent data on climatic effects on biological systems of stratospheric ozone reduction.

The short-term program will be completed by about July 1978 and funding will be completed in 1977.

1977 Program

The 1977 resources level for the stratospheric modification subactivity is $1,301,000. These resources will include approximately $137,000 in grants and contract efforts and $792,000 in interagency agreements.

Since results from short-term funding are not scheduled until approximately December 1977, there will be no specific program outputs during 1977.

1977 Explanation of Changes from Budget Estimate

To support the 1977 program, $1,301,000 has been redirected from research in the following media areas:

Air-Health Effects.....	$851,000
Pesticides-Health Effects.....	100,000
Energy-Technical Support.....	65,000
Interdisciplinary-Technical Support...	285,000
Total.....	1,301,000

1978 Plan

No resources are being requested for the stratospheric modification program in 1978. During early 1978, the objectives of the short-term BACER program are to be achieved and the program terminated.

AIR

Research and Development

Industrial Processes

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
	(dollars in thousands)				
Appropriation					
Mineral, Processing and Manufacturing Industries..	$5,224	$5,065	$5,000	$5,000	...
Permanent Positions					
Mineral, Processing and Manufacturing Industries..	34	49	40	40	...

Budget Request

An appropriation of $5,000,000 and 40 positions is requested for 1978. This is the same as the 1977 resource level.

Program Description

The industrial processes program concentrates on point sources of air pollution arising from the industrial sector of the economy and is focused on those mining, manufacturing, service and trade industries which are involved in the extraction, production and processing of materials into consumer products. This research activity supports the technology requirements of the Clean Air Act through the development and demonstration of new or improved cost-effective technology having industrywide applicability, short-term achievability and long-term viability. In addition, emphasis is being placed on the assessment of various industrial processes to determine possible sources of toxic emissions.

1976 Accomplishments

In 1976, obligations included $3,646,700 for contract support, $156,200 for interagency agreements, and $99,400 for grants.

In 1976, the air industrial processes program:

- Accelerated the hazardous materials source assessment program in order to provide a data base for New Source Performance Standards;
- Completed study on technological options and economic consequences of requiring 80-90 percent control of SO_x emissions in the petroleum refining industry;
- Completed protocol document for ocean incineration of hazardous organochlorine waste residues; and
- Completed source assessments for specific inorganic chemicals, organic chemicals and nonferrous metals industry emissions.

1977 Program

The 1977 resource level for this activity is $5,000,000. These resources include approximately $3,600,000 in contract support and $500,000 in grants.

The 1977 program focuses on assessing the nature and quantity of toxic and other hazardous pollutants emitted from industrial sources. This information, together with data on the ability to control these pollutants, will provide the basis for regulatory actions. In addition, several development and demonstration projects on criteria pollutant control will continue as will efforts to transfer technology for particulate control from the power industry to other industrial sectors.

Major outputs to be achieved in 1977 include:

- Source assessments for hydrocarbon emissions from the synthetic organic chemicals industry;
- Demonstration of technology to control emissions of NO_x from nitric acid plants;
- Demonstration of techniques for control of asbestos emissions; and
- Complete manual for electrostatic precipitator design criteria for collection of metallic fumes in secondary smelters.

1977 Explanation of Changes from Budget Estimate

The decrease of $65,000 from the budget estimate results from a transfer to the program management media to support increased costs, contingent upon Committee approval, as appropriate.

1978 Plan

The requested 1978 resource level for this activity is $5,000,000. These resources include approximately $3,600,000 in contract support and $500,000 in grants.

Major outputs to be achieved in 1978 include:

- Complete source assessments for hazardous emissions with emphasis on the petroleum refining, ferrous and nonferrous, as well as the organic chemicals industries;
- Preliminary assessment of applicability of known control technology to remove these pollutants;
- Development of assessment methodology to determine airborne emissions;
- (Phase II) Demonstration of combined industrial energy conservation and environmental improvement in a full-scale glass melting furnance (SO_x, particulates and NO_x reduction);
- International protocol for at-sea incineration of organochlorine waste residues; and
- Demonstration of control technology for ammonia plants.

AIR

Research and Development

Monitoring and Technical Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Characterization and Measurement Methods Development.....	$4,285	$6,112	$5,695	$5,695	...
Measurement, Techniques and Equipment Standardization.....	178	658	265	265	...
Technical Support.....	2,694	3,402	2,483	1,996	-$487
Total.....	7,157	10,172	8,443	7,956	-487
Permanent Positions					
Characterization and Measurement Methods Development.....	59	50	59	54	-5
Measurement, Techniques and Equipment Standardization.....	3	3	4	...	-4
Technical Support.....	85	66	77	61	-16
Total.....	147	119	140	115	-25

Budget Request

Resources of $7,956,000 and 115 positions are requested, a decrease of $487,000 and 25 positions. The position reduction will be taken at the Environmental Sciences Research Laboratory and Environmental Monitoring and Support Laboratory, RTP, North Carolina.

Program Description

The program in monitoring and technical support consists of three major areas: (1) characterization and measurement methods development for measuring pollutants from sources and in ambient air; (2) measurement techniques and equipment standardization for operational monitoring functions; and (3) technical support to program and regional offices. Each of these areas is discussed separately below.

The output of the characterization and measurement methods development program is new and/or improved methodology and instrumentation technology which will be utilized for stationary source, mobile source, and ambient air quality goals.

A major program activity is the development of sampling and analysis techniques for identification and measurement of pollutants from stationary sources. Work in this area focuses on the development of sampling procedures and associated instrument requirements for impending new source performance standards and improvement of techniques for existing new source performance standards, e.g., the development of improved sampling procedures for continuous in-stack monitoring of particulate matter. Additional work is carried out in the identification of stationary source pollutants and in the support of stationary source compliance activities.

Another major program activity is the development of sampling and analysis techniques for identification and measurement of pollutants from mobile sources. Integral to this development work are characterization studies which describe gaseous and particulate emissions from advanced power systems for light-duty vehicles. Characterization studies are also carried out to determine the composition of aircraft particulate emissions and the effects of emission control systems on the quality, size distribution and composition of particulate emissions.

Sampling and analysis techniques for identification, characterization and measurement of pollutants in ambient air is the third activity. New and improved analytic techniques for the criteria and noncriteria pollutants in ambient air are developed. This area of research also includes studies on the identification and characterization of urban and rural atmospheres for a variety of important gaseous and particulate pollutants including, for example, ammonia, sulfates, formaldehyde, polynuclear aromatics, nitrates and organic acids.

The air measurement techniques and equipment standardization program involves the demonstration, test and evaluation of prototype and existing measurement systems and techniques and instruments as tools for measuring specific pollutants in ambient air and emissions from stationary sources. The program is directed towards assuring that methods are available to measure all air pollutants of concern at or below concentration levels of interest.

The technical support program assures that the specialized knowledge obtained from the research programs, the expertise of ORD personnel, and specialized facilities and equipment in ORD are available to Agency program and regional offices in response to their specific requests for support. Part of the technical support program is planned on a level of effort basis with resources set aside to allow for quick response to unforeseeable but urgent requests for services. The technical support program also plans and provides routine support in those areas where it would be difficult for regional or program personnel to respond because of high costs, specialized personnel expertise or other reasons.

CHARACTERIZATION AND MEASUREMENT METHODS DEVELOPMENT

1976 Accomplishments

The characterization and measurement methods development program element was newly created in FY 1977, subsequent to submission of the 1977 budget request, by dividing the existing element, measurement techniques and equipment standardization (MTES). FY 1976 data represents an allocation of the resources previously reported in MTES. 1976 resources included approximately $1,336,000 in contracts, $549,000 in grants, and $38,000 in interagency agreements.

The following efforts were completed during 1976:

- A sulfuric acid monitor was developed and evaluated. This monitor is an integral part of the system being developed to determine the presence of sulfuric acid emissions from mobile and stationary sources.

- An automated dichotomous sampler, which collects and segregates suspended particulate matter into two size ranges was improved. This instrument will be useful for determining the physical and chemical characteristics of particulates as they impact on health and control studies.

- The rapid X-ray fluoresence technique for analyzing total sulfur in particulate matter was successfully applied and found to be in good agreement with wet chemistry methods and far more rapid.

- A gas chromatographic/mass spectrometric/computer (GS/MS/COMP) system has been successfully used during pilot studies of polluted environments, to identify and quantify volatile nitrosamines and a variety of polynuclear aromatic hydrocarbons. Because of its specificity, sensitivity, and versatility, this technique is superior to all others for measuring organic vapors.

- A significantly improved analytical technique, ion chromatography, has been developed to measure water soluble sulfates. The technique also has promise for measuring other ionic species.

- New analytical methods were evaluated to measure such gaseous pollutants in motor vehicles exhaust as hydrogen cyanide, nitrosamines, nitrous oxide, ammonia, hydrogen sulfide, sulfur dioxide, and carbonyl sulfide.

- The exhaust emissions of some in-use and prototype cars were characterized over a wide range of operating conditions. Included among the cars tested were lean-burn, stratified charge, dual and threeway catalyst-equipped, and diesel models.

- Gaseous and particulate emissions, especially sulfur compounds, were characterized from oil fired power plants. The results indicate that sulfuric acid emissions in the plume are several times higher than those estimated by currently used emission factors.

- A simultaneous multiwavelength x-ray fluorescence spectrometer was adapted and modified to analyze automatically many elements in particulate samples. The instrument is now being used routinely to analyze particulate samples collected from both stationary and mobile sources.

- Prototype continuous monitoring systems were developed to measure chlorinated hydrocarbons emissions from dry cleaning and solvent degreasing industries. The monitoring systems are necessary to support contemplated new source performance standards (NSPS).

1977 Program

The 1977 resource level for characterization and measurement methods development was $5,695,000 and 59 positions. Those resources included approximately $2,454,000 in contracts, $570,000 in grants, and $136,000 in interagency agreements.

The 1977 characterization and measurement methods development program will continue development and assessment of air pollutant measurement methodologies. These measurement and sampling techniques are developed to support the program in the Environmental Sciences Research Lab to characterize pollutants in ambient air and emissions from stationary and mobile sources. They are also used to support new source performance standards.

The stationary source activity focuses on the Agency research need associated with the increasing NSPS activity; specifically NO_x, HC, toxic pollutants, and fine particulates.

Work on instruments and methods for characterizing the species of sulfate in the ambient air will be emphasized. Characterization of urban/rural atmospheres will necessitate increased activity in multipollutant techniques development with consideration for remote, high sensitivity equipment.

Characterization studies of the exhaust from light-duty vehicles will focus on the identification and measurement of nonregulated pollutants in emissions from advanced engines and control system during malfunctions of either the engine, the control system or both. Current research indicates that the greatest variety and abundance of potentially harmful pollutants appear to occur during these phases of operation.

1977 Explanation of Changes from Budget Estimate

The $417,000 decrease from the budget estimate resulted from a decision to decrease the level of effort of characterization work on criteria and noncriteria pollutants. Contingent upon Committee approval, as appropriate, these funds will be redirected to the interdisciplinary quality assurance activity to support the laboratory certification effort.

1978 Plan

The 1978 resource level for characterization and measurement methods development is $5,695,000 and 54 positions. These resources include approximately $4,454,000 in contracts, $570,000 in grants, and $136,000 in interagency agreements.

The program in characterization and measurement methods development will continue to carry out research in the following areas:

The program will provide new or improved methodology and instrumentation to be used for characterization of stationary and mobile sources and in ambient air. For stationary sources, instrument development and characterization will focus on sulfuric acid mist, reactive hydrocarbons, chlorinated hydrocarbons and toxic metals. For ambient studies, multipollutant measurement methods will be evaluated to help in the characterization of carcinogens in ambient air. In addition, improvements will be made in the current sampling methodologies for selected sulfates, sulfuric acid, reduced sulfur compounds, and ambient ammonia. Work on mobile source measurement methods development and mobile source characterization will emphasize nonregulated

sulfur bearing and nitrogen bearing compound analysis. The reduction of five positions will decrease the number of different chemical species that will be identified from mobile sources, and to delete current work on the development of improved methods of collecting particulate matter for continuous sampling in stationary sources covered by new source performance standards.

The five position reduction in characterization and measurement methods development is part of an overall reduction in research and development manpower in order to release positions for other Agency activities. The reduction will be effected at the Environment Sciences Research Laboratory in North Carolina. The reduction will result in more of the research being implemented on an extramural basis.

MEASUREMENT TECHNIQUES AND EQUIPMENT STANDARDIZATION

1976 Accomplishments

During 1976, $55,000 was expended for contracts, $23,000 was expended for grants, and $2,000 was expended for interagency agreements. Late in 1976, the fuel and fuel additive program was transferred into this activity. Specific accomplishments in this program in 1976 included:

- Development of instrument performance specifications for emissions of nitrogen oxides and sulfur oxides from coal fired power plants;

- Development of performance specifications for sulfuric and nitric acid emissions from fossil fuel fired power plants;

- Initiation of development of continuous stack monitor for fluorides; and

- Promulgation of fuel and fuel additive registration regulations on November 7, 1975 (40 CFR 79) implementing Section 211 of the 1970 Clean Air Act. To date, 1,920 fuel additives, 511 motor vehicle gasolines and 250 motor vehicle diesel fuels have been registered.

1977 Program

The 1977 resource level is $265,000 and four positions, of which $100,000 is devoted to contracts and $165,000 is being utilized in-house for the fuel and fuel additives (F & FA) registration program.

- Work has been initiated on performance specifications for emissions of carbon monoxide and water from coal fired power plants;

- Work is also being initiated on the development of a continuous particulate mass in-stack monitor;

- Also during 1977, work is starting on the development of performance specifications for total reduced sulfur monitors; and

- Due to the requirements in the F & FA regulations for the manufacturers to report quarterly usage figures, any changes in registered fuels or additives, and new products, this program will be a continuing requirement of the Agency. The Agency must also evaluate the information being submitted and make recommendations regarding possible effects on health and emission control device performance as a basis for requiring the manufacturers to further test their products before registration.

1977 Explanation of Changes from Budget Estimate

The $393,000 decrease from the budget estimate reflects a reduction in the initial planned level of effort. These funds are to be redirected to the interdisciplinary technical support activity contingent upon Committee approval, as appropriate.

1978 Plan

Resources requested for measurement techniques and equipment standardization in 1978 are $265,000. Of this amount, $100,000 will be devoted to contracts. Specific outputs from the 1978 program will include:

- Completion of performance specifications for the continuous total reduced sulfur monitor;
- Completion of performance specifications for stack monitors for the following;
- Opacity from seven different industrial categories (Groups II and IIA of EPA Groups of Sources);
- Carbon monoxide from petroleum refineries;
- SO_2 from petroleum refineries and from primary copper smelters; and
- Hydrocarbons from petroleum storage vessels

At the reduced level of resources, the development of equivalency criteria for stationary source measurement methods begun in 1977 will be slowed as will be development of a flouride monitor, and a continuous monitor for NO_x emissions from gas turbines will not be started in 1978.

The four position reduction in measurement techniques and equipment standardization is part of an overall reduction in research and development manpower in order to release positions for other Agency activities. The four position decrease reflects a decision to conduct all fuel and fuel additive registration activities extramurally.

TECHNICAL SUPPORT

1976 Accomplishments

1976 resources include approximately $234,000 in contracts and $83,000 in interagency agreements. A unified planning and management system has improved the responsiveness of the research and development program to the scientific and technical needs of the Agency. During 1976, accomplishments in the technical support area included:

- Major participation in an investigation of long distance transport of oxidant and precursors in the New England and Gulf Coast areas.
- Conduct of general short-term sampling and analysis projects were carried out in response to Agency requirements. These included Kepone at Hopewell, vinyl chloride and polychlorinated biphenyls in Arkansas and Mississippi.
- Completion of special studies on ozone transport in rural areas of the midwest, and initiation of studies were begun on ozone levels in national forests.
- Planning and initiation of a special study on high arsenic levels around the Tacoma, Washington, smelter.
- Continued measurements of high NO_2 levels in 22 critical Air Quality Control Regions.
- Continued analyses of trace elements in National Air Sampling Network samples for nonmetal inorganics, metals, and benzene soluble organic compounds as well as analyses of the Fuel Surveillance Network samples for trace metals, sulfur, lead, and phosphorus.
- Provision of support as a referee laboratory for phosphorus analysis of gasoline as part of the lead and phosphorus regulations.

- Initiation in the summer of 1976 of a major measurement activity on oxidant levels in the metropolitan Washington, D.C., area. This work included assistance by the D.C. Council of Governments and several EPA contractors.

- Completion of numerous specialized analytical analysis requests were completed in support of State and local agency and regional office needs.

- Continued ORD operation of a worldwide air quality data bank for the World Health Organization (WHO), in addition to the provision of a number of staff to serve brief periods as expert advisors to WHO.

- Continued ORD service as a referee laboratory in precipitation chemistry for the World Meteorological Organization as well as the maintenance of a worldwide data bank for precipitation chemistry and turbidity.

- Continued ORD staff provision of technical support and assistance in response to the US-USSR bilateral agreement.

1977 Program

The 1977 resource level for technical support is $2,483,000 and 77 positions. These resources include approximately $275,000 in contracts and $65,000 in interagency agreements. The 1977 program for air technical support includes:

- Completion of contact sensing and sampling to determine the impact of aircraft operations on air quality, vegetation, and soil at the Atlanta, Georgia, municipal airport.

- Continuation of a multiyear (approximately three) oxidant study in the Tampa/St. Petersburg area in which data is being collected to validate an urban source grid model for use in developing State Implementation Plans.

- Continuation of the World Meteorological Organization and WHO Data Bank and chemistry activities. There is an expansion in the WHO activity planned due to a request by WHO for the Agency to assist them in procurement (with WHO resources) of ambient air pollution instrumentation to be used in the UNEP Global Environmental Monitoring System (GEMS) expansion.

- Guidance and assistance to Agency program offices and regions in the design, implementation and operation of field and laboratory systems to collect and/or measure valid environmental samples; evaluation of instruments and methods, assessment and analysis of the data; and issuance of reports. In these efforts, emphasis is being given to pollutants of proven or potential adverse effects to human health and welfare including polycyclic organic trace chemicals.

- Provision of high purity glass fiber filters to all State and local agencies and EPA regional offices monitoring stations for particulates. This will insure a common filter in use throughout the United States which will improve considerably the validity and trend comparability of air pollution data.

- Initiation of a plume characterization study using instrumented aircraft and ground based monitors which is designed to provide data for state sulfur dioxide regulation hearings scheduled for later 1977.

- Initiation of a follow-up study of the New York Urban Plume Oxidant, Sulfur and Aerosol Transport Study to characterize and define the transport of the plume under varying meteorological conditions.

- Initiation of a companion study in Houston/Galveston to the Tampa/St. Petersburg Oxidant Transport Study to define the nature and extent of the urban plume as characterized by oxidants; and a sulfur oxide monitoring study in Hawaii.

1977 Explanation of Changes from Budget Estimate

The reduction of $919,000 from the budget estimate in the technical support program reflects a decision to decrease resources available to respond to small regional requests for technical support. Contingent upon Committee approval, as appropriate, these resources will be redirected to the program management and support media to help alleviate increased costs.

1978 Plans

The 1978 resource level for technical support is $1,996,000 and 61 positions, a reduction of $487,000 and 16 positions from 1977. These resources include approximately $300,000 in contracts and $100,000 in interagency agreements.

The reduction in resources reflects a planned reduction in the level of short-term technical support services to the Agency's Office of Air Quality Planning and Standards and to the Office of Enforcement and termination of support for the continuous Air Monitoring Project. Participation in activities of such organizations as World Health Organization (WHO), World Meteorological Organization (WMO), Organization for Economic Cooperation and Development (OECD) and Pan American Health Organization (PAHO) will be terminated to permit a shift in resources to areas of higher Agency priority.

The 1978 program will focus on designing and developing monitoring protocols, preparing monitoring methodologies, continued analytical analyses, operating a membrane filter network and providing support to other ORD laboratories for planning and implementing monitoring programs. Specifically, resources will be devoted to the following projects:

- Continued activities related to the National Air Surveillance Network. This involves provision of new filters to the monitoring stations and the special trace element and inorganic analyses.
- Continued support to EPA program offices in the National Forest Ozone Study but at only about one-half the effort originally requested due to resource restraints.
- Provision of analyses to ORD laboratories for special pollutants of concern such as dimethylnitrosamines, dioxin, and ethylene dibromide.
- Completion of sampling and analysis program of Hawaiian SO_2 monitoring study.
- Initiation of a project to define oxidant transport from Riverside, San Bernadino, and Orange County, California.
- Initiation of a plume characterization study of the Kennecott smelter near Salt Lake City, Utah.
- A study to characterize airborne aerosols and oxidants related to agricultural burning practices.
- Completion of the Charlotte, North Carolina, carbon monoxide distribution study.
- Continued utilization of advanced remote sensing instruments for atmospheric plume dispersion and opacity.

The 16 position reduction in technical support is part of an overall reduction in research and development manpower in order to release positions for other Agency activities. The position reduction will be effected at the Environmental Monitoring and Support Laboratory, North Carolina. The reduction will result from a greater proportion of the research being implemented on an extramural basis.

Water Quality

SECTION TAB

Water Qu

	Ford Submission Pos.	Ford Submission Amount (dollars in thousands)	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount (dollars in thousands)
Abatement and Control:	1,768	$79,472	1,927	$151,907
Water Quality Planning and Standards	372	19,616	392	19,893
Water Resources Council	(2)	(...)	(2)	...
State Programs Regulations and Guidelines	(332)	(12,990)	(352)	(13,267)
Great Lakes Program	(17)	(4,100)	(27)	(4,100)
Clean Lakes Program	(1)	(26)	(1)	(26)
Chesapeake Bay Program	(20)	(2,500)	(10)	(2,500)
Effluent Standards and Guidelines	69	11,400	79	19,400
Effluent Standards and Guidelines	(69)	(11,400)	(79)	(19,400)
Grants Assistance Programs	...	5,450	...	57,850
Control Agency Resource Supplementation	...	...	...	(52,400)
Areawide Waste Treatment Resources	...	(5,000)	...	(5,000)
Training Grants	...	(450)	...	(450)
Water Quality Strategies Implementation	229	7,201	228	7,201
Spill Prevention and Response	(116)	(3,701)	(110)	(3,701)
Ocean Disposal Permits	(24)	(1,400)	(24)	(1,400
Federal Activities/EIS	(60)	(1,500)	(75)	(1,500)
Dredge and Fill Regulations	(29)	(600)	(19)	(600)
Water Quality Monitoring and Analysis	186	5,225	201	5,225
Water Quality Monitoring and Analysis	(186)	(5,225)	(201)	(5,225)
Municipal Source Control	912	30,580	1,027	32,338
Municipal Waste Treatment Facility Construction	(818)	(24,970)	(913)	(26,728)
Waste Treatment Operations and Maintenance	(63)	(1,751)	(63)	(1,751)
Manpower Planning and Training	(31)	(3,859)	(51)	(3,859)
Loan Guarantee Program	...	...	...	10,000
Loan Guarantee Program	...	...	...	(10,000)

Water Qu

	Ford Submission Pos.	Ford Submission Amount (dollars in thousands)	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount (dollars in thousands)
Enforcement:	657	21,398	756	21,398
Water Quality Enforcement	657	21,398	756	21,398
Water Quality Enforcement	(657)	(21,398)	(756)	(21,398)
Research and Development:	512	44,769	526	45,014
Health and Ecological Effects	271	22,200	276	22,327
Health Effects	(24)	(3,800)	(23)	(3,800)
Ecological Processes and Effects	(219)	(12,700)	(229)	(12,827)
Transport and Fate of Pollutants	(28)	(2,800)	(24)	(2,800)
Chesapeake Bay	...	(2,900)	...	2,900
Industrial Processes	38	7,400	33	7,400
Mineral, Processing, and Manufacturing Industries	(38)	(7,400)	(33)	(7,400)
Public Sector Activities	108	10,800	108	10,800
Waste Water Management	(108)	(10,800)	(108)	(10,800)
Monitoring and Technical Support	95	4,369	109	4,487
Characterization and Measurement Methods Development	(32)	(1,892)	(41)	(1,968)
Measurement Techniques and Equipment Standardization	(35)	(1,194)	(36)	(1,202)
Technical Support	(28)	(1,283)	(32)	(1,317)

WATER QUALITY

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$161,633	$115,173	$153,483	$149,872 ~~$79,472~~	-3611 ~~-$74,011~~
Permanent Positions..	1,783	1,816	1,774	1,768	-6
Transition Quarter...	45,536	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	19,414	21,242	21,369	21,398	+29
Permanent Positions..	786	764	756	657	-99
Transition Quarter...	5,859	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	35,201	41,823	44,243	44,769	+526
Permanent Positions..	587	552	546	512	-34
Transition Quarter...	21,638	N/A	N/A	N/A	N/A
Total, Water Quality Program:					
Appropriation.....	216,248	178,238	219,095	216,039 ~~145,039~~	~~-73,456~~ -3056
Permanent Positions..	3,156	3,132	3,076	2,937	-139
Transition Quarter...	73,033	N/A	N/A	N/A	N/A
Outlays.....	198,849	138,655	275,000	~~230,770~~ 305,270	~~-44,230~~ +30,270
Authorization Levels.	200,513	211,051	48,588a/	39,017*	

a/ Remaining funds in 1977 are considered authorized by virtue of Appropriation Act.
* Authorization pending for remaining funds.

NOTE: The program highlights and description of the Construction Grants appropriation will be found in the Construction Grants section of this submission.

OVERVIEW AND STRATEGY

The Federal Water Pollution Control Act Amendments of 1972 represent the most comprehensive legislation ever enacted to clean up the Nation's waters. The Act expanded the Federal role in water pollution control, dramatically increased the funding for construction of publicly owned waste treatment works, elevated planning to a new level of significance, opened new avenues for public participation, and created a regulatory mechanism featuring uniform technology based effluent standards, together with a national permit system for all dischargers as the means of enforcement.

The objectives of the Act are to "restore and maintain the chemical, physical and biological integrity of the Nation's water." The Act provides for achieving these objectives in distinct phases. The FY 1973 to FY 1977 period is generally referred to as Phase I, and FY 1978 to FY 1983 as Phase II. During Phase I, the Act requires industry to install best practicable control technology currently available (BPT) and publicly owned waste water treatment works to achieve secondary treatment by July 1, 1977. Phase I emphasizes the development of effluent limitations guidelines and pretreatment standards for industrial dischargers, secondary treatment limitations for publicly owned waste treatment works, issuance of permits, and the award of construction grants.

(Revised 2/24/77)

WATER QUALITY

PROGRAM HIGHLIGHTS

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Phase II requirements are intended to be achieved by July 1, 1983. Industries are to install best available technology economically achievable (BATEA) which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants. Publicly owned treatment works are to achieve best practicable waste treatment technology, including reclaiming and recycling water and confined disposal of pollutants. During this phase, increased attention will be given to control of nonpoint sources and the more difficult point sources of pollution.

As the Agency enters FY 1978, it will be at the end of a transition period between Phases I and II in implementing the requirements of the Act. During this time, its plans and expected efforts tend to fall within several broad areas of concern: industrial point source control, point source control for publicly owned treatment facilities, nonpoint source control, and the improvement of State and local institutions for carrying out the requirements of the Act.

By the end of FY 1977, the first major effort of developing and promulgating effluent limitation standards and guidelines for 43 major industrial categories will be complete, with the exception of final pretreatment standards for existing industrial sources. However, in compliance with court ordered deadlines, continuing activities are required to complete standards for industrial categories which have been published as interim final, and to develop final pretreatment standards. In addition, considerable effort will be required to defend and support industrial standards as they come under judicial review and to redevelop those standards that are remanded by the courts. Technical support also must be given to application of the standards in the writing and enforcement of permits. As the Agency has become involved in these follow-up and support activities for those standards promulgated early in the Phase I period, it has become evident that such activities will require almost as much effort as for the initial development of those standards. This effort will continue throughout FY 1978 in order to deal with those standards promulgated late in the Phase I period.

The second phase of the industrial point source control program beginning in FY 1977 requires the revision and updating of the BATEA and new source standards as well as pretreatment standards for both new and existing sources. Recent court settlements have escalated these requirements into a high level program, requiring significant resources with very stringent deadlines for initiation of contract studies as well as eventual promulgation of standards. The inclusion of health and environmental effects considerations into the standard setting process substantially increases the complexity of carrying out the Phase II standard setting requirements of the Act. It is expected that toxic pollutant control will be the major thrust of these efforts, with relatively minor emphasis on achieving additional control over the more traditional nontoxic pollutants which were the focus of many of the standards developed during Phase I.

Concomitant with the requirement to develop BATEA standards for industry to control toxic pollutants is the requirement under a recent court settlement to develop and promulgate water quality criteria for a list of 65 specific toxic pollutants. This work will require a continuation and expansion of ongoing efforts to develop water quality criteria for use by States in the development of water quality standards.

Municipal point source control is effectuated through the municipal waste water treatment construction grant program, initially funded at $18 billion by P.L. 92-500 to achieve secondary treatment by the end of FY 1977. This program has a key role in enabling publicly owned treatment works to apply best practicable waste treatment technology by July 1, 1983. The obligation of the $18 billion by the end of FY 1977 will enable about 50 percent of the 18,000 municipalities to achieve secondary or higher level treatment as required. However, less than 40 percent of the FY 1977 population will be served by the required levels of treatment, principally because larger cities will not have had time to complete construction.

The FY 1978 budget request contains $4.5 billion for waste water treatment plant construction grants. EPA is proposing a ten year program commitment totalling $45 billion along with several proposals which would assure directing Federal support to construction of those facilities most critical to reducing pollutant dischargers from municipal waste water systems ad bringing the Federal funding support requirement to a manageable level. Fiscal year 1978 will be the first year of a ten year program. In order to achieve substantial progress toward the 1983 goals, additional effort must be placed on ensuring that grant obligations quickly result in construction and on ensuring that federally funded publicly owned treatment works operate efficiently and reliably.

The water quality management program under Section 208 of P.L.92-500 seeks to establish effective environmental decision making at the State and local government level. Nationally based programs for pollution control which establish uniform thresholds of abatement are best supplemented on a localized basis. Since abatement alternatives are apt to be severe in their consequences, there is a necessity that local citizen expectations and opinion be a major element in any abatement decisions. The most effective political level to respond to this source of opinion and for solving these pollution programs is local and State government.

The water quality management process, under Secton 208 of the Federal Water Pollution Control Act, is viewed as the framework by which all basic water quality decisions and determinations will be made. Area wide and State wide Section 208 planning efforts will peak in FY 1978, such that by November 1978 most of the highest priority planning will have been completed. Identification and designation of management agencies to implement formulated plans will also have been initiated. Section 208 planning is the principal mechanism for dealing with de minimis source and nonpoint source pollution problems. With increasing levels of control being applied to the abatement of industrial and municipal point sources, the relative contribution of nonpoint sources to total pollution loads becomes more and more significant. As this occurs, increasing attention will be focused toward the control of nonpoint sources. These nonpoint sources include agriculture, silviculture, construction activities, mining, and runoff from urban areas.

In order to meet the goals of the Federal Water Pollution Control Act, water enforcement will pursue two primary goals in FY 1978. The first is to promote increasing State participation in the National Pollutant Discharge Elimination System program. The second is to assure the completion of treatment facilities by major industrial dischargers to achieve best practicable technology and by funded major municipal dischargers to achieve secondary treatment. Included in the latter goal is the resolution of all major adjudicatory hearings requests in order to assure that all priority dischargers have an enforceable National Pollutant Discharge Elimination System permit.

Major municipal facilities will be placed on construction schedules which are realistic and consistent with construction grant funding schedules. Major industrial permit reissuance and modification will continue to receive high priority in FY 1978 as will the issuance of major and energy related new source permits. Non-NPDES enforcement will continue to focus on oil spill and spill prevention enforcement as well as on the enforcement of the Ocean Dumping Act.

In FY 1978, EPA intends to mechanize the review of discharge monitoring reports and to hire private contractors to conduct a large percentage of sampling inspections. Some reduction in enforcement activity is anticipated as a result of a curtailment in the compliance monitoring program and expansion of the adjudicatory hearing program. Adjudicatory hearing requests are anticipated to increase due to new and complex permit requirements such as 208 planning requirements, Section 302 water quality related effluent limitations, and toxic pollutant standards and limitations. The determination of Section 301(c) variance requests is also expected to result in increased adjudicatory hearing requests.

The role of research and development in EPA's water quality program is to provide the scientific information needed to support its standard setting and enforcement activities. To do this a multifaceted research program has been established.

The health effects, ecological effects and transport and fate of pollutants research is geared to (1) the development of criteria for the safe treatment and disposal of waste waters and sludges, and health related criteria for fresh and marine recreational waters; (2) research on the toxicological effects of pollutants on aquatic organisms; and (3) research on the movement, transformation, degradation, accumulation, and fate of water pollutants.

The industrial research program concentrates on point sources of pollution resulting from the industrial sector of the economy and develops or demonstrates new or improved cost effective technology.

Research results provide a significant data base for the establishment of economically and technically feasible effluent guidelines and treatment parameters for industrial waste water permits. The program also addresses technology for the prevention and control of accidental spills of hazardous materials and is a focal point for the joint industrial/municipal point source research in EPA.

The public sector waste water management research program focuses on the prevention, control treatment and management of water pollution which is a result of public service, and community nonindustrial activities. The program incorporates the problem areas of municipal waste water treatment sludge management, urban runoff, and soil treatment systems. The research efforts are geared toward impacting the standard setting and operational implementation of the Agency's programs dealing with the public sector.

The monitoring and technical support program relating to water quality supports three activities: (1) characterization and measurement methods development for measuring pollutants contained in surface and ground waters, sludges and soils, and the effluents from municipal, industrial, and nonpoint sources; (2) measurement techniques and equipment standardization for routine monitoring functions; and (3) the provisions of technical support by which the results of research and development programs and the expertise of researchers are made available for agencywide use in response to specific requests for support. This technical support activity is planned for and provides resources to respond to both continuing and emergency requests for laboratory and monitoring services.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1977 Water Quality Program..... $219,095

Abatement and Control..... ~~74,011~~ - 3611

The net reduction results from ~~decreases~~ an increase for the State control agency grants, ~~$600~~ $2.4 million; clean lakes program, -$15 million; areawide waste treatment management grants, -$9.6 million; effluent standards and guidelines, ~~-$6.9 million;~~ $+1.1 training grants, -$1.1 million; and other minor program decreases of -$.5 million. Increases offsetting these reductions are for State program regulations and guidelines, +$2.9 million; Chesapeake Bay Study, +$.4 million; municipal waste treatment facility construction, +$4.7 million; manpower planning and training, +$.9 million; and other minor program increases of +$.2 million. Also included is +$10 million for the loan guarantee function.

Enforcement..... +29

The increase of $29,000 is the net result of one-time reprogrammings in FY 1977 from water quality enforcement by regional offices. A 99 position decrease is proposed due to the expected mechanization of the review of discharge monitoring reports and anticipated use of private contractors to conduct a large percentage of sampling and nonsampling inspections.

Research and Development..... +526

The net increase of $526 thousand is broken down into: (1) a $1,390 thousand increase for health effects to develop methods for characterizing the toxic effects of pollutant classes; (2) a $992 thousand decrease in ecological effects which will result in the reduction of work on ocean dumping, criteria for temperature and dissolved gases, the effects of oil, ocean outfalls, fine particulates, disinfection, and ecosystem dynamics; (3) a $408 thousand increase in waste water management to begin development of nonstructural control methods for urban runoff abatement; and (4) a $280 thousand decrease in characterization and measurement methods development which will cause research on measurement of nonvolatile organics, asbestos, and other toxic species to be deferred to the future.

1978 Water Quality Program..... ~~145,639~~ 216,039

(Revised 2/24/77)

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request $216,039,000

An appropriation of ~~$145,039,000~~ is requested for 1978. This request, by appropriation, is as follows:

Abatement and Control.....	~~$79,472,000~~ $149,872,000
Enforcement.....	21,398,000
Research and Development.....	44,769,000

increase

This represents a decrease of ~~$79,455,000~~ $3,055,800 from the 1977 water quality program and includes ~~reductions~~ for the State control agency grants ~~(-$50,000,000) which are now requested under the consolidated grants media~~ (+2,400,000); for the clean lakes program (-$15,000,000) to allow time for evaluation of accomplishments and benefits of program before assessing the need for additional appropriations; for the areawide waste treatment management grants (-$9,643,400) to reflect the elimination of water quality management planning; for effluent standards and guidelines ~~(-$6,928,200)~~; for training grants (-$1,068,300) to reflect the termination of academic training; for the Water Resources Council (-$192,400) to reflect the establishment of a centralized budget in the Council; for ecological effects research (-$991,700) for reduced efforts on ocean dumping, criteria for temperature and dissolved gases, and the effects of oil, ocean outfalls, fine particulates, disinfection, and ecosystem dynamics; and for characterization and measurement methods development (-$280,000) to defer research on measurement of nonvolatile organics, asbestos, and other toxic species. There is also a $10 million increase for the loan guarantee function.

These decreases are partially offset by increases for State program regulations and guidelines (+$2,902,900) for contracts to assist in and accelerate the development of notable Section 208 plans; for the Chesapeake Bay study (+$400,000) to expand studies on tion control methodology in the Bay's ecosystem; for municipal waste treatment facility ctruction for new contract requirements to develop the NEEDS Survey (+$1,000,000), interagency agreements with the Corps of Engineers, GSA, and other agencies to perform construction inspections and various program evaluations (+$2,000,000), and contract support for improved management information systems, special studies, and other tasks to improve fiscal and technical integrity of the program (+$1,654,600); for manpower planning and training (+$993,200) to contract for expanded delivery of available course work and training materials through interagency agreements with HEW, DOL, and other agencies and to expand support at the State and local levels; for health effects research to develop methods for characterizing the toxic effects of pollutant classes (+$1,390,000); and for waste water management to begin development of nonstructural control methods for urban runoff abatement (+$408,000). Other minor program increases and decreases result in a net decrease of $100,500.

2. Changes from Original 1977 Budget Estimate

Changes from the budget are as follows:

	(in thousands of dollars)
Original 1977 estimate.....	$178,238
Congressional increases:	
Control agency grants.....	+10,000
Clean lakes.....	+15,000
Academic training.....	+1,550
Chesapeake Bay study.....	+5,000
Effluent guidelines.....	+11,300
Subsequent appropriation.....	+800
Pay cost relief.....	+802
Transfer for Cost of Clean Environment Report.....	-125

(Revised 2-24-77)

Transfer to fund increased construction grant program support functions.....	-806
Office of Enforcement transfers.....	-35
Transfer for training grants.....	+156
Miscellaneous increases and decreases.....	-276
Regional operating adjustments.....	-1,779
Office of Research and Development reprogramming.....	-730
Revised 1977 estimate.....	219,095

Most of the additional funds currently estimated for the water quality programs were provided by congressional increases to the 1977 budget request. An increase of $10 million was made to the control agency grants; grants to improve water quality in the Nation's lakes were increased by $15 million; academic training was increased by $4 million of which $1,550,000 was allocated to water quality; and $5 million was added-on for the Chesapeake Bay study to continue efforts to develop a management system which is designed to maintain and improve the overall water quality of the Bay. A budget amendment requesting $11,300,000 for effluent standards and guidelines was also approved. In addition, the Public Works Employment Appropriations Act, enacted subsequent to EPA's appropriations, included $800,000 for municipal waste treatment facility construction.

Funds were transferred from the Agency and Regional Management appropriation to provide relief from pay cost absorption, $802,000, in accordance with the congressional add-on for pay cost relief.

The responsibility and associated resources for the preparation of the Cost of Clean Environment report was transferred to the Office of Planning and Evaluation, -$125,000.

A portion of the new 1976 construction grants positions were allocated to other media to provide for the increased support necessary in the management areas of audit, contract and grant administration, general counsel, and EIS preparation, -$806,000.

The Office of Enforcement transferred (a) $100,000 from water quality enforcement to stationary source enforcement activities at the Denver National Enforcement Investigation Center; (b) $40,000 from program management in support of second generation permit issuance; and (c) $25,000 from program management in support of growing litigation burdens.

Transfers from other media were made for support of "one time only" training grants, +$156,000.

Miscellaneous program increases and decreases resulted in a net change of -$276,000.

Operating adjustments are changes required to adjust the budget to actual operating conditions. In the process of applying the budget estimate to the specific needs of each regional office, laboratory, and headquarters program office, it is often necessary to make small adjustments to the planned budget. The $1,779,000 reduction is the cumulative effect of these changes on water quality regional programs in 1977.

A proposal will be submitted to the Committee, as appropriate, for separate consideration for the research and development reprogramming, -$730,000.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Revised Estimate 1978
	(in thousands of dollars)	
Prior year obligations	$216,248	$256,410
Loan Guarantee Program	...	+10,000
Congressional add-ons for control agency grants, clean lakes, academic training, Chesapeake Bay study	+4,950	...
Budget amendment for effluent guidelines	+6,780	...
Public Works Employment Appropriation Act	+720	...
Increases and decreases as detailed previously	-2,514	...
~~Transfer to consolidated grants media~~ Increase for control agcy support	...	~~-52,100~~ +2000
Change in amount of carryover funds available	+74,226	-37,315
Decrease in areawide waste treatment grants	-44,000	-5,993
1978 program decreases	...	~~-18,800~~ -14,800
1978 program increases	...	~~+5,798~~ +6,798
Total estimated obligations	256,410	~~148,000~~ 217,100
(From new obligation authority)	(216,620)	~~(145,525)~~ (214,625)
(From prior year funds)	(39,790)	(2,475)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

Congressional add-ons in 1977 are expected to result in an increase of $4,950,000. The budget amendment included in the 1977 appropriation is estimated to increase obligations by $6,780,000. The appropriation realized through the Public Works Employment Act will result in an increase of $720,000 to obligations.

1977 increases and decreases from the budget estimate, as detailed previously, will decrease obligations by an estimated $2,514,000.

The ~~transfer of~~ increase in the water quality control agency support grants will result in an estimated ~~decrease~~ increase in 1978 of ~~$52.1~~ $2 million from 1977 obligations for the water quality media.

A major change is due to the amount of carryover funds available for obligation. Carryover funds effecting obligations after FY 1976 result in a change of +$74,226,000; obligations from carryover funds in 1977 are estimated to be $39,790,000. In 1978, obligations are expected to be $2,475,000, a decrease of $37,315,000.

The decrease in 1977 for areawide waste treatment grants is expected to reduce 1977 obligations by $44 million. The 1978 program decrease will further reduce obligations by $5,993,000.

The 1978 decreases for clean lakes, effluent standards and guidelines, and training grants is expected to decrease obligations in 1978 by $14,800,000; the 1978 program increases previously itemized are estimated to increase by $6,798,000.

(Revised 2-24-77)

WATER QUALITY

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
PROGRAM LEVELS					
Section 208 State Planning Agency Designations.....*.	49	...	1	...	-1
Section 208 Regional (areawide) Planning Agency Designations.....*.	27	5	50	...	-50
Section 208 Management Agency Designations.....**	...	...	100	200	+100
* Agencies engaged in developing State and areawide Section 208 plans.					
** Agencies engaged in implementing Section 208 plans.					
Clean Lakes Projects.....	19	50-60	39	48	+9
Ocean Dumping Permits.....	60	60	60	60	...
Construction Grants Awards.....	3,976	4,825	5,750	5,850	+100
Step I Awards.....	(2,341)	(1,000)	(2,100)	(2,000)	(-100)
Step II Awards.....	(724)	(2,300)	(2,100)	(2,300)	(+200)
Step III Awards.....	(911)	(1,525)	(1,550)	(1,550)	...
Active Construction Grant Projects.....	8,367	...	9,900	10,900	+1,000
State Program Approvals (NPDES).....	28	36	33	45	+12
Adjudicatory Hearings:					
Prehearing Conferences.....	77	70	70	70	...
Settled.....	260	300	300	575	+275
Permits Issued by EPA: Municipal --					
Major.....	716	2,000	1,255	688	-567
Minor.....	3,120	1,500	950	...	-950
Nonmunicipal --					
Major.....	701	3,000	124	688	+564
Minor.....	7,086	2,500	2,705	...	-2,705

Abatement and Control

SECTION TAB

WATER QUALITY

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Water Quality Planning and Standards.....	$20,750	$14,927	$31,513	$19,616	-$11,897	WQ-12
Effluent Standards and Guidelines.....	4,670	7,142	18,328	19,400 ~~11,400~~	+1072 ~~-6,928~~	WQ-20
Grants Assistance Programs.....	103,016	55,000	66,161	57,850 ~~5,450~~	-8311 ~~-60,711~~	WQ-24
Water Quality Strategies Implemenation.....	6,731	7,534	7,241	7,201	-40	WQ-28
Water Quality Monitoring and Analysis.....	5,236	4,515	5,304	5,225	-79	WQ-34
Municipal Source Control.....	21,230	26,055	24,936	30,580	+5,644	WQ-38
Loan Guarantee	...	...	...	10,000	+10,000	
Total.....	161,633	115,173	153,483	~~79,472~~ 149,872	~~-74,011~~ -3611	
Permanent Positions						
Water Quality Planning and Standards.....	433	403	362	372	+10	
Effluent Standards and Guidelines.....	58	54	51	69	+18	
Grants Assistance Programs.....	...	...	...	...	...	
Water Quality Strategies Implementation.....	221	241	228	229	+1	
Water Quality Monitoring and Analysis.....	182	176	201	186	-15	
Municipal Source Control.....	889	942	932	912	-20	
Total.....	1,783	1,816	1,774	1,768	-6	

Purpose

The objective of the water quality abatement and control program is primarily to assist State and local agencies in controlling water pollution by providing management, technical, and resource assistance and through disseminating guidelines and standards. These guidelines set methods and procedures and levels of control for sources of pollution. Water quality criteria and standards are applied to the receiving waters and are subsequently reflected in the level of control placed on the source. Management assistance is provided in the preconstruction and construction of waste water treatment facilities and their operation. One-half of the water program manpower is used to manage and monitor this multibillion dollar program. Additional management assistance is provided in developing State and areawide Section 208 water quality management planning agencies, improving municipal waste control management, and in monitoring and reporting on ambient water quality and changes in quality. Technical assistance includes general assistance on controlling persistent and complex pollution problems as well as specific response assistance for spills or other pollution emergencies.

Because a primary responsibility for the control of pollution lies with the States, most of EPA's abatement and control efforts are oriented toward support of State and local efforts. States are responsible for detailed planning, monitoring, and enforcement efforts, as well as for establishing the priorities for commitment of Federal funds to construct sewage treatment plants. Local governments are responsible for detailed planning, for operation and maintenance of sewage treatment plants, and for participating financially in the construction of treatment plants.

(Revised 2-24-77)

WATER QUALITY

Abatement and Control

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EPA monitoring and analysis activities are coordinated with State and other Federal efforts and include ambient water quality monitoring, data collection, and dissemination of water quality data. Current programs include the establishment of basic national water monitoring programs and the analysis of monitoring data to assist in development and implementation of standards and regulations. Increasing emphasis is being placed on monitoring of toxic materials, nonpoint sources, and biological impact.

Technical assistance and information is provided to assist in applying technology, developing standards, and instituting effective programs and source management. Research assistance is requested to develop new control techniques as problems are anticipated through the Section 208 planning process. A major program thrust involves the development and establishment of industrial effluent (point source) guidelines on best practicable and available technologies, effluent and pretreatment standards, and regulations for all industrial categories. These guidelines are used by the enforcement program in issuing permits. Research and development assistance is provided on new treatment technologies applicable to development of particular guidelines. Limited assistance and technical development efforts will continue on nonpoint sources to support Phase II (1977-1983) planning. A spill prevention and control program focuses on implementing spill prevention plans at nontransportation related onshore and offshore facilities, and responding to major spill events to mitigate the effects of polluting spills on the environment.

EPA provides or supports training to improve the skills of State and local water pollution control personnel as well as to increase the availability of water pollution control manpower. Skills which are addressed range from sewage treatment plant operation to plant design and management. Also under this program, EPA assists other Federal agencies to bring their facilities into conformance with prevailing pollution standards and helps to ensure that the programs, projects, and other activities of Federal agencies produce a minimum water pollution impact.

The Marine Protection, Research, and Santuaries Act of 1972, as amended, authorizes EPA to regulate the disposition of materials into the ocean, excepting dredged material. Under this authority, a permit program for ocean disposal of waste has been underway since FY 1973.

Primary objectives for fiscal year 1978 include:

- Obligate $5.3 billion for 5,850 new awards for the planning, design, and construction of waste treatment facilities;
- Review municipal construction activities for technical and fiscal integrity, including project site reviews, reviews of completed facilities plans, and an increased number of financial audits;
- Initiate evaluation of human health and environmental effects of additional toxic pollutants and reassess the data base of the original 130 constituents included in water quality criteria;
- Repropose regulations for 9 of 21 industrial effluent guidelines, addressing 65 toxic substances;
- Implement water quality management program plans by State and designated areawide planning and management agencies;
- Develop ocean dumping guidelines and alternatives;
- Continue an expanded and intensified national municipal operations program;
- Assist States to implement the national Basic Water Monitoring Program developed in FY 1977; and
- Implement final EPA dredged or fill material guidelines.

WATER QUALITY

Abatement and Control

Water Quality Planning and Standards

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Water Resources Council.....	$49	$207	$192	...	-$192
State Programs Regulations and Guidelines.....	14,085	10,561	10,087	$12,990	+2,903
Great Lakes Program.....	3,297	4,159	4,108	4,100	-8
Clean Lakes Program.....	3,243	...	15,026	26	-15,000
Chesapeake Bay Program.....	76	...	2,100	2,500	+400
Total.....	20,750	14,927	31,513	19,616	-11,897
Permanent Positions					
Water Resources Council.....	3	3	2	2	...
State Programs Regulations and Guidelines.....	402	375	332	332	...
Great Lakes Program.....	20	25	27	17	-10
Clean Lakes Program.....	...	...	1	1	...
Chesapeake Bay Program.....	8	...	...	20	+20
Total.....	433	403	362	372	+10

Budget Request

An appropriation of $19,615,500 is requested for FY 1978, which represents a decrease of $11,897,600 from FY 1977. This includes a $15,000,000 reduction for Clean Lakes to allow time for evaluating the accomplishments and benefits of prior year grant expenditures during FY 1978, before assessing the need for additional appropriations. Also included is an increase of $2,902,900 for contracts to assist in and accelerate the development of acceptable Section 208 plans. An additional $400,000 is included to expand studies on pollution control methodology in the Chesapeake Bay's ecosystem.

Program Description

The water quality planning and standards subactivity includes five program elements. The State programs regulations and guidelines element covers a broad range of activities including providing technical guidance, assistance, and information to States, other Federal agencies, and local agencies to assist with the development of water pollution control programs. These activities include assisting States and State-designated areawide agencies in the preparation and implementation of their water quality management programs for the prevention and elimination of water pollution from both point and nonpoint sources; providing guidance on the setting of standards; disseminating technical information concerning scientific and engineering advances; and providing technical consultation.

The second program element covered by this subactivity is the Great Lakes program which includes both funding for the Great Lakes initiative program as well as demonstration grants authorized by Section 108(a) of the FWPCA. The Great Lakes initiative program was established in FY 1973 to provide the principal source of funding for United States activities in direct support of the Canadian-United States Agreement including the Upper Lakes Study, the Pollution from Land Use Study, Great Lakes water quality surveillance, International Joint Commission support activities, special studies of water quality problem areas, and demonstration grants authorized by Section 108(a).

The third program element covered by this subactivity is the Clean Lakes program. Under this program, the Agency provides financial assistance to the States to carry out methods and procedures to restore the quality of publicly owned fresh-water lakes. Nineteen million dollars has been appropriated by Congress for fiscal years 1975 and 1976 to carry out the requirements under Section 314. Ninety-six applications for lake restoration have been received.

The fourth program element covered by this subactivity is support provided the Water Resources Council. This program has three principal activities: (1) participation in Water Resources Council meetings as a member agency; (2) participation in a national assessment by furnishing data on water supplies and water quality, along with appropriate analysis of the total assessment data and findings; and (3) participation in comprehensive water and related land resource planning studies and in the activities of River Basin Commissions.

The fifth program element covered by this subactivity is the Chesapeake Bay program which is charged with developing a management system to maintain and improve the overall water quality of Chesapeake Bay. This will be accomplished through an inventory of point sources, review and revision of NPDES permits, and increased priority for construction grants to municipalities. In addition, existing and potential water quality problems will be investigated for possible regulatory action. The program will emphasize coordination of existing programs of Federal, State and local planning and regulatory agencies.

WATER RESOURCES COUNCIL

1976 Accomplishments

In FY 1976, four comprehensive planning studies were completed for Hawaii; Maumee; Minneapolis - St. Paul; and the Monongahela River.

1977 Program

In 1977, $192,400 and two positions are allocated to this activity. In FY 1977, the Ohio Main Stem, Yellowstone Pacific Northwest, and Hudson studies will be completed. Six comprehensive water resources studies will be initiated. These are: Allegheny, Delaware, Fox-Wolf, Lake Champlain, Southcentral Alaska, and Upper Mississippi. A national assessment study will also be completed.

1977 Explanation of Changes from Budget Estimate

The decrease of $15,000 from the budget estimate reflects partial regional reprogramming of resources into related technical assistance functions in anticipation of the full assumption by the Water Resources Council of all resource requirements in FY 1978.

1978 Plan

Continuing Agency staff support will be provided through cooperation and participation in river basin commissions. Due to the establishment of a centralized budget in the Water Resources Council, funds for participation in river basin studies will no longer be provided by EPA but by the Water Resources Council.

STATE PROGRAM REGULATIONS AND GUIDELINES

1976 Accomplishments

In FY 1976, $1.6 million was spent on contractual studies to assist Section 208 program management development and to foster public involvement in local Section 208 programs. Grants of $200 thousand were awarded to environmental organizations to support 208 public information and participation activities. An additional $400 thousand was spent for State projects to demonstrate how the planning process can be used to solve potential problems, for development of nonpoint source best management practices, and for technology transfer. Two hundred thousand dollars was spent on evaluation of in-place toxic removal, to perform technology assessments for developing and publishing water quality criteria, and for assessment of waste water treatment technology to determine achievable toxic pollutant effluent concentrations. In FY 1976, the program:

- Published EPA's Quality Criteria for Water, 1976;
- Initiated development of expanded second generation water quality criteria document;

- Finalized revision and approval of 56 State water quality standards and promulgated Federal water quality standards for two States;

- Developed and published regulations on water quality standards and anti-degradation policy;

- Completed a report to identify and prioritize the locations for removal of in-place toxic pollutants;

- Promulgated standards of performance for Marine Sanitation Devices;

- Acted on six petitions from States requesting that discharge of sewage from vessels, whether treated or not, be prohibited in specific waters -- published determinations in the Federal Register;

- Developed a proposed regulation for permitting discharges to aquaculture projects in navigable waters -- now awaiting promulgation;

- Presented a summary report to Congress on the national estuarine pollution control program;

- Completed a documentary movie on estuaries for public dissemination;

- Funded 27 areawide and 49 statewide 208 agencies to conduct water quality management planning;

- Developed final regulations for integrated State and areawide water quality management planning;

- Developed a silviculture pesticides best management practice report as part of the nonpoint source control program;

- Used Section 106 grant resources to support priority program areas including permits, municipal facilities management, compliance monitoring, and planning;

- Completed a project to aid State water pollution control agencies in upgrading and reclassifying key environmental control positions; and

- Secured formal agreements with 10 other Federal agencies and departments on participation in the Section 208 program.

1977 Program

The 1977 allocation for this effort is $10,086,800 and 332 positions. In FY 1977, program emphasis will be placed on the continuation of Section 208 planning by State and local governments. This will include the control of nonpoint source pollution. In the past, EPA and the States concentrated virtually all of their resources on abating point sources of pollution. The States have begun to develop strategies which include nonpoint source abatement in accordance with regulations and guidance issued by EPA. Section 208 is being used by the Agency regularly to address those water quality problems not readily soluble by other sections of the Act, in addition to coordinating planning and implementation relative to construction grants and NPDES permits issuance.

The development of a Continuing Planning Process Handbook and a State Strategy Handbook are planned to assist the States in developing well integrated planning and decision making processes.

Plans for the SBA Loan Program include a substantial increase in the number of loans approved and the delegation of this program to several States.

In FY 1977, $600 thousand is being committed to fostering involvement by public and local government officials in Section 208 programs. An additional $200 thousand is committed for development of nonpoint source best management practices and for technology transfer. Two hundred thousand dollars is committed to contracts for increasing the number of pollutants included in water quality criteria and for developing risk assessments on which to base recommendations for these criteria.

Under the State Programs Regulations and Guidelines program, EPA will also:

- Publish a report on the integrity of water;
- Complete the review and revision of State water quality standards;
- Continue to investigate harbors and waterways of critical importance requiring additional studies which provide the basis for a decision on removal of in-place toxic pollutants;
- Investigate and approve or disapprove State petitions requesting the prohibition of vessel sewage, whether treated or not, as required;
- Assist in the review of permit applications for approval or disapproval;
- Continue reevaluation of the status of the Nation's estuaries in preparation for the updated FY 1978 report to Congress;
- Complete the issuance of best management practices for five nonpoint source categories;
- Continue nonpoint source demonstration projects dealing with sediment control and mining; and
- Make initial attempts to identify controls for pollution from urban stormwater, grazing and other nonpoint pollution sources, and to disseminate this technology.

1977 Explanation of Changes from Budget Estimate

The decrease of $474,000 from the budget estimate is the cumulative change of several actions. A reorganization in the Office of Water Planning and Standards resulted in a transfer of $499,000 from water quality strategies implementation; a realignment of laboratory operations created a transfer of $436,000 to water quality monitoring and analysis; a transfer of $109,000 was made to water quality grants assistance programs; a transfer of $96,000 was made from the Agency and Regional Management appropriation for relief in pay cost absorption; and $524,000 was transferred to other activities as a result of the application of the budget estimate to actual operating conditions.

1978 Plan

In 1978, $12,989,700 and 332 positions are requested for this activity, an increase of $2,902,900. Implementation of Section 208 water quality management plans will occur in FY 1978.

Continued decentralization of functions and responsibilities will be a major program emphasis. The development of policies and guidance to ensure State emphasis on and commitment to national priorities will continue.

In FY 1978, $1.3 million will be spent on contracts to provide support to Section 208 agencies. The increase of $2,903,000 includes $900 thousand for contracts to provide assistance to Section 208 agencies in implementing approved plans and to provide evaluation of the management effectiveness of local agencies. Public involvement will be fostered through public interest groups ($300 thousand). The balance of $1.7 million is to provide increased assistance for implementation of nonpoint source control plans through development of model laws, demonstration projects, examples of BMP implementation, and dissemination of this information.

Other activities to be undertaken in FY 1978 include:

- Review and approval of State, areawide and local 208 agency plans and determination of eligibility for continued funding,
- Initiation of incorporation of criteria constituent parameters into State water quality standards;
- Continued investigation of harbors and waterways of critical importance which require additional studies and provide the basis for a decision on removal of in-place toxic pollutants;
- Taking action on State petitions requesting the prohibition of vessel sewage, whether treated or not, as required;
- Publication of an updated report to Congress on the condition of the Nation's estuaries;
- Continued provision of technical support rationale for toxic pollutants, effluent guidelines, ocean dumping, hazardous spills, and dredged or fill materials programs;
- Continuation of nonpoint source planning projects (principally mining and new legal institutional arrangements for nonpoint source control); and
- A study will be undertaken to examine the ability of the Section 208 water quality management process to develop effective controls on nonpoint source pollution.

GREAT LAKES PROGRAM

1976 Accomplishments

A final report on the Upper Lakes Reference Studies was submitted to the International Joint Commission (IJC) in July 1976. Another study, that of pollution from land use activities in the entire Great Lakes basin, reached midpoint in FY 1976 and will continue toward its scheduled completion in FY 1979. The latter effort required $600 thousand in contractual work.

Because of the size and uniqueness of the Great Lakes, EPA supplements its normal monitoring programs and those of the States, and cooperates with Canada through the IJC in a scheduled nine-year cyclical program. Monitoring of Lake Michigan was begun in FY 1976. Total monitoring contractual or grant costs was $800 thousand.

The special demonstration grants program ($1.8 million) authorized for the Great Lakes by Section 108(a) of PL 92-500 continued during FY 1976, with completion of one project and publication of the related report.

The Office of Research and Development continued to do studies on the Great Lakes under EPA's Large Lakes Research program. Work has been directed to the most polluted lakes first to obtain the most timely information for pollution control programs. The mathematical model of Lake Ontario was completed in FY 1976 and preliminary base line information was collected for Lake Michigan.

1977 Program

The 1977 allocation for this effort is $4,108,100 and 27 positions. The Pollution from Land Use Activities Reference Group (PLUARG) studies will continue in FY 1977, and a public information program on the findings of the land use studies will be initiated to inform and obtain input from the public and other government agencies in connection with the final report preparation scheduled for FY 1978. Contractual cost for this effort is programmed at $700 thousand.

Systematic monitoring of near-shore waters will be initiated and intensive surveillance of Lake Michigan will be continued into the second year, based upon the IJC approved Federal-State-Canadian cooperative program, and will include continuation of the open-lakes survey. Data for both water quality monitoring and research will result from the Lake Michigan program. Contractual or grant costs for this effort are programmed at $800 thousand.

Continuing staff support will be provided for the Water Quality Board including Special Studies, and for the direct activities of the government under the Great Lakes Water Quality Agreement, particularly those in connection with the special fifth year review of the Agreement.

Work on four demonstration grant projects will continue in FY 1977, with $1.8 million, and are expected to be completed, bringing to a total of seven completions of the original nine projects authorized.

The Office of Research and Development will continue mathematical modelling efforts, including calibration of lake-wide models for Lakes Erie and Huron, and preliminary examination of models to describe the fate and transport of hazardous pollutants in selected areas.

1977 Explanation of Changes from Budget Estimate

The reduction of $51,000 from the budget estimate reflects the transfer to water quality ecological processes and effects for support of Reye's Syndrome research.

1978 Plan

In 1978, $4,100,000 and 17 positions are requested for this activity, a decrease of $8,100 and 10 positions. The level of Great Lakes work remains undiminished. The reduction of 10 positions will be partly offset by contract initiatives in 1978.

The $8,100 decrease reflects a slightly reduced level of operation as a result of completing the final report of the four year Pollution from Land Use Activities Reference Group (PLUARG) studies for the IJC.

The final report of the four-year PLUARG studies will be submitted to the IJC; and collection of field data will continue to verify mathematical modelling predictions and to supplement the water quality monitoring program. The total cost of this effort is $800 thousand.

The FY 1978 program represents an increase in activities, particularly those related to surveillance and monitoring, based on the IJC recommended Federal-State monitoring program in cooperation with Canada. Monitoring of near shore waters will continue, and the intensive lake-wide survey program will be shifted to Lake Erie. Continuing staff support will be provided for the Water Quality Board. The total surveillance and monitoring cost is $1.0 million and will be secured through contracts with States and other contractors.

Two demonstration grant projects will be completed, including the final reports. Work will continue on the last two of the original nine authorized projects, at a total cost of $1.8 million.

Research will continue to be highlighted by issuance of reports dealing with nutrients and ecological effects of dredge spoils disposal, and by completion of the mathematical models of Lake Michigan and the generalized Great Lakes hazardous pollutant model.

CLEAN LAKES PROGRAM

1976 Accomplishments

- Seventeen lake restoration grants to eight States were awarded for $3,243,000;
- Fourteen lake restoration grants were technically approved for subsequent award;
- $1.4 million was designated for evaluation of the above projects; and
- Seven lake restoration proposals were rejected.

1977 Program

In 1977, $15,025,800 and one position are allocated to this area. The 1977 program includes:

- Continue to receive and review lake restoration proposals from the States;
- Hold regional meetings to discuss and evaluate grants for funding;
- Evaluate lake restoration proposals submitted by States for Federal funding;
- Coordinate program with pertinent activities of other Federal agencies; and
- Evaluate restoration projects under way.

1977 Explanation of Changes from Budget Estimate

The $15,025,800 increase over the budget estimate reflects the congressional add-on of $15 million for the Clean Lakes program as well as an increase of $25,800 as a result of a regional reprogramming to help meet the workload of processing the additional grant authorization.

1978 Plan

The 1978 plan is $25,800 and one position, a reduction of $15 million to allow time for evaluating the accomplishments and benefits of prior year grant expenditures, before assessing the need for additional appropriations. Continue the FY 1977 program until all appropriated funds are committed:

- Evaluate, approve, and fund lake restoration proposals; and
- Conduct site visits to awarded projects to monitor and evaluate restoration progress.

CHESAPEAKE BAY PROGRAM

1976 Accomplishments

- Completed studies on the concentration of PCB's in Striped Bass eggs and on the relationship between herbicides and the disappearance of rooted aquatic vegetation.
- Initiation of studies on the Chesapeake Bay to evaluate nonpoint source effects, ecological significance of underwater vegetation and wetlands, fate of Kepone in sediments, geochemistry of surface sediments, and to develop a zoning scheme for the Bay.

1977 Program

In 1977, $2.1 million is allocated to this activity. Major contractual investigations will be launched into the cause and effect relationships of pollutant inputs to the Bay and regarding available and appropriate regulatory mechanisms to control Bay pollution (contracts cost: $1,100,000). The pollutant studies will concentrate on the input of toxic materials such as Kepone and PCB's, the effect of nonpoint source pollution on the disappearance of rooted aquatic vegetation, and the effect of dredging on the environment. Major outputs during FY 1977 will include:

- An assessment of the water quality and related resource problems of the Bay;
- Determination of the relationship between water quality management and existing regulatory agencies, research programs, permits and mandates and review of the specific institutional/regulatory issues as they arise;
- Development of a comprehensive zoning scheme of the Chesapeake Bay; and
- A definition and prioritization of estuarine physical transport processes.

1977 Explanation of Changes from Budget Estimate

The increase of $2,100,000 over the budget estimate reflects the congressional add-on of $2.1 million for initiation of contractual investigations into causes and effects of Chesapeake Bay pollution and available and appropriate regulatory mechanisms.

1978 Plan

In 1978, $2.5 million and 20 positions are requested for this activity, an increase of $400,000 for personnel costs of the additional 20 positions and for an increased level of monitoring programs and to do additional work on developing pollution control methodology as it effects the Bay's ecosystem.

In FY 1978 the study programs will concentrate on pollution control methodology as it effects the Bay's ecosystem. Monitoring programs will be developed to utilize sophisticated sensing systems. Regulations and intergovernmental mechanisms will be developed to provide a uniform regulatory system for the Chesapeake Bay as an entity. Contractual cost is estimated to be $1,500,000.

Program studies ($500,000) will concentrate on priority management issues identified, examining available alternative solutions, expected benefits, implementation feasibility and costs, and needed implementation actions.

WATER QUALITY

Abatement and Control

Effluent Standards and Guidelines

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Effluent Standards and Guidelines.....	$4,670	$7,142	$18,328	$19,400 ~~$11,400~~	+1,072 ~~$6,928~~
Permanent Positions					
Effluent Standards and Guidelines.....	58	54	51	69	+18

Budget Request

An appropriation of $19,400,000 is requested for FY 1978. This is an increase ~~a decrease~~ of $1,071,800 ~~$6,928,200~~ from FY 1977. An increase in positions will be allocated to addressing problems arising from adverse court actions regarding previously promulgated effluent guidelines. ~~The reduction in funding is the result of a one time supplemental of $11.3 million in 1977 for the purpose of meeting court orders to develop effluent guidelines on 65 toxic pollutants.~~

Program Description

The Federal Water Pollution Control Act Amendments of 1972 require the Environmental Protection Agency to establish effluent limitations which must be achieved by point sources of discharges into the navigable waters of the United States. Section 301 of the Act requires the achievement by July 1, 1977, of effluent limitations which require the application of the "best practicable control technology currently available" (BPT), and the achievement, by July 1, 1983, of effluent limitations which require the application of the "best available technology economically achievable" (BAT). Section 306 of the Act requires the establishment of new source standards and 307(B) and (C) requires pretreatment standards for industry.

The first major effort of developing and promulgating effluent limitations, standards, and guidelines for 43 major industrial categories has largely been completed, with the exception of final pretreatment standards for existing industry sources. In compliance with court ordered deadlines, continuing activities will be devoted to completing standards for industrial subcategories which have been published as interim final or deferred, development of pretreatment standards for industries for which effluent limitations have been developed, the promulgation of standards of performance for new sources, and the review and revision of all standards within five years of promulgation. A continuing major activity involves Agency response to court challenges and remands of standards already promulgated, often requiring additional technical information.

A major new program emphasis is being directed toward implementing a toxic control strategy to identify the most cost effective and cost beneficial regulatory approach to controlling toxic pollutant discharges to the Nation's waters. During FY 1976, a prioritized list of the 65 most dangerous toxic materials was developed, together with a list of 21 industries known or suspected of discharging these materials. In fiscal years 1977 and 1978, EPA will analyze in detail the technological, economic, health, and general environmental factors in order to develop specific regulations, including revision of BAT limitations and guidelines. The schedule for completion of studies and promulgation of regulations is outlined in a Settlement Agreement between EPA and the Natural Resources Defense Council, along with other environmental groups, which establishes specific point source categories, pollutants to be evaluated, priority of review, and specific promulgation dates. Substantial and potentially costly impact from these guidelines to the Nation's industries is possible. To fulfill the Agency's obligations in this area will require careful analyses, evaluation, and integration of health, technology, and economic studies to

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WATER QUALITY

Abatement and Control

Effluent Standards and Guidelines

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Effluent Standards and Guidelines.....	$4,670	$7,142	$18,328	$11,400	-$6,928
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identify the best regulatory approach among alternatives. Of special concern is the role of some of these toxic substances as health hazards and as carcinogenic agents. Beginning in FY 1977, and continuing through 1978, emphasis will be directed toward investigating the toxicity and biological effects on man and other life forms, including those entering the food chain, and the fate, transport, and effects of toxic agents in the environment.

Economic, statistical, and inflationary impact analyses are conducted on a regular basis to support the development of water quality standards, regulations, and programs and to support adjudicatory hearings. The primary emphasis continues to be direct support to the development of effluent limitations and guidelines.

1976 Accomplishments

In FY 1976, $1.9 million was obligated and $2.2 million committed on contractual work to identify advancements made in treatment technologies for those industries previously promulgated, to provide additional technical information necessary for adjudicatory hearings, to collect data on effluent processes and on potentially hazardous materials, and to provide more accurate data and technical information for developing additional regulations. An additional $600 thousand was obligated and $400 thousand committed on contractual work for revision, modification, and amendments to existing contracts. In addition, approximately $2.2 million was obligated for program management support. This support includes personnel and travel costs for 58 positions; publishing and mailing costs; for proposed, interim final, and final regulations; and rental and supply costs. During FY 1976 the program:

- Published interim final or final regulations for existing sources for 17 industries;
- Published interim final or final regulations for 11 industries and developed regulations for specific categories not previously covered;
- Developed and analyzed data and background information to be used in the annual review of established limitations. The effluent limitations must be revised every five years;
- Provided technical support and assistance to the States and enforcement proceedings involving industrial discharges, industrial waste water treatment technology and control;
- Developed technical information necessitated by legal reconsiderations and remands as a result of court challenges to previously promulgated industries;
- Evaluated the effect of effluent limitations and guidelines on energy, solid wastes, air, and radiation impact and alternative techologies to reduce such impacts;
- Provided scientific and engineering technology to assist in controlling the discharge of industrial pollutants affecting the quality of drinking water;
- Quantitatively evaluated the environmental effects of the regulations applicable to industrial point sources as BPT, BAT, NSPS, and pretreatment regulations are implemented;
- Provided profiles of discrete industrial sources for use in preparing new source environmental impact assessments; and
- Provided technical assistance to the regions and States on the applicability of the guidelines and standards to the NPDES permit program.

1977 Program

In FY 1977, $18,328,200 and 51 positions have been allocated to this activity, including $11.3 million to be allocated to initiate contract studies in support of the toxics strategy, including technical studies, economic impact analyses, determination of health effects, and analyses of environmental distribution and overall exposure risk. An additional $5.0 million will be committed for contractual work to promulgate the remaining regulations now under court order, to respond to litigations, to collect additional data to strengthen and repromulgate regulations which are remanded as a result of lawsuits, and to collect and analyze data necessary to promulgate pretreatment regulations. Projected principal accomplishments for the program include:

- In response to the toxic pollutant Settlement Agreement between EPA and NRDC:

  (a) Begin studies to collect and analyze technical data necessary to revise BAT, and new source and pretreatment regulations for industries required by the Settlement Agreement (about $3.1 million);

  (b) Initiate economic analyses on the impact of best available technology (BAT), and new source and pretreatment standards for 21 industries, primarily through contractual studies and complete economic analyses ($3.1 million);

  (c) Initiate contractual work of $2.5 million to develop criteria for 65 toxic pollutants which will address human health and environmental effects; and

  (d) Initiate in-house and contractual studies of $2.6 million to determine overall environmental exposure and risk, and recommend control strategies for each of the 65 toxic pollutants;

- Publish final regulations for seven industries which have been published as interim final: raw cane sugar, electroplating; inorganic chemicals; iron and steel; nonferrous metals; pulp and paper; and ferroalloy manufacturing;

- Publish final regulations for eight industries for which regulations have been proposed but not promulgated: ore mining; coal mining; oil and gas extraction; mineral mining; explosives; gum and wood; carbon black; and hospitals;

- Develop, propose, and promulgate effluent limitations and standards for industries and industrial subcategories not previously covered;

- Issue draft guidance development documents for industries such as fish hatcheries; water supply; steam supply; transportation; concrete products; clay and gypsum products; and petroleum bulk storage facilities; and

- Develop technical information required by the judicial review, technical reconsiderations, and remands of previously promulgated regulations.

1977 Explanation of Changes from Budget Estimate

The net increase of $10,186,800 over the budget estimate includes an $11,300,000 add-on resulting from an amendment to the budget, for initiating contract studies in support of the toxics strategy, including technical studies, economic impact analyses, determination of health effects, and analyses of environmental distribution and overall exposure risk. This add-on is offset by a reduction of $113,200 as a result of applying the budget estimate to actual operating conditions.

1978 Plan

The 1978 resources provide for $11.4 million and 69 positions a decrease of $6,928,200 and an 18 position increase. At least $7.6 million will be required in FY 1978 to continue contractual support to the toxic strategy, including $1.3 million for health effects and environmental risk studies, $1.2 million for economic and statistical support, and $5.1 million for technical studies to revise BAT, pretreatment, and new source regulations for nine of the 21 industries in the court settlement. An additional $1.4 million is planned for technical, economic, and statistical contractual support for about one-half of the law suits and remands from previously promulgated regulations.

In addition to the resources allocated for contractual work, $2.3 million will be obligated for program management support. The planned outputs for this program are:

- Complete work on and promulgate revised BAT, new source and pretreatment standards for nine of the 21 industries in the court settlement;

- Continue contractual studies to provide for appropriate risk assessments and concentration determinations of each of the 65 pollutants which are associated with discernable health or environmental effects of aquatic and human organisms;

- Publish a criteria document for 65 toxic substances, and revise criteria for those substances contained in the initial EPA criteria document;

- Develop technical information necessary to respond to about one-half of the court remands and law suits filed on the previously promulgated regulations;

- Prepare and publish two reports: (1) the Agency's water quality management plans, programs, and priorities, and (2) a report on the Agency's previous year's water related programs; and

- Certify approximately 100 loans to small business for water pollution control facilities.

1978 Plan

The 1978 resources provide for $19.4 million and 69 positions, an increase of $1,072,000 and 18 positions. At least $15.0 million will be required in FY 1978 to continue contractual support to the toxic strategy, including $1.3 million for health effects and environmental risk studies, $4.7 million for economic and statistical support, and $9.0 million for technical studies to revise BAT, pretreatment, and new source regulations for 21 industries in the court settlement. An additional $2.1 million is planned for technical, economic, and statistical contractual support for the law suits and remands from previously promulgated regulations.

In addition to the resources allocated for contractual work, $2.3 million will be obligated for program management support. The planned outputs for this program are:

- Complete work on and propose revised BAT, new source and pretreatment standards for five of the 21 industries in the court settlement (promulgation is scheduled for FY '79);

- Continue technical studies and economic and statistical support on the remaining 16 industries in the court settlement (to be proposed and promulgated in FY '79 and FY '80);

- Continue contractual studies to provide for appropriate risk assessments and concentration determinations of each of the 65 pollutants which are associated with discernable health or environmental effects of aquatic and human organisms;

- Publish a criteria document for 65 toxic substances, and revise criteria for those substances contained in the initial EPA criteria documents;

- Develop technical information necessary to respond to the court remands and law suits filed on the previously promulgated regulations;

- Prepare and publish two reports; (1) the Agency's water quality management plans, programs, and priorities, and (2) a report on the Agency's previous year's water related programs; and

- Certify approximately 100 loans to small business for water pollution control facilities.

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WATER QUALITY

Abatement and Control

Grants Assistance Programs

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Control Agency Resource Supplementation.....	$46,277	$40,000	$50,000	52,400	~~-50,000~~ +2400
Areawide Waste Treatment Management Resources.....	52,992	15,000	14,643	5,000	-9,643
SECTION 208 Training Grants.....	3,747	...	1,518	450	-1,068
Total.....	103,017	55,000	66,161	~~5,450~~ 57,850	~~-60,711~~ -8311
Permanent Positions.....	...	...	...	...	...

Budget Request

$57,850,000

$8,311,700

An appropriation of ~~$55,450,000~~ is requested for FY 1978. This represents a decrease of ~~$60,711,700~~ from the FY 1977 level and reflects the cessation of funding for Section 208 water quality planning agencies (except for solid waste planning) ~~and the transfer of control agency grant funds to the consolidated grant media.~~

Program Description

The water quality grants assistance programs include three grant assistance activities: (1) control agency resource supplementation grants, (2) Section 208 planning grants, and (3) training grants.

The water control agency resource supplementation program provides Federal support to State and interstate water pollution control agencies. In virtually every program activity (e.g., permitting, monitoring, planning, enforcement, and municipal facilities management), EPA and the States perform functions which must be coordinated if they are to be effective. EPA develops the strategy for coordination of effort between EPA and the States as well as the sequencing of this effort from year to year. These broad guidelines are translated into operational program terms in the annual program plan prepared by each State and approved by the EPA regional office. Upon approval of the program, EPA funds each State agency to enable it to conduct its program activity. In FY 1978 the State agencies will be funded through the consolidated grants program. The EPA regions also monitor State performance to ensure that the outputs specified in the programs are accomplished.

In FY 1975, the last year for which figures are available, the role of the States is clearly shown as State man-years of effort totaled approximately 5,500, compared to EPA regional man-years of about 2,200. Thus, the States are providing about 70 percent of the manpower resources in the water program. To help fund the State efforts in FY 1976, EPA provided $46 million for State grants, or 37 percent of the total State spending of $125 million for FY 1976.

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WATER QUALITY

Abatement and Control

Grants Assistance Programs

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Control Agency Resource Supplementation.....	$46,277	$40,000	$50,000	...	-$50,000
Areawide Waste Treatment Management Resources.....	52,992	15,000	14,643	5,000	-9,643
Training Grants.....	3,747	...	1,518	450	-1,068
Total.....	103,017	55,000	66,161	5,450	-60,711
Permanent Positions.....	...	...	...	...	...

Budget Request

An appropriation of $5,450,000 is requested for FY 1978. This represents a decrease of $60,711,700 from the FY 1977 level and reflects the cessation of funding for Section 208 water quality planning agencies (except for solid waste planning) and the transfer of control agency grant funds to the consolidated grant media.

Program Description

The water quality grants assistance programs include three grant assistance activities: (1) control agency resource supplementation grants, (2) Section 208 planning grants, and (3) training grants.

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In FY 1975, the last year for which figures are available, the role of the States is clearly shown as State man-years of effort totaled approximately 5,500, compared to EPA regional man-years of about 2,200. Thus, the States are providing about 70 percent of the manpower resources in the water program. To help fund the State efforts in FY 1976, EPA provided $46 million for State grants, or 37 percent of the total State spending of $125 million for FY 1976.

The Act provides for the establishment of water quality management and planning agencies under Section 208. Through Section 208, State and areawide planning agencies are provided a unique opportunity to plan and manage a comprehensive program based on integrated planning and control over such activities as municipal and industrial waste water, storm and combined sewer runoff, nonpoint source pollutants, and land use as it relates to water quality. From a pollution control standpoint, Section 208 provides the unique opportunity to examine all sources of pollution in an area and develop the most beneficial cost-effective trade-offs between sources to reach the desired ambient water quality level.

A management system will be developed to carry out the objectives and requirements of the plans. This comprehensive management system is expected to be the cornerstone of efforts for attaining the 1983 goals of the act, as it incorporates all the principal functions of water pollution control planning, construction, and regulation.

Academic training grants are awarded to institutions of higher education to meet a variety of professional manpower needs. Efforts in this area are divided into four primary categories: the professional training grant program, the graduate fellowship program, professional training curriculum activities, and undergraduate training grants.

CONTROL AGENCY RESOURCE SUPPLEMENTATION

1976 Accomplishments

- Support of priority program areas including permits, municipal facilities management, compliance monitoring, and planning;
- State issuance of 1,100 major permits and 9,900 minor permits;
- Increased capacity of State compliance monitoring to strengthen the enforcement of more than 38,000 issued permits; and
- Increased capacity of State agencies to manage the construction of municipal facilities and expedite the award of more than $3.6 billion of construction grants.

1977 Program

In 1977, $50 million is allocated for this effort. Compliance monitoring and enforcement will receive increased emphasis while permitting activities will decline. The point source control phase of planning was completed in most areas in FY 1976, and FY 1977 will see additional emphasis on nonpoint source planning. Additional State personnel must be provided to properly manage the multibillion dollar construction grants program. The total of FY 1977 grant resources available for these purposes is $50 million, including a $10 million congressional increase. The Agency is depending on increasing waste water treatment plant construction grant program delegations to the State in such areas as plans and specifications review, operation and maintenance manual review, bid tabulation, etc.

EPA manpower resources will be inadequate to undertake all required increased activities in areas of program emphasis. Thus, States must be encouraged to respond by shifting and adding personnel to carry out priority activities. Resources will be moved from permitting to compliance monitoring and enforcement and manpower will be shifted from point source planning to nonpoint source planning.

1977 Explanation of Changes from Budget Estimate

The $10,000,000 increase over the budget estimate reflects the congressional add-on for this program.

1978 Plan

A total of $52.4 million is requested in 1978 for control agency grants. In FY 1978, additional program emphasis will be placed on compliance monitoring and permit reissuance and the reorientation of management agencies to implement Section 208 planning outputs. The planning and managing of programs addressing non-point source pollution will also be addressed. In the past, EPA and the States have concentrated virtually all of their resources on abating point sources of pollution. Programs will now be reoriented to place greater emphasis on nonpoint sources. Control strategies will begin to be developed in FY 1977 by the States based on "best management practices." Beginning in FY 1978, specific controls and the regulatory programs are to be developed by the States to cover their nonpoint source problems for selected categories.

AREAWIDE WASTE TREATMENT MANAGEMENT RESOURCES

1976 Accomplishments

In FY 1976, the areawide designated agency portion of the Section 208 areawide waste treatment management planning program became fully operational. This involved not only management of the 149 areawide agencies funded by June 1975, but included $52,993,000 for the initiation of planning activities by the States and 27 newly designated areawide agencies. This brought 176 areawide waste treatment management plans under development throughout the Nation. Additionally, 49 States and Territories began their work under the Section 208 process. This effort was in response to a court order requiring a State to conduct water quality management planning for all areas of a State where this planning is not being performed by local government. In five States, the entire planning is being done by local governments.

1977 Program

A total of $14,643,400 will be provided to agencies to assist in their planning. The last remaining territory is expected to be designated in FY 1977.

1977 Explanation of Changes from Budget Estimate

The decrease of $357,000 from the budget estimate results from a $200,000 transfer to municipal waste treatment facility construction to partially support the NEEDS survey. The remaining $157,000 was transferred to other media to support increased operating costs.

1978 Plan

In FY 1978, no funds will be made available for water quality management planning. Five million dollars is being requested for solid waste management planning under Subtitle D of the Resource Conservation and Recovery Act (RCRA) of 1976. These funds will be available on a one time (noncontinuing) basis for planning agencies already designated under Section 208 of the Federal Water Pollution Control Act which may be identified by Governors to develop in conjunction with local governments' solid waste management plans. (It should be noted that in accordance with Section 1001(8) of RCRA, funds will not be available for planning agency employees' salaries after December 31, 1979.)

Some "Section 208 agencies" are in a unique position to develop, with contributing local solid waste agencies, solid waste management plans. These agencies will be primarily involved in developing the plans concerning the treatment and disposal of solid waste with the local agencies primarily responsible for collection and transportation planning. These plans will include methods designed to dispose of solid waste in an environmentally sound manner, to maximize the utilization of valuable resources, and to encourage resource conservation. The solid waste plans will consider the following elements: the varying geologic, hydrologic, and other circumstances under which waste is disposed, particularly as they affect leachate contamination of ground and surface water supplies; characteristics and volume of the waste treated or disposed of; methods available for disposal of solid wastes; the necessity to close or upgrade open dumps; appropriate resource recovery and resource conservation methods; market available for material, including energy, recovered from solid waste; and political, economic and organizational problems affecting comprehensive solid waste management.

1978 Plan

In FY 1978, control agency grants will be funded through the consolidated grant program.

AREAWIDE WASTE TREATMENT MANAGEMENT RESOURCES

1976 Accomplishments

In FY 1976, the areawide designated agency portion of the Section 208 areawide waste treatment management planning program became fully operational. This involved not only management of the 149 areawide agencies funded by June 1975, but included $52,993,000 for the initiation of planning activities by the States and 27 newly designated areawide agencies. This brought 176 areawide waste treatment management plans under development throughout the Nation. Additionally, 49 States and Territories began their work under the Section 208 process. This effort was in response to a court order requiring a State to conduct water quality management planning for all areas of a State where this planning is not being performed by local government. In five States, the entire planning is being done by local governments.

1977 Program

A total of $14,643,400 will be provided to agencies to assist in their planning. The last remaining territory is expected to be designated in FY 1977.

1977 Explanation of Changes from Budget Estimate

The decrease of $357,000 from the budget estimate results from a $200,000 transfer to municipal waste treatment facility construction to partially support the NEEDS survey. The remaining $157,000 was transferred to other media to support increased operating costs.

1978 Plan

In FY 1978, no funds will be made available for water quality management planning. Five million dollars is being requested for solid waste management planning under Subtitle D of the Resource Conservation and Recovery Act (RCRA) of 1976. These funds will be available on a one time (noncontinuing) basis for planning agencies already designated under Section 208 of the Federal Water Pollution Control Act which may be identified by Governors to develop in conjunction with local governments' solid waste management plans. (It should be noted that in accordance with Section 1001(8) of RCRA, funds will not be available for planning agency employees' salaries after December 31, 1979.)

Some "Section 208 agencies" are in a unique position to develop, with contributing local solid waste agencies, solid waste management plans. These agencies will be primarily involved in developing the plans concerning the treatment and disposal of solid waste with the local agencies primarily responsible for collection and transportation planning. These plans will include methods designed to dispose of solid waste in an environmentally sound manner, to maximize the utilization of valuable resources, and to encourage resource conservation. The solid waste plans will consider the following elements: the varying geologic, hydrologic, and other circumstances under which waste is disposed, particularly as they affect leachate contamination of ground, and surface water supplies; characteristics and volume of the waste treated or disposed of; methods available for disposal of solid wastes; the necessity to close or upgrade open dumps; appropriate resource recovery and resource conservation methods; market available for material, including energy, recovered from solid waste; and political, economic and organizational problems affecting comprehensive solid waste management.

TRAINING GRANTS

1976 Accomplishments

The professional training grant program provides for training graduate level students in water related engineering and environmental sciences. In FY 1976, 540 graduate trainees were supported at 34 institutions. Under the graduate fellowship program, 98 employees from 53 State and territorial water pollution control agencies were selected to spend one year in a water related graduate or undergraduate program. Upon completion of this training, the employees returned to their respective agencies. Professional training activities for FY 1976 included continuation of curriculum development in the Ohio Model Monitoring Program, development of operation and maintenance technical assistance courses, and courses for waste water collection systems operators. In addition, demonstration grants were developed for professional training in the 208 program and in certification of senior operators in the local water pollution control facilities. Undergraduate training grants were provided for 10 institutions in water related engineering and environmental disciplines to support approximately 100 students.

1977 Program

In FY 1977, $1.5 million is being provided to support: (1) a three phase national environmental energy workforce study that will provide supply and demand data essential to the eventual assimilation of academic training programs into established State education and training delivery systems; (2) grants to postsecondary educational institutions direct financial assistance for water pollution trainee State agency fellowships; and (3) operator training curriculum development. These professional and subprofessional training grant programs will support curriculum development, operations and maintenance training, technical assistance and demonstration project activities.

1977 Explanation of Changes from Budget Estimate

The increase of $1,518,000 over the budget estimate reflects the congressional add-on of $4 million for academic training, of which $1,150,000 has been allocated to the water quality media. In addition, $368,000 has been reprogrammed from other activities to support specific training grants.

1978 Plan

The request for 1978 is $450,000. Training grants will be terminated after FY 1977. The gradual phase out of this activity over the past several years is leading to the eventual assimilation of these programs into established State education and training delivery systems. In FY 1978, $450,000 will be provided for continuation of the national environmental energy workforce study.

WATER QUALITY

Abatement and Control

Water Quality Strategies Implementation

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Spill Prevention and Response.....	$3,249	$4,042	$3,642	$3,701	+$59
Ocean Disposal Permits.....	1,490	1,319	1,406	1,400	-6
Federal Activities/EIS.....	1,640	1,769	1,758	1,500	-258
Dredge & Fill Regulations...	352	404	435	600	+165
Total.....	6,731	7,534	7,241	7,201	-40
Permanent Positions					
Spill Prevention and Response.....	107	117	110	116	+6
Ocean Disposal Permits.....	24	24	24	24	...
Federal Activities/EIS.....	74	81	75	60	-15
Dredge & Fill Regulations...	16	19	19	29	+10
Total.....	221	241	228	229	+1

Budget Request

The FY 1978 appropriation request is $7,201,400 and 229 positions. This represents a decrease of $39,700 and an increase of one position from FY 1977.

Program Description

The water quality strategies implementation subactivity covers the program areas of Federal activities and EIS reviews, ocean disposal permits, dredge and fill regulations, and spill prevention and response.

The Federal activities and EIS review activity includes the evaluation of projects and programs of other Federal agencies in light of the requirements and goals of the National Environmental Policy Act (NEPA) and the Federal Water Pollution Control Act, as amended, (FWPCA).

EPA's Federal facilities water compliance assurance activities include (1) review and issuance of water discharge permits for existing and new facilities and, if needed, ocean dumping permits of NPDES and review of new source applications; (2) review of Federal agencies' proposed budgets for water pollution abatement projects; (3) issuance of water compliance planning, operating, and reporting guidelines to other Federal agencies; and (4) conducting onsite inspections to assure continuing compliance of and providing technical assistance to Federal facilities.

The EIS review activity consists of reviews, consultations, and special technical studies on the potential water quality impact of proposed major Federal actions. EPA has a unique responsibility to review and comment on such proposed actions. Any proposed actions found by EPA to be environmentally unsatisfactory must be referred to the Council on Environmental Quality. EPA's water quality review activity focuses on those kinds of Federal programs and projects which have the greatest potential water quality impact: nuclear energy development and the nuclear fuel cycle; energy conversion and conservation; energy transportation; mineral extraction; water resources development; and community development projects. In addition to reviewing EIS's on major Federal actions, EPA also reviews proposed Federal regulations; regulations and technical specifications for governing mining and offshore oil and gas development require especially detailed environmental impact review.

The ocean disposal permit program is authorized by the Marine Protection, Research, and Sanctuaries Act of 1972. Under Title I of this Act, the Administrator of EPA is authorized to strictly regulate the disposition of all materials except dredged material which is regulated by the Corps of Engineers. It further prohibits the transportation for the purpose of dumping, and the dumping in ocean waters, of chemical, biological, and radiological warfare agents and high level radioactive materials. Under this authority, a permit program for ocean disposal of wastes was implemented in 1973, and has been operational since then.

The purpose of the dredged and fill material program is to protect the Nation's wetlands and navigable waters from the discharge of dredged or fill material that will result in significant environmental impact. The EPA is responsible for the promulgation of guidelines in conjunction with and for use by the Corps of Engineers in specifying disposal sites for the discharge of dredged or fill material and for the technical review of applications for disposal permits received by the Corps. A significant action in developing final site-selection guidelines is the preparation of a procedures and testing manual for the environmental acceptability of dredged or fill material disposal in water.

The primary objective of EPA's spill prevention and response program is to protect water quality through the prevention of spills and minimizing the impact of spills on the environment. Section 311 of the Federal Water Pollution Control Act specifies a three-fold approach to the control of spills which consists of response, prevention, and enforcement. Essential to the implementation of Section 311 is the promulgation of key regulations (including the designation of hazardous materials), development of the National Contingency Plan, establishment of spill response programs, and development of an aggressive spill prevention program. The Spill Response Program is shared with the U.S. Coast Guard and jurisdictional lines between the agencies are drawn geographically between inland and coastal (including the Great Lakes) waters. It is EPA's position, supported by Section 311, that the discharger should take actions to remove the spill material; however, if the violator fails to do so, clean-up actions will be undertaken by EPA and the discharger charged for the cost of removal. To provide efficient and coordinated response actions, national and regional contingency plans are required which delineate procedures, techniques (chemical uses), and responsibilities of the various Federal, State, and local authorities.

SPILL PREVENTION AND RESPONSE

1976 Accomplishments

Contract funding of $300 thousand was used to support the regions through multidisciplinary technical field support under emergency spill operations and to support further implementation of the total program. An additional $200 thousand was utilized to fund two grants involving hazardous materials spill response training and hazardous materials prevention regulations.

The spill prevention and response program published proposed hazardous pollutant rules for designation, removability, harmful quantities, and rates of penalty; conducted a regulations workshop at the 1976 National Hazardous Substances Meeting; conducted through a contract ($100 thousand) a study on the cost of spill prevention; worked with the Canadian Government on spill prevention related annexes of the Great Lakes Water Quality Agreement; finalized a grant to recommend the technical approach for the development of the Hazardous Substances Spill Prevention Program; finalized a technical draft of the Oil Removal Regulations; completed contract studies in support of the development of regulations for Non-Harmful Discharges of Oil Regulation; and finalized the training program for hazardous substances response personnel in the field.

1977 Program

The spill prevention and response program resource levels are $3,641,600 and 110 positions for FY 1977. Contract funding of approximately $300 thousand will be used to support the regions through multidisciplinary technical field support under emergency spill operations and to support further implementation of the total program. An additional $200 thousand is to be used to fund contractual functions pertaining to the implementation of the hazardous materials program, to expand the management information system, and continue the oil prevention program.

The spill prevention and response program plans to publish final Hazardous Substances Rules for Designation, Removability, Harmful Quantities, and Rates of Penalty; develop the technical approach for the Hazardous Substances Spill Prevention Regulation; amend the Oil Pollution Prevention Regulation; continue oil prevention aerial monitoring; finalize the technical approach for the development of the Removal and Mitigating Action Hazardous Substances Regulations; implement the Oil Removal Regulation; provide special equipment and technical assistance to regions for hazardous substances spill removal operations; revise the National Contingency Plan; implement the training program for the Hazardous Substances Response Program; and provide technical expertise to headquarters and regional enforcement personnel, and the Coast Guard.

1977 Explanation of Changes from Budget Estimate

The net decrease of $400,000 from the budget estimate reflects a resource transfer of $499,000 to state programs regulations and guidelines, water quality planning and standards. The transfer consolidates the accounting structure of one of the headquarters' divisions into one element, rather than two, and reflects completion of the principal functions of developing regulations on hazardous substances. Offsetting this transfer is a net increase of $99,000 resulting from adjustments required when applying the budget to actual operating conditions.

1978 Plan

The spill prevention and response program resource levels will be $3,701,400 and 116 positions in FY 1978. This represents an increase of $59,800 and six positions.

The additional six positions and $59,800 will be utilized to implement the hazardous substances spill prevention and response program. One position will be allocated to headquarters for coordinating technical and field investigation assistance to the 10 regions on major hazardous substances spills; five positions will be distributed to EPA's highly industrialized regions to provide field response capability for about 300 major hazardous substances spills per year.

OCEAN DISPOSAL PERMITS

1976 Accomplishments

Sixty permits were issued under the permit program; revisions to the regulations and criteria were proposed; and a specialized air and water monitoring program was conducted for the first ocean incineration for disposal of wastes to be performed in the United States. The program also conducted surveys of three ocean dump sites through $500 thousand in contracts and $200 thousand in interagency agreements with NOAA and published environmental impact statements on two ocean dump sites. Violations of the Act were reported with civil enforcement actions taken and fines levied. An annual report was also prepared as required by statute.

1977 Program

The ocean disposal permit program resources are $1,406,100 and 24 positions for FY 1977. Approximately 60 permits will be issued under the permit program; revisions to the regulations and criteria will be promulgated. The program will also begin

conducting baseline surveys for site designation on approximately three dump sites through contracts and interagency agreement with NOAA and begin environmental impact statements on two ocean dump sites. Prototype biotal ocean monitorings will be evaluated for monitoring at the dump sites. Civil enforcement actions will continue to be taken when violations occur and an annual report will be prepared.

In addition to the above, program guidance to the regions will be continued; operating manuals prepared; oversight hearings may be expected; and adjudicatory and public hearings will be held.

1977 Explanation of Changes from Budget Estimate

The net increase of $87,000 over the budget estimate results from reprogrammings required in order to reflect actual operating conditions.

1978 Plan

The ocean disposal permit program will be funded at $1.4 million and 24 positions, a slight decrease of $6,100 from the 1977 level. Baseline surveys will be continued on the three sites initiated in FY 1977. These surveys will be funded with $750 thousand and will be conducted by contract and through interagency agreement. Environmental impact and site designation activities will carry over into FY 1979. Designation of these sites and the ones designated in fiscal years 1976 and 1977 will represent approximately four percent of the ocean dump sites which must be surveyed and designated under the requirements of the Act and the Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

Refinement of the biotal ocean monitorings developed in FY 1977 will be made and operational monitoring systems development initiated.

In addition to the above, program guidance to the regions will be continued; operating manuals prepared; oversight hearings may be expected; adjudicatory hearings, and public hearings will be held.

FEDERAL ACTIVITIES/EIS

1976 Accomplishments

In Federal facilities compliance, 86 major NPDES permits were issued, increasing the end of year total of permits issued to 232. A total of 510 facilities were examined for compliance with NPDES permit provisions. At years's end, 88 percent of these permittees were found to be in compliance with their permit schedules.

A total of 1,002 draft and 992 final EIS's as well as 104 proposed Federal agency regulations and other proposed Federal actions, were reviewed for quality impact. Pre-EIS liaison activities were emphasized on major new programs, such as the coastal zone management program and the HUD block grant program, and on major ongoing programs such as outer continental shelf oil development, nuclear power plants, and mineral development. Guidelines for review of impoundment and channelization projects were formulated and issued to EPA regional offices in late FY 1976. These guidelines are expected to improve both the quality and timeliness of EPA's EIS review of such projects' EIS's.

1977 Program

The current resource level for this program element is $1,758,100 and 75 positions.

In Federal facilities compliance, the emphasis has shifted to new source review, coordinated with EPA's EIS review program and to ensuring adherence to NPDES permit schedules through on site inspections, with special attention to compliance with secondary treatment requirements (July 1977 deadline). Efforts are also being made to

determine whether there are any other sources for which an NPDES has not been received. Finally, EPA will continue to coordinate with Federal facilities who are seeking to connect their discharges to municipal systems.

No significant change in the overall level of EIS review activity from the previous year is expected. In addition to the continued goal of timely and high quality reviews, EPA's participation in the pre-EIS review and post-EIS liaison processes will be emphasized in FY 1977 as an effective method of affecting upon Federal agencies' decision processes. Efforts in these areas will be focused on energy development activities: pipelines, nuclear development, coal development on Federal lands; OCS oil and gas leasing; major water resource projects such as locks and dam 26, the Cross Florida Barge Canal, the lower Mississippi River and tributaries projects, and the Garrison Diversion Project; and major community development projects.

1977 Explanation of Changes from Budget Estimate

The net decrease of $11,000 from the budget estimate is the result of reprogramming to higher priority water programs to support actual operating conditions.

1978 Plan

Total resources requested for this program element are $1.5 million and 60 positions, a decrease of $258,100 and 15 positions. The reduction of 15 positions and $258,100 from the FY 1977 level will be possible due to expected management efficiencies.

In Federal facilities' compliance, emphasis will be on new source review and on review of facilities' self-monitoring reports to ensure adherence to permit requirements. In addition, effort will continue to be focused on early identification of needed pollution abatement projects to ensure their inclusion in Federal agencies' budget proposals. It is anticipated that fewer on-site inspections will be made than in FY 1977 and a lower level of technical assistance will be rendered to Federal facilities.

EPA anticipates no change in the number of EIS's that will be submitted to EPA for review. EPA will continue to produce comments on the documents submitted and on proposed Federal regulations. A somewhat lower level of pre-EIS liaison will be possible. Pre-EIS liaison will be emphasized where a series of projects will have significant cumulative effects on a large area. For example, navigation projects on the Upper Mississippi constitute a wide ranging program which, without proper environmental planning, would have major adverse effects on the environment. Pre-EIS liaison will also be critical for projects involving river basins shared with Mexico and Canada. Emphasis will be placed on preventing and mitigating water quality degradation from energy development, water resource development and urban development.

DREDGE AND FILL REGULATIONS

1976 Accomplishments

EPA assisted the Corps of Engineers in the promulgation of interim final regulations. Interim final guidelines for use by the Corps in disposal site selection were developed and published. EPA initiated the development of a testing procedures manual for use in conjunction with the EPA guidelines by the Corps, and through cooperation with EPA laboratories and other Federal agencies initiated the collection of information to define the boundaries of wetlands. EPA personnel contributed to setting precedents through denial of permits that would have unacceptably degraded wetlands.

1977 Program

The dredge and fill materials program resource levels are $435,300 and 19 positions in FY 1977. None of the above funding is to be utilized for contracts or grants. EPA will continue in FY 1977 to: assist the Corps in promulgation of final regulations and prepare and promulgate final EPA guidelines, and develop and publish interim final testing procedures manual. The emphasis in FY 1977 will be on expansion of permit review and the development of general permits from the traditionally navigable waters to certain of the remaining waters of the U.S.

1977 Explanation of Changes from Budget Estimate

The increase of $31,000 over the budget estimate is due to reprogrammings required to support actual operating conditions.

1978 Plan

The dredge and fill materials program is allocated $600 thousand and 29 positions, an increase of $164,700 and 10 positions over FY 1977. In FY 1978, the Corps of Engineers regulation, EPA guidelines, and test manual will be reviewed and revised on the basis of the accumulation of new information from research and program management.

Additional resources are required to expand the permit review and development of general permits to all waters of the United States and to implement the veto responsibility of the Administrator under Section 404(c) of the Federal Water Pollution Control Act, P.L. 92-500.

WATER QUALITY

Abatement and Control

Water Quality Monitoring and Analysis

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Water Quality Monitoring and Analysis.....	$5,236	$4,515	$5,304	$5,225	-$79
Permanent Positions					
Water Quality Monitoring and Analysis.....	182	176	201	186	-15

Budget Request

An appropriation of $5,225,100 and 186 positions is requested for FY 1978. This represents a decrease of $78,500 and 15 positions from FY 1977. This change reflects a reduction in technical assistance for waste load allocations to States and to Section 208 agencies for water quality management.

Program Description

This program includes (1) the operation of EPA and State monitoring stations and surveys, including survey design, field sampling and data collection, laboratory analyses, and quality control operations; (2) data interpretation, reporting, and evaluation; (3) water quality and effluent progress measurement, reporting, and analysis; and (4) maintenance, operation, and improvement of a national water quality data system. This program also includes analyses to support the development of water quality standards and regulations.

The Federal Water Pollution Control Act Amendments of 1972 require the Environmental Protection Agency, in partnership with the States, to perform a wide variety of water quality monitoring activities. These include establishing, equipping, and maintaining a water quality surveillance system for the purpose of monitoring quality of the navigable waters and ground waters of the United States, and providing an annual water quality inventory report to Congress describing the quality of all navigable waters during the preceeding year. To implement these programs, EPA established and maintained during FY 1974 to 1977 a national network of 188 monitoring stations upstream and downstream from a variety of drainage areas. This network provided information concerning the impact of municipal and rural areas on water quality and valuable insights into the effectiveness of control programs, especially municipal and industrial point sources. Future analyses will focus on the impact of nonpoint sources. These results, together with the results of State monitoring progams and analyses, have been forwarded to Congress and the public in the calendar years 1974, 1975, and 1976 Water Quality Inventory Reports to Congress.

The Act requires that no grant under Section 106 (grants for pollution control programs) shall be made to any state or interstate agency which has not provided or is not carrying out an appropriate water quality monitoring program. In FY 1976 EPA issued specific regulations outlining the State monitoring programs required. The primary focus of these regulations is to require each State, in conjunction with EPA, to develop a systematic water quality monitoring strategy, and update it as required; to establish adequate quality control procedures on all monitoring activities; and to provide necessary data to EPA in a format compatible with the national water quality data system.

To insure that the monitoring programs during the FY 1978 to 1983 period provide the information necessary to implement water pollution control programs and measure their impact, a Standing Work Group on Water Monitoring has been established to define comprehensive national programs needed. During FY 1977, national programs will be developed in the area of ambient water monitoring, effluent monitoring, toxics monitoring, and biological monitoring. The major emphasis in FY 1978 will be on implementing these comprehensive programs.

A major initiative in FY 1977 to 1978 is water monitoring support to the implementation of the comprehensive toxics control program. Major studies will be undertaken in-house and with contractor assistance to (1) establish and document the existence, concentrations, and geographic location of 65 identified toxic pollutants in the United States; (2) analyze the sources, uses, and leakages to the environment of these pollutants; (3) evaluate the risks which these pollutants pose, based on their presence in the environment; and (4) make recommendations concerning the most appropriate control strategies for each pollutant. These studies will make full use of toxics information developed by State, EPA, and other Federal agencies as part of their monitoring programs.

To provide a national water quality data system, EPA operates the STORET Water Quality File as a service to Federal agencies, States, and other governmental agencies to insure their ability to store, retrieve, and analyze water quality data. During FY 1976 major changes were made in the operation and management of the system to improve cost accountability, data quality, and overall management controls. With these changes, emphasis is now being placed on improving the support which STORET provides to top managers.

1976 Accomplishments

In FY 1976, sampling surveys and laboratory analyses of data from river/stream sampling stations of the national water quality surveillance system were conducted. Important accomplishments during FY 1976 were the initiation of a quality control program with the States, analysis of initial data from the NWQSS, and adoption of a plan to improve the operation of STORET. Principal accomplishments include:

- Promulgation of Section 106 grant regulations concerning State water quality monitoring programs, with requirements for quality control, strategy development, and data handling;
- Evaluation of quality assurance procedures in over 60 State water quality monitoring laboratories;
- Submission to Congress of the first set of State Water Quality Inventory Reports, together with a national overview by EPA;
- Analysis of the first year's data from the National Water Quality Surveillance System, focusing on municipal and industrial point source effects;
- Analyses and publication of documented case studies of water pollution clean-up successes in five geographic areas;
- Agencywide adoption of a policy for the operation of STORET as a national utility data system for water quality information, and a comprehensive action plan to assure adequate fiscal and management controls; and
- Interagency agreement with the U.S. Geological Survey (USGS) to provide sampling and laboratory analyses of data from river/stream sampling stations operated by USGS.

1977 Program

In FY 1977, $5,303,600 and 201 positions are allocated to this activity. Important programs being undertaken during FY 1977 are the adoption and initiation of a uniform national Basic Water Monitoring Program for States, negotiations with States to implement the program, and data collection and analyses to support the Agency's toxic strategy. Projected accomplishments for the program include:

- Development, adoption, and publication of uniform national Basic Water Monitoring Programs for State collection of ambient, effluent, toxics, and biological data;

- Negotiation of agreements with States concerning content and implementation of each State's monitoring programs to support the Basic Water Monitoring Program and comply with Section 106 regulations;

- Follow-up activities on State quality assurance evaluations, including reevaluation of selected laboratories, and implementation of routine performance checks on laboratory results;

- Analyses of 65 pollutants designated in the Toxics Strategy, based on analyses of existing data and literature developed by an effluent standards and guidelines contract, the STORET system and a selected sample of permit program effluent data; provision of technical support to toxics monitoring by States;

- Operation and evaluation of data from the National Water Quality Surveillance System, focusing on nonpoint sources and selected toxic pollutants;

- Submission to Congress of the Second Annual State Water Quality Inventory Reports;

- Publication of additional case studies of water pollution clean-up successes;

- Performance of a feasibility study on the need for a national utility data system for effluent data;

- Continued implementation of the STORET action plan, including thorough revision of documentation, improved quality control procedures and improved support to top managers; and

- Conclusion of an interagency agreement with the USGS to provide sampling and laboratory analyses of data from river/stream sampling stations operated by USGS.

1977 Explanation of Changes from Budget Estimate

The net increase of $789,000 over the budget estimate reflects reprogrammings to provide additional regional monitoring support and technical assistance.

1978 Plan

In FY 1978, $5,225,100 and 186 positions are requested, a decrease of $78,500 and 15 positions. The decrease reflects a reduction in technical assistance for waste load allocations to States and to Section 208 agencies for water quality management. Major accomplishments planned for FY 1978 are the State implementation of the Basic Water Monitoring Program, limited exposure-to-risk assessment for selected toxic pollutants, and the establishment of a biological monitoring program to support the toxics program. The planned outputs for this program are:

- State implementation of the comprehensive Basic Water Monitoring Program developed during FY 1977, including greater reliance on intensive surveys and more uniform sampling protocols, reduced numbers of fixed ambient stations, and initiation of biological and toxics monitoring;

- Assessment of environmental exposure and risk to help develop control strategies for several of the 65 toxic pollutants, based on the studies performed during FY 1977; controls may include: revised best available technology regulations, pretreatment and new source performance standards, water quality standards, Section 307(a) toxic standards, or regulation through solid waste, air, or other regulatory programs;

- Establishment of a biological monitoring program to support the toxics strategy, including analyses of fish and shellfish tissues and maintenance of a tissue bank; the program will involve participation by States, U.S. Fish & Wildlife Service, Food and Drug Administration, and other ongoing programs;

- Submission and analyses of State Water Quality Inventory reports;

- Continuation of STORET support to managers;

- Development of a quality assurance program for dischargers, including validation of industrial self-monitoring reports, and inspection of municipal laboratories; and

- Provision of technical support and back-up for toxics controls and water quality management plans.

WATER QUALITY

Abatement and Control

Municipal Source Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Municipal Waste Treatment Facility Construction.....	$16,825	$21,409	$20,316	$24,970	+$4,654
Waste Treatment Operation and Maintenance.....	1,757	4,646	1,754	1,751	-3
Manpower Planning and Training.....	2,648	...	2,866	3,859	+993
Total.....	21,230	26,055	24,936	30,580	+5,644
Permanent Positions					
Municipal Waste Treatment Facility Construction.....	766	826	818	818	...
Waste Treatment Operation and Maintenance.....	59	116	63	63	...
Manpower Planning and Training.....	64	...	51	31	-20
Total.....	889	942	932	912	-20

Budget Request

The 1978 request is $30,580,000 and 912 positions. Administration of the municipal source control subactivity in FY 1978 is expected to require an additional $5,644,500 over the currently estimated FY 1977 level. This increase is due to the following major factors: (1) the new contract requirements from NEEDS Survey development ($1.0 million), operator training ($1.0 million), and general contract support ($1.6 million); and (2) an increase in funding for interagency agreements with the Corps of Engineers, GSA, and other agencies to perform various tasks, including increased numbers of construction inspections ($2.0 million).

The $3.6 million increase for contract support will provide $1 million to fund the basic contracts required for the biennial NEEDS Survey required under Sections 516(b)(2) and 205(a) of the Federal Water Pollution Control Act Amendments of 1972. The output from these contracts will be the 1978 NEEDS Survey to be submitted to Congress in February 1979. In addition, $1 million is to be used for increased contract effort to supplement the current operator training program. This will allow increased training despite a reduction in total EPA personnel assigned to this function. The remaining $1.6 million will be utilized to cover general contract support, including improvement in management information systems, special studies, and other contract efforts aimed toward ensuring the fiscal and technical integrity of the program.

The additional $2.0 million will allow at least a $1.0 million increase in funding, to a total of $3.5 million, to perform increased numbers of construction inspections under the interagency agreements with GSA and the Corps of Engineers. Approximately 50 percent of the total interim inspections to be performed by EPA are included in these subagreements. The remainder of the $2 million increase is for interagency agreements for other evaluations and tasks that would work to improve program performance and accountability.

Program Description

The municipal source control subactivity is composed of two sections. The first, the municipal waste water treatment facility construction program, derives its legislative authority from Title II of the Federal Water Pollution Control Act Amendments of 1972 (P. L. 92-500). The second, the municipal operations and manpower planning and training program, derives its principle authority from Title I, Sections 104 and 109 through 112, and portions of Title II and Title IV. The primary goals of these programs are (1) to achieve the most cost effective and timely abatement of municipally treated waste water pollution control through proper planning, design, construction, and operations and maintenance of treatment works; and (2) to assure an adequate supply of qualified water pollution control manpower at all government levels. Workload for the program is primarily measured by two factors, the number of new awards to be processed and the number of ongoing projects to be managed. The funding provided under this subactivity covers the cost of both operating the construction grants program and the municipal operations and manpower planning and training program. Omitted from this subactivity are those operating costs related to construction grants environmental impact statements, which are provided separately, and the municipal construction grant funds, which are included in a separate appropriation account (Construction Grants).

This subactivity is predominantly located in the EPA regional offices, where all the grant activity and associated administration of the grants program and post-construction activities take place. The direct training and operational technology activities of the municipal operations and training programs are located at the National Training and Operational Technology Center in Cincinnati. The remainder of the subactivity (i.e., program policy, administrative oversight, needs estimates) resides in headquarters, primarily in the Municipal Construction Division and the Municipal Operations and Training Division of the Office of Water Programs Operations. The subactivity is divided into two major programs, areas, comprising three program elements, reflecting the functional division between the construction and facility operations portions.

The first program area -- the administration and operation of the construction grants program -- includes the following activities: (1) technical and administrative review of grant applications, amendments, and supporting materials; (2) review of facilities plans, construction plans and specifications, and bidding documents; (3) assessment of environmental impact; (4) evaluation of infiltration or inflow into the waste treatment system; and (5) review of user charge and industrial cost recovery systems. It also includes various postaward management activities related to monitoring on-going construction projects: (1) periodic review of vouchers and subsequent payment to grantees; (2) conducting interim and final construction inspections of treatment facilities; (3) analysis and processing of change orders and grant amendments; and (4) review of contracts to ensure compliance with civil rights and labor laws and regulations. Many of the States have accepted delegation of certain parts of these activities, particularly the review of construction drawings and specifications and the review of the bidding documents. The funding requirements reflect actual and planned delegation through FY 1978.

The second area -- the municipal operations and manpower planning and training program -- includes the following interrelated activities:

(1) Development and maintenance of State and local municipal operations programs. This involves continuous assessment of plant operational efficiencies nationwide through a vigorous plant operations and maintenance inspection program. Inspection results are reported annually to Congress per Section 210 of the Act. The program supports State and local efforts to improve plant operations and maintenance through the development of guidance materials and manuals, identification of research and training needs, conduct of technical assistance demonstration programs, and public awareness activities; and

(2) Development of trained water pollution control personnel to implement programs authorized by P.L. 92-500. These include (a) training and certification of municipal waste water treatment facility operators and related personnel to improve treatment efficiencies and existing plants and assure efficient and reliable operation of new federally funded plants; (b) development of manpower planning capabilities to assess State agency manpower and training needs relative to supply; (c) training of professional and subprofessional waste pollution control manpower; (d) training of State agency personnel in the technology of abatement and control of water pollution through short-term training courses, packaged training courses, development of audiovisual training aids, and delivery of training resources to State agencies for the purpose of developing State agency training self-sufficiency.

MUNICIPAL WASTE TREATMENT FACILITY CONSTRUCTION

1976 Accomplishments

Approximately $1.1 million of 1976 resources was for contracts and $1.2 million was for interagency agreements. The interagency agreements were with the Corps of Engineers and GSA to perform interim construction inspections.

During FY 1976, the Agency processed 3,976 new awards and 2,020 change orders totalling $4.1 billion for the planning, design, and construction of treatment facilities (an additional $200 million was obligated for reimbursable projects). The number of ongoing projects for all steps on June 30, 1976, totalled 8,367, with a grant award total of $14.4 billion. Payments totalling $2.4 billion were processed for work completed during FY 1976. A total of 1,119 construction projects were completed over the year and 3,438 projects were either under construction or awaiting construction initiation. In comparison to FY 1975, the activity in FY 1976 represented a substantial acceleration, both in terms of new awards (i.e., 3,976 awards vs. 2,600), in payments (i.e., $2.4 vs. $1.9 billion), and in active projects (i.e., 8,367 vs. 6,052). The following table summarizes the grant program during FY 1976:

	FY 1976	
Item	Number	Amount (dollars in millions)
Awards Processed:		
Step 1 Awards.....	2,341	$120.1
Step 2 Awards.....	724	150.2
Step 3 Awards.....	911	3,870.7
Active Projects:		
Step 1.....	4,020	294.3
Step 2.....	909	396.4
Step 3.....	2,160	9,736.8
Section 8 (P.L. 84-660).....	1,278	4,012.1
Total Outlays.....		2,429.0

A number of steps were taken during FY 1976 to improve management of the program and expand public knowledge of the laws and regulations. These included (a) the publication of a construction grants handbook explaining in detail all parts of the program (and a companion summary pamphlet for municipal officials); (b) a series of training sessions for EPA and State personnel, grantees, and the public on various facets of Title II; (c) the publication of expanded guidance on multiyear planning and priority list procedures, revenue procedures, facility plan development, and value engineering requirements; (d) the reorganization of several offices to allow closer coordination between the different functional groupings within the construction program; and (e) the development of improved payment guidelines to allow monthly payment processing and better payment management.

Other program activities in FY 1976 should also be noted:

(a) The development of an improved grants management information system to facilitate EPA and State management was initiated during FY 1976. A feasibility study and a requirements analysis were completed under contract and implementation of the new system was begun in the EPA regional offices. Full implementation is expected in mid-FY 1977;

(b) The emphasis on delegation of program activities to the States remained a high Agency objective throughout FY 1976. An agreement was signed with the State of California to pursue delegation of most Federal tasks to the State under a fee arrangement that returns part of the allotment funds to the State for administration of the program. Twenty-six functional subagreements involving all parts of the program are now complete or under negotiation. Delegations to States other than California were increased during FY 1976 for those program areas allowable under current regulations. Approximately 35 States had been certified to review plans and specifications and operations and maintenance manuals by June 30, 1976. Other areas of delegation included change order review, interim inspections, and construction bid review;

(c) A cross reference index file was developed during FY 1976 that linked together NPDES permits, construction grants projects, and facilities required from the 1974 NEEDS Survey. The intent of the file is to facilitate coordination of grant program schedules with permit compliance schedules to improve project tracking and management; and

(d) A FY 1976 NEEDS Survey, required under Sections 516(b)(2) and 205(a) of the FWPCA (P.L. 92-500), was initiated to (1) update the 1974 needs estimates for treatment plants and conveyance systems for individual facilities, (2) provide detailed inventory of data on all aspects of existing and needed municipal facilities, and (3) estimate the costs by State for correction of combined sewer overflows and treatment and control of storm water. The Survey involves EPA personnel, outside contractors, and State personnel. It is scheduled to be completed and submitted to Congress by February 1977.

1977 Program

In FY 1977 it is estimated that approximately, 5,750 new awards, totalling approximately $6.2 billion, will be made for the planning, design, and construction of municipal waste water treatment facilities, and that approximately 9,900 projects will be in various stages of preconstruction or construction activity. In addition, approximately $300 million is expected to be obligated to reimburse the 5,000 projects eligible under Section 206(a) of P.L. 92-500. These program activities include projects to be funded with the $480 million authorized under Title III of the Public Works Employment Act of 1976 (P.L. 94-369). It further assumes that an additional $400 million will be made available for obligation during FY 1977 and that legislation to extend the reallotment period by one year will be enacted for the FY 1976 allotment. The following table summarizes the program planned for FY 1977:

Item	FY 1977 Number of Projects	FY 1977 Amount (dollars in thousands)
Step 1 Awards.....	2,100	$200
Step 2 Awards.....	2,100	700
Step 3 Awards.....	1,550	5,300
Active Projects.....	9,900	16,850
Total Outlays.....		4,430

To support this level of activity, the FY 1977 resources assigned to this element are $20,315,800 and 818 positions. Of this $20.3 million, approximately $2.0 million will be for contracts and $2.5 million for interagency agreements. The interagency agreements are with the Corps of Engineers and GSA for construction inspections and total $2.5 million (an increase of $1.3 million from FY 1976). The bulk of the contract funding is for the NEEDS Survey for $1.0 million.

The Agency has taken a number of steps to maximize the utility of the resources allocated to this program. These steps include an increase in the outside contracting or delegation of selected tasks, the acceleration of the delegation of construction inspections to the Corps of Engineers and GSA, and the beginning of attempts to automate certain project reporting tasks to best utilize the available personnel.

A number of activities in support of the program are expected to continue or be initiated during FY 1977:

(a) EPA has begun a major new effort within the current resources ceiling to ensure the technical and fiscal integrity of the construction grants program. This will involve the regional offices, headquarters personnel, and the EPA Office of Audit in several different activities intended to monitor and evaluate various components of the program. A series of approximately 20 construction operations review inspections will be conducted on selected projects as one major component of this effort. These inspections will be conducted by teams of EPA engineers and auditors who will thoroughly review the fiscal and construction aspects of ongoing construction projects, including onsite inspections, grantee interviews, State meetings, and EPA regional visits. In addition, detailed quality reviews of completed facilities plans will be performed to give feedback to the regional, State, and local officials on facility planning procedures. Finally, EPA will perform increased numbers of financial audits at various stages of the construction process to ensure proper accounting and program procedures are being followed;

(b) The revised management information system will be fully implemented into the EPA regions to facilitate improved milestone tracking of projects, to expand multiyear project management, to provide timely and accurate management access to information, and to improve payments processing and management. This, coupled with increased onsite review and inspection, and increased EPA staff review activities, will assure that EPA funds are being utilized as intended and that construction is timely and cost-effective;

(c) A third round of reimbursement to projects eligible under Section 206(a) will be accomplished during FY 1977 utilizing additional funds made available for this year. A total of $300 million is expected to be obligated. With this new round, a total of $2.1 billion will have been awarded under this Section, bringing the precentage reimbursed from 68.7 to 78.7 percent of the total potential reimbursable amount; and

(d) The FY 1976 NEEDS Survey will be completed and transmitted to Congress in February 1977. Within EPA, the results on needs by category will be integrated into construction grants priority list development, facilities planning, and Section 208 areawide planning to assure close coordination of the programs related to grants management. The technical needs data will also provide assistance in legislative planning and analysis for future years.

1977 Explanation of Changes from Budget Estimate

The net decrease of $1,093,000 from the budget estimate is the result of several actions. An increase of $800,000 was realized by the enactment of the Public Works Employment Act, which included these funds as well as Construction Grant funds. A transfer of $970,000 was made to other activities to provide for the increased support necessary due to the 1976 new positions ($477,000 to audit, contracts and grants administration; $70,000 to general counsel; $258,500 for EIS support; and $164,500 to other water quality areas of support). A transfer of $200,000 was made from Section 208 activity in order to partially support the NEEDS Survey. A decrease of $1,123,000 was the result of applying the budget estimate targets to actual operating conditions.

1978 Plan

The FY 1978 program includes $24,970,400 and 818 positions, an increase of $4,654,600 over the FY 1977 level. This program will support 5,850 new awards totalling $5.3 billion, approximately 10,900 ongoing projects in the preconstruction or construction stages, and payments totalling approximately $5.2 billion. This level of activity is contingent upon enactment of legislative proposals that would provide additional appropriations of $400 million in FY 1977 and $4.5 billion in FY 1978 to the construction grants program.

The following table compares the planned FY 1978 program with FY 1976 and FY 1977 activities:

Item	FY 1976 Actual	FY 1977 Planned	FY 1978 Requested
		(dollars in billions)	
Total Obligations.*.....	$4.1	$6.2	$5.3
New Step 1 Awards.....	2,341	2,100	2,000
New Step 2 Awards.....	724	2,100	2,300
New Step 3 Awards.....	911	1,550	1,550
Active Projects.....	8,367	9,900	10,900
Total Outlays.....	$2.4	$4.4	$5.2

* Does not include reimbursable project obligations.

The increase from FY 1977 to FY 1978 of $4.7 million is due to: (1) new contract requirements to develop the NEEDS Survey ($1.0 million); (2) additional funding for interagency agreements with the Corps of Engineers, GSA, and other agencies to perform construction inspections and various program evaluations ($2.0 million); and (3) an increase in contract support for improved management information systems, special studies, and other tasks to improve fiscal and technical integrity of the program ($1.7 million). The following management efforts are planned for FY 1978:

(a) Several activities now underway in development of automated MIS capability will be operational during FY 1978. Multiyear program planning through the State continuous planning process will be fully integrated into construction grants management through the vehicle of the State Project Priority List. Through this, EPA and the States will be able to plan and manage existing projects with full awareness of the impact of current actions on future funding constraints. Linkage of the construction grants activities from priority list through monitoring of completed facilities will be available to facilitate "cradle to grave" project management;

(b) A program of technical and fiscal inspections will continue in FY 1978 and will begin to reap benefits in regard to improved guidance, regulations, and general program management. Construction operations review inspections, facilities planning quality reviews, value engineering reviews, and financial audits will continue to be performed to ensure compliance with existing program guidance and regulations. Feedback of such inspections to States, municipalities, and regional offices should provide improvements at all levels of the construction process;

(c) The 1978 NEEDS Survey will be conducted during FY 1978, with completion expected by February 1979. Unlike past surveys, the 1978 effort will canvas 100 percent of all the facilities in the country to compile a complete inventory of current and future facilities. This data will provide the basis for detailed planning, management, and evaluation of the grants program;

(d) Procedures to improve outlay forecasts and aid payments management will be implemented in the regional offices during FY 1978. Such guidance will result in management benefits at both the national level in regard to government fiscal policy and at the local level in regard to expeditious and cost-effective construction management; and

(e) Steps will be taken to integrate EPA construction grants management information capabilities with State management systems to improve the accuracy, consistency, and timeliness of management data available for decisionmaking and program management. The capability of States to put results of thier activities directly into the unified data base and to able to gain access to reports and status information as management needs arise will improve State/EPA communications and trust. With many Federal requirements delegated to the States under a Cleveland/Wright form of proposal, an information system that facilitates easy review by EPA of program progress becomes essential.

WASTE TREATMENT OPERATION AND MAINTENANCE

1976 Accomplishments

The waste treatment operation and maintenance program completed the following during FY 1976:

- Regional operational and maintenance (O&M) offices, working with the States, developed an increasingly active O&M municipal facility inspection program;

- Regional O&M programs continued to provide operational assistance to the construction grant program and to States, municipalities, and consultants to help improve performance of existing treatment facilities;

- A plan for a National Municipal Operations Program was submitted jointly with the State/Federal Water Programs Advisory Committee and is currently awaiting Agency approval;

- An O&M data system supporting the entire inspection process, data needs and form review was implemented and further development of applications programming was begun. Further study and review of requirements is now underway;

- A series of conferences for regional, State, and consulting personnel was held, covering design for operability, flexibility, and maintainability;

- A new program format was adopted for process control assistance demonstrations. The new format is designed to gain broad spectrum training benefits for State and consulting personnel in addition to demonstrating the effectiveness of technical assistance at a plant site;

- The development of manuals designed to assist personnel at municipal waste water treatment facilities in dealing with operational controls, troubleshooting and maintenance of anaerobic sludge digestions, aerobic biological treatment processes and lagoons was initiated. A course in troubleshooting and evaluating waste water treatment facilities was completed and given on a pilot test basis;

- A municipal operations public information strategy was adopted that includes projects to inform the engineering community, public administrators and decision makers, public interest groups and the general public about the importance of a continuing interest and investment in good plant operation and maintenance; and

- In cooperation with the construction grants program, eligibility requirements for plant start-up activities and guidance for a plan of operation were prepared.

1977 Program

Sixty-three positions and $1,753,900 have been allocated to this program in 1977. The FY 1977 waste treatment operations and maintenance program will emphasize:

- Guidance development for implementation and monitoring of accomplishments under the National Municipal Operations Strategy;

- Coordination with the Office of Public Affairs in development of a public information strategy. Effort in this first year will concentrate on reaching local administrators, decision makers, and public interest groups;

- Technical assistance activities for facility operations and maintenance. Projects will be selected to insure either training benefits or demonstrations of new process control approaches;

- Onsite training of State and local personnel in treatment plant process controls;

- Continued regional and State municipal facility inspection activity as part of joint O&M/compliance evaluation inspection program; and

- Publication and distribution of four operations manuals initiated in FY 1976.

1977 Explanation of Changes from Budget Estimate

The decrease of $2,892,000 from the budget estimate primarily reflects the restructuring of program elements within water quality municipal source control. $2,750,000 was transferred to the new designation "manpower planning and training" for greater visibility. This area is discussed immediately after this O&M section. In addition, a decrease of $142,000 is a result of reprogrammings required to reflect actual operating conditions.

1978 Plan

Except for a minor decrease of $3,300, the same level of resources will be allocated in 1978 as in 1977: 63 positions and $1,750,600. The operation and maintenance program will concentrate on implementing a national municipal operations program aimed at identification and resolution of treatment plant operational problems. Such activities are in response to the continuing failure of a large percentage of municipal waste water treatment facilities to perform in compliance with design criteria or secondary treatment requirements. The following activities are also consistent with expected increases in compliance and enforcement efforts by EPA and the States:

- Continued regional/State municipal facility inspection activities to support planning, construction, operations, and NPDES objectives through inproved data flow on treatment plant operations and problems;

- An identification of major O&M problem areas nationally and development of priority areas for resolution;

- Continuation of technical assistance demonstrations in operations and maintenance technology and onsite training in treatment plant process controls. Establishment, thereby, of State, local, and private sector expertise in treatment plant process controls and problem solving;

- Preparation of special reports to Congress and target groups on plant efficiency (legislatively mandated), associated problems and their causes;

- Development of new applications of O&M materials including regionalizing access to the files for organizing POTW operational data for analysis, evaluation, and decision making on resolution of O&M related problems;

- Preparation of printed materials on O&M issues of national concern and distribution of materials to gain public support for improving plant performance and reliability;

- Continuation of technical studies and documentation to improve the availability of urgently needed reference materials on treatment plant operational technology for use by operators, consultants, and regulatory personnel;

- Guidance to State and local officials on treatment plant budget, staffing, and related needs for improving compliance with FWPCA requirements and objectives; and

- Support to the development of effective State and local operator training and certification programs.

MANPOWER PLANNING AND TRAINING

1976 Accomplishments

The manpower planning and training activities conducted in FY 1976 included: (1) an operator training program to improve skills of treatment plant operators, improve State operator certification programs, and provide assistance to municipalities for developing instructional capability, specialized new methods and skills; (2) an academic training program funded under the grants assistance subactivity which provided professional graduate training, undergraduate training, and State agency fellowships; and (3) a direct training support program which conducted 21 short-term courses for 500 students, developed and distributed nationally a variety of training resources, made available extensive audiovisual training aides, and fostered State agency training self-sufficiency through training workshops and EPA/State consultation.

1977 Program

The FY 1977 resource level for the element is $2,865,800 and 51 positions.

The FY 1977 manpower planning and training program includes expanded operator training programs to facilitate development of effective operator training and certification capabilities at the State and local levels. These programs include: (1) grant support to training on NPDES effluent monitoring procedures; (2) support of the Association of Boards of Certification (ABC) to develop and improve operator certification programs; (3) development of facility operator training in advance treatment operation; and (4) State and local agency operator instructor development.

Manpower planning programs provide technical assistance to State and local water pollution control agencies. This includes assistance to four or more agencies through manpower planning courses, development of guidance to systematize State manpower planning activities, and a manpower needs assessment methodology for water pollution facilities.

Direct training support programs to facilitate State and local training capabilities include: (1) preparation of student reference texts, instructor guides, and development of four new courses for State agencies; (2) presentations to 144 State agency instructors in municipal waste treatment operations and treatment technology; (3) two workshops for selected regional, State and national training personnel; (4) 15 short courses at the National Training Center for 360 EPA State and local personnel; (5) instruction and material support for an expected 28 courses in the EPA regions for an estimated 570 students; and (6) audiovisual training aids lending and information services reaching from 35,000 to 50,000 viewers.

1977 Explanation of Changes from Budget Estimate

The increase of $2,866,000 from the budget estimate primarily reflects the transfer of $2,750,000 from waste treatment operation and maintenance to display this function separately within the municipal source control. In addition, $116,000 was transferred from other water quality activities for miscellaneous increases.

1978 Plan

The FY 1978 program for manpower, planning, and training is to be funded at $3,859,000 and 31 positions, an increase of $993,200 and a decrease of 20 positions from the FY 1977 level. The additional $993,200 will be used to contract for expanded delivery of available course work and training materials through interagency agreements with HEW, DOL, and other agencies. The additional funds will also be used for expanded support to the development of manpower planning and training capabilities at the State and local levels. Training support will be reduced by 20 positions.

Training activities will continue to be directed toward the development of water pollution control manpower planning and training capabilities at the State and local level. Program outputs and products will focus on the development and delivery of curricula, courses, and related training materials in support of identified water pollution program objectives. Increased emphasis will be placed on delivery of available municipal treatment plant operator training courses and materials, through HEW, DOL, and other sources. Manpower planning and training activities in FY 1978 will include:

- Training program development, curricula, and course development to support construction grants, municipal operations, permits compliance, and oil and hazardous materials program objectives;

- Support to the National Coordination Committee for operator training to provide assistance in the implementation of the ABC "Brown Book" recommendations. The National Coordination Committee in turn will provide support to State coordinating committees for the development of waste water treatment plant operator training. The "Brown Book" provides a comprehensive plan for development and coordination of operator training at the State and local level. This plan, developed by ABC, was funded in FY 1976 by EPA;

- Expanded support through interagency agreements with the Vocational Education Department of the Office of Education (HEW) to provide grant training assistance to State and local agencies. It is anticipated that additional vocation education funds will also support this activity;

- Support to the Association of Boards of Certification for the continuing development of operator certification programs and examination systems;

- Support to State and local agencies for the continuing development of manpower planning capabilities; and

- Development, demonstration, and distribution of course packages and materials in support of State and local training programs.

Products of these activities include: (a) curricula, courses, and related training materials to meet the identified needs of State agency staff and municipal waste water treatment plant operators; (b) operator certification program guidance and examination materials; (c)training programs and materials for State and local manpower planners; (d) instructor training for State and local personnel; (e) information systems for inventories and evaluations of courses, instructional materials, instructors, and training resources; (f) grant support primarily through the National Coordinating Committee for Operator Training and Program Development and to the vocational education system in the Office of Education (HEW), to assist State and local agencies to develop operator training programs; and (g) support for developing training programs and materials for State and local water pollution control instructors.

WATER QUALITY

ABATEMENT AND CONTROL

LOAN GUARANTEE PROGRAM

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
	(dollars in thousands)				
Loan Guarantee.....	...	...	...	$10,000	+$10,000

Budget Request

An appropriation of $10,000,000 is requested for FY 1978 for a new program authorized by P.L. 94-558.

Program Description

Sec. 213 of the Federal Water Pollution Control Act, as amended (P.L. 94-558) establishes a loan guarantee program authorizing the Administrator to guarantee, and make commitments to guarantee, the principal and interest of any loan obligation or participation therein of any State, municipality, or intermunicipal or interstate agency financed thru the Federal Financing Bank for any grant eligible projects for the construction of public owned waste treatment works, if the issuing body is unable to obtain financing on reasonable terms, and there is reasonable assurance of repayment.

FY 1977 Program

Draft regulations have been developed and a public meeting was held to discuss the draft regulations. Subsequent incorporation of comments resulting from the public meeting is underway with the expectation of printing in the Federal Register in March. A projection of the number of applications to be processed cannot be made until certain policy decisions are determined.

The resources for FY 1977 will be absorbed within the Agency's present ceilings unless, by some unexpected chance, an early default occurs.

FY 1978 Plan

An appropriation of $10 million is requested to provide funds for EPA to respond to the terms of the Federal Financing Bank in case of defaults on any loans which have been guaranteed. These funds are to remain available until expended. They will become part of a revolving account into which recoveries and fees can also be placed to make the program self-sustaining, and to offset defaults. In FY 1978, $300,000 of additional resources is requested for contracts to assist EPA in the evaluation of loan applications. The $300 thousand is requested under the Agency and Regional Management appropriation.

Enforcement

SECTION TAB

WATER QUALITY

Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
		(dollars in thousands)			
Appropriation					
Water Quality Enforcement..	$19,414	$21,242	$21,369	$21,398	+$29
Permanent Positions					
Water Quality Enforcement..	786	764	756	657	-99

Budget Request

An appropriation of $21,398,000 and 657 positions is requested for FY 1978, a decrease of 99 positions and an increase of $29,100 from FY 1977.

Program Description

The water quality enforcement program emphasizes compliance monitoring, enforcement, and continuing issuance of National Pollutant Discharge Elimination System (NPDES) waste water discharge permits. Other activities include the enforcement actions necessary achieve compliance with regulations on oil and hazardous materials discharges, ocean dumping, and other related requirements of the Federal Water Pollution Control Act, the Rivers and Harbours Act (Refuse Act), and the Marine Protection, Research, and Sanctuaries Act. Most water quality enforcement activities are conducted cooperatively with the States and maximum State assumption of these responsibilities is a primary goal.

The NPDES permit program is part of the comprehensive effort initiated by the Federal Water Pollution Control Act to reduce or eliminate point source pollution from industrial, municipal, commercial, and agricultural dischargers. The Act prohibits discharge of pollutants to all waters of the United States unless a permit is issued by EPA or an EPA approved State program. The permit is the focal point of the tight regulatory system with precise and detailed abatement requirements, streamlined enforcement procedures, and heavy penalties for permit violation.

The permit is the mechanism for imposing on point source dischargers the uniform national effluent limitations and national performance standards for new source facilities which EPA is required to promulgate. These standards, set by the abatement and control function, establish the maximum amounts of various pollutants which can legally be discharged by a facility. If, at a given facility, the established national effluent limits will not reduce enough pollutants to meet the ambient water quality standards set by the State or EPA, the permit will impose stricter effluent limitations as necessary to meet the water quality standards. These more stringent effluent limits are set by the permit program in coordination with pollution load allocation activities covered under the abatement and control function. Permits are issued on condition that their pollutant reductions be accomplished according to given time schedules.

The permit program is also responsible for integrating with NPDES permits the toxic pollutant standards and limitations, Section 208 areawide planning requirements, the findings of studies carried out pursuant to Section 316(a) and (b), variances with effluent limitation standards and new source determinations and assessments. Other activities include the application of ocean discharge criteria under Section 403, and review of proposed dredge and fill permits under Section 404.

EPA's NPDES compliance monitoring program covers all aspects of EPA activity utilized in determining compliance with permit conditions and actions initiated in instances of noncompliance. It includes compliance review and compliance inspections. Compliance review is the review of all status reports submitted by dischargers to EPA and to States which provide information on the planning, construction, and operation of treatment facilities. Compliance inpsection refers to all field related activities conducted to determine the status of compliance with permit requirements, including compliance evaluation (nonsampling) inspections and sampling inspections.

The FWPCA provides for various enforcement mechanisms to assure compliance with the requirements of the NPDES program. These primarily consist of the issuance of Section 309(a)(1) Notices of Violations (NOVs) to dischargers with NPDES permits issued by approved States; issuance of Section 309(a)(3) Administrative Orders to dischargers with EPA issued permits and to dischargers with State issued permits who fail to comply with NOVs; and referrals to U.S. Attorneys for civil or criminal relief to remedy violations of NPDES permits and the FWPCA. The law provides for $10,000 civil penalties and $25,000 criminal fines per day of violation.

The non-NPDES enforcement program is responsible for providing technical and legal support to achieve compliance with Section 311 (oil and hazardous material spill prevention and control) and Section 404 (discharges of dredged or fill materials; wetlands protection) of the FWPCA, the Refuse Act, and the Marine Protection, Research, and Sanctuaries Act.

The most important priority of the water quality enforcement program is to assure the completion of the construction of treatment facilities by major industrial and municipal facilities to meet the requirements of the Federal Water Pollution Control Act and the effective maintenance of their permits.

1976 Accomplishments

Permit issuance activities consisted primarily of the issuance and reissuance of NPDES permits. By the end of FY 1976, approximately 52,000 NPDES permits were issued, reissued, or modified by EPA and the 28 States which have been delegated the NPDES program; 12,000 of which were written in 1976 alone. Nearly all of the major dischargers now hold valid NPDES permits. For the most part, the majors yet to be permitted have been involved in legal proceedings.

The municipal permiting functions were established in the Office of Water Enforcement during FY 1976. Existing municipal permit policies were reexamined. Policies were developed jointly with the Offices of Water Program Operations and Water Planning and Standards, to begin the process of coordinating NPDES activities with construction grant and areawide planning activities. Policies and procedures were also established regarding the 1977 statutory deadline for all dischargers and the issuance of enforcement compliance schedule letters, among other issues.

Other areas of accomplishment for the permit program in FY 1976 included the signing of a Memorandum of Understanding between EPA and the Nuclear Regulatory Commission on the licensing of nuclear power plants to eliminate duplication of effort in the preparation of EIS's and in the issuing of permits and licenses; the development of national strategy to control PCB's; the organization of national conferences on steam electric power generating facility and new source NPDES permit regulations; the resolution of over 100 thermal discharge and cooling water intake studies with final decisions on the respective requirements; and the issuance of regulations regarding agriculture and silviculture activities. The permit program also provided substantial technical support in resolving effluent guidelines variance requests and in the preparation of adjudicatory hearings for the steam electric power, iron and steel, and chemical industries.

FY 1976 was a transition year in which compliance monitoring and enforcement activities were emphasized in support of the large number of discharge permits previously issued. Resources that had been previously dedicated to the enormous task of getting out the initial round of discharge permits were, to a great extent, focused on permit compliance and enforcement.

All major discharger self-monitoring reports, facility compliance schedules, and discharge monitoring reports were reviewed for compliance. EPA conducted 1,696 reconnaissance inspections and 949 sampling inspections in FY 1976. These inspections were conducted to verify permittee self-monitoring information, review violations identified in permittee self-monitoring reports, and to identify and categorize permit violations not indicated in the reports.

Identification of violations was followed by letters, telephone calls, conferences, Notices of Violation, Administrative Orders, and referrals to the Department of Justice as appropriate. In FY 1976, the regions issued 900 Administrative Orders, 137 Notices of Violation to the States, and 129 Referrals to the U.S. Attorneys.

The water quality enforcement program also pursued full implementation of approved State NPDES programs for permit issuance and compliance assurance and pursued additional State NPDES approvals. At the end of the fiscal year, 28 States had received program approval.

The resolution of adjudicatory hearings was also a high priority program in FY 1976. A total of 598 cases were settled by the end of FY 1976 (235 majors and 363 minors). A backlog of 451 major and 826 minor requests remained. The Agency continues working to resolve these as quickly as possible.

Oil spill prevention requirements were also monitored and enforced. The regions referred 1,077 oil spill cases to the Coast Guard, 20 spill cases to the U.S. Attorneys, and conducted 1,175 proceedings for violations of spill prevention countermeasure and control plans.

The Corps of Engineers and EPA, in conjunction with the Department of Justice, also developed a procedure for administrative and judicial enforcement arising from a discharger's failure to comply with Section 404, dredge and fill regulations. On June 1, 1976, an interagency agreement on enforcement policy was signed by leading representatives of EPA, the Corps of Engineers, and the Department of Justice. The procedure makes the Corps primarily responsible for administrative enforcement and civil and criminal referrals to the Department of Justice, but specifies that EPA may act independently of the Corps of Engineers where appropriate (e.g., emergencies, at the request of the Corps, in response to serious actions).

Approximately $411,000 was allocated for contracts under the water quality enforcement program. Of this amount, $189,399 was used for several individual contracts supporting automatic data processing (ADP) systems. This involved regional support, permit compliance system maintenance and operation, and other ADP modifications and improvements. Consulting services in support of individual adjudicatory hearings of permit effluent limitations cost $190,086.

1977 Program

The primary emphasis for FY 1977 is the assurance of the achievement of Best Practicable Technology Currently Available (BPTCA) and water quality requirements of the Federal Water Pollution Control Act (FWPCA) through water enforcement and permit issuance activities. FY 1977 resource levels for the water quality enforcement program are $21,368,900 and 756 positions. Of these resources, $14,323,600 and 546 positions have been allotted for water quality enforcement activities. One of the most important goals is to promote increasing State participation in the NPDES program. To further this end the regions will continue to make every attempt to grant NPDES program approval to those States which are willing and capable of taking on the program responsibilities. States that have already received program approval will be given help in developing their capabilities in a manner consistent with the requirements of the FWPCA. States that have not received program approval will be encouraged to participate with the regions in as many areas of the NPDES program as possible within the boundaries of the Act.

The basic thrust of the water quality enforcement program is to assure the completion of the construction of treatment facilities by major industrial and municipal facilities in order for these facilities to meet the July 1, 1977, BPTCA, secondary treatment, and other water quality requirements in accordance with the Federal Water Pollution Control Act. Additionally, vigilance in compliance monitoring will be necessary during FY 1977 to ensure that final effluent limitations will have in fact been achieved and are being maintained. An increase in the number of referrals to U.S. Attorneys for civil and criminal enforcement action is also expected. Cases brought in FY 1977 will be more resource intensive since it will be more difficult to establish a violation of a final effluent limitation than a compliance schedule violation.

Also an important priority in FY 1977 is the resolution of adjudicatory hearing requests. In FY 1976, the Agency received requests for adjudicatory hearings in excess of the number originally estimated. Furthermore, a greater portion of the FY 1977 cases will involve recalcitrant dischargers who will use every possible appeal device available under the regulations.

The FY 1977 resource level for permit issuance activities will be $7,045,300 and 210 positions. These resources will be primarily devoted to putting enforceable permits into effect.

The number of permits to be issued, reissued, or modified by EPA and the States will increase from about 12,000 in FY 1976 to 22,000 in FY 1977. In addition, EPA objectives to prepare and issue permits which are tied to available construction grant funding and which have reasonable schedules for planning, design, and construction are expected to result in the need in FY 1977 to modify most, if not all, of the long-term municipal permits that would have extended beyond FY 1977. The modification of the secondary treatment definition regarding fecal coliform limits and suspended solids, issuance of the best practicable waste treatment technology information, and emerging pretreatment requirements may all be expected to contribute to the need to modify municipal permits. Virtually all municipal permits will need to be reexamined and either reissued or modified. These resource intensive efforts will result in enforceable permits that are effective in assuring the optimum utilization of readily available construction grant funds and continued progress toward meeting the national goals for pollution abatement.

Major industrial permit reissuance and modification will also receive high priority status during FY 1977, as will the special handling of thermal variance requests wherein exemption claims are allowed, based on environmental impact studies in accordance with Section 316 of the Act.

Also of importance for FY 1977, will be the issuance of major and energy related new source permits, especially with regard to coal and oil exploration, and uranium mining.

Non-NPDES enforcement will continue to focus on oil spill and spill prevention enforcement as well as the enforcement of the Ocean Dumping Act.

Approximately $1.35 million has been allocated for contract support of the permit issuance and water enforcement activities. Of this amount, $588,000 will be used for technical and legal adjudicatory hearing and permit support functions. Total ADP and information needs requirements will be $350,000. Enforcement case support will involve $412,000 for technical, economic, and engineering efforts in the prosecution and resolution of permit violations.

Explanation of Changes from 1977 Budget Estimate

The increase of $127,000 over the budget estimate is the result of several actions. A decrease of $100,000 is the result of a realignment of workload between water quality enforcement and stationary source enforcement activities at the Denver National Enforcement Investigation Center. An increase of $65,000 was reprogrammed from the program management media to the permit program in support of second generation permit issuance ($40,000) and to water quality enforcement to meet growing litigation burdens ($25,000). A total of $964,000 was transferred from the Agency and Regional Management appropriation from the funds provided by Congress to provide for relief from the pay cost absorption. This pay cost absorption relief was due to a previously applied $802,000 reduction necessitated by pay costs.

1978 Plan

FY 1978 resource levels for the water quality enforcement program will be $21,398,000 and 657 positions. Of this amount, $7,080,900 and 210 positions will be allocated to permit issuance, an increase of $35,600, and $14,317,100 and 447 positions will be allocated to water quality enforcement, a reduction of 99 positions and $6,500 from FY 1977.

FY 1978 will pose substantial new and increased demands upon the water quality enforcement and permit issuance programs. These new demands will result from four primary stimuli. (1) Increased numbers of violations of NPDES permits resulting from permittees failing to meet the July 1, 1977, deadline for compliance with BPT. (2) New and more complex permit requirements, such as the 1983 Best Available Technology Economically Achievable (BAT) requirements, Section 208 areawide planning requirements, Section 302 water quality related effluent limitations, and toxic pollutant standards and limitations. In many cases, formal BAT standards and limitations will not be promulgated in time for second round issuance of permits. Effluent limits will, therefore, have to be established on a case-by-case basis. Also post-1977 permits requiring BAT will be the subject of Section 301(c) variance requests to consider whether BAT standards may be relaxed for economic reasons. Many permit conditions based on these new requirements will be challenged by permittees in adjudicatory hearings. Resolution of these requests is, therefore, a high priority program for FY 1978. (3) New and important programs requiring considerable development and implementation effort, as well as enforcement effort. These include the application and enforcement of pretreatment standards pursuant to Section 307(b),(c), and (d), application of Section 403 ocean discharge criteria, and implementation of the Section 404 dredge and fill program. (4) Increased emphasis on EPA's NPDES role as overseer of approved State programs.

These new responsibilities will be addressed to the degree possible with the available resources in FY 1978 without jeopardizing a base level of enforcement and permit issuance support of ongoing water pollution control programs indicated under the activities for FY 1977. EPA will determine the most efficient means of conducting the review of discharge monitoring reports, in order to avoid an unnecessary curtailment of Agency overview of permit compliance. An attempt will be made to determine, through a pilot study in FY 1977, if possible, whether it is less resource intensive to have the private sector, through contracts with EPA, conduct sampling and reconnaissance inspections to assure enforcement of permit effluent limitations and compliance schedule requirements. The 99 position decrease may then be taken due to the expected mechanization of the review of discharge monitoring reports and anticipated use of private contractors to conduct a large percentage of sampling and nonsampling inspections.

A reduction in enforcement activity is also anticipated as a result of the curtailed compliance monitoring program and as a result of the transfer of positions to adjudicatory hearing activities to provide for the anticipated increase in workload. Formal enforcement action will only be taken against the most serious violations by major dischargers with EPA issued permits. This reduction in enforcement, however, should be offset by the increased participation expected from NPDES States in compliance monitoring and enforcement.

The adjudicatory hearing activities will expand in FY 1978 to respond to anticipated increases in hearing requests due to new and complex permit requirements such as 208 area wide planning requirements, Section 302 water quality related effluent limitations, and toxic pollutant standards and limitations. The determination of Section 301(c) variance requests are also expected to result in increased adjudicatory hearing requests.

The permit issuance program places first priority on the reissuance of all major permits due to expire in FY 1978 so that all major dischargers will be required to continue and progress in appropriate pollution abatement efforts. No major permit should be allowed to lapse. Some permits will be revoked before they are due to expire in FY 1979, and some permits will be issued for less than five years in an effort to level out extreme workload variations. Under the resource levels requested, expiring minor permits will not be reissued.

Other activities, including Section 316 considerations, adversary proceedings support, agriculture and silviculture activities, Section 208 planning, pretreatment, and reviews of State and regional NPDES programs will be supported by positions in the permit issuance element.

In addition, the permit issuance activities will include the issuance of technical guidance on the use of BAT limitations in the absence of guidelines on the ways of addressing toxic substances both under Section 307(a) and other court ordered priority pollutants of industries, on the use of concentration limitations, and other subjects. Procedures and regulations will be issued to assure the processing of variance requests in a uniform, effective, and efficient manner. NPDES reviews of State and regional programs will be performed to assure quality control, render technical and policy support, and assure uniform application of policy.

Approximately $1.35 million has been allocated for contract support of the permit issuance and water quality enforcement activities. Of this amount $514,000 will be used for technical and legal adjudicatory, Section 301(c) economics, and 316(a) and (b) hearings support functions. Total ADP and information needs will require $400,000. Enforcement case support expenditures will total approximately $400,000 for technical, and engineering efforts in the prosecution and resolution of permit violations. Program studies in municipal permit limitations, Section 404, and special permit categories will require $36,000.

Additional funds will be available to compensate for the 99 position reduction in water enforcement. The exact amount available will depend on the rate of attrition of the personnel being reduced from compliance review and compliance inspection activities. These funds will be used to implement a mechanized system for routine screening of discharge monitoring reports, and to implement a process through which a portion of sampling and reconnaissance inspections are conducted by private firms under contract with EPA. The increase of $29,000 is the net result of one-time regional reprogrammings in FY 1977.

Research and Development

SECTION TAB

WATER QUALITY

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Health and Ecological Effects.....	$14,427	$18,940	$21,802	$22,200	+$398	WQ-55
Industrial Processes...	5,764	8,285	7,400	7,400	...	WQ-65
Public Sector Activities.....	10,298	10,014	10,392	10,800	+408	WQ-68
Monitoring and Technical Support.....	4,712	4,584	4,649	4,369	-280	WQ-74
Total.....	35,201	41,823	44,243	44,769	+526	
Permanent Positions						
Health and Ecological Effects.....	319	276	286	271	-15	
Industrial Processes...	51	49	38	38	...	
Public Sector Activities.....	115	118	113	108	-5	
Monitoring and Technical Support.....	102	109	109	95	-14	
Total.....	587	552	546	512	-34	

Purpose

The role of research and development in EPA's water quality program is to provide the scientific information needed to support its standard setting and enforcement activities. To do this, a multifaceted research program has been established. The goals of this program include the development of efficient and cost-effective waste water treatment technology for both municipalities and industries; the determination of useful and defensible monitoring methods; definition of criteria for water use in various aquatic environments; and the establishment of strategies for control of pollution from spills of hazardous materials. An overall goal is to provide the scientific basis for economical and socially viable environmental management.

WATER QUALITY

Research and Development

Health and Ecological Effects

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Health Effects.....	$937	$2,723	$2,410	$3,800	+$1,390
Ecological Processes & Effects.....	12,247	13,625	13,692	12,700	-992
Transport & Fate of Pollutants.....	1,243	2,592	2,800	2,800	...
Chesapeake Bay.....	...	...	2,900	2,900	...
Total.....	14,427	18,940	21,802	22,200	+398
Permanent Positions					
Health Effects.....	15	17	24	24	...
Ecological Processes & Effects.....	272	236	234	219	-15
Transport & Fate of Pollutants.....	32	23	28	28	...
Chesapeake Bay.....	...	...	...	...	...
Total.....	319	276	286	271	-15

Budget Request

A budget of $22,200,000 and 271 positions is requested for 1978. The request provides for an increase of $1,390,000 in health effects to develop methods and approaches to identify and characterize classes of pollutants; to develop tests to assess the biological impact of substances on living organisms; and to apply these tests to complex effluents. The ecological program effort will be decreased by $991,700 and 15 positions. Various options for making the position reduction are being considered by the Agency. Research on ocean disposal, petroleum hydrocarbons, temperature and dissolve gases, fine particulates, disinfection, and ecosystem dynamics will be affected by the decrease. The transport and fate program and the Chesapeake Bay study will be maintained at the 1977 level.

Program Description

This program includes three specific areas of research: (1) the development of criteria for the safe treatment and disposal of waste waters and sludges, and health-related criteria for fresh and marine recreational waters; (2) research on the toxicological effects of water pollutants on aquatic organisms; and (3) research on the movement, transformation, degradation, accumulation, and fate of water pollutants.

The water quality health effects program includes the determination of the health effects associated with land application of waste water and sludge and the development of criteria for safe implementation of such practices; the development of necessary health effects information to assure public safety from pollutants emitted during operations of waste water treatment plants; and the investigation and quantification of health effects associated with the disposal or runoff of waste water and sludge into the aquatic environment.

The construction grant program calls for alternative waste treatment management techniques and systems to implement Section 201 of the Federal Water Pollution Control Act (P.L. 92-500) as amended. One such technique is land disposal. However, many State agencies are reluctant to use land for the treatment and disposal of waste water and sludge because of a lack of precise information on the health hazards associated with this practice. Specific areas of health effects research to address this problem include: determination of safe practices for utilization of waste water and sludge and of safe operation of waste treatment facilities; the transport of heavy metals and viruses; and the uptake and effects of pollutants in plants, animals, and man.

Health effects data associated with municipal waste water management have become important due to the rapid movement towards secondary treatment of waste water required by P.L. 92-500, the resulting increase in the number of treatment plants, and the increase in sludge and other waste materials. Aerosols emitted from the aeration basins of activated sludge plants, from trickling filters, and from aerated lagoons pose a potential health hazard to persons living or working nearby. These aerosols contain pathogenic organisms, which may cause disease, and chemical contaminants, which may lower resistance to disease or produce adverse health effects. Epidemiologic studies are performed to document the incidence and risk of disease associated with waste water aerosols. To complete the link between epidemiological results and the waste water treatment plant, the aerosols produced are characterized physically, chemically, and microbiologically.

The water quality health effects research program also supports the national goal that water be suitable for recreation by calendar year 1983. The data base available for recreational water quality standards remains deficient. It is possible that current standards are too stringent, resulting in unnecessary closing of beaches, excessive chlorination costs, and discharge of chlorinated effluents which are known to be harmful. Therefore, the water quality health effects program will concentrate on the development of valid health related recreational water quality criteria that will contribute to the Agency's water pollution regulatory program by providing the scientific basis for effluent standards and by assessing the potential impact of ocean outfalls.

The water quality ecological effects program is designed to determine the fate and effects of pollutants in fresh water and marine ecosystems. This research aids the Agency in the development of water quality criteria and provides information for use in developing effective pollution control programs. This is accomplished by conducting research that will provide a sound scientific basis for setting effective, legally defensible standards, and will assist in determining effective treatment and control strategies.

The ecological effects research program includes research on the effects of specific pollutants and pollutant combinations on representative or key sensitive organisms in aquatic ecosystems, and on critical ecosystem parameters and processes. Also under investigation are the physical, chemical, and biochemical transformation products of pollutants introduced to, or passing through, aquatic ecosystems. Additional research includes the characterization of natural and stressed aquatic ecosystems; development of mathematical ecosystem simulations and laboratory models which aid in the prediction of pollutant stress effects on aquatic biota and ecosystems; and methods to measure the relative "health" of aquatic ecosystems. Inherent in these efforts is the consideration of intermedia pollutant transport and effects, wherever applicable.

The water quality transport and fate program includes: (1) research on the movement, transformation, degradation, accumulation, and fate of pollutants in fresh surface waters and ground waters; (2) development of protocols (including mathematical models) for predicting point and nonpoint source pollution contributions and their impacts on fresh surface and ground waters; and (3) development of methods for evaluating the effectiveness of alternative point and nonpoint source management strategies with considerations of water quality, energy, and socioeconomic impacts.

The outputs from this research are needed to translate ambient water quality goals into pollution control requirements at the source. This requires information on how quickly pollutants will be transformed into harmless materials; under what circumstances specific pollutants become more toxic; and the movement, persistence, and bioaccumulation potential of hazardous substances within various substrates of the aquatic ecosystem. The expression of much of this information in quantitative or mathematical terms is required. The results are used in: (1) developing water quality criteria for bioaccumulative pollutants; (2) determining effluent limitations necessary on the part of pollution discharge permit applicants to meet water quality standards; (3) evaluating the extent of environmental contamination and resultant hazards that would occur from the registration and use or disposal of a given pesticide or other hazardous substance in a specified manner; and (4) developing water quality management plans (as required under Sections 201, 208, and 303 of P.L. 92-500) for achieving and maintaining desired water quality levels.

This research provides the sound and legally defensible methods necessary for determining levels of point and nonpoint source controls required to meet water quality goals. The need for accurate and reliable assessment methods is becoming more critical as the rate of expenditure on pollution control systems increases. It is currently estimated that $180 billion will be spent over the next 10 years on point source systems alone. At this level of investment, it becomes imperative that valid methods be made available and used to accurately determine the specific levels of pollution control required and identify the most cost effective mix of point and nonpoint controls that can achieve water quality goals. Existing methods, of unknown validity, address only a portion of the water quality parameters of interest and are totally inadequate for assessing the impacts of nonpoint sources of water pollution.

The Chesapeake Bay research program is designed to satisfy two mutually supportive major objectives. First, the research will address those particular problems that are the concern of the Chesapeake Bay management program in Region III. Secondly, the research program will emphasize the study of those aspects of the problems which are common to other estuarine areas in the United States. In this way, the benefits of the research will be of value to both the Chesapeake Bay program and to water quality management programs in other parts of the country.

The research will focus upon three problems that are of serious concern in all estuarine waters in the United States and, in particular, in the Bay. These problems are: the potentially adverse long term effects of nutrient loadings to the Bay; the water quality and ecological effects of physical alterations that have been occurring in the Bay; and the extent to which the Bay is serving as a sink for toxic substances and the effects of these substances on the Bay. A description of this effort is located in the water quality planning and standards, abatement and and control section.

HEALTH EFFECTS

1976 Accomplishments

$189,700 was expended in contracts, $183,200 in grants, and $15,000 in interagency agreements. The major accomplishments in this area included the following:

- The third phase of the marine recreational water quality criteria project at the New York City beaches was completed. The objective of this project concerned the possible relationship of gastrointestinal symptomatology to indicator bacteria densities. The findings confirmed a relationship between the densities of certain indicator organisms, such as E. coli, and gastrointestinal symptoms associated with swimming. This study also led to the development of a rapid membrane filter technique for enumerating this indicator bacterium which is more precise when compared to conventional methods. The information obtained is expected to be useful in the development of recreational water quality criteria.

- A state-of-the-art review was prepared on the effects of waste water treatment and disposal methods on the occurrence, persistence, and movement of pathogens and heavy metals. This document summarizes current knowledge on problems associated with the disposal of waste water and sludges, and identifies investigators and institutions currently involved in such research. It is expected to assist in determining most useful directions for research programs.

- The causative agent of primary amoebic meningoencephalitis, a disease associated with swimming, has been isolated.

1977 Program

In the area of health effects research, the total resources are $2,410,000 and 24 positions. Those resources include approximately $265,700 in contracts, $876,000 in grants, and $443,000 in interagency agreements. In FY 1977, the water quality health effects program is directed toward:

- Identification of possible health effects associated with treatment, disposal, and use of waste water and sludge on land;

- Epidemiological studies of people living near either land application sites for waste waters and sludges or near activated sludge treatment plants;

- Characterization of aerosols from land application sites and activated sludge treatement plants;

- Evaluation of workers at waste water treatment plants to determine evidence of infections before and after exposure to aerosols;

- Determination of human health criteria for pathogen concentrations in marine and fresh recreational water, including further studies to monitor the prevalence and determine the health significance of the agent, found in recreational waters, responsible for the occurrence of amoebic meningoencephalitis;

- Assessment of pathogen survival and movement at sites using land application of waste water and sludge, including uptake through the food chain; and

- Studies of bioavailability of cadmium, lead, and other metals contained in food grown on soil which receives waste water and sludge.

1977 Explanation of Changes from Budget Estimate

The $313,000 reduction from the budget estimate results from a transfer to the water quality public sector activity to provide funds needed to accelerate the development of disinfection alternatives to chlorine utilization in waste water treatment.

1978 Plan

The 1978 program for health includes a total of $3,800,000 and 24 positions. The health effects research program will expend approximately $457,200 in contracts, $2,240,300 in grants, and $262,900 in interagency agreements.

The increase in health effects resources in 1978 will be used to develop approaches to characterizing classes of water borne hazardous substances and to accelerate the development of a standardized sequence of tests for determining pollutant effects and to apply these tests to complex effluents. Chemical protocols for improved toxicity testing of suspect substances and criteria for safety factors will be developed and validated.

Recently started studies will continue on the determination of the dispersion of pathogens, especially viruses, in aerosols formed by spray irrigation of sludges and waste waters; determination of the persistence and transport of contaminants through the soil at land application sites and on to the food chain, and assessment of the health of populations residing in areas where land disposal of waste water and sludges is conducted. In addition to research associated with land applications, studies will continue on the disposal of these wastes in water. The Federal Water Pollution Control Act of 1972 has placed stringent conditions on waste water discharges into rivers and lakes. As a result, many communities are considering disposal of treated effluent on land. Hence, the potential for health hazards from food or forage crops irrigated with waste waters will be investigated.

In addition to the studies mentioned above, several interrelated research efforts will develop valid microbiological criteria for shellfish-growing waters to evaluate the health effects associated with the consumption of shellfish. This program is being carried out in cooperation with FDA.

The FY 1978 program for health will be increased by $1,390,000 in order to develop rapid screening tests for characterizing toxic pollutants. The program will be supportive of P.L. 92-500 in developing protocols to meet future needs.

ECOLOGICAL PROCESSES AND EFFECTS

1976 Accomplishments

1976 resources included $722,400 in contracts, $2,739,000 in grants, and $296,300 in interagency agreements. Accomplishments included:

- Field and laboratory phases of the National Eutrophication Survey were completed. Samples were obtained and analyzed from all 48 adjacent States. These samples were collected from lakes and reservoirs, tributaries and outlets, and waste treatment plant effluents. Data generated by the survey will be used throughout the country to determine feasibility of restoring polluted lakes and streams via construction of municipal waste treatment facilities to reduce nutrient inflow. In addition, a part of the study relates land use and other drainage area characteristics to phosphorus and nitrogen levels in streams. Results for the eastern third of the United States were completed and reported in EPA's Ecological Research Series;

- A four year study was completed on causes and effects of air supersaturation of water, a form of pollution that causes tissue damage, and often death, for migrating Pacific salmon. Supersaturation is a serious economic problem in the Snake and Columbia Rivers of the Pacific Northwest, where water becomes supersaturated as it spills over dams. Supersaturation is also found at dams in Montana and Colorado and at thermal power plants in eastern States. As a result of the studies, 110 percent saturation has been proposed by the Office of Research and Development to the Agency as a safe level for salmonids in shallow water;

- Studies were completed on the effects of sewage outfalls on aquatic life, including incidence of fish disease in Southern California. About three percent of the Southern California coastal shelf is affected by sewage discharges to a depth of 200 meters. The incidence of fin erosion in botton dwelling fish increased in the vicinity of outfalls. It was estimated that biological recovery from the effects of the discharges would probably require six to 12 months in shallow water and many years in deeper water (60 meters or deeper);

- A major study on the Tanana River near Fairbanks, Alaska, showed that the survival of indicator and pathogenic bacteria and enteric viruses at low temperatures is greater than previously expected. This information, along with data on the relationship between indicator bacteria and pathogens, will contribute to the basis for establishing disinfection criteria and water quality standards in cold climates;

- A mobile bioassay unit has been developed to conduct on-site analyses of complex effluents, those industrial and municipal discharges that vary over time in composition and concentration of the component chemicals. These methods can be readily incorporated into effluent testing requirements, permit conditions, and hazardous substance evaluations;

- Methods development was completed for phytoplankton and zooplankton bioassays. These methods were incorporated into the EPA Manual for Bioassay Procedures for the ocean disposal permit program and also are being modified for use by EPA Region II for controlling waste disposal in the New York Bight;

- The environmental characteristics of Narragansett Bay have been simulated in the laboratory, an important first step in developing valid test systems to study actual ecosystems or to test selected stress factors; and

- A procedure was developed to enable the use of filtration (feeding) rates of mussels and scallops as a sub-lethal measure of the impact of a toxicant on those species. This work will contribute to the assessment of pollutant impacts on important marine organisms, especially at low-level exposures.

1977 Program

The 1977 resource level for ecological processes and effects research is $13,691,700 and 234 positions. Those resources include approximately $405,000 in contracts, $3,070,000 in grants, and $593,000 in interagency agreements. The FY 1977 ecological effects water quality research program is broken down into the following categories:

Petroleum and Petroleum Products -- In the area of Petroleum and Petroleum products, the total resources are $594,000 and 18 positions. Research in this area is designed to study the extent of marine and fresh-water ecosystem perturbation caused by acute and chronic discharges of crude oils and petroleum products. Studies examine the lethal and sublethal effects of a wide variety of oils on aquatic organisms representing various trophic levels and toxa. This research improves the scientific data base on which to set effluent standards, design oil spill clean up and treatment and to assess the extent of ecosystem damage. Research in this area focuses on the fate and effects of petroleum hydrocarbons on arctic and subarctic estuarine/marine ecosystems as well as effects on the coastal areas of the Continental United States. Emphasis is given to studies on degradation, neoplasia induction in marine organisms, uptake and localization, effects on intertidal communities, and sublethal effects.

Criteria for Water Quality -- In the area of criteria for water quality, the total resources are $3,556,000 and 74 positions. The effort under this category is in direct response to Section 304 of P.L. 92-500 which requires the publication and updating of water quality criteria to reflect the latest scientific knowledge. Based on the criteria, water quality standards are set by the States and EPA. Research is designed to discover the maximum concentration of specific pollutants which aquatic ecosystems can accommodate without adverse effects. Pollutants studied included a wide range of organic and inorganic compounds likely to be found in water bodies. In addition, studies are performed to determine the water quality criteria for environmental parameters that are affected by pollution stress, e.g., dissolved oxygen, temperature, and dissolved gases.

Disinfection/Antifoulants -- In the area of disinfection/antifoulants, the total resources are $75,000. This research focuses on the ecological consequences of the addition of disinfectants or biocides to treatment plant effluents and power plant cooling waters. Chlorine is the most commonly used disinfectant/antifoulant. Therefore, the effects of chlorine and chlorination compounds on the biota of receiving waters receive the most attention. The effects of other disinfectants (e.g., ozone) are also being studied. In conjunction with determining the negative aspects of disinfection practices studies are performed on the environmental fate of discharged bacteria and viruses to determine the extent of disinfection required to protect swimmers and consumers of shellfish.

Great Lakes -- In the area of Great Lakes, the total resources are $2,174,000 and 10 positions. Research on the Great Lakes is performed as part of the United States-Canada Treaty on the Great Lakes to restore and maintain the water quality of these very important bodies of water. All research done by EPA in this region is coordinated with the International Joint Commission (IJC) of the United States and Canada. Studies are performed to characterize the pollution problems of the Great Lakes, determine the dynamic processes affecting the degree of pollution, and develop management oriented predictive models that describe lake ecosystem response as a function of the degree of pollution source control.

Industrial Waste Discharges -- In the area of industrial waste discharges, the total resources are $1,009,000 and 24 positions. Research is performed to determine the safe concentrations for specific pollutants in industrial waste discharges. This information is urgently needed to develop an effective industrial waste management program under the terms of the consent decree, involving 65 pollutants and 20 industries, between EPA and several ecology action groups. Work in this area consists of a sampling and analysis program with emphasis on the development of screening methods for complex wastes which are discharged to marine and fresh water ecosystems.

Ocean Disposal -- In the area of ocean disposal, the total resources are $2,916,000 and 52 positions. This broad category includes efforts to determine the ecological significance of current practices of (1) dredge material disposal; (2) ocean dumping of sewage sludge and industrial wastes; and (3) direct discharge of municipal waste into coastal waters. Research information derived from these studies is directly incorporated into regulations and criteria for those programs mandated by P.L. 92-500 and P.L. 92-532 (Ocean Dumping Act) to control pollution from those sources.

Nutrient Enrichment -- In the area of nutrient enrichment, the total resources are $1,805,000 and 37 positions. One of the major problems encountered with thousands of lakes in this country is the rapid acceleration of the lake aging process by man-caused nutrient enrichment. This problem of eutrophication is described in terms of deterioration of water quality, changes in fish species composition and populations, and a general degradation that limits the water body's utility for water supply, recreation, commercial fishing, and aesthetic appreciation. In order to arrest these trends and provide treatment to restore lakes to their former quality, research is performed to learn how lakes respond to nutrient (nitrogen and phosphorus) loading. In addition, this research is related to Section 314 of P.L. 92-500.

Ecosystem Dynamics -- In the area of ecosystem dynamics, the total resources are $1,563,000 and 19 positions. The research activities in this area respond directly to the need to understand the dynamics of selected ecosystems. Through these efforts better management and regulatory decisions will be possible and earlier and more precise pollutant impact prediction will be possible. Emphasis is placed on development of microcosms which simulate actual ecosystems and on determination of the dynamics of polluted and unpolluted ecosystems.

1977 Explanation of Changes from Budget Estimate

The increase of $67,000 results from several actions. Resources were transferred to agency management to reflect the transfer of responsibility for the Cost of Clean Environment Report, -$125,000; a transfer from water quality planning and standards to support Reye's Syndrome research, +$50,000; and net reprogrammings of +$142,000 to reflect actual operating conditions.

1978 Plan

The FY 1978 resources for the ecological effects research program are $12,700,000 and 219 positions. The resources consist of approximately $350,000 in contracts, $2,600,000 in grants, and $500,000 in interagency agreements. A brief summary of the FY 1978 ecological effects water quality research program follows.

Petroleum and Petroleum Products -- In the area of petroleum and petroleum products, the total resources are $499,000 and 18 positions. The petroleum and petroleum products program will be reduced by $95,000. Efforts under this program will be restricted to high priority work, such as, studies of the effects of oil on East Coast and Gulf of Mexico aquatic ecosystems. These studies are ongoing research projects with greater payoff potential than those terminated. Studies will include research on lethal and sublethal effects, neoplasia induction, uptake, and localization.

Criteria for Water Quality -- In the area of criteria for water quality, the total resources are $3,256,000 and 64 positions. This research program will be reduced by $300,000 and 10 positions. Studies will continue on acute and chronic effects of a limited selection of organic and inorganic pollutants (singly and in combination), carcinogenicity of pollutants in the marine environment, and methods to measure the relative "health" of ecosystems and development of bioassays. However, research on toxic and synergistic effects of fine suspended particulates (including asbestos) will be limited. The only research on temperature and dissolved gas requirements will be directly related to modifying the effects of pollutants. Support for the TVA Brown's Ferry thermal research facility will be discontinued.

Disinfection/Antifoulants -- This program will not be funded in FY 1978. The disinfection/antifoulants program will be reduced by $75,000. Research supported by a FY 1976 congressional add-on will be completed in 1978. Work will be limited to study of the effects of chlorination and ozonation, with emphasis on the determination of the ecological effects of ozonation and comparative studies on unaffected estuarine communities.

Great Lakes -- In the area of Great Lakes, the total resources are $2,174,000 and 10 positions. The Great Lakes program will remain at a level equal to the FY 1977 level. Studies will be performed to characterize pollution problems of the Great Lakes, determine the dynamic processes affecting the degree of pollution, and develop management oriented predictive models which describe lake ecosystem response as a function of the degree of pollution source control. That work initiated under a congressional add-on in FY 1976 will be completed.

Industrial Waste Discharges -- In the area of industrial waste discharges, the total resources are $1,009,000 and 24 positions. The industrial waste discharges program will remain at a level equal to that in FY 1977. The research in this area will be similar to that conducted in FY 1977, with emphasis on the development of screening methods for complex wastes which are discharged to marine and fresh water ecosystems.

Ocean Disposal -- In the area of ocean disposal, the total resources are $2,494,000 and 47 positions, a reduction of $422,000 and five positions. Ocean disposal research will be restricted to high priority problems associated with ocean dumping and dredge material disposal. Studies in these two areas will include research on biological availability of pollutants, development of predictive models which describe pollutant distribution and interaction, and determination of the effect of ocean dumped pollutants on marine species, ecosystems, community structures, and populations. A limited effort in bioassay development and validation is to be conducted and completed under a FY 1976 congressional add-on.

Nutrient Enrichment -- In the area of nutrient enrichment, the total resources are $1,805,000 and 37 positions. The nutrient enrichment program remains at a level equal to that in 1977. The effort includes research on nutrients from nonpoint sources, nutrient loading, nutrient sources, and rate limiting nutrients.

Ecosystem Dynamics -- In the area of ecosystem dynamics, the total resources are $1,463,000 and 19 positions. The ecosystem dynamics program is to be reduced by $100,000. Studies include research on nutrient cycling/recycling in lakes; dynamics of physical, chemical, and biological processes in fresh water seminatural ecosystems; and development of ecosystem level microcosms for the marine environment. A study on changes in estuarine water quality as a result of decreased pollution stress will be delayed until 1979.

The ecological effects research program will be reduced by $991,700 and 15 positions. The program plans to continue work in areas having the highest potential payoff such as research with broad implications and near term completion dates. The reduction of 15 positions in ecological effects is part of an overall reduction of positions in the Office of Research and Development directed at conducting more extramural research in order to release positions for other Agency activities. Work begun in 1976 as a result of a congressional add-on will be completed. Follow-up studies in ocean dumping and outfalls will not be initiated and studies on temperature and dissolved gases will be discontinued since past research and development efforts have addressed these areas and made them a somewhat less pressing priority area. Work on the ecological effects of oil, ocean outfalls, fine particulates (including asbestos), disinfection, and ecosystem dynamics will be reduced.

TRANSPORT AND FATE OF POLLUTANTS

1976 Accomplishments

In 1976, $800,000 was devoted to grant and contract efforts. These resources were concentrated in three areas: (1) characterization of the physical, chemical, and biological processes that determine a pollutant's fate; (2) characterization of the transport and fate of pollutants in ground water; and (3) development of mathematical models for estimating nonpoint source pollution loadings and linking these models to existing models for predicting water quality.

Major accomplishments in the work on transport and fate processes include:

- The development of a preliminary evaluative model for predicting the distribution, residence time, and fate of pesticides in various substrates of a fresh-water ecosystem and calibration of the model for malathion;

- Development of a conceptual model for predicting the distribution, residence time, and fate of mercury among substrates of a fresh water ecosystem;

- Completion of a report containing laboratory data and an evaluative model for the fate of vinyl chloride (a carcinogen) upon release to the environment; and

- Development of methodologies for microbiological sampling of saturated and unsaturated subsurface zones.

Accomplishments in the area of water quality predictive models included:

- The development of a preliminary computerized model for estimating nonpoint source loadings of BOD, suspended solids, and total dissolved solids to a riverine system and the development of a simplified (manual) methodology for use primarily by 208 agencies in estimating the nature and extent of nonpoint source pollution contributions from nonirrigated agricultural and silvicultural activities; and

- Continued work on the development of nonpoint source loading models capable of addressing a broader range of the pollutants of interest and the interfacing of these models with existing water quality predictive models.

1977 Program

The FY 1977 resource level for the transport and fate subactivity is $2,800,000 and 28 positions. In FY 1977, emphasis continues in the same three areas pursued in FY 1976, with $2,050,000 being devoted to grant and contract efforts.

The transport and fate process characterization work includes:

- Mathematical characterization of microbial degradation processes of importance in transforming organic pollutants;
- The development of quantitative transport and fate process and rate data for PCB's, dichlorobenzidene, and several other representative pollutants of national concern;
- Completion of an evaluative model for mercury for use by water pollution control agencies and the private sector; and
- Expansion of the pesticide (malathion) evaluative model to address other pesticides.

Ground water transport and fate research will be directed toward:

- Completion of a study aimed at determining allowable septic tank densities for discharging to sandy, loam, and clay soils (i.e., densities that will not result in degradation of the ground water aquifer);
- Completion of a method for organic pollutant sampling of saturated and unsaturated subsurface zones and completion of a report on the utility of the use of stable isotope ratios in ground water investigations to identify the source and dynamics of subsurface pollution; and
- Work on the characterization of the four major environmental processes (microbial degradation, oxidation, volatilization, and sorption).

In the predictive model research area, emphasis will be on:

- Evaluation of the applications and limitations of existing water quality predictive models in allocating allowable point source loadings among discharge permit applicants;
- Development of basinwide and 208 areawide analysis procedures for conducting gross or broad assessments of point and nonpoint source pollution contributions and their water quality impacts; and
- Initiation of the development of an analysis procedure for conducting detailed assessments in a given stream section of point and nonpoint source pollution contributions and predicting water quality impacts and improvements that would result under alternative pollution control schemes.

1977 Explanation of Changes from Budget Estimate

The increase of $208,000 from the budget estimate reflects a transfer from water quality industrial processes and permits: (1) evaluation of the applications and limitations of existing water quality models used to support the NPDES Program, and (2) increased emphasis on the development of mathematical models capable of predicting the impact on water quality from a combination of point and nonpoint pollution contributions.

1978 Plan

The 1978 program for the transport and fate subactivity includes $2,800,000 and 28 positions. Of this amount, approximately $2,050,000 will be used for grant and contract support. These resources will be allocated among the same three main areas being addressed in 1977.

The effort placed on nonpoint source and water quality modeling research in FY 1978 is projected to result in the availability of the desired outputs in 1978. Upon completion of these models, emphasis will then be placed on verification of their accuracy and validity over the range of conditions expected to be encountered in the field.

The 1978 program will also: characterize the major environmental processes controlling aquatic transport and fate of pollutants, with emphasis on sensitized photolysis and oxidative processes; develop quantitative transport and fate process and rate data for specific hazardous pollutants of national concern (e.g., kepone and arsenic compounds); develop quantitative information on natural loading rates of sediments and nutrients to watercourses (as necessary to distinguish between man induced and natural pollution contributions); expand the pesticides evaluative model to address additional specific pesticides; adapt the mercury evaluative model to address cadmium and other inorganics; and initiate studies to verify the accuracy and validity of mathematical models being used as the basis for setting effluent limitations in discharge permits, as necessary to successfully defend legal challenges of the results obtained through their use.

CHESAPEAKE BAY

1977 Program

In FY 1977, Congress provided an additional $2,900,000 under the Research and Development appropriation to support work in the Agency's Chesapeake Bay study program for which Region III is the designated manager. A description of this effort is located in the water quality planning and standards, abatement and control section.

1977 Explanation of Changes from Budget Estimate

The increase of $2.9 million reflects this activity's portion of the congressional add-on of $5 million for the Chesapeake Bay study.

1978 Plan

The support for this study will continue at the 1977 level. See discussion under the water quality planning and standards, abatement and control section.

WATER QUALITY

Research and Development

Industrial Processes

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Mineral, Processing, and Manufacturing Industries.....	$5,764	$8,285	$7,400	$7,400	...
Permanent Positions					
Mineral, Processing, and Manufacturing Industries.....	51	49	38	38	...

Budget Request

An appropriation of $7,400,000 and 38 positions is requested for FY 1978. This is the same as the FY 1977 resource level.

Program Description

The water industrial processes program concentrates on point sources of water pollution resulting from the industrial sector of the economy in those mining, manufacturing, service, and trade industries which must meet best available technology (BAT) standards of the Federal Water Pollution Control Act (FWPCA). This program is also the realization of the national policy established in P.L. 92-500, that a major research and demonstration effort be made to develop technology necessary to help eliminate the discharge of pollutants to the Nation's waters.

The program develops and demonstrates new or improved cost effective technology having industry wide applicability, short-term achievability and long-term viability, principally through cost-sharing extramural grants. Research results provide a significant data base for the establishment of economically and technically feasible effluent guidelines and treatment parameters for industrial liquid waste discharge permits. As a result of the recent consent decreee, program emphasis is being shifted towards the development of the data required to regulate the discharge of hazardous pollutants. The new program direction focuses on developing complete waste stream assessments including chemical and bioassay data and the applicability of treatment alternatives to a broad range of pollutant materials in industrial waste effluents. In addition, this program addresses technology for prevention and control of accidental spills of hazardous materials in support of Section 311 of P.L. 92-500.

1976 Accomplishments

The FY 1976 resource level for this subactivity included $1,311,000 for contracts, $2,646,000 for cost sharing research and demonstration grants, and $114,000 for interagency agreements. Industrial contributions accounted for 50 percent of the total demonstration costs (i.e., in excess of $3,000,000).

In FY 1976 the water industrial processes program:

- Completed an engineering design and economics feasibility report on the conversion of chlorinated organic residues into marketable products. This information will be used in designing a new regional waste residue conversion facility;

- Initiated an engineering design study for complete pollution control in an integrated steel mill. The results of this study will be used in designing waste treatment facilities at several iron and steel facilities and by EPA's regulatory staff in revising effluent guidelines. The project was partially supported by the iron and steel industry;

- Completed source assessments for specific inorganic and organic chemical processes and for nonferrous metals production. The results of these studies will be used in evaluating the relative importance of various types of pollutants to the overall environmental impact of these industries;

- Prepared manual on available practices for hazardous spills prevention. The manual has been widely distributed to users by EPA and has been published in the professional literature; and

- Demonstrated a system for the containment of hazardous materials spilled on land.

1977 Program

The FY 1977 program focuses on assessing the nature and quantity of hazardous pollutants discharged from industrial sources. This information, together with information on the controllabilty and treatability of these pollutants will supplement the data base which will be utilized for future regulations. In selected industries, demonstration of more viable control technologies or in-plant modifications are being undertaken. These industries are selected on the basis of the preliminary assessments now underway and the probability of being able to control the pollutants having the most serious health and ecological effects. Research is continuing to demonstrate the economic and technical viability of combined municipal/industrial waste water management with special emphasis on providing a technical base for pretreatment standards.

The hazardous incident program is continuing efforts to control and minimize hazardous material spills and damages, and initiating research to implement the new EPA spill regulations.

The FY 1977 resource level for this subactivity is $7,400,000 and 38 positions. Approximately $3,100,000 will be used for contracts and $2,300,000 for grants. Industrial cost-sharing is expected to decline to approximately 35 percent due to the increased emphasis on assessments. Industry is expected to contribute $1,200,000 to the projects.

Major outputs to be achieved in 1977 include:

- Preliminary assessment of the occurrence of the 65 pollutants in the 21 industries specified in the consent decree;

- Preliminary assessment of the applicability of currently available control technology to remove hazardous and toxic pollutants;

- Complete engineering design study for overall pollution control in an integrated steel mill;

- Demonstration of control technology for selected pesticide manufacturing wastes;

- Demonstration of technology for treatment of ammonia plant condensates; and

- Development of screening tests for evaluation of toxicity of effluents.

1977 Explanation of Changes from Budget Estimate

The net $885,000 reduction from the budget estimate results from several actions: (1) $208,000 was transferred to water quality transport and fate to accelerate development of nonpoint source loading models; (2) $112,000 was transferred to water quality technical support to provide additional support related to the kepone problem at Hopewell, Virginia; and (3) a planned $565,000 reprogramming into the program management media contingent upon Committee approval, as appropriate, to partially cover the increased management support.

1978 Plan

The requested FY 1978 resource level for this subactivity is $7,400,000 and 38 positions. These resources include approximately $2,600,000 for contract support and $2,800,000 for grants. Industry is expected to contribute $1,000,000 to these projects.

In FY 1978, activities will be focused on the problem of hazardous discharges. As source assessments are completed, the available control technology, together with economic implications will be identified. This information will serve as a basis for updating effluent guidelines and for regulating the use and disposal of hazardous chemicals.

Complete source assessments will establish detailed chemical characterizations of industrial waste streams. These assessments will relate effluent composition to production variables including alternative processes, types of raw material, operating conditions, and waste treatment alternatives. Completed assessments will provide comprehensive information not only on the chemical and bioassay characteristics of waste streams, but also will provide data on the costs of alternatives for reducing adverse environmental impacts.

Major outputs to the achieved in FY 1978 include:

- Complete assessment of the occurrence of a range of pollutant parameters including the 65 pollutants of the consent decree in six selected industries;

- Complete assessment of the applicability of currently available control technology to remove hazardous pollutants;

- Complete assessment of the state-of-the-art of control procedures for nonenergy mining activities; and

- Demonstration of field detection and identification kit for spilled hazardous materials.

WATER QUALITY

Research and Development

Public Sector Activities

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Waste Water Management..	$10,298	$10,014	$10,392	$10,800	+$408
Permanent Positions					
Waste Water Management..	115	118	113	108	-5

Budget Request

An appropriation of $10,800,000 and 108 positions is requested for FY 1978. This represents an increase of $408,000 from the FY 1977 level and a decrease of five positions. The increase will provide the resources to begin development of nonpoint source control techniques for urban runoff through non-structural methods. The Agency is considering various options for taking the position reduction.

Program Description

Public sector water quality research efforts address primarily the prevention, control, treatment, and management of water pollution which is the result of public service and community nonindustrial activities. The program functional areas are defined in such a way as to incorporate the major groupings of municipal responsibilities with the corresponding Federal (EPA) programs which support or regulate them.

A principal program area is the municipal and domestic waste water treatment and control systems technology development activity. This element directly supports the needs of the construction grants program and requires that the research program develop new technologies to meet effluent requirements along with the generation of a data base to support Agency regulatory activities, guidelines and policy. There are a number of major gaps in the data base relating to economics, performance, reliability, efficiency, water quality, waste water renovation and reuse, and disposal of residuals which require investigation. A generalized summary of the research areas to meet municipal and Federal needs are:

a. Sludge management, including sludge utilization and residual disposal;

b. Performance reliability and efficiency of existing publicly owned treatment works (POTW's);

c. Economical and feasible technological alternatives for specific water quality requirements;

d. Disposition of toxic compounds and metals;

e. Reliability and efficiency of individual home and rural treatment systems;

f. Management of wet weather flows, including urban runoff and combined sewer discharges; and

g. Performance, cost, and operational feasibility of soil treatment systems for municipal waste waters.

The objective of this portion of the program is the mitigation of the problems within the constraints of resources, time, and technological capabilities. Of the roughly $7 million allocated annually in fiscal years 1976 and 1977 for this activity, approximately $5 million per year has been expended in extramural efforts. The majority of both the extramural and in-house resources were directed to municipal sludge management and treatment process development for NPDES requirements.

The sludge management program activities focus on developing the solutions to a myriad of problems: technological, ecological, health effects, monitoring and analysis, and socioeconomic. The program is geared to provide a broad technology base for sludge utilization/disposal so as to best protect public health and the environment by including an improved understanding of the fate and probable impacts of toxicants and nutrients on sludge processing and disposal. Major focus will include continued developmental research and evaluation of improved approaches for new dewatering equipment capable of producing an autothermal cake, incineration and pyrolysis equipment, and stabilization of sludges during processing and disposal. Finally, an overall methodology for cost effective managing of sludge processing and disposal will be developed and distributed to users. Work on sludge management has received major support for several years and is expected to continue with emphasis on approaches which reduce energy consumption. Funding in this area was approximately $2.3 million in FY 1976.

A high priority program in the waste water management program is improved performance reliability and efficiency of publicly owned treatment plants through the application of better operation and maintenance (O&M) practices and instrumentation and control systems.

Since an appropriate quantitative historical study of the deficiencies in O&M is unavailable, the relationships between O&M practices and POTW performance in terms of secondary effluent and other effluent standards will be studied for several years to determine which factors in O&M have potential for the greatest cost reduction and improved performance. Emphasis in this area will be on small plants where O&M costs are high per unit of production. EPA is just beginning to examine plant reliability and the relationship of O&M to it. This work is expected to continue throughout the next five year period.

The instrumentation and process control work will develop and evaluate strategies for process control of conventional plants. The work also includes development of selected sensors to measure constituents such as ozone in water and online toxic analyzers together with the corresponding control strategies employing the sensors for improved plant operations. Finally, research to develop control strategies for new technology such as fluidized bed technology, specific contaminant and removal systems, or single-stage nitrification/denitrification will be initiated. The funding level for this program is approximately $800,000.

Small waste water flows is a subdivision in the waste water treatment technology area. The objective of this activity is the development of practical handbooks or manuals which will provide regulatory agencies, planning agencies, consulting engineers, and the general public with specific details on the design, operation, applicability, capital and operating costs, and environmental implications of alternatives available for the treatment and disposal of waste waters generated from individual homes, rural communities, and recreational vehicles. An annual total of about $800,000 has been budgeted for this research with more than 75 percent of this in extramural efforts.

The other public sector research resources totaling some $2.1 million are about equally divided between the program areas of urban runoff pollution control and soil treatment systems.

Urban runoff research spans the categories of: problem definition, user's assistance tools, developing land management techniques for prevention, collection system flow control, storage, treatment and disposal of wet weather flows and sludges, preventive or best management practices, integrated systems and technical assistance for the three runoff subdivisions of combined sewer overflow, urban storm water discharges and hydrologic modification effects. Of the total annual $1.1 million budget, almost 80 percent is expended in extramural efforts. Emphasis is being placed on urban nonpoint pollution control utilizing nonstructural methods as opposed to the combined sewer treatment hardware development of the past to seek out lower cost control techniques. The products of this research are guidelines, manuals, methods, and management tools with supportive data to aid planners, designers, and policy makers in carrying out assessments and formulating solutions to urban sewered and unsewered wet weather pollution.

The activities of the soil treatment systems research program are interwoven with waste water treatment research activities and with research activities of other agencies such as the Corps of Engineers and the Department of Agriculture. The research is oriented toward field evaluation and development of design manuals for three major methods or processes which can be utilized to achieve "best practical treatment" or "nonpolluting discharge" for municipal sewage treatment systems. Of the approximately $1 million annual total for this program, more than 60 percent is in extramural efforts.

1976 Accomplishments

During FY 1976, budget expenditures were divided as follows: grants, $2,272,400; contracts, $3,557,000; and interagency agreements, $54,200. In FY 1976, the waste water management research program in the public sector accomplished the following:

- Demonstrated at field scale a method of meeting or exceeding the EPA secondary effluent standards for BOD_5, suspended solids and fecal coliform with lagoon effluents utilizing intermittent slow sand filters in year round operation at the Logan, Utah waste water treatment works. The results of this study have been disseminated by a joint EPA-Utah State University symposium, at scientific and engineering society meetings and with EPA Technology Transfer seminars to a broad range of users. Over a dozen full-scale processes of this type are presently either in operation, being constructed, or have construction approval. This system development offers a proved method for the more than 4,000 lagoon systems in the United States to meet secondary effluent standards with a process that is reliable, reasonably inexpensive, and requires minimal operation and little maintenance;

- Completed a comparative study on the bacteriological effectiveness of alternative waste water disinfectants and determinaton of residual toxicity associated with waste water disinfection. One of the principal findings was that the threshold value for toxic effects to selected fish is 0.03 mg/l of available chlorine;

- Developed, in-house, three-sludge system for removal of organic and nitrogenous material which is now an accepted state-of-the-art;

- Completed and distributed an audiovisual training program for erosion and sediment control. The training material is directed to the implementation level of sediment pollution prevention, i.e., excavation contractors, foremen, local government inspectors, and developers. The training material was developed through the joint efforts of EPA, Department of Agriculture Soil Conservation Service, and the Department of Transportation's Federal Highway Administration. The need for this type of user's tool is urgent. As state and local agencies move toward accelerated control of nonpoint source pollution, training of a large number of people is essential;

- Developed an updated and refined version of the User's Manual for the Storm Water Management Model (SWMM). Additionally, several simplified mathematical models were developed for preliminary storm water management planning. These may be used by planners or officials as the level of detail, resources, or data reliability dictate;

- Completed a two year effort on the effects of climate on soil treatment and developed two computer programs to aid in design and operation of such systems; and

- Completed and published the research findings on a pilot overland flow treatment of raw domestic waste water which emphasized enhanced phosphorous removal.

1977 Program

In the area of waste water management, the total resources for FY 1977 are $10,392,000 and 113 positions. During FY 1977, the following division of expenditures are planned: grants, $3,252,000; contracts, $2,745,000; and interagency agreements, $591,000. The public sector program in 1977 is developing sludge treatment and utilization, disinfection, and urban runoff control. Lime treatment and thermophilic anaerobic and aerobic digestion processes are being evaluated for cost effectiveness. Also, research to minimize energy consumption in sewage sludge disposal continues. Major efforts in sludge pyrolysis in cooperation with the St. Paul-Minneapolis Waste Control Commission, the City of South Charlestown, West Virginia and Union Carbide, and New York-New Jersey Interstate Sanitation Commission is being executed.

Development and demonstration of new methods, processes, and management techniques to provide improved operation and maintenance of municipal waste water treatment plants is continuing. This effort will be in "midstream" during FY 1977 and indications gained from early results show that this will be a worthwhile product when incorporated into every day operation.

An initial evaluation of an oxidation ditch type of secondary treatment facility was completed in FY 1976. Results show that this type of plant is capable of a high degree of treatment. In FY 1977, the economic advantages and capital costs under varying conditions are being examined. This will allow publication of cost, performance and design guides for this method of treatment.

In the small flows area it is expected that the work on the characterization and handling of septic tank pump out (septage) is to be completed. These results will contribute to future planning manuals.

The study of economic and environmental impacts of combined sewer overflow sludges and the initial generalized analysis of receiving water impacts from all urban wet-weather sources are to be completed.

An evaluation of the cost effectiveness and influence on local planning of existing urban wet weather pollution and hydraulic control facilities is to be conducted. Several existing projects dealing with treatment hardware and instrument evaluation are being continued.

A manual of practice for collection system infiltration/inflow analysis, prevention and control which is being done in cooperation with the Office of Water Program Operations' construction grants program is to be completed. In the soil treatment area, the initial land treatment planning and design manual is to be completed. This manual is urgently needed and widely anticipated. It has been compiled with close support of the Office of Water Planning, the Corps of Engineers, and Technology Transfer. Technical reports are being prepared on various design models for phosphorous removal and climatological considerations in soil treatment systems.

1977 Explanation of Changes from Budget Estimate

The $378,000 increase over the budget estimate was provided from water quality technical support and health effects to accelerate development of disinfection alternatives to chlorine utilization in waste water treatment.

1978 Plan

The FY 1978 plan includes a total of $10,800,000 and 108 positions. The resources are divided as follows: $4,000,000, grants; $3,300,000, contracts; and $350,000, interagency agreements.

Sludge Management--In the area of sludge management, the total resources are $2,000,000 and 21 positions. Efforts will continue to research, develop, and evaluate in the field reliable and cost effective processes which will render municipal sludges environmentally suitable for disposal to the land which will eliminate secondary environmental pollution (e.g., air pollution from incinerators), and ultimately provide communities with an array of cost effective and environmentally acceptable alternatives to solve their sludge disposal problems. Two of these alternatives are pyrolysis and land application. All waste water treatment research activities will stress energy conservation and disposal techniques with beneficial uses of residues. Guidelines will be developed on using sludge for timber production, reclamation of marginal land, and crop production. Process or methods to mitigate the effects of metals and hazardous substances on crops will be investigated. The $1,800,000 supplement in the solid waste program for land application of sludge will be planned and managed within this program.

Treatment Technology--In the area of treatment technology, the total resources are $5,500,000 and 67 positions. Development of efficient, reliable, and cost effective disinfection technology for POTW's is planned. A major effort will be initiated to develop alternate strategies for the control, removal, and/or management of toxic compounds.

Research will be carried out to develop alternative forms of treatment that are less costly than secondary treatment for ocean discharges and plant upgrading.

Poor operation and maintenance (O&M) of treatment plants compromises the impact of construction grants expenditures in achieving the Nation's water quality goals and thus gives priority to development and use of improved O&M practices. Research to evaluate instrumentation and control strategies in order to improve O&M practices of POTW's will be done.

Small Flows--In the area of small flows, the total resources are $800,000 and five positions. The planned objective of the small flows subarea in FY 1978 is to develop new and improved methods and upgrade existing technology for collection, storage, and treatment of individual home and rural waste water treatment and disposal systems. Development of alternative technologies to the traditional septic tank soil absorption system will be continued. Emphasis will be placed on completion of the onsite treatment alternatives state-of-the-art study and the evaluation of the pressure and vacuum collection systems. Approximately $800 thousand is scheduled for these developments.

Soil Treatment--In the area of soil treatment, the total resources are $1,000,000 and seven positions. Research efforts in soil treatment will be directed to development of design manuals for nitrogen management and other long-term effects. Phosphorous and climatological models will be developed.

Urban Runoff--In the area of urban runoff, the total resources are $1,500,000 and eight positions. Urban runoff research will concentrate on the development, collection, and analysis of data, tools, and solution methodologies which will provide policy and decision making information on the source, cause, impacts, remedial benefits, and secondary pollution problems of wet weather flow and abatement. The ultimate objective

is to provide a manageability index and a reliable data base for remedial actions on wet weather pollution. This entails a quantitative problem assessment, with receiving water sensitivity and pollutant ranking, on a national basis; cost estimates for various levels of abatement; monitoring tools; and methods of solution and planning. It is planned in FY 1978 to expand this nationwide characterization and impact research to help resolve key technical questions in data reliability, prediction techniques, secondary impacts, storm design criteria, receiving water requirements, and pollutants to be controlled.

In the area of solution methodology and user's guidelines for runoff control in developing areas, urban land management and wet weather flow instrumentation studies are planned.

The $408,000 increase will be used to develop cost, design, and performance criteria to aid in implementation of nonstructural control methods for urban runoff abatement to seek out less expensive control techniques for use in the construction grant program and 208 planning activities. With the additional funding, a total of $1.5 million will be devoted to urban runoff research.

The five positions reduction in waste water management is part of an overall reduction of positions in the Office of Research and Development (ORD) directed at conducting more research extramurally in order to release positions for other Agency activities.

WATER QUALITY

Research and Development

Monitoring and Technical Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Characterization and Measurement Methods Development.....	$2,141	$2,218	$2,172	$1,892	-$280
Measurement Techniques and Equipment Standardization.....	1,153	1,195	1,194	1,194	...
Technical Support.....	1,418	1,171	1,283	1,283	...
Total.....	4,712	4,584	4,649	4,369	-280
Permanent Positions					
Characterization and Measurement Methods Development.....	42	41	41	32	-9
Measurement Techniques and Equipment Standardization.....	36	56	36	35	-1
Technical Support.....	24	12	32	28	-4
Total.....	102	109	109	95	-14

Budget Request

Resources of $4,369,000 and 95 positions are requested in 1978, a decrease of $280,000 and 14 positions. The positions reduction will be taken at the Environmental Research Laboratory, Athens, Georgia, and the Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

Program Description

The monitoring and technical support program relating to water quality supports three activities: (1) characterization and measurement methods development for measuring pollutants contained in surface and ground waters, sludges and soils, and the effluents from municipal, industrial, and nonpoint sources; (2) measurement techniques and equipment standardization for routine monitoring functions; and (3) the provisions of technical support by which the results of research and development programs and the expertise of researchers are made available for Agencywide use in response to specific requests for support. This technical support activity is planned for and provides resources to respond to both continuing and emergency requests for laboratory and monitoring services.

CHARACTERIZATION AND MEASUREMENT METHODS DEVELOPMENT

1976 Accomplishments

1976 resources included $309,171 in contracts and $197,672 in grants. The following efforts were completed during FY 1976:

- An interim reference method for waterborne asbestos. This method will provide for the consistency of results obtained in different studies;
- A method specifically for methyl mercury. Methyl mercury is the most toxic form of mercury and previously was not measured separately from other mercury forms; and
- Characterization of organic constituents in typical municipal waste waters.

1977 Program

The FY 1977 resource level for characterization and measurement methods development is $2,172,000 and 41 positions. These resources include approximately $110,000 in contracts and $300,000 in grants. The FY 1977 program continues the development and assessment of measurement methods and associated instrumentation for waterborne pollutants. Major emphasis is on trace organic contaminants, toxic trace elements, special toxic species such as asbestos, and infective agents such as viruses.

In the area of organic contaminants, a considerable effort is placed on analytical procedures development for identification of volatile organic contaminants, toxic trace elements, special toxic or infective species such as asbestos, and viruses for the quantitation of 80 substances which the Agency is under court order to examine for need to control.

An automatic sampler for these same organics is ready for field evaluation and improvements are being made in the analytical procedure to lower the cost per analysis.

Preliminary studies are being undertaken on methods for non-volatile organics which constitute about 80 percent of the total organic content of water. These studies will identify specific problems to be solved and potentially useful approaches to the solutions, and will serve as a basis for reevaluating priorities for subsequent research efforts.

Work on other pollutants and on the characterization of waste water continues. Characterization of waste water from organic phosphate manufacturing plants will be completed.

1977 Explanation of Changes from Budget Estimate

The $46,000 reduction from the budget estimate was reassigned to the water quality public sector activity to support acceleration of work on disinfection alternatives.

1978 Plan

The FY 1978 resource level for characterization and measurement methods development is $1,892,000 and 32 positions, a decrease of $280,000 and nine positions from FY 1977. 1978 resources include approximately $200,000 in grants.

The program will continue on the improvement of methods for volatile organics leading to a lowering of the cost per analysis. Specifically, more efficient gas chromatographic columns and computer assisted interpretation schemes will be developed along with techniques for confirmation of identification and for accurate quantitation. These developments will allow regional and other laboratories to increase their activities related to volatile organics in water.

Special attention will be given to the specific substances identified for Agency action. In addition, work will continue on trace elements and viruses.

The reduction of $280,000 and nine positions reflects a decision to concentrate efforts on volatile organics and toxic trace elements. Solutions to the measurement problems associated with non-volatile organics, asbestos, and toxic species of elements will be deferred to the future.. The nine position reduction is part of an overall reduction in research and development manpower in order to release positions for other Agency activities. The reduction will result in more of the research being implemented on an extramural basis. This position reduction will be taken at the Environmental Research Laboratory, Athens, Georgia.

MEASUREMENT TECHNIQUES AND EQUIPMENT STANDARDIZATION

1976 Accomplishments

1976 resources, used intramurally, supported the development, adaption, and evaluation of measurement methods for use in Federal and State monitoring and enforcement programs.

Accomplishments resulting from the FY 1976 program include:

- Development of radiochemical methods for drinking water sources;
- Development of a bio-storet system for biological data;
- Publication of a manual for microbiological reference methods;
- Development and publication of reference methods for volatile toxic organic compounds including chloroform, carbon tetrachloride, chlorinated benzenes, and chlorinated ethanes;
- Development and publication of reference methods for carcinogenic elements and compounds including benzidene, PCB's, pesticides chlorinated phenols, and Cadmium Selenium;
- Development of a laboratory automation system for the Region V central laboratory and initiation of the automation of the Region III laboratory;
- Publication and distribution of an EPA manual on analytical procedures using gas chromatography/mass spectrometry;
- Evaluation and improvement of candidate and reference methods required for compliance and other monitoring activities, particularly the NPDES and ocean dumping activities. The methods include procedures for the biological monitoring of effluents and ambient waters, and for the identification of significant microbiological organisms; and
- Update of approved test procedures for the NPDES program, as published in the Federal Register, October 1973.

1977 Program

The FY 1977 resource level for this subactivity is $1,194,000 and 36 positions. Of these total resources, approximately $300,000 will be allocated to grants. This program emphasizes the development of new reference methods and correction of deficiencies in existing reference methods to support the Agency's NPDES program and monitor pollutants contained in fresh and marine waters. Specific outputs from the 1977 program will include:

- Publication of a revised methods manual containing analytical procedures for determining the presence and concentration of organic pesticides, polychlorobiphenyls, phenols, acids, and other organic compounds;

- New reference methods for selected hazardous pollutants, such as Kepone, benzidine, endrin, arsenic and other compounds from a list of 65 compounds and classes of compounds which the Agency is under court order to review for regulation will be the candidate for developing reference methods;

- Adaption of a bacterial mutagen screening test for routine monitoring of water for mutagenic/carcinogenic compounds;

- Publication of an updated biological methods manual for monitoring biological pollutants;

- Development of a standardized bioassay techniques for evaluation of biological effects of municipal and industrial effluents, and marine waste disposal sites;

- Investigation of fluorescence methods for characterization of petroleum products in surface and ground waters; and

- Evaluation of membrane filter methods for recovery and enumeration of indicator bacteria from effluents or waters that have been subjected to disinfection techniques.

1977 Explanation of Changes from Budget Estimate

There is no change.

1978 Plan

The FY 1978 program for this activity includes resources of 35 positions and $1,194,000 of which $300,000 will be devoted to grants. The program will continue to emphasize the development of monitoring and reference methods and correction of deficiencies in existing reference methods in support of the Agency's needs in the enforcement and monitoring areas particularly in the NPDES program and for monitoring pollutants contained in fresh and marine waters. Specific outputs from the FY 1978 program will include:

- New reference methods for selected hazardous materials. Additional candidates from the list of 65 compounds and classes of compounds which the Agency is under court order to review will be selected for investigation;

- Investigation and standardization of methods of measuring halowaxes, terphenyl, and the application of total organic chlorine method for analysis of industrial effluents as well as development and standardization of methods for aldehydes and ketones;

- Preparation of a preliminary report on low-level response in-plant biomonitoring methods for toxic substances;

- Development of a preliminary method for phytoplankton bioassay for ocean disposed wastes;

- Development of revised manuals with keys for identification of indicator and pathogenic organisms such as zooplankton, caddis flies, and penuate diatomes;

- Preparation of updated microbiological methods manuals as appropriate incorporating the most recent methods developments for use in Federal and State monitoring programs; and

- Extension of NPDES test procedures to sludge and ocean disposed wastes.

The one position reduction in measurement techniques and equipment standardization is part of an overall reduction in research and development manpower in order to release positions for other Agency activities. The reduction will result in more of the research being implemented on an extramural basis.

TECHNICAL SUPPORT

1976 Accomplishments

In 1976, $289,000 was obligated for contracts, $20,000 for interagency agreements, and $65,000 for grants. In FY 1976, major activities of this program included:

- Aerial sewer surveys to detect industrial and municipal waste outfalls;

- A water quality survey of the Atchafalaya River to evaluate potential environmental impacts of water course development;

- Identification of organic pollutant levels in ground waters, drinking waters, and industrial wastes in four regions;

- Chemical analyses of samples for presence of heavy metals and radiological pollutants in support of enforcement actions;

- Chemical analyses of drinking waters to support water supply surveys; and

- Provision of expert testimony documenting viruses content in sludges, and on the capabilities of analytical methods for measuring pesticides and herbicides in support of Agency 307(a) standards.

1977 Program

The FY 1977 resource level for technical support is $1,283,000 and 32 positions of which $188,000 is planned for contractual support.

Not all the activities of this program can be planned in advance because the nature of the technical support programs requires rapid response to unanticipated events. However, some activities have been identified and include:

- Monitoring for viruses in waste waters, sludge, lake, river, and ocean samples;

- Continuing surveys of the Atchafalaya River basin as part of an interagency study group examining the Corps of Engineers water control program;

- A study of Lake Tahoe and its drainage basin to determine nutrient budget and lake productivity;

- A trophic classification of Illinois lakes using satellite data;

- A water quality study of Lake Powell and the San Juan river to evaluate the impact of energy developments;

- Assessment of agriculture and silviculture practices related to water quality impacts; and

- Determination of the transport and diffusion of effluent plumes from power plants.

1977 Explanation of Changes from Budget Estimate

A $112,000 increase to the budget estimate was made to allow additional technical support related to the Kepone problem at Hopewell, Virginia.

1978 Plan

The FY 1978 program for this activity includes resources of $1,283,000 and 28 positions; a decrease of four positions from 1977. Of these resources, approximately $188,000 is planned for contracts.

In FY 1978, the program will be restricted as a result of the personnel reductions. The decrease of four positions will result in a 70 percent reduction in the level of support provided to Agency program and regional offices for the conduct of specialized laboratory analyses. In addition, the reduction of 20 positions in the closely related interdisciplinary technical support program will also have an impact on the capability of providing rapid responses to requests for expert consultation and other activities requiring in-house personnel rather than contractual support. A limited response to technical services request will be provided using extramural support contractors. Actual FY 1978 program requirements can not be planned in detail because of the quick response nature of the technical support program. However, based on the experience gained in fiscal years 1976 and 1977, various types of service requests can be anticipated from the Agency program and regional offices. Examples of probable support requests include:

- Determination of the location and dispersion of thermal plumes from power plants;

- Development of inventories of water outfalls in given river basins;

- Location and identification of nonpoint sources of water pollution from agriculture, silviculture, and mining activities;

- Determination of sources of pollution affecting water quality in watersheds, bays, and estuaries; and

- A limited number of laboratory analyses for program and regional offices on special samples containing difficult interference problems or requiring difficult biological identifications.

In-house resources will be used to conduct a limited number of special emergency missions in such areas as contact monitoring using amphibious aircraft, remote sensing from fixed-wing aircraft, and interpretation of existing photographic imagery.

The four position reduction in technical support is part of an overall reduction in research and development manpower in order to release positions for other Agency activities. The position reduction will be taken at the Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

Abatement and Control

SECTION TAB

SOLID WASTE

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
		(dollars in thousands)				
Appropriation						
Waste Management Practices, Procedures, Guidelines and Regulations.....	$8,058	$6,812	$6,492	$12,145	+$5,653	SW-9
Financial Assistance.....	1,799	2,925	2,925	12,000	~~2,925~~ +9075	SW-16
Waste Management Strategies Implementation.....	1,111	1,112	1,238	1,480	+242	SW-18
Resource Conservation.....	1,626	821	1,009	2,190	+1,181	SW-22
Total.....	12,594	11,670	11,664	~~15,815~~ 27,815	~~+4,151~~ +16,151	
Permanent Positions						
Waste Management Practices, Procedures, Guidelines and Regulations.....	80	93	109	109	...	
Financial Assistance.....	...	...	...	...	...	
Waste Management Strategies Implementation.....	45	46	56	56	...	
Resource Conservation.....	19	22	23	23	...	
Total.....	144	161	188	188	...	

~~* Budgeted under Consolidated Grant program.~~

Purpose

The Abatement and Control appropriation encompasses the activities of the solid waste management program devoted to the development and implementation of waste management strategies; the translation of these strategies into guidelines, regulations, and management tools; interaction with Federal and State agencies, local government, industry, organizations, and individuals to gain implementation of the strategies; and the demonstration of resource recovery, resource conservation, hazardous waste management, and solid waste management systems and technologies. The activities reflect the increased emphasis in land disposal, hazardous waste management, and State program development, which is implicit in the amendments to the Solid Waste Disposal Act passed by the 94th Congress. These activities differ from those covered under the Research and Development appropriation in that they are related to the implementation of solid waste management practices (herein defined to include solid waste, hazardous waste, resource recovery, and resource conservation as defined by the newly amended Act) for specific problems at the in-place operating level rather than the development of knowledge on the effects of solid waste management practices on the environment and human health, or on the development of control technologies to resolve these effects.

The current EPA solid waste management strategy conceives the States as being the prime force in the correction of health and environmental threats resulting from improper solid waste management practices and the institutional catalyst for increasing resource recovery and resource conservation. The strategy perceives that the States must gain control over all land disposal of wastes and more comprehensive control over those wastes which are deemed to be hazardous, and create the institutional opportunities for resource recovery and resource conservation. The program efforts in this budget over the past several fiscal years have been directed toward accomplishment of the objectives of that strategy. The amendments to the Solid Waste Disposal Act continue with the logic of that strategy and its objectives and provide new tools at the Federal, State, and local levels to aid in achieving those objectives. Specifically, the amendments include the mandate for regulation and control of hazardous waste from generation to disposal, with supportive provisions to assist the States to assume this responsibility. The EPA strategy for implementing the Act is designed to maximize the opportunity for the States to manage their own hazardous waste management problems.

The amendments further include a mandate to assist and guide States in the implementation of strategies and plans to assure that the disposal of wastes on the land are done in a manner to safeguard human health and environmental quality. Again, it is the Agency's intention to maximize the opportunities for the States to manage their own land disposal problems.

(Revised 2-24-77)

SOLID WASTE

Abatement and Control

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Financial Assistance.....	...	...	...	...	...	
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The amendments further include a mandate to assist and guide States in the implementation of strategies and plans to assure that the disposal of wastes on the land are done in a manner to safeguard human health and environmental quality. Again, it is the Agency's intention to maximize the opportunities for the States to manage their own land disposal problems.

The amendments also provide for measures to create the necessary information and technologies for communities, with State and Federal support, to improve their solid waste management practices and to optimize the opportunities for resource recovery and resource conservation. They provide the EPA and the Department of Commerce with authorities to overcome the technological, economic, and institutional barriers preventing increased successes in these two areas, and the plan in this area is designed to develop the information, tools, and knowledge to achieve these purposes.

The original budget estimate for FY 1977 did not reflect the new emphasis reflected in the recently passed amendments. Planned efforts are supportive of the new mandates, but do not within themselves respond to the specifics in hazardous waste management regulation, land disposal, State program development, guidelines development, or systems implementation.

Hazardous waste management program activities will increase materially as a result of the amended Act. Regulations, standards, and guidelines will be developed in order to provide leadership for States' hazardous waste management regulatory programs. The technology evaluation programs for land disposal and incineration will continue. Increased technical assistance to States will be initiated to build up the necessary competency to assure compliance with the amendments.

The program activities associated with land disposal of "nonhazardous" wastes, sludges, and special wastes will continue with some acceleration. The land disposal and State program development efforts will be accelerated to provide the necessary guidances and guidelines so that State governments can assume a more aggressive role in land disposal. Because of the mandates of the amendments, state-of-the-art work in land disposal and sludge management will be accelerated to provide needed information for local and regional implementation of solid waste management programs, which will comply with required solid waste management guidelines, and the inventory of open dumps will be initiated.

The resource recovery and resource conservation efforts will continue in the same direction as proposed in the original FY 1977 request except for the mandated studies which are required by the amendments.

SOLID WASTE

Abatement and Control

Waste Management Practices, Procedures, Guidelines and Regulations

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977	Page
		(dollars in thousands)				
Appropriation						
Hazardous Waste Management Guidelines & Regulations.	$3,329	$2,990	$3,024	$3,490	+$466	
Solid Waste Management Guidelines.....	2,252	1,082	1,508	4,305	+2,797	
State & Local Programs Guidelines & Regulations Development.....	2,477	2,740	1,960	4,350	+2,390	
Total.....	8,058	6,812	6,492	12,145	+5,653	
Permanent Positions						
Hazardous Waste Management Guidelines & Regulations.	21	23	33	33	...	
Solid Waste Management Guidelines.....	19	29	31	31	...	
State & Local Program Guidelines & Regulations Development.....	40	41	45	45	...	
Total.....	80	93	109	109	...	

Budget Request

The budget request for this subactivity is $12,145,000 and 109 positions. This reflects an increase of $5,653,000. Increases over the FY 1977 estimate are necessary for developing guidelines and regulations for planning and implementing hazardous waste management and solid waste management programs.

Program Description

This subactivity includes activities related to the development of standards and guidelines for the proper control and disposal of hazardous and solid wastes, and the development of guidelines and regulations for State and community programs.

Activities include investigating and analyzing state-of-the-art methods, practices, and technologies for solid waste management (including hazardous wastes), documenting the background and constraining parameters for these techniques, developing and publishing specific guidance materials, guidelines, and regulations, and designing and disseminating model implementation strategies for use by State and local governments. Essential to the development of these documents is the demonstration of new technologies. These investigations provide the variety of case studies and information from which tools and guides (both technical publications and Federal Register issuances) as well as broader strategy documents are developed.

Under previous legislation, most of the specific work activities were directed toward the development (or modification) of strategies for dealing with hazardous and solid waste management problems and the translation of strategies into appropriate guidance documents (non-regulatory publications) or guidelines (regulatory publications) binding on Federal agencies. These efforts are being incorporated into the regulatory actions required by the new Act.

Hazardous Waste -- In the context of the new Act, there is an immediate shift in effort, primarily in the hazardous waste management program. Approximately 10 hazardous waste standards, regulations, and guidelines must be developed and proposed from ongoing work, plus additional extramural efforts by early FY 1978. Virtually all of the studies that had been previously directed toward guidance documents will provide some of the data and information needed for standards for hazardous waste generators, transporters, and operators of treatment, storage, and disposal facilities.

The identification of hazardous waste characteristics, by April 1978, will involve the development of criteria which take into account toxicity, persistence and degradability in nature, flammability, corrosiveness, and other hazardous characteristics for identifying hazardous wastes. Identification is to be followed by the listing of selected wastes. These regulations will require the development of standard sampling measurement and analysis techniques where they do not already exist or are inadequate for regulatory purposes. (The measurement analyses and techniques are being developed with resources included in the Research and Development appropriation).

The standards that will be developed for generators of hazardous wastes will include requirements for recordkeeping, labeling, and appropriate containers. A major aspect of the generator standards will be required use of manifests to assure that all hazardous wastes generated are properly transproted and stored, and disposed or treated only by facilities which have a valid permit. A data management system will be developed to record manifest data and allow for subsequent monitoring for compliance with hazardous waste transport, treatment, storage, and disposal regulations. Hazardous waste transport standards will include requirements for recordkeeping, labeling, and compliance with the manifest system.

The development of standards applicable to the owners and operators of hazardous waste storage, treatment, or disposal facilities will include requirements for recordkeeping, reporting, monitoring, and location, design, and construction criteria. The standards will also require contingency plans to minimize damage from accidental release of hazardous wastes. This development effort will require analysis of the economic impact of the standards as well as extensive study of alternative treatment and land disposal techniques.

After October 1978, all treatment, storage, or disposal facilities will require a permit issued by EPA or States with approved hazardous waste programs. The promulgation of permit regulations and their implementation will require a permit review manual of administrative tools including standard forms, a permit review manual, and a management information system. Subtitle C of the Act requires that all treaters, disposers, or storers of hazardous wastes notify EPA, or States with approved programs, of the location and general description of such wastes once the standards for these areas are in effect. Procedures and a data management system must also be developed to implement this system by July 1978.

Essential to the development of hazardous waste standards required by the Resource Conservation and Recovery Act of 1976 will be the continuation of studies and evaluations of hazardous waste systems currently under way. These include a chemical waste land disposal project, assessment of various hazardous waste control technologies, and evaluation of incineration techniques. Other efforts that continue will be the demonstration of a waste exchange system as a hazardous waste reduction option, the evaluation of strategies to utilize energy and heat recovery as a means of reducing hazardous waste disposal problems, and the development of standard leaching tests for hazardous wastes.

Solid Waste Guidelines -- A second principal program thrust under the previous law focused on developing information for guidance and guideline documents to assist States and communities with problems primarily related to the solid waste disposal practices of municipalities. Emphasis was placed on problem definition, finding solutions to problems associated with improper land disposal practices (leachate and gas), and with the disposal problems associated with landfilling of sewage treatment sludges.

Under the new law, these efforts will be directed toward the development of revised solid waste disposal guidelines and the initiation of a program to develop and promulgate municipal sludge utilization and disposal guidelines. Specifically, the municipal sludge guidelines will address the problems of heavy metal contamination of ground water from the landfilling of municipal sludge both with and without solid waste, and food chain contamination from the spreading of municipal sludge on agricultural land. The revised land disposal guidelines will address current practices as well as specifying acceptable practices. The development of land disposal guidelines will require considerable effort, especially regarding public participation, since the issue of ground water policy must be addressed.

Efforts under this section also include technical evaluations of environmentally and economically acceptable options as well as guidelines development. Therefore, existing work, such as identification of the impact on ground water of leachate at municipal waste disposal sites, evaluation of the use of remote sensing for disposal site monitoring, evaluation of the adequacies of reworked clay liners in preventing leachate contamination, and compiling information on leachate migration and soil attenuation will continue. Other work, which will be continued and expanded in order to provide information for the development of future guidelines, include evaluating the impact of crop uptake from the land disposal of municipal sludge and assessing the concept of tilling municipal solid waste and sewage sludge into the land. While the problems associated with municipal sludge management will be the first priority, additional guidelines covering other waste streams such as water treatment sludge, mining waste, agricultural waste, and the large volumes of nonhazardous industrial waste will be addressed in subsequent years.

In addition, guidelines which affect the Federal purchase and procurement of products containing recycled materials, including fuels derived from solid waste, will be developed. The intent of these guidelines will be to stimulate procuring agencies to purchase items composed of the highest percentage of recovered materials, consistent with maintaining a satisfactory level of competition. The guidelines will set forth recommended practices with respect to procurement of recovered materials and will provide information on the availability, sources of supply, and potential uses of such materials.

State and Local Programs -- These activities include developing regulations, guidelines, guidance and tools which are utilized by the regional offices and States in the delivery of technical assistance, the development of solid waste management plans, and implementation of solid and hazardous waste management programs.

Other efforts include the development of guidelines to assist States and local governments in identifying planning areas with common solid waste problems. Additionally, guidelines for developing State plans will be developed which will include at a minimum procedures for the designation of responsible State and community agencies, methodology for upgrading or closing dumps, the regulatory program to do so, and implementation schemes for achieving acceptable waste recovery, resource conservation, and waste disposal. Such compliance schedules and plans will involve a transition to improved land disposal alternatives and involve resource recovery or conservation systems. It is important to note that unless there is an approved State plan with a compliance schedule for closing open dumps, site operators will be subject to citizen suits.

A major aspect of the hazardous waste program is the option for States to develop their own program including the issuance of permits. The assumption of hazardous waste responsibilities by the States is a major priority of EPA. To assist States in the development of hazardous waste programs, EPA will publish guidelines (by April 1978) and criteria for the authorization of State programs, including interim authorization. State grant rules and regulations will also be developed.

A second major focus will be the development of criteria for classifying sanitary landfills and open dumps. This is extremely complex and includes the necessity of addressing the relationship between land disposal and ground water policies. Efforts will address the development of guidelines for State plans that will provide for acceptable land disposal practices, as opposed to open dumping. The inventory of open dumps, which are to be closed or updated by October 1983, is to be published by October 1978. It should be noted that the new definition of disposal broadens the inventory beyond the 20,000 solid waste disposal sites to include land disposal at 23,000 waste treatment facilities and over 100,000 industrial sites.

Guidance and Tools Development -- Guidance and tools development efforts in municipal solid waste management include the completion of the Cost Estimators Handbook for assisting cities in assessing the costs of land disposal of sludge, and revision of the Sanitary Landfill Design and Operations Manual. Efforts also include the development and modification of collection techniques such as updating the Collection Management Information System (COLMIS), adapting heuristic routing to more complex collection systems, analysis of collection safety problems, and the development of management tools for regional planning and management such as the Waste Resource Allocation Program (WRAP).

The efforts in resource recovery and conservation at the State and municipal levels include development of information on the technical and institutional factors to be considered in implementing such programs. Implementation guides including analysis of methods of procuring, financing, and contracting for resource recovery systems will be updated and expanded.

In the area of hazardous waste support, a State Decisions Makers Guide will be published which discusses the essential issues and implementation concepts for State hazardous waste programs. In addition, a waste management capacity study will be completed and a State program evaluation guide developed.

HAZARDOUS WASTE MANAGEMENT GUIDELINES AND REGULATIONS

1976 Accomplishments

1976 resources included approximately $1.9 million of grant and contract support for the demonstration of treatment and disposal alternatives, and the development of standard analytical methods for determining attenuation rates and leaching potential of chemical wastes in landfills. Data from these projects is expected to be available in late FY 1978. These data will be incorporated into guidance, guidelines, and regulations documents on hazardous waste management. In addition to the new efforts initiated in FY 1976, the industry study contracts (initiated in 1974 and 1975) were completed. Data defining potentially hazardous wastes in 15 industries is now available, evaluations and assessments of 15 existing hazardous waste facilities were issued, and damage incidents and detailed damage reports from improper waste management were published. Specific guidance on the disposal of wastes containing PCB's and aerosol cans containing vinyl chloride was issued.

1977 Program

The resources in this area are $3,024,000 and 33 positions. These resources will be used to develop (through contract studies and in-house analyses) over 10 hazardous waste standards, regulations, and guidelines by early FY 1978. Included are criteria for the identification and listing of hazardous wastes; standards for solid waste generators (including labeling, packaging, notification, and reporting), transporters (including placarding, identification, and use of a manifest); and treatment, storage, and disposal facilities (including design and performance standards monitoring, reporting, training, fiscal responsibility, and other operational requirements). In addition, work will begin on regulations for a permit program for such facilities, State program authorization, and grants regulations. Limited resources will continue to be assigned to complete ongoing contract studies and surveys devoted to the development of these standards and regulations. Economic impact and environmental assessments studies will be initiated to develop the data supportive of mandated regulations, standards and guidelines.

1977 Explanation of Changes from Budget Estimate

The increase of $34,000 over the budget estimate results from the application of the budget estimate to actual operating conditions.

1978 Plan

The resources in this program are $3,490,000 and 33 positions, an increase of $466,000. These resources will be utilized to complete efforts, initiated in FY 1977, leading to the promulgation of identification, generation, transport, disposal, storage, and treatment standards by April 1978. Subsequent to the promulgation of initial standards, work will continue to refine the criteria, identify "new" hazardous wastes and update generation, transport, disposal, treatment, and storage standards as new technologies and problems evolve. Standards and regulations will be completed in FY 1978 with comments received through public participation. Inflationary impact and environmental assessments for the required standards and regulations will be completed as part of the final rule-making effort. In addition to completion of rule making, resources will be used for the chemical waste landfill demonstration.

SOLID WASTE MANAGEMENT GUIDELINES

1976 Accomplishments

1976 resources, including $1,498,000 of extramural funds, were allocated to the development of data to provide information for guidance documents and guidelines to Federal agencies and State and local governments on the management of municipal solid wastes and residual sludges on land. Included were contracts for determining the nature and extent of the leachate problem, evaluation of treatment alternatives for controlling leachate from landfills, and development of analytical and regulatory procedures for States and municipalities to utilize in managing land disposal of solid waste. In residuals sludge management, extramural resources were directed primarily at evaluating disposal alternatives, surveying current sludge disposal and utilization practices, and analyzing the economics associated with various utilization and disposal alternatives. These studies are expected to culminate in guidelines in FY 1978. In addition to the developmental activities, guidelines on solid waste management were issued (Collection, Federal Procurement, Source Separation, Beverage Containers, and Resource Recovery Facilities).

1977 Program

The resources allocated to this program are $1,508,000 and 31 positions. These resources, including $640,000 of extramural funds, are being used to develop guidelines for land disposal, sludge disposal, and state-of-the-art guidance documents for municipal and special wastes, to be promulgated in FY 1978.

Work has been initiated on the most pervasive municipal waste disposal problems such as municipal sludge disposal and the control of leachate. (It should be noted that EPA is now required under Section 1008 of the Act to publish two different types of guidelines: (1) a technical and economic description of the level of performance attainable by various available solid waste management practices, by October 1977, and (2) levels of performance, including appropriate control technology, by October 1978).

Also, as a part of (and in support of) guidelines development, state-of-the-art studies in mining wastes, agricultural wastes, and water treatment plant sludges will be initiated. A revised edition of the Sanitary Landfill Design and Operation document will be published, as well as a Cost Estimator's Handbook, a Decision Guide for sludge management, and two public information brochures.

1977 Explanation of Changes from Budget Estimate

The increase of $426,000 over the budget estimate reflects a redirection of resources to implement the Resource Conservation and Recovery Act of 1976 (RCRA).

1978 Plan

The resources requested for this program element are $4,305,000 and 31 positions, an increase of $2,797,000. In the municipal sludge area, further studies of land disposal are planned. These will include an analysis of liquid disposal techniques in landfills and an analysis of leachate collection from sludge landfills. State-of-the-art efforts will continue in order to provide the basis for guideline promulgation on municipal and special waste management practices and procedures. Land disposal guidelines and criteria will be promulgated. Other special wastes, such as mining and agricultural wastes, will be addressed during FY 1978 and will be promulgated as guidelines in future years.

STATE AND LOCAL PROGRAMS GUIDELINES, GUIDANCE AND REGULATIONS DEVELOPMENT

1976 Accomplishments

1976 resources were allocated primarily for development of State programs through provision of special technical, scientific, or economic tools in the form of information and direct assistance. The objective of these efforts is to develop State programs capable of exercising control over all land disposal sites, initiating hazardous waste control programs, stimulating the recovery of energy and materials from solid waste, reducing solid waste generation, and utilizing land use planning procedures to aid in the acquisition and siting of solid waste management facilities.

A revised Decision Makers Guide incorporating new chapters on balefills, landfill liners, and other subjects was issued. A model State hazardous waste law was completed. An Injury Reporting Information System (IRIS) was implemented in 100 cities (this system allows managers to determine the underlying causes of injuries so that they can take remedial action); and the Solid Waste Information Retrieval System (SWIRS) continued to provide assistance to various receptor groups.

In 1976, the Agency also expanded its efforts to provide technical assistance in resource recovery to communities. These efforts included working with communities on a one-to-one basis, the provision of grant funds to 10 communities and development of a series of guides which provide information on the marketing, technology, and implementation aspects of resource recovery. Resources allocated to technical assistance included $1.1 million and 13 positions, of which $700 thousand was allocated for extramural support. EPA provided technical consultation to communities desiring to implement a resource recovery system: Dade County, Florida; Detroit, Michigan; Lane County, Oregon; Lexington, Kentucky; Memphis, Tennessee; Montgomery County, Ohio; and Washington, D.C. Eight resource recovery implementation guides were completed to assist communities in planning and implementing systems to recover materials and energy from solid waste.

1977 Program

The resources allocated this program element are $1,960,000 and 45 positions. Efforts will include the development of criteria defining sanitary landfills and open dumps, coordination of the open-dump inventory, and initiation of guidance for State solid waste programs, solid waste plans, and hazardous waste programs.

In addition, tools and guides to evaluate State programs and assist State programs in drafting State statutes will be developed and hazardous waste concepts will be integrated into planning grant guidelines. The State Decision Makers Guide for hazardous wastes will be completed as planned. The program will also address further guidance on sludge management and disposition, rural systems design, land protection technologies, safety, and collection concepts. Resource recovery, source separation, and waste reduction expertise will continue to be utilized to develop policy and procedures for regional office use, and for development of implementation guides and case studies.

1977 Explanation of Changes from the Budget Estimate

The decrease of $780,000 from the budget estimate reflects a reduction of ongoing activities to provide resources for the development of regulations and guidelines relating to State and local programs. During FY 1977, the direct technical assistance activities will be limited with the responsibility for providing these services shifted to the regional offices.

1978 Plan

The resources requested for this program are $4,350,000 and 45 positions, an increase of $2,390,000 over the FY 1977 level. Extramural resources of $3,000,000 will be utilized for development of new data on various solid waste management methods, model accounting systems, and codes, as well as on methods of managing and financing hazardous waste systems. An annual report describing all activities undertaken to implement the Act will be prepared; in addition, a manpower and training needs study to determine future manpower needs as a result of the mandates of the amendments will be initiated. As part of the base program, in parallel with the development of the hazardous waste program, the municipal waste regulatory controls for the prohibition of open dumps and for State plan development and implementation will be completed. A mandated regulation, containing guidelines on the development and implementation of State solid waste management plans, will be produced.

SOLID WASTE

Abatement and Control

Financial Assistance

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
State Program Resource Assistance.....	$1,799	$2,925	$2,925	...	-$2,925
Local Program Resource Assistance.....	...	...	...	...	...
State/Local Training Assistance.....	...	...	...	...	...
Total.....	1,799	2,925	2,925	...	-2,925
Permanent Positions....	...	...	...	...	...

Budget Request

Funds for this activity are being requested under the consolidated grant program.

Program Description

This subactivity includes only financial resources to support State and local government activities in implementing hazardous and solid waste programs.

State Program Resource Assistance--The EPA maintained a small State solid waste management planning program under the authorities of the old Act. During FY 1977, efforts will be redirected to enable the States to move toward meeting the requirements of the amended Act. During fiscal years 1974, 1975, and 1976, financial support to the States was directed at developing plans and, in many instances, strategies to implement those plans. New requirements relative to the designation of local/regional areas, the land disposal provisions, and the hazardous waste management regulatory aspects will be factored into the current efforts in order to provide a means for the States to move into an increasingly active role in FY 1978.

From a legislative and strategy development standpoint, States are estimated to be only 50 percent effective in their land disposal programs. Further, the current level of effectiveness in the area of resource conservation is estimated to be only 36 percent.

Local Program Resource Assistance--The Resource Conservation and Recovery Act authorizes financial assistance to be provided to local governments for the implementation of local/regional plans. These plans are to provide for solid waste management, resource recovery, and resource conservation services and hazardous waste management. This assistance is for facility planning, surveys and analyses, technology assessments, economic studies, and engineering feasibility studies. Assistance under this program is contingent upon the local government meeting the requirements of the land disposal and hazardous waste management portions of the Act.

SOLID WASTE

Abatement and Control

Financial Assistance

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
State Program Resource Assistance.....	$1,799	$2,925	$2,925	12,000	+9075 ~~$2,925~~
Local Program Resource Assistance.....	...	...	...	...	...
State/Local Training Assistance.....	...	...	...	...	...
Total.....	1,799	2,925	2,925	12,000	~~2,925~~ +9075
Permanent Positions....	...	...	...	...	...

Budget Request $12 million is requested in 1978, an increase of $9,075,000.

~~Funds for this activity are being requested under the consolidated grant program.~~

Program Description

This subactivity includes only financial resources to support State and local government activities in implementing hazardous and solid waste programs.

State Program Resource Assistance--The EPA maintained a small State solid waste management planning program under the authorities of the old Act. During FY 1977, efforts will be redirected to enable the States to move toward meeting the requirements of the amended Act. During fiscal years 1974, 1975, and 1976, financial support to the States was directed at developing plans and, in many instances, strategies to implement those plans. New requirements relative to the designation of local/regional areas, the land disposal provisions, and the hazardous waste management regulatory aspects will be factored into the current efforts in order to provide a means for the States to move into an increasingly active role in FY 1978.

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Local Program Resource Assistance--The Resource Conservation and Recovery Act authorizes financial assistance to be provided to local governments for the implementation of local/regional plans. These plans are to provide for solid waste management, resource recovery, and resource conservation services and hazardous waste management. This assistance is for facility planning, surveys and analyses, technology assessments, economic studies, and engineering feasibility studies. Assistance under this program is contingent upon the local government meeting the requirements of the land disposal and hazardous waste management portions of the Act.

(Revised 2-24-77)

Rural communities are frequently the least able financially to improve their solid waste management practices. Because of their limited financial capability, most of these communities will not be able to afford to meet the land disposal requirements of the amended Act. The Resource Conservation and Recovery Act (RCRA) authorizes assistance to be provided for those communities which have no other alternative (i.e., regionalization, resource conservation, etc.) to plan and develop a solid waste management system for their communities which will meet the requirements of the Act, to plan land disposal sites, construct facilities, and to acquire equipment for these systems.

The Act also recognizes the unique problems of communities and regional areas that serve as the "dumping ground" for wastes generated outside their jurisdiction. Special assistance is authorized for communities where 75 percent of the waste coming into the disposal system is generated from outside their jurisdiction and disposal of these wastes results in serious environmental problems.

STATE PROGRAM RESOURCE ASSISTANCE

1976 Accomplishments

1976 resources were utilized in State planning and upgrading State solid waste management capabilities.

1977 Program

The resources allocated to this program element are $2,925,000 to be used to support the continuation of State programs undertaken in FY 1976, and to initiate State programs which will prepare them for implementation of the RCRA, e.g., State plans for regionalization, inventory of landfills, preparation for hazardous waste regulatory program, etc.

1977 Explanation of Changes From Budget Estimate

There is no change.

1978 Plan

A total of $12.0 million is requested in 1978 for this program element to support the expansion of State activities in implementing the requirements of the Resource Conservation and Recovery Act of 1976.

Prior to FY 1978, financial support for State solid waste programs was used primarily to support planning and development of programs at the State level. With the passage of the Resource Conservation and Recovery Act of 1976, the role of the States, as well as the need for State resource supplementation, has expanded greatly. FY 1978 resources will be used by States to undertake and complete the open dump inventory which is required by October 1978; to upgrade existing programs including the development of a plan for properly managing all wastes generated within their borders, and establishing a suitable legislative base and enforcement program; providing guidance and assistance to local/regional governments in the planning and implementation of solid waste management programs; and development of a State technical assistance program to improve the locals' level of effectiveness. In addition, it will provide funding (under Subtitle D) for planning and upgrading State Hazardous Waste Management programs in States that are expected to seek such authority.

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The resources allocated to this program element are $2,925,000 to be used to support the continuation of State programs undertaken in FY 1976, and to initiate State programs which will prepare them for implementation of the RCRA, e.g., State plans for regionalization, inventory of landfills, preparation for hazardous waste regulatory program, etc.

1977 Explanation of Changes From Budget Estimate

There is no change.

1978 Plan

Funds for financial assistance to State and local governments have been included under the consolidated grants program.

SOLID WASTE

Abatement and Control

Waste Management Strategies Implementation

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Federal Guidelines Implementation.....	$250	$226	$252	$270	+$18
Solid Waste Management Program Implementation.....	861	886	986	910	-76
Hazardous Waste Management Regulatory Strategy Implementation.....	...	...	...	300	+300
Total.....	1,111	1,112	1,238	1,480	+242
Permanent Positions					
Federal Guidelines Implementation.....	6	9	9	9	...
Solid Waste Management Program Implementation.....	39	37	47	37	-10
Hazardous Waste Management Regulatory Strategy Implementation.....	...	...	...	10	+10
Total.....	45	46	56	56	...

Budget Request

The budget request for this subactivity is $1,480,000 and 56 positions, an increase of $242,000 over the 1977 level.

Program Description

The effort budgeted in this subactivity is conducted almost entirely in the regional offices and is related to the implementation of regulatory requirements for which the Federal Government has primary responsibility. These include development of State program capability to implement hazardous and solid waste management activities, implementation of the Federal hazardous waste regulatory program, the review of Environmental Impact Statements (EIS) for their solid waste impact, and assisting Federal agencies in complying with solid waste management guidelines and regulations.

Federal Guidelines Implementation -- The primary thrusts in this area are aimed at assisting Federal agencies to implement the promulgated guidelines and meet State requirements. Continuing activities will focus on such activities as surveying Federal agencies to check on their compliance with published land disposal guidelines, implementation of a prototype source separation program in regional offices, development and evaluation of pilot tests of the returnable beverage container guidelines on military establishments, and various reports and evaluations on the implementation and compliance with beverage container source separation and resource recovery guidelines. The majority of resources in this area are involved with assisting Federal agencies in implementing guidelines promulgated in FY 1977, as well as those to be developed under this Act which are applicable

to them as operators or administrators of facilities having solid waste disposal activities.

Solid Waste Management Program Implementation -- Historically, it has been the Agency's goal to develop effective State solid waste management programs. The new legislation serves to accelerate that process. A major goal of the regional offices during 1977 and 1978 is to sharpen the focus of ongoing State programs in order to prepare them for assuming the land disposal control, hazardous waste regulation, and resource conservation program activities.

It is the Agency's intent that the hazardous waste regulatory program be assumed by as many States as possible and that the capability of States and communities to implement environmentally sound solid waste management programs be increased. EPA will provide technical and financial assistance (largely under Section 2003 of the Act) to States in the development of hazardous and solid waste planning efforts.

Specifically in hazardous waste, there are currently about five to ten States with legislation and programs that would permit them to apply for interim approval to issue hazardous waste permits. In addition to these States, it is estimated that 10 to 15 more States may, by the end of FY 1978, enact legislation and establish programs to assume Federal program responsibilities. Consequently, the level of technical and financial assistance must be raised to assure that appropriate laws are enacted, and that programs capable of implementing the legislation are established so that approvable plans are submitted.

In addition to the hazardous waste requirements, the amended Solid Waste Disposal Act establishes requirements for State and local solid waste management agencies to develop and execute plans and programs that will ensure coordinated and comprehensive solid waste management planning and implementation within a State. Federal guidance for designating State solid waste management regions will be published in mid-1977, and criteria for sanitary landfills by the end of FY 1977. As a result of Federal actions, States will have to designate solid waste regions within six months of the Federal guidance and will also be participating in the inventory of open dumps to be completed by the end of FY 1978. States must also begin the planning process in accordance with Federal criteria to be issued in mid-1978. All 56 States and territories are expected to participate in this aspect of the program as future Federal funds to State and local governments depend upon approvable State plans.

The regional offices will provide guidance to the States in developing their solid waste management plans, which will include assistance such as identifying areas with common solid waste problems, identifying responsible State and community agencies (utilizing Federal Water Pollution Control Act, Section 208 agencies wherever possible), and developing State plans. A final, but very important aspect of this activity, is the review of State plans to determine compliance with EPA guidelines.

The Act also requires that technical assistance be provided to State and local governments upon request and without charge (20 percent of the funds appropriated under the general authorization are to be used for this purpose). This assistance will serve to facilitate the adoption of regulations and State plans in the area of hazardous waste management, improved land disposal, resource recovery, and resource conservation. This assistance will be provided through several mechanisms: EPA personnel, consultants, representatives from the solid waste and resource conservation industries, and experts from State and local governments and universities or available through contract or grants funds provided to the State and local governments.

Hazardous Waste Management Regulatory Strategy Implementation -- Efforts in this area are directed toward implementing hazardous waste programs in States that do not assume such programs. The largest effort in this area is related to issuing permits for all hazardous waste management activities. Beginning in October 1978 (FY 1979) it is expected that EPA will have to issue permits for about 1,000 offsite facilities and about 10,000 onsite facilities for residual storage, treatment, or disposal. This estimate is based on the assumption that approximately 25 State programs will initially request interim authorization to operate the hazardous waste permit based regulatory program with the remainder to be issued by EPA. Other State legislatures are expected to adopt legislation to implement hazardous waste programs during subsequent years and EPA would expect an additional five to ten States to take on the hazardous waste permit program. For resource reasons, and due to the minimal nature of this problem in rural States, the remaining States will probably opt to let EPA continue to operate the permit program for hazardous waste storage, treat disposal sites--both offsite and on the property of industrial concerns. The activities in this area would also include the operation of the notification system and the transport manifest system required under Sections 3002 and 3010, repectively, of the Act, and the establishment of a small Federal enforcement capability to handle inspections and compliance determinations.

FEDERAL GUIDELINES IMPLEMENTATION

1976 Accomplishments

1976 resources were utilized to initiate activities related to implementation, by Federal agencies, of the Land Disposal Guideline and the Source Separation Guideline. No extramural funds were allocated for these activities.

1977 Program

The resources allocated to this program are $252,000 and nine positions. This reflects essentially a continuation of the FY 1976 level. There are no extramural funds associate with activites carried out in this program. These resources will be used to assure that Federal agencies comply with regulations issued under the RCRA and those issued by the States. These personnel will also provide technical assistance and advice to Federal facilities in connection with their resource recovery, land disposal, and hazardous waste guidelines compliance activities. In addition, EPA regional office personnel will be responsible for recommending the best procedures for removing solid waste from Federal lands in Alaska.

1977 Explanation of Changes from Budget Estimate

The increase of $26,000 over the budget estimate reflects adjustments required to reflect actual operating conditions in 1977.

1978 Plan

The resources allocated to this program are $270,000 and nine positions, an increase of $18,000. The increased funds will provide for additional salary and travel costs and will permit a continuation of the FY 1977 level of technical assistance. Technical assistance to Federal agencies in their implementation of solid waste guidelines will be continued.

SOLID WASTE PROGRAM IMPLEMENTATION

1976 Accomplishments

1976 resources were primarily used for the development of State programs by providing technical information and direct assistance. The objective of these efforts was to develop State programs capable of implementing State control programs, stimulating the recovery of energy and materials from solid waste, reducing solid waste generation, and utilizing land use planning procedures to aid in the acquisition and siting of solid waste management facilities. In addition, assessments of solid waste management programs were conducted and grants were awarded to State solid waste management programs.

1977 Program

The allocation for FY 1977 is 47 positions and $986,000 for salaries and expenses related to regional office personnel. These resources will be used to provide assistance to States. The need for this assistance is paramount in the latter half of FY 1977 and the early part of FY 1978 to prepare States for assuming responsibility for hazardous waste management programs and for meeting the solid waste planning requirements. Federal guidance for designating State solid waste management regions will be published in mid-1977, and criteria for sanitary landfills by the end of FY 1977. As a result of Federal actions, States will have to designate solid waste regions within six months of the Federal guidance and will also be participating in the survey of open dumps to be completed by the end of FY 1978. Once these activities are completed, States will begin the planning process in accordance with Federal criteria issued in mid-1978. All 56 States and territories are expected to participate in this aspect of the program as future Federal funds depend upon approvable States' plans. In addition, the regional offices will be providing technical assistance in technological, marketing, financial, and institutional areas to assist State and local communities in implementing the requirements of RCRA.

1977 Explanation of Changes from Budget Estimate

The increase of $100,000 over the budget estimate is to provide support for the increased regional office responsibilities under RCRA.

1978 Plan

The request for FY 1978 is 37 positions and $1,110,000, for continued support of State assistance activities. However, due to a shift in priorities and a reduction in the emphasis needed in this program, this represents a reduction of 10 positions and $76,000 which is to be redirected to hazardous waste management regulatory strategy implementation. Efforts will include the continuation of work with States to complete development of State plans and begin implementation of these plans; completion of a national survey of disposal sites; continued technical assistance; and to begin the program of closing open dumps.

HAZARDOUS WASTE MANAGEMENT REGULATORY STRATEGY IMPLEMENTATION

1976 Accomplishments

This is a new activity; resources were not provided in 1976.

1977 Program

No resources are requested for FY 1977. However, regional offices will utilize some of the available time of personnel assigned to solid waste program implementation to assist headquarters in its program development work relating to the permit and reporting provision of RCRA. These efforts will primarily concentrate on interacting with headquarters in designing procedures for Federal permit processing and developing monitoring programs for all State hazardous waste management efforts.

1978 Plan

Ten positions and $300,000 are requested for this activity. Regional office participation in the implementation of regulations and hazardous waste management permit systems will remain minimal in FY 1978, although activities will begin in the latter half of the year to prepare for permit issuance. The major implementation of the Federal permit and reporting provisions of the hazardous waste management program will be initiated in early FY 1979. Of the total of 10 positions and $300,000 required for this program in FY 1978, all of the positions and $76,000 will be transferred from the solid waste implementation program.

SOLID WASTE

Abatement and Control

Resource Conservation

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Resource Conservation Strategy Development..	$655	$221	$445	$1,000	+$555
Resource Conservation Strategy Implementation.....	971	600	564	1,190	+626
Total.....	1,626	821	1,009	2,190	+1,181
Permanent Positions					
Resource Conservation Strategy Development..	9	9	10	10	...
Resource Conservation Strategy Implementation.....	10	13	13	13	...
Total.....	19	22	23	23	...

Budget Request

The resources requested for this subactivity are $2,190,000 and 23 positions, an increase of $1,181,000 over 1977.

Program Description

This subactivity relates to the evaluation and demonstration of resource recovery systems and resource conservation techniques. Special policy and analytical studies on various aspects of resource recovery and conservation are also conducted.

Resource Conservation Strategy Development--The purpose of the effort in this area is to examine the factors currently inhibiting resource conservation and to develop policies to encourage and promote such activities. The barriers to resource conservation are economic, technological, and institutional. The major economic obstacles to resource conservation include poorly developed markets for recovered energy and materials, existing fiscal policies which discourage the use of recovered materials, and the failure of various social costs and benefits of resource recovery and conservation to be adequately reflected in the current economic system. Technological problems include major uncertainties associated with resource recovery system operating and capital costs, and the reliability and performance of the various systems now existing or being developed. Institutional constraints arise from the difficulties in implementing such systems under conditions related to the aforementioned technological uncertainties and economic obstacles.

The Act requires a number of special studies to investigate options for facilitating the implementation of resource recovery and waste techniques and alleviating economic, legal, and institutional barriers affecting resource conservation and recovery. Final reports to Congress for seven studies are due in October 1978 with four additional reports due in October 1979. The results of this work will be applicable and accessible to those involved in resource conservation programs at State and local levels.

The Act also requires establishment of an Interagency Resource Conservation Committee to emphasize the importance of developing policies to improve the economics of resource recovery and conservation. The Committee, which is composed of eight cabinet level officials, is required to conduct investigations of existing public policies (including economic incentives and disincentives) in areas such as the feasibility of imposing solid waste management charges on products to reflect solid waste disposal costs. (The Committee is authorized to demonstrate, on a pilot basis, solid waste disposal charges.) Essentially, the Committee is charged with arriving at resource conservation policy options that would revise the whole manner in which natural resources are valued and used in the future. EPA will chair and staff this Committee. A study plan to Congress is due in April 1977 with progress reports following every six months. A final report with recommendations is due by October 1978.

Resource Conservation Strategy Implementation--The activities in this area include the evaluation and demonstration of resource conservation and recovery options, as well as the actual implementation of strategies which would enhance resource conservation.

EPA has funded demonstrations of resource recovery technology in St. Louis, Missouri (recovery of solid waste fuel for firing as a supplement to coal); Franklin, Ohio (processing of municipal solid waste to obtain metals, color-sorted glass, and paper fiber in a recyclable form); Baltimore, Maryland (pyrolysis to produce steam); and San Diego, California (pyrolysis of solid waste to an oil-like liquid fuel usable in utility boilers). EPA is also demonstrating a separate collection system technique for materials recovery in Somerville and Marblehead, Massachusetts. EPA is evaluating (through contracts) new technology developed in the private sector, such as European waterwall combustion energy recovery systems, and markets for recovered materials. The information gathered is being used to develop guidance for State and local governments for their use in planning and implementing resource recovery systems.

The existing demonstrations have proven to be very effective mechanisms for reducing technological and economic uncertainties and stimulating activity by private firms and State and local governments. The St. Louis demonstration has led to six similar projects currently in the construction phase and 10 to 20 projects in the early phases of planning and design. The Franklin, Ohio project has led to three similar projects. All of these projects have been initiated without Federal funding support.

RESOURCE CONSERVATION STRATEGY DEVELOPMENT

1976 Accomplishments

1976 resources provided for policy studies related to waste reduction measures. The contractual efforts in this area primarily focused on the beverage container aspect of waste reduction and on the analysis of product charges to reflect the costs of solid waste management in product prices. Several analytical support efforts were initiated. These included a study of disposable versus reusable milk containers and the development of data on various waste reduction options. EPA also completed an analysis of national returnable beverage container legislation, provided technical information on beverage container issues, and testified at State and local hearings.

1977 Program

The resources for FY 1977 are 10 positions and $445,000, including $165,000 in extramural funds. These resources will be used to initiate mandatory studies and reports to Congress on a number of resources conservation and resource recovery issues, and for supporting the Interagency Resource Conservation Committee. The issues to be studied include resource recovery from glass and plastics, front end source separation, and resource recovery facilities.

1977 Explanation of Changes from Budget Estimate

The increase of $224,000 over the budget estimate reflects adjustments required to provide resources for implementing the Resource Conservation and Recovery Act of 1976.

1978 Plan

The request for FY 1978 is 10 positions and $1 million, including $700,000 for extramural projects. The increase of $555,000 is required to continue the studies initiated in FY 1977 and to provide for their timely completion as required by RCRA. In addition, a preliminary report to the President and the Congress putting forth the study design of all aspects of the economic, social, and environmental consequences of resource conservation will be completed (e.g., the feasibility of employing solid waste management charges on consumer products). Subsequent follow-up reports are due each six months thereafter with the final report due in October 1979.

RESOURCE CONSERVATION STRATEGY IMPLEMENTATION

1976 Accomplishments

1976 funds included $571,000 for contract support. These resources were utilized primarily for technology evaluation and economic analyses. These activities provided the State and local communities with information on technology, managerial problems, and economics associated with resource recovery facilities and source separation techniques. EPA completed the demonstration of refuse derived fuel in St. Louis. The construction of the San Diego (liquid pyrolysis) and Baltimore (gas pyrolysis) projects was completed. EPA completed the evaluation of the Franklin, Ohio, demonstration plant (wet pulping and recovery). In addition, EPA initiated two demonstration projects at Marblehead and Somerville, Massachusetts, to test the potential of resource recovery through a multimaterial source separation system of a residential waste stream.

1977 Program

The resources for FY 1977 are $564,000 and 13 positions. Included are $300,000 for contract support. These resources will be utilized to initiate funding for two or three resource recovery facility evaluations and/or continued funding of the Somerville and Marblehead source separation demonstration projects.

1977 Explanation of Changes from the Budget Estimate

The decrease of $36,000 from the budget estimate reflects a reprogramming to the resource conservation strategy development program in order that work on the high priority mandates of RCRA be initiated as expeditiously as practicable. This reduction results in a deferral of all new grant and contractual efforts. Monitoring of on-going demonstration and evaluation projects will be continued under the reduced program level.

1978 Plan

The request for FY 1978 is 13 positions and $1,190,000. This reflects an increase of $626,000 for additional evaluations of resource recovery systems. These evaluations will consider the institutional, management, marketing, economic, and environmental aspects of full-scale, operational resource recovery systems. Technological inputs to these evaluations wll be provided from the studies and testing carried out under the solid waste Research and Development appropriation.

EPA will evaluate three to five resource recovery systems. Projects under consideration include systems now under construction in Milwaukee, Wisconsin; Chicago, Illinois; and East Bridgewater, Massachusetts. Also, evaluations will be completed on the Baltimore and San Diego pyrolysis plants.

Research and Development

SECTION TAB

SOLID WASTE

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Public Sector.....	$2,811	$4,066	$4,098	$7,718	+$3,620
Peramanent Positions					
Public Sector.....	28	22	22	22	...

Purpose

EPA's research and development efforts in the solid waste program are directed to supporting the objectives of the new Resource Conservation and Recovery Act, passed late in 1976. Major activities are directed toward the development of improved solid waste management techniques, disposal technology, and resource recovery technology. These technological advances will enable local agencies to handle their solid waste problems in a cost effective and environmentally acceptable manner. In addition, the program is developing the scientific base for the possible establishment of standards for hazardous wastes disposal. In particular, information on the fate and processes of such materials flowing through soils and ground water systems is being developed.

Budget Request

An appropriation of $7,718,000 and 22 positions is requested for this program, an increase of $3,620,000 over 1977. Research efforts will be continued at a level commensurate with 1977 efforts except for two areas in which there will be an expansion of emphasis. These two areas are reflected in the increased estimate of 1978 over 1977. The two areas are municipal waste water treatment sludge disposal and resources recovery. In the sludge area, research will primarily be dedicated to the application of waste water treatment sludges to land ($1,800,000). In the resources recovery area the expanded effort will be dedicated primarily to the evaluation of various existing resource recovery systems ($1,820,000).

Program Description

EPA's research and development efforts will be directed toward supporting the goals and objectives of the Resource Conservation and Recovery Act of 1976, P.L. 94-580 (RCRA), through the development of improved solid waste management, disposal technology, and resource recovery technology. These technological advances will enable local agencies to handle their solid waste problems in a cost effective and environmentally acceptable manner.

Research and development efforts in the solid waste program are directed toward the development of technologies necessary to achieve environmentally acceptable cost effective solid and hazardous waste management in which conservation and recovery of resources are among the prime considerations. Included in this objective of the program are the following:

1. Development of methodology and/or equipment to control the release into the environment of materials present in solid and hazardous waste which adversely affect public health and welfare;

2. To evaluate and develop new or improved management techniques, and new or improved methods of collection, storage, transportation, and disposal;

3. To evaluate and develop new or improved methods for the reduction, separation, processing, and recovery of resources; and

4. To establish a technical basis to support the Agency's efforts in developing guidelines for solid and hazardous waste management as required in the RCRA.

1976 Accomplishments

1976 resources included $951,700 for contracts, $866,500 for grants, and $182,000 for interagency agreements. Specific accomplishments included:

- Analytical methods have been developed and compiled for characterizing the composition of municipal solid waste and leachates. A predictive model was developed to more accurately and easily assess the dangers of migrating landfill gases. The model can be used through charts and tables designed to allow convenient insertion of site specific conditions; it will also be distributed in computer coded form with a user manual.

- Laboratory based work has led to an alternative method for modifications of the traditional sanitary landfill method by recirculating leachate through municipal solid waste to accelerate decomposition. Benefits to be derived are intensified methane gas production for efficient recovery, predictable and short periods of strong leachate production, in situ leachate treatments, and more rapid return on landfill to alternative productive uses.

- Symposia were held to disseminate latest research results on the disposal of municipal and hazardous wastes including: (a) the processing of wastes prior to disposal; (b) site modification and management; (c) identification of pollution potential of certain municipal and industrial wastes; and (d) special disposal problems.

- In the area of pollutant movement in soils, research results identified the significant properties of those soils which most strongly retard movement of pollutants and have classified the mobility of many pollutants found in leachates from disposal sites receiving mixed municipal and hazardous wastes.

- The monitoring of the pollutants arsenic, beryllium. cadmium, chromium, copper, iron, mercury, lead, nickle, selenium, vanadium, zinc, cyanide, fluoride, and organics have indicated that pollutants from hazardous wastes are much more soluble in leachates than in water. Therefore, these pollutants will be much more available for movement into underlying or adjacent potable water supplies than would be assumed on the basis of water solubility data.

- Various pesticides and organic wastes were successfully detoxified in a low-temperature microwave plasma apparatus. The system comprises a liter reactor tube through which hazardous material to be decomposed is passed. A plasma is induced in the tube using a 2,450 MHz microwave power supply and applicator. As an example, phenyl mercuric acetate is instantly converted into mercury metal, which is recovered, plus water and gaseous oxides of carbon. Multipound per hour quantities have been detoxified in the unit and it is envisioned that a scaled up system capable of up to 100 lbs. per hour throughput is feasible with current technology. No special gases or chemical are used. Other toxic wastes which have been detoxified are difficult-to-treat compounds like PCB's and the pesticides malathion and methyl bromide.

- Research results indicated that building materials for houses can be made out of waste products such as rice hulls, peanut shells, and woodchips. Building materials produced are two to three times stronger than existing standards, 30 to 50 percent cheaper, and less flammable with less hazardous smoke properties. These materials are being used on a test basis in structures.

- An investigation of acid hydrolysis of solid waste to produce glucose has resulted in a significant advance in the state-of-the-art technology. The work, conducted at New York University, has shown that a combination of ultraviolet and electron beam radiation pretreatment has resulted in a 67 percent increase in yield, halving of the residence time, and a cellulose throughput increase of as much as 20 percent. This conversion process is of interest because glucose is an intermediate input in the production of ethyl alcohol which is an important chemical intermediate and a pollution free and easily stored liquid fuel.

1977 Program

The amount of funds allocated to this program for 1977 is $4,098,000. Of this amount, it is estimated that $1,400,000 will be expended through contract efforts, $1,300,000 for grants, and $600,000 for interagency agreements. The 1977 program includes:

- Research to establish data on the decomposition of landfilled municipal wastes under differing moisture regimes and the development of techniques for collecting and treating leachates. The research will lead to the development of criteria for design and operation of landfills to effect rapid stabilization and settlement so that landfills can be put to use for other constructive purposes in a relatively short-time after closure.

- Completion of an assessment of deep well injection of hazardous wastes and the continuation of studies to assess alternative methods of waste disposal to land other than conventional "landfilling".

- Initiation of research directed toward establishing practical technologies for closing off and taking remedial actions on environmentally unacceptable land disposal sites.

- Technical and environmental assessment of methods for processing and treating hazardous materials; e.g., kepone, DDT, mirex, lindane, chlordane, PCB's, methyl bromide, parathion, malathion, atrazine, and 2-4-D.

- A number of critical short-term studies to assist the Agency in implementing the Resource Conservation and Recovery Act of 1976.

1977 Explanation of Changes from Budget Estimate

The increase of $32,000 over the original budget estimate was the result of reprogrammings required to apply the budget to actual operating conditions.

1978 Plan

Planned FY 1978 funding for this program is $7,718,000. Of this amount, it is estimated that $3,500,000 will be expended in contracts, $2,500,000 in grants, and $718,000 in interagency agreements.

Specific items of research will include:

- Monitoring of established landfill test cells to provide long-term data on environmental impact of municipal solid waste disposal in processed form (shredded and baled).

- Determining the effect of controlled moisture regime on long-term gas and leachate production.

- Field verification of gas migration predictive methods and design criteria for gas control.

- Publication of updated "state-of-the-knowledge" report on contaminant movement in soils.

- Laboratory and field evaluation of chemically stabilized hazardous sludges.

- Field vertification of technologies for closing off and remedying environmentally unacceptable land disposal sites will be initiated.

- Preparation of reports on updated "state-of-the-knowledge" on pesticide disposal and hazardous waste encapsulation.

- Continuation of efforts on the assessment of biodegradation processes for the treatment of selected hazardous wastes.

- Continuation of efforts in resource recovery research directed toward improved resource recovery through (1) improved preprocessing systems and development, (2) development of alternative produce application, and (3) the development of product specifications, quality control procedures, and measurement techniques.

The $3,620,000 increase will support an expansion of research in two areas identified for special attention in the Resource Conservation and Recovery Act: the land application of sludges and the evaluation of resource recovery systems.

The increase in FY 1978 for land application of sludge is $1,800,000. One of the major environmental problems addressed by the RCRA of 1976 is the increasing amount of sludges destined for land application. This increased budget will supplement the existing program in land application of sludge and will be planned and implemented within the water quality public sector activities program in order to effectively utilize existing resources.

The additional resources will be used to undertake projects to define interim guidance on site monitoring plans, preparation of technology state-of-the-art reports for an expanded technology transfer program, assessment of the material balances of persistent and potentially toxic organics of publicly owned treatment works influent and effluent streams, interpretive studies of the effects of plant uptake of metals and toxicants on public health, and expansion of current efforts to define "safe" loading rates for a broad spectrum of land application alternatives. The purpose of this research would be to determine when sludge can be applied, what amendments to the sludge are required and what quantities can be applied safely.

The increase in FY 1978 for technological evaluation of resource recovery systems is $1,820,000. Existing resource recovery systems will be evaluated in conjunction with the assessments carried out under the solid waste Abatement and Control appropriation. These technological evaluations will focus on the performance, cost, and operational features of existing systems in order to provide "state-of-the-art" information to the technical assistance teams which will offer guidance to States and municipalities under Section 2003 of P.L. 94-580. The evaluations will examine the systems to determine environmental impact; consumption and conservation of energy; resultant product quality; overall system operability, maintainability and reliability; and attendant costs. Considerable emphasis will be placed on the evaluation of preprocessing equipment which is a key to sucessful resource recovery system operation. There are 30 or more manufacturers now engaged in manufacturing preprocessing components yet there is a dearth of information relating to their performance. This lack of technical performance information has contributed to widespread resistance in applying such technology.

Enforcement

SECTION TAB

SOLID WASTE

Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Solid Waste Enforcement..	...	...	...	$1,000	+$1,000
Permanent Positions					
Solid Waste Enforcement..	...	...	5	5	...

Budget Request

Five positions and $1 million are requested for solid waste enforcement activities in FY 1978. The resources requested will support development of solid waste compliance monitoring and enforcement procedures, particularly those relating to hazardous waste management.

Program Description

The EPA solid waste enforcement program is authorized by the Resource Conservation and Recovery Act of 1976 (RCRA). This new legislation provides EPA with new regulatory authorities, particularly in the regulation of hazardous wastes.

Under the RCRA, a regulatory program is being implemented wherein criteria will be promulgated identifying hazardous wastes. RCRA requires EPA to establish record-keeping, labeling, containerization, and reporting requirements applicable to facilities which generate, transport, store, treat, or dispose of hazardous wastes. Facilities which store, treat, or dispose of hazardous wastes will be issued permits by EPA or by cooperating State agencies. A manifest system will be developed by regulation to log and track the movement of such hazardous wastes.

Procedures for the inspection and sampling of facilities which generate, transport, store, treat, or dispose of hazardous wastes will be developed. Guidelines will be promulgated which establish standards of evidence needed to support enforcement actions. Rules of practice governing the issuance of compliance orders and hearings conducted in the assessment of administrative penalties or the suspension or revocation of permits will also be promulgated.

1977 Program

The FY 1977 budget includes five positions for solid waste enforcement. The solid waste enforcement program in FY 1977 has three major focuses: (1) participating in the development of an Agencywide plan for the implementation of the RCRA; (2) developing the compliance monitoring aspects of regulations establishing standards for facilities which generate, transport, store, treat, or dispose of hazardous wastes and of regulations providing for the issuance of permits to all hazardous waste storage, treatment, and disposal facilities; and (3) developing policies and procedures for the inspection of facilities which generate, transport, store, treat, or dispose of hazardous wastes, guidelines and rules of practice governing the issuance of compliance orders, and the assessment of civil or criminal penalties against persons who violate the provisions or regulations of RCRA.

1977 Explanation of Changes from Budget Estimate

There is no change in the funding.

1978 Plan

The FY 1978 budget request for this activity is five positions and $1 million, of which $875,000 will be used for contracts to develop procedures, checklists, and manuals for inspection and sampling activities, analyze the impacts of phasing the implementation of the RCRA regulatory program, and develop an ADP enforcement management system. In FY 1978, the hazardous waste regulations required to be promulgated by RCRA will become final.

The enforcement activity will assist in the development of regulations establishing standards for facilities which generate, transport, treat, store or dispose of hazardous wastes, and in the promulgation of regulations providing for the issuance of permits to facilities which treat, store, or dispose of hazardous wastes.

All of the substantive regulations for the control of hazardous wastes are to become final and enforceable in late FY 1978. Accordingly, enforcement will establish policies and procedures for the inspection and sampling of facilities which generate or handle hazardous wastes. Guidance will be provided regarding standards of evidence and procedures to assure sample integrity and chain of custody. Guidance and rules of practice governing the issuance of notices of violation, compliance orders, and the assessment of civil or criminal penalties against persons who violate the provisions or regulations of RCRA will be fully promulgated.

Pesticides

SECTION TAB

PESTICIDES

	Ford Submission Pos.	Ford Submission Amount	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount
	(dollars in thousands)		(dollars in thousands)	
Abatement and Control:	637	$24,050	657	$24,420
Registration and Tolerances	365	10,209	382	10,579
Product Registration	(227)	(6,615)	(244)	(6,985)
Criteria and Standards	(138)	(3,594)	(138)	(3,594)
Hazard Evaluation	89	5,264	89	5,264
Epidemiologic Studies	(10)	(2,628)	(10)	(2,628)
Residue Profiles	(36)	(1,689)	(36)	(1,689)
Accident Investigations	(14)	(315)	(14)	(315)
Market Sample Analysis	(29)	(632)	(29)	(632)
Federal and State Program Support	183	8,577	186	8,577
Information Services	(65)	(1,982)	(65)	(1,982)
Program Cooperation and Aid	(118)	(6,595)	(121)	(6,595)
Enforcement:	185	10,398	185	10,768
Pesticides Enforcement	185	10,398	185	10,768
Pesticides Enforcement	(185)	(10,398)	(185)	(10,768)
Research and Development:	151	10,756	156	10,798
Health and Ecological Effects	151	10,756	156	10,798
Health Effects	(66)	(5,696)	(71)	(5,738)
Ecological Effects	(50)	(2,560)	(50)	(2,560)
Substitute Chemicals	(35)	(2,500)	(35)	(2,500)

PESTICIDES

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$24,974	$24,175	$24,067	$24,050	-$17
Permanent Positions..	632	642	637	637	...
Transition Quarter...	13,240	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	3,463	4,745	5,000	10,398	+5,398
Permanent Positions..	162	153	165	185	+20
Transition Quarter...	1,160	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	8,829	10,887	10,656	10,756	+100
Permanent Positions..	168	157	156	151	-5
Transition Quarter...	4,212	N/A	N/A	N/A	N/A
Total, Pesticides Program:					
Appropriation.....	37,266	39,807	39,723	45,204	+5,481
Permanent Positions..	962	952	958	973	+15
Transition Quarter...	18,612	N/A	N/A	N/A	N/A
Outlays.....	38,882	34,880	37,200	44,700	+7,500
Authorization Levels.	79,865	43,335	23,600*	a/	

*Available through March 31, 1977. Remaining funds are considered authorized by virtue of the Appropriation Act.

a/ Authorization pending.

OVERVIEW AND STRATEGY

The EPA pesticides program is based upon two specific approaches. One, pesticide products are registered to prevent harmful products from entering the market and to require labeling to assure proper use. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended in 1972, and the 1975 amendments to the Act require that the more than 33,000 pesticides presently registered under Federal authorities, and 7,000 products sold on an intrastate basis, be registered or reregistered and classified for general or restricted use by October 21, 1977. As part of the reregistration process, EPA has scheduled approximately 179 chemical compounds for an intensive review to determine whether they cause unreasonable adverse effects on the environment. These compounds have been identified as potential candidates for the Agency's full Rebuttable Presumption Against Registration (RPAR) process because they appear to exceed certain risk criteria. Products that have been presumed against by the Agency can only be registered or reregistered if it is shown (1) that the scientific data indicating unacceptable levels of risk are not valid, (2) that any risk predicted by the data will not be manifested in the environment under actual use conditions, or (3) that the benefits of using the compound exceed the risks.

Two, the use of pesticides is controlled. Only certified applicators or persons under their direct supervision may apply pesticides classified for restricted use. States certify the applicators and training is being provided through a joint effort by EPA, the Agriculture Extension Service, and State agencies. It is expected that more than two million private applicators and over 100,000 commercial applicators will be certified by October 1977, as required by the Act or in time for the 1978 growing season.

The previous strategy for the pesticide reregistration program was to examine pesticide ingredients only for classification (general or restricted) and for label reregistration while deferring in-depth assessment of the health safety of chemicals until registration was due for renewal at the end of five years. The operating assumption had also been that previous data and tests in the files were valid. However, recent questions as to the completeness of data previously submitted by pesticide companies, and the reliability of previous testing and interpretations against present scientific and regulatory standards, have prompted a reappraisal of reregistration policies. In April 1976, the Agency developed, in cooperation with the Food and Drug Administration, an auditing program to examine laboratory data validity. Serious questions have been raised about the adequacy of testing in EPA file, and the completeness of the Agency's own review and follow-up. EPA has decided it needs to determine if toxicological data submitted in the past is now acceptable. No longer can it be accepted that previous test reports are complete and accurate and that prior reviews, performed on the basis of scientific standards at that time, are still valid.

The reexamination of previously submitted data will cause delays in the reregistration of non-RPAR products. Reregistration of these products will continue at least into FY 1978 and 1979. In order to avoid an adverse impact on State certification of private and commercial applicators, priority will be given to scheduling examination of prior reviews of pesticides likely to be classified for restricted use.

State pesticide activities under the various sections of FIFRA will shift in FY 1978 from a predominantly developmental phase to full implementation of programs and their surveillance and maintenance. For States to become more actively involved in implementation of the Act, continued Federal assistance will be required.

Activities under the enforcement program primarily support the control of supply and use. The FY 1978 pesticides enforcement program will focus on the following objectives: ensuring user compliance with label directions, ensuring industry compliance with registration and classification requirements, and developing Federal/State cooperative agreements for the enforcement of the FIFRA. In addition, the program will be expanded to include new areas not previously addressed, e.g., the verification of test data submitted in support of product registration.

User compliance activities will focus on ensuring that only certified applicators are using restricted pesticides and that professional mass applications of pesticides are in conformance with label directions. The industry compliance efforts will be directed at ensuring that products subject to the October deadline are sold and distributed in accordance with registration and classification requirements.

In FY 1977, between 15 and 20 States will be involved in cooperative enforcement programs implemented with the support of grants-in-aid. These programs bring localized expertise into the national regulatory effort and provide invaluable assistance in the areas of detection and prevention of pesticide misuse and ensuring compliance of intrastate products and producers with the registration and classification requirements. In FY 1978, EPA intends to develop cooperative agreements with additional States, with the ultimate intention of involving all of the States in this program.

The Federal Insecticide, Fungicide, and Rodenticide Act also authorizes research and development activities providing scientific data to the program offices on the health and ecological effects of pesticides, and developing methodologies for monitoring, analysis, and quality control to determine pesticide residues. This information is needed to meet mandated regulatory and control responsibilities for pesticides, including registration, label reviews, hazard classification, and tolerance setting.

The primary objective of the health effects research on pesticides is to investigate the potential hazards of the major classes of pesticides now registered by EPA and in common use. This research provides evaluations of the acute and chronic exposures to pesticides, their residues and their metabolites, and evaluations of pesticides effects upon normal biological functions. It also includes laboratory investigations of biologic or "new generation" pest control agents such as insect pathogens or chemosterilants. The development and validation of new toxicological methods to be used for registering pesticides and the development and application of analytical methods for detecting these agents in environmental samples and human tissue are also a part of this program.

The ecological effects program emphasizes research on the determination of exposure effect relationships and fate of pesticides in terrestrial and aquatic fresh water, estuarine, and marine ecosystems, and includes studies on routes and rates of pesticide movement through the ecosystem and man. Additional investigations address pesticide microbial interactions and the effects of antifouling biocides and disinfectants on estuarine environments.

Another aspect of the pesticides program concentrates on toxicological testing of substitute pesticide chemicals. The Agency is required by law to conduct a thorough review of the scientific and economic implications of utilizing alternate (substitute) chemicals that replace cancelled compounds. This includes agents such as DDT or compounds in litigation related to cancellation for use in pest control, including new and old registered pesticides. The review process, as established under this mandate, provides for developing scientific criteria and protocols for establishing the hazards associated with the use of each compound.

SUMMARY OF INCREASES AND DECREASES

	(in thousands of dollars)
1977 Pesticides Program.....	$39,723
Abatement and Control.....	-17
The small net decrease is a result of major shifts of funding due primarily to decreased Federal support of State certification and training programs (-$2,699,900) to high priority registration/reregistration activities (+$2,109,700) and hazard evaluation programs (+$573,500).	
Enforcement.....	+5,398
The increase includes $4.0 million for grants-in-aid to establish additional Federal/State cooperative enforcement agreements. The remainder of the increase is for expanded enforcement activities resulting from the new FIFRA provisions.	
Research and Development.....	+100
The increase results from a 1977 reprogramming for BACER. The increase restores the program to the 1977 level.	
1978 Pesticides Program.....	45,204

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of $45,204,000 is requested for 1978. This request, by appropriation, is as follows:

Abatement and Control.....	$24,050,000
Enforcement.....	10,398,000
Research and Development.....	10,756,000

This represents an increase of $5,480,800 over the 1977 pesticides program and includes shifts in the abatement and control area to reflect increased contract support of reregistration and registration data and literature searches and retrievals, and risk benefit analyses, +$2,109,700; integration of ongoing programs into a hazard evaluation system, increased pesticide residue profile analyses, examination of alert triggering mechanisms, and increased data information requirements, +$573,500; and a reduction in the Federal support of State certification activities, -$2,699,900. An increase of $4 million is requested for grants for the Federal/State cooperative pesticides enforcement program; an additional $1,397,800 reflects the increased emphasis on pesticides use observation activities and expansion of Federal/State cooperative enforcement activities. The increase of $100,000 in the health effects research activity reflects the restoration of a one time transfer in 1977 to the air media to provide support for the Biological and Climatic Effects Research (BACER) program.

2. Change from Original 1977 Budget Estimate

Changes from the original budget estimate are as follows:

	(in thousands of dollars)
Original 1977 estimate.....	$39,807
Transfer for BACER.....	-100
Office of Research and Development reprogramming.....	-131
Pay raise costs.....	-68
Office of Enforcement reprogramming..	+130
Regional reprogramming.....	+31
Transfer from program management.....	+54
Current 1977 estimate.....	39,723

A transfer of $100,000 was made to the air media to provide support for the Biological and Climatic Effects Research (BACER) program.

A proposal will be submitted to the Committee, as appropriate, for separate consideration for the research and development reprogramming to the interdisciplinary media for increased costs on efforts such as the Kepone incident, dioxin disposal, and certain regional oxidant transport studies, -$131,000.

A net decrease of $68,000 was transferred to other media to provide support for increased salary costs.

An increase of $130,000 from other media provides support for growing litigation activity and to develop a coordinated approach to toxic substances control.

Regional operating adjustments were required in order to support actual operating conditions. The cumulative change of these adjustments is +$31,000.

A transfer of $54,000 was made from the program management media to reflect the transfer of personnel from the management activity.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations.....	$37,266	$41,354
Miscellaneous increases and decreases detailed above.....	-76	...
Change in amount of carryover funds available.....	+8,564	-1,631
1977 reductions to program.....	-4,400	...
Increase for enforcement activities	...	+5,398
Restoration of BACER support.....	...	+80
Total estimated obligations.....	41,354	45,201
(From new obligation authority)..	(39,253)	(44,731)
(From prior year funds).....	(2,101)	(470)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The increases and decreases to the budget estimate, as detailed previously, are expected to result in a net decrease of -$76,000 in obligations.

The major change in obligations results from the amount of prior year funds available for obligation. Carryover funds effecting obligations after FY 1976 result in a change of $8,564,000 from those available in 1976. Carryover funds are expected to result in obligations of $2,101,000 in 1977, but only $470,000 in 1978, a decrease of $1,631,000.

Other changes in the 1978 budget for the pesticides media are expected to result in a net increase of $5,478,000. This change reflects the increases for increased pesticides enforcement activities and the restoration of the BACER transfer.

PESTICIDES

PROGRAM LEVELS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
Completed registration data review of new products and amendments.....	5,700	19,000	10,000	16,000	+6,000
Completed reviews of data files on reregistration actions of previously registered products.....	...	32,000	10,000	12,000	+2,000
State Certification Plans for Applicators:					
Final Approval.....	1	56	30	54	+24
Contingency Approval.....	11	56	18	...	-18
State Plans/Programs Monitored.....	...	...	25	56	+31
Applicators Certified:					
Private.....	5%	...	75%	100%	+25%
Commercial.....	33%	...	100%	100%	...
Applicators Recertified.....	...	...	...	10%	+10%
Establishment Inspections...	2,264	1,480	1,420	135	-1,285
Use/Re-entry and Experimental Use Observations...	1,461	...	1,091	2,295	+1,204
Marketplace Investigations..	2,947	...	1,558	225	-1,333
Import Investigations.....	465	...	418	450	+32

Abatement and Control

SECTION TAB

PESTICIDES

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Registration and Tolerances.....	$9,087	$8,250	$8,099	$10,209	+$2,110	P-9
Hazard Evaluation.....	4,321	4,890	4,691	5,264	+573	P-13
Federal and State Program Support.....	11,566	11,035	11,277	8,577	-2,700	P-18
Total.....	24,974	24,175	24,067	24,050	-17	
Permanent Positions						
Registration and Tolerances.....	357	374	362	365	+3	
Hazard Evaluation.....	90	93	89	89	...	
Federal and State Program Support.....	185	175	186	183	-3	
Total.....	632	642	637	637	...	

Purpose

The EPA pesticides abatement and control program has the major responsibility for implementing the requirements of the Federal Insecticide, Fungicide and Rodenticide Act as amended and consequently the lead role in the design and implementation of the Agency's pesticide strategy. Supply control serves to keep hazardous chemicals off the market so as to prevent unreasonable adverse effects to man or the environment. This is accomplished through registration of new products and reregistration of previously registered products, wherein newly submitted toxicological data or that submitted in the past are examined to determine acceptability under current scientific and regulatory standards. The reregistration process allows the Agency to make a rebuttable presumption against registration of pesticides which appear to cause unreasonable adverse effects to human health or the environment. In addition, control is exercised through the process of classification of pesticide products for restricted or general use, pesticide residue tolerance-setting, and product labeling.

Intrastate as well as interstate products are now subject to the requirements of the new Act which has increased significantly the Agency's overall registration/classification responsibilities. Two of the most significant impacts on registration operations under the new requirements of the Act are, first, the significantly increased timeframe required to examine records of prior reviews of toxicological data, particularly those submitted in support of tolerance petitions over the past 25 years, and second, the scientific skill requirements necessary to support the more involved registration process.

The hazard evaluation system exists to facilitate decisions on registration, cancellation, suspension, classification and labeling of specific products or classes of products. It serves to provide an information base for potential changes to registration requirements, and to point out the need for potential changes in the pesticides program.

Federal and State program support activities, now that the development of certification and training plans has already been completed or will be completed in 1977, will be oriented to monitoring and maintenance of the program, which is expected to be for the most part in full operation in 1978. Refinement and maintenance of State programs will require significant levels of regional technical support as well as continued Federal funding though at lower than previous levels. Major efforts to improve public understanding of pesticides policies, regulations, and decisions, as well as to encourage public participation in the decision-making process are also included in this program. Additional program activities include educational programs on integrated pest management, such as developing a curriculum and training programs on ecological systems management relating to both the urban and agricultural areas in cooperation with other Federal and State agencies and the private sector; and dissemination of pesticides use information to the public.

The EPA enforcement program is directed at ensuring industry compliance with registration and classification requirements developed under the Abatement and Control appropriation. Pesticides research supports abatement and control activities.

FY 1978 pesticide program objectives and priorities are: to ensure that all reregistration actions have determined the acceptability of toxicological data submitted in the past under current scientific and regulatory standards; to reduce 1977 backlogs of registration actions on new product uses and amendments; to have an integrated hazard evaluation system in operation; and to have in operation, through the Regions, a program for State certification and training of pesticide applications.

PESTICIDES

Abatement and Control

Registration and Tolerances

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
		(dollars in thousands)			
Appropriation					
Product Registration.....	$5,139	$5,620	$4,505	$6,615	+$2,110
Criteria and Standards....	3,948	2,630	3,594	3,594	...
Total.....	9,087	8,250	8,099	10,209	+2,110
Permanent Positions					
Product Registration.....	208	267	224	227	+3
Criteria and Standards....	149	107	138	138	...
Total.....	357	374	362	365	+3

Budget Request

An appropriation of $10,209,000 and 365 positions is requested for 1978. The increase of $2,109,700 and three positions over the 1977 level will be directed to pesticide product registration.

Program Description

The major efforts of the program are directed toward (1) reregistration of previously Federal and State registered pesticides; (2) completing registration and classification actions on new chemicals, new products and new product uses and amendments; (3) setting new and reexamining existing domestic tolerances for pesticides residues on food and feed crops, as well as participating with FAO on the establishment of international tolerances. Special pesticide reviews of products that are candidates for rebuttable presumptions are a significant new activity. During 1978, priority will be given to completion of carryover reregistration from 1977 although the Agency expects a continuation of reregistration at least through 1978 and 1979. Much of the data identified as reregistration data gaps during 1976 and 1977 will be submitted by registrants in 1978, 1979, and 1980. Intensive scientific evaluation of these data as well as continuing the in-depth reexamination and validation of previously submitted toxicological data on other products in the reregistration process will have the highest priority. The temporary decline of new product applications in 1976 and 1977 is expected to readjust in 1978 requiring a high concentration of effort to prevent processing backlogs resulting from an extensive data review being given to every application. The Agency works closely with the Department of Agriculture on the collection of pesticide use data as a vital input to the overall registration process and there is also close coordination of effort with State agencies and industry. Scientific and socioeconomic studies are an integral part of the reregistration process and public participation is actively solicited at key points in the decision making process through notices in the Federal Register and other means.

PRODUCT REGISTRATION

1976 Accomplishments

Contract support of $1.1 million was used for literature searches and data management support for reregistration. Issuance on January 22, 1976, of the Revised Interim Policy Statement on test data compensation permitted the first call in of products for reregistration. A schedule was published in February 1976 giving the approximate call in dates and data requirements for the first 650 chemicals. Manpower reprogramming was ncessary within the pesticides program to the extent of almost 60 man-years in order to support priority reregistration activities in 1976. A new office was established to handle the special reviews of pesticides that are candidates for rebuttable presumption. Eighteen chemicals were under review of the 179 active ingredients (14,000 products) which have been scheduled for examination under the rebuttable presumption process.

Over 13,000 registration actions were completed on applications for new product uses, amendments and resubmissions. Implementation of reregistration and problems encountered in the implementation of the test data compensation regulations resulted in a temporary decline in handling of new product applications. Review time is increased over that prior to the new regulations because of the more extensive data review requirements. Action was completed on 144 registrations submitted by States under interim special local needs certifications. Two hundred eighty-three Experimental Use Permits have been issued; and there have been 53 completed emergency exemption actions.

1977 Program

A total of 224 positions and $4,505,600 is available for FY 1977. Top priority reregistration commitments for FY 1977 and ensuring strict quality controlled data review and evaluation will require significant Agency efforts.

The reregistration approach for 1977 and future years will be to examine files more closely and determine whether studies are valid, and proper follow-up has occurred; to develop standard procedures for reviews to document findings; to present all pertinent findings to a national review panel; and to expand the rebuttable presumption against registration (RPAR) process as well as the review of all other pesticides for which there are tolerances or exemptions from tolerance requirements to include examination of prior reviews of toxicological data. This means that for the total of about 1,300 active ingredients there will be screening and summarization of previous reviews including original test reports, etc. and a redetermination of the adequacy of previous toxicological data. EPA is in the process of cataloging all company data in the files and presently has an index of 50,000 volumes of company data. The Agency is also cataloging the tests within each volume (estimated at 16-18 tests per volume). The increased timeframe now required for reregistration data review and validation necessitated by this approach is expected to curtail the action completion rate in 1977.

The trade secret provisions of the Act significantly affect the availability of data. Ten cases involving data compensation and trade secret disputes are currently at issue in the courts. Pending final decision the Agency has been enjoined from considering any data in question in support of other registrants applications. This could affect approximately 12,000 products on which no registration or reregistration actions may be taken until the courts make a final ruling. The impact of reregistration and problems encountered in implementation and interpretation of test data compensation which resulted in a temporary decline of new product registrations in 1976, is expected to readjust upwards to an estimated 10,000 in 1977.

The Agency is planning to reexamine existing pesticide tolerances to ensure compliance with current criteria for safety and residue data and to assess total human exposure. Also the establishment of tolerances for minor uses which have been of increasing concern to growers and States because of lack of interest among pesticide manufacturers, calls for EPA to undertake a coordinated effort with USDA and the States. The Agency also expects to be working closely with States and regions handling actions on an estimated 12,000 State registrations of pesticides for special local uses and 125 State issued Experimental Use Permits.

FY 1977 objectives are: to complete the review of data files relating to the reregistration/classification of an estimated 10,000 products; to continue the 1976 program and complete special reviews and documents on 179 RPAR candidate compounds; to complete registration data review and classification on an estimated 10,000 new product uses and amendments; and to complete reviews on 280 new tolerance petitions and 280 revised tolerances.

1977 Explanation of Changes from Budget Estimate

The net decrease of $1,115,000 from the budget estimate reflects the transfer of $1,044,000 primarily to the program element criteria and standards for Rebuttable Presumption Against Registration (RPAR) and reregistration support and staffing of the Office of Special Pesticide Review (OSPR); the transfer of $9,000 to program cooperation and aid to assist in the applicator certification program; the transfer of $37,000 to information services to assist in reregistration support; the transfer of $67,000 to other media to support increased pay costs; and the transfer of $42,000 from the program management media to reflect a transfer of management staff.

1978 Plan

Two hundred twenty-seven positions and $6,615,300 are requested for FY 1978, of which $2.0 million will be for contracts used for registration and reregistration data and literature searches, retrievals and validation. Highest priority will continue to be given to reregistration in 1978 and to the registration of new chemicals, new products and uses. In 1978, the Agency expects the special pesticide review program to continue major commitments in the rebuttable presumption process as well as giving extensive support to over 30 administrative hearings requested by registrants adversely affected by the RPAR process as a result of actions in 1977. The present workload of 179 compounds will extend into 1978 and at least an additional 50 compounds are also expected to be referred for RPAR processing, although restricted use products are expected to be reregistered by October 21, 1977, the Agency still expects a workload carryover into 1978 of at least 12,000 reregistrations which will need to be handled. There is in addition, increasing evidence that many inactive (inert) ingredients may pose health hazards (some may be carcinogens) and since no examination is currently being made, the Agency will probably also have to undertake scientific reviews and assessments in this area. The bulk of the estimated 7,000 intrastate products now requiring Federal registration are expected to be carried over from 1977 and become a 1978 workload. Also, data identified as gaps during late 1976 and early 1977 reregistration reviews will be submitted during 1978 and subsequent years. Evaluation of this data and subsequent processing of interim reregistrations to full reregistrations will add to the 1978 workload. Incoming applications for new product registrations and amendments are expected to increase and reach about 16,000. The adequacy of Agency systems capabilities for data search and retrieval will be a major factor in determining if RPAR, reregistration and registration decision processes are completed on time. The $2,110,000 increase is for contract support of reregistration and registration data and literature searches and retrievals, and risk benefit analyses, all of which will provide critical input to evaluations and decisions on the adequacy and validity of previously submitted data. The three position increase is the return of several positions moved to the Federal and State program support subactivity in 1977 to assist in the applicator certification program.

CRITERIA AND STANDARDS

1976 Accomplishments

In 1976, $945,000 in contracts were used for dioxin studies and farm worker reentry safety data. The effort conducted in this program in 1976 focused primarily on the revision and development of guidelines for registering pesticides including information on tests that must be conducted and on data which must be supplied by registrants when making application for the registration of pesticides. Included in this effort also was the development of standards and criteria, which are necessary ingredients for the guidelines. A preliminary draft of the guidelines was proposed and published in the Federal Register on June 25, 1975. Comments on this draft were received from numerous companies, associations, and other institutions in the early months of 1976. These comments have formed the basis for a major revision of the guidelines in the remaining months of 1976. The effort on the guidelines was organized in accordance with its four major parts, i.e., product performance, labeling, chemistry and hazard evaluation. Standards and criteria were initiated or developed for disinfectants, antimicrobials, and controlled release formulations.

1977 Program

One hundred thirty-eight positions and $3,593,700 are available for FY 1977. Of these resources $600,000 will be used for reregistration risk/benefit studies and contractual studies performed on the role of inert chemicals in pesticide formulations. The effort on the guidelines for registering pesticides will continue in 1977, and completion of the four major parts is expected by the latter part of the fiscal year. Some sections cannot be completed, however, until acceptable standards, criteria and test protocols have been developed, and work will continue on such development throughout the year. Because of the importance of the Agency's conveying data requirements to applicants and other interested parties, it is intended to publish the hazard evaluation sections of the guidelines in April 1977. Chemistry, product performance, and label development sections will be published in final about June 1977. Standards and criteria will be completed for the efficacy of flea and tick collars, vertebrate repellants, insect pheromones, insect growth regulators, insect fungi, insect protozoa and nematodes. Test protocols will be developed for in-vitro carcinogenesis and thyroid inhibition. Regulations will be developed for pesticide tolerances and controlled release formulations.

1977 Explanation of Changes from Budget Estimate

The increase of $964,000 over the budget estimate reflects a transfer of $992,000 from product registration for RPAR support and staffing of the Office of Special Pesticide Review, and a transfer of $28,000 to other pesticides activities to support increased salary costs.

1978 Plan

One hundred thirty-eight positions and $3,593,700 are requested for FY 1978 of which $600,000 will be used for contracts to develop standards and criteria for registration, guidelines for registering pesticides, and risk/benefit studies. Additions, revisions, and modifications will be made to update the registration guidelines based on comments stemming from the published version and from new developments in the pesticide industry. Specific additions will be guidelines for the registration and labeling of insect pheromones, growth regulators, microbials, fungi, protozoa and nematodes. Other important additions include guidelines for pesticide experimental use permits, tolerance levels, disposal and storage. Also standards and criteria will be developed for the use of viruses, biological pesticides, cooling tower additives, spray drift, bioaccumulation of pesticides in fish and aquatic organisms, and registration requirements for inert chemicals. Test protocols will be developed for measuring the delayed neurotoxicity effects of pesticides and for determining possible chronic effects of using aldrin, dieldrin, chlordane and heptachlor in and around homes.

PESTICIDES

Abatement and Control

Hazard Evaluation

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Epidemiologic Studies..	$2,296	$2,826	$2,628	$2,628	...
Residue Profiles.....	958	1,164	1,116	1,689	+$573
Accident Investigations.....	426	262	318	315	-3
Market Sample Analysis.....	641	638	629	632	+3
Total.....	4,321	4,890	4,691	5,264	+573
Permanent Positions					
Epidemiologic Studies..	9	13	10	10	...
Residue Profiles.....	36	37	36	36	...
Accident Investigations.....	14	10	14	14	...
Market Sample Analysis.....	31	33	29	29	...
Total.....	90	93	89	89	...

Budget Request

An appropriation of $5,264,000 and 89 positions is requested for 1978. This reflects an increase of $573,500 over the 1977 level for hazard evaluation which is to be applied to residue profiles.

Program Description

Determination of unreasonable adverse effects is the major focus of the pesticides regulatory process, and a large proportion of registration data requirements are oriented toward the determination of hazards. Since 1974, the Agency has been developing new systems and integrating current systems for structuring, evaluating and interrelating scientific data on hazards to human health and the environment. The Hazard Evaluation System (HES) exists to facilitate decisions on the registration, cancellation, suspension, classification and labeling of specific products or classes of products; to provide an information base for potential changes to registration requirements; and to identify the need for potential changes in the pesticides program. The HES consists of a series of activities extending throughout the Agency and is designed to carry out a series of functions: defining and delineating pesticide hazards; alerting the Agency to potential pesticide problems; collecting, verifying and analyzing information; predictive modeling; and hazard determination. Conceptual development of the system has been completed and the major tasks in system design will be completed in 1977.

EPIDEMIOLOGIC STUDIES

1976 Accomplishments

In 1976, $2.0 million was used for contracts to conduct epidemiologic studies. The program conducted studies into the relationships between pesticide exposure and human health including selected toxicological studies and determination of pesticide use patterns in study areas. It is primarily a contract program operating through State universities and health departments. During 1976, studies were made on such things as hospital admitted pesticide poisonings, pesticide usage, Kepone residue in human milk, Chlorinated Hydrocarbons in human milk, and pesticide health effects on farm workers (reentry), as well as numerous others of significance.

1977 Program

Of the 10 positions and $2,628,000 available in FY 1977, $2.4 million in contracts will be used for epidemiologic studies. The 1977 program will: (a) Provide data and information on the magnitude of the absorption of pesticidal chemicals (residues) in the human population and characterize them by types, amounts and uses of pesticide. Examples: National samplings of organochlorines in human milk and National samplings of blood and urine for pesticide residues; (b) Provide the services of peer scientific consultants for evaluating the scientific validity of registrants' human risk data for the RPAR process; (c) Produce data and information on a short-term basis (generally one year or less) on human populations exposed to pesticides in order to determine related health effects, e.g., studies of the effects of nitrosamines on human health; (d) Provide data and information on annual pesticide poisonings; (e) Undertake special quick response studies as needed to support nonprogrammable events, e.g., the Kepone incident at Hopewell, Virginia.

1977 Explanation of Changes from Budget Estimate

The decrease of $198,000 from the budget estimate reflects a reprogramming of $195,000 to program cooperation and aid to assist in the applicator certification program and a transfer of $3,000 to other pesticides activities to support increased salary costs.

1978 Plan

Ten positions and $2,628,000 are requested, the same level as 1977. $2.4 million in contracts will be used for epidemiologic studies. The work effort during 1978 will be essentially an extension of the 1977 program. The Epidemiologic Studies Program (ESP) will provide much of the human health effects data comprising the output of the hazard evaluation system and will continue to assist in the analyses and interpretation of data with regard to human health effects and pesticide exposure.

RESIDUE PROFILES

1976 Accomplishments

In 1976, $200,000 was used for pesticide residue profile analyses. This program includes the collection and analysis of air, water, soil, human, and estuarine samples to determine the levels and trends of pesticide residues.

During 1976, ambient pesticide monitoring continued for human adipose tissue, urban soil, surface water and sediment, and estuarine and ocean finfish. Limited air monitoring was done at five locations across the country. Monitoring of agricultural crops was completely suspended because of funding limitations.

A new blood serum and urine survey was initiated cooperatively with the U.S. Public Health Service. This and the other cooperative programs (surface water and sediment, estuarine and ocean) represent very significant savings to the Agency, since samples are provided without cost by the cooperating agency.

Activities undertaken were:

Human Monitoring--1,600 adipose samples collected at 75 sampling locations.

Urban Soil Monitoring--400 soil samples collected from 14 cities.

Air Studies--60 samples from 5 locations.

Water Monitoring--900 surface water and bottom sediment samples from 153 sampling stations.

Blood Serum and Urine Monitoring--5,000 samples

Special studies undertaken in 1976 included a cooperative study with the State of West Virginia on the accumulation and persistence of the herbicide Tordon 10K (picloram) in water and sediment following its use for control of multiflora rose. A second special study was undertaken to determine the incidence and concentrations of mirex in adipose tissue from humans residing in the Imported Fire Ant Control Program area in the Southeastern U.S.

During 1976, the National Pesticide Monitoring Plan draft was significantly revised, and will soon be published in the Federal Register.

1977 Program

Resources of 36 positions and $1,115,900 are available in FY 1977, of which $300,000 will be used for contractual residue profile analyses. For 1977, most monitoring programs will continue at 1976 levels of effort. The PHS cooperative blood serum and urine survey will continue. Monitoring of agricultural soil and raw agricultural crops will be reinstated on a limited scale. The ongoing estuarine monitoring program will be suspended for the year. However, monitoring of marine food species will be done cooperatively with the Department of Commerce's National Marine Fisheries Service. The National Human Monitoring Program adipose tissue survey has been redesigned and will operate on a slightly reduced scale.

An implementation schedule for the National Pesticide Monitoring Plan will be established. Plan implementation will begin before the end of 1977.

1977 Explanation of Changes from Budget Estimate

The decrease of $48,000 from the budget estimate reflects the transfer of $38,000 to program cooperation and aid to assist in the applicator certification program, and the transfer of $10,000 to other pesticides activities to support increased operating costs.

1978 Plan

Thirty-six positions and $1,689,000 are requested, of which $800,000 will be for residue profile analysis contracts. The Urban Soil Monitoring and Human Monitoring (adipose survey) will continue to operate at 1977 levels of effort. The Surface Water Program will be expanded and periodic monitoring of tapwater will be investigated. Agricultural soil and crop monitoring will be redesigned

and expanded to concentrate on those crops which are either significant components of the human diet or are consumed by humans with little or no intermediate processing. Monitoring of estuarine finfish will be reinstated. The cooperative PHS blood serum and urine survey will continue and is scheduled to terminate at the end of 1978.

Special studies will continue to be undertaken as they are required. Efforts will be increased on residue profile analyses of pesticides found in the various environmental media. Priority will be given to completing the integration of on-going programs into the hazard evaluation system. Implementation of the National Pesticide Monitoring Plan will continue during 1978.

The increase of $573,000 is for integration of ongoing programs into a hazard evaluation system, increased pesticide residue profile analyses, examination of alert triggering mechanisms, and increased data information requirements.

ACCIDENT INVESTIGATION

1976 Accomplishments

This program during 1976 was focused on the collection of pesticide episode reports and investigation as feasbile. Reports are prepared on a voluntary basis by State, Federal, and private sector personnel. Coordination is through regional offices. Some 3,600 episode reports were collected during 1976. Individual episode reports are consolidated into special reports on chemicals, uses, etc. and reports were prepared on 31 active ingredients in support of RPAR. In addition, special reports were prepared for the Office of General Counsel.

1977 Program

Fourteen positions and $318,200 are available for FY 1977. Major objectives in 1977 are to: expand the collection of risk information associated with pesticide use; develop episode verification criteria for better user utilization; establish better information networks; and expand the program on farm workers safety with respect to pesticide use. Expanded voluntary participation in episode reporting will be sought in an effort to increase the data base and become a more effective tool in the hazard evaluation system and RPAR support.

1977 Explanation of Changes from Budget Estimate

The increase of $56,000 over the budget estimate is the result of several actions. Regional operating adjustments were made in order to reflect actual operating conditions; the transfer of $116,000 was made from program cooperation and aid. An increase of $8,000 for increased operating costs was reprogrammed from other pesticides activities. In addition, the headquarters offices transferred $68,000 to program cooperation and aid to assist in the applicator certification program.

1978 Plan

Fourteen positions and $315,200 are requested for FY 1978, a decrease of $3,000 from the 1977 level. The 1978 plan is a continuation of the 1977 program.

MARKET SAMPLE ANALYSIS

1976 Accomplishments

The program is conducted by four pesticide analysis laboratories located in New York, Mississippi, Colorado, and California. Pesticide product samples are analyzed by the laboratories to determine if the products contain the active ingredients in the amounts claimed on the labels, and if the products contain adulterating chemicals including pesticides not claimed on the label. A total of 4,823 samples was analyzed during 1976. In addition, the laboratories check samples of water, soil, adipose, etc. to determine levels of pesticide residues.

1977 Program

Twenty-nine positions and $628,400 are available for FY 1977. The pesticide product sample analysis program will remain at approximately the 1976 level with increasing emphasis on residue analysis as capability in this area is recognized by States and local governments.

1977 Explanation of Changes from Budget Estimate

The decrease of $10,000 from the budget estimate reflects a reprogramming of $13,000 to program cooperation and aid to assist in the applicator certification program, and an increase of $3,000 from other activities to provide support for increased operating costs.

1978 Plan

Twenty-nine positions and $631,800 are requested for FY 1978, an increase of $3,400 over the 1977 level. The 1978 plan is a continuation of the 1977 program.

PESTICIDES

Abatement and Control

Federal and State Program Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Information Services...	$1,839	$1,949	$1,982	$1,982	...
Program Cooperation and Aid.....	9,727	9,086	9,295	6,595	-$2,700
Total.....	11,566	11,035	11,277	8,577	-2,700
Permanent Positions					
Information Services...	78	63	65	65	...
Program Cooperation and Aid.....	107	112	121	118	-3
Total.....	185	175	186	183	-3

Budget Request

An appropriation of $8,577,000 and 183 positions is requested in 1978. This reflects a decrease of $2,699,900 and three positions from the 1977 level.

Program Description

EPA is committed to ensuring that State and local governments are able and willing to accept a larger responsibility for pesticides control problems, especially those best handled by governments closest to the problems. A major emphasis, therefore, of EPA is to cooperate with States through it regional offices as well as with other Federal agencies, so as to ensure the development and full scale implementation of cooperative Federal-State programs. Complementary to the classification of pesticides into general and restricted uses have been programs with States to train and certify pesticide applicators to use restricted use pesticides. EPA believes that this will not only result in better control of pesticides and fewer accidents and incidents of misuse, but will result in pesticides application being more cost effective to the farmer and other users. EPA provides information to the public on activities associated with pesticides registration and has activities directed at educating the public on safe use practices. Section 4(c) of FIFRA provides for the distribution of instructional materials on integrated pest management techniques.

Federal-State cooperative efforts to develop sound operational bases for key programs will determine the levels of State operational capabilities and achievement by October 21, 1977, the effective date for FIFRA. The States will begin large scale implementation of their pesticides control programs in fiscal year 1978 and EPA regional programs will be geared primarily to surveillance of State performance and maintenance of training and certification capabilities.

INFORMATION SERVICES

1976 Accomplishments

In 1976, $300,000 in contract support was for product information, company data, and microfiche support for registration. This program includes the collection, storage, and dissemination of information on all aspects of pesticides; publication of technical documents; and the development, operation, and maintenance of ADP systems. Its function is to support registration, reregistration, RPAR, and other pesticide activities. Major efforts in 1976 were directed to the maintenance of data submitted by registration applications in a Company Data Catalogue, maintaining and publishing a Compendium of registered pesticides, maintaining information about the site of application and the pests to be controlled by registered pesticides in a Site/Pest File, maintaining and providing to the user community (FDA inspectors, USDA Extension Agents, etc.) a Tolerance Index of tolerances cross-referenced by chemical and commodity, providing technical Literature Searches, preparing and publishing notices in the Federal Register and reviewing daily issues for notices having an impact on pesticide programs, and responding to requests made under the Freedom of Information Act. Available computerized pesticide information was disseminated to the regions and State agencies on microfiche.

1977 Program

Sixty-five positions and $1,982,300 is available in FY 1977, of which $450,000 will be for contract support. The ongoing support programs will be continued with every effort being made to increase reliable data bases needed for registration, reregistration, and RPAR. A computerized tracking system to maintain information on the status of products in the registration and reregistration processes will be implemented.

1977 Explanation of Changes from Budget Estimate

The increase of $33,000 over the budget estimate reflects a reprogramming of $37,000 from product registration to assist with the Company Data Catalogue; a transfer of $12,000 from the program management media to support the technical services area, and a transfer of $16,000 to other pesticides activities to support increased pay costs.

1978 Plan

Sixty-five positions and $1,982,300 are requested in FY 1978, the same level as in 1977. Contract support of $450,000 will continue as in FY 1977. The 1977 program will be continued in this area.

PROGRAM COOPERATION AND AID

1976 Accomplishments

In 1976, $7,500,000 in extramural support was for applicator certification and training, waste disposal demonstrations, and data collection on product information. Forty-one States now have legislation considered adequate to implement Section 4 (Certification of Applicators) of the Act and an additional 13 States will introduce legislation during the 1977 legislative session. Thirty States have completed certification plans and another 24 State and Territory plans will be submitted and approved by October 21, 1977. The Agency has developed a contingency Federal certification program in the event States do not have an adequate certification plan or are deficient in necessary legislative authority. There are 20 States with over 50 percent of the commercial applicators having completed approved training but only five States with over 50 percent of private applicators trained. An additional nine States have about 25 percent of the commercial applicators trained and seven States with about 25 percent of the private applicators trained. In order to avoid any undue holdups in States starting their training because of the delay in reregistration of products, EPA provided States with a "presumptive restricted list" at the start of 1976; this has recently been updated. Forty-five States and Territories have been granted interim certification to register pesticides for special local needs. Pending issuance of final regulations, expected early in 1977, States will begin submitting final certification plans for special local needs registrations. A Farm Worker.

Protection Program has been started to provide training and information materials to clinicians (nurses and technicians) on the recognition and treatment of pesticide intoxications. Several workshops and training sessions have been held. EPA is coordinating this program with NIOSH, and OSHA, as well as the American Association of Pesticide Control Officers, National Association of State Departments of Agriculture and the National Agricultural Chemical Association. The State-Federal FIFRA Implementation Advisory Committee (SFFIAC) was established at the beginning of 1976 and has since had several meetings as well as subworking group meetings to advise and assist EPA on the substance and impact of FIFRA regulations and their implementation by State and local agencies. A series of workshops and conferences has been completed with State and local agencies, industry, farmer and agricultural groups, pest control organizations and interested public, on the various published FIFRA regulations, their intent and implementation.

1977 Program

In 1977, 121 positions and $9,294,600 are available. Extramural activities will be supported with $6,200,000, including $5.6 million contract support for State applicator certification programs and waste disposal demonstration projects. The EPA-Agriculture Extension Service interagency agreement is expected to continue through most of 1977, using 1976 funds, and State Extension Services' training programs for applicators are expected to continue at a high level of operation throughout the year. Indications are that States will not generally slow down their certification and training efforts because of the compliance date extension to October 1977 and EPA will vigorously promote maximum cooperation in the implementation of these programs. The Agency expects that most States will have approved certification plans by October 21, 1977, and will have the majority of applicators certified by October 1977. Since the Agency expects some States to have substantially completed applicator certification and training, EPA regions will begin monitoring State performance; State Cooperative Extension Services will undertake maintenance training programs for applicators. EPA will have more adequate and coordinated public relations and educational efforts in 1977 so as to meet the need for improved all around public understanding of pesticides policies, regulations, decisions, and actions and to give greater encouragement to public participation in the overall decision process. Public participation will be increasingly solicited through the various media including news releases, the Federal Register, other Federal agencies, national, State, and local officials and public interest groups and other mechanisms. EPA regional efforts will shift significantly in 1977 to assisting States in the conduct of their plans to register products for special local needs and plans to issue experimental use permits. EPA will also work closely with States and in coordination with USDA on determining needs for information on special nonchemical techniques for controlling pests and insects and ensuring these integrated pest management techniques are made available to farmers.

FY 1977 objectives are: to complete final approval on 54 State and Territory Certification Plans for Applicators, to complete performance monitoring of 25 State Certification Programs, to ensure that between 50 and 75 percent of private applicators and 100 percent of commercial applicators have received acceptable training, and to complete special training programs for regional, State, and industry personnel.

1977 Explanation of Changes from Budget Estimate

The net increase of $209,000 over the budget estimate results from several actions. Regional operating adjustments in order to reflect actual operating conditions created a transfer of $159,000 to other pesticides activities; $6,000 was transferred to other activities to support increased operating costs; and $374,000 was transferred in the headquarters offices to assist in the applicator training program from other pesticides activities.

1978 Plan

In FY 1978, 118 positions and $6,594,700 are requested, a decrease of three positions and $2,699,900. $3,800,000 will support continued extramural activities. State certification activities will complete the shift from development to implementation, monitoring and maintenance of programs. Although most applicators will have been certified by the spring of 1978, the Agency expects that there will be new applicants for certification during the fiscal year as well as extensive recertification programs in some States. While it is expected that some of the training will be funded through the Agriculture Extension Service resources without EPA funding support, there will be a continuing requirement for EPA participation in State programs, to ensure proper maintenance of State plans to update training programs and to routinely reexamine program performance and assist States in the conduct of special local needs and experimental use permit programs. The decrease of three positions and $2,699,900 is a result of shifting from developing and assisting State certification activities to monitoring and maintenance of the program. The three positions will be shifted back to product registrations along with $2,110,000 of the reduced funding requirement; $573,000 of the remaining reduction will be applied to residue profiles.

Enforcement

SECTION TAB

PESTICIDES

Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Pesticides Enforcement...	$3,463	$4,745	$5,000	$10,398	+$5,398
Permanent Positions					
Pesticides Enforcement...	162	153	165	185	+20

Budget Request

A total of $10,398,000 and 185 positions is requested for the FY 1978 pesticides enforcement program. This request includes an increase of $4 million in grants-in-aid for the Federal/State cooperative pesticides enforcement program and an increase of 20 pesticides enforcement positions. Additional resources requested for pesticides enforcement in FY 1978 reflect the increased emphasis on pesticides use observation activities and expansion of Federal/State cooperative enforcement activities.

Purpose

The EPA pesticides enforcement program is administered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended. The program includes the registration of pesticide-producing establishments; sampling and label checks of pesticides in the marketplace; observation of pesticide usage; and, when violations are found, initiation of enforcement actions including civil actions, criminal prosecutions, seizures, stop sales, and injunctive actions. This program covers the approximately 6,500 firms involved in the production of pesticides sold and distributed in the United States and millions of persons using those pesticides.

State agency cooperation in pesticides enforcement activities is an important feature of the program. Enforcement agreements are developed pursuant to the authority of Section 23(a)(1) of the amended FIFRA. With State participation, the scope and effectiveness of the pesticides enforcement program are significantly enhanced.

1976 Accomplishments

In FY 1976, $100,000 was designated for contracts. Contract funds were used for ADP support and public affairs. During FY 1976, the following accomplishments were realized by EPA: inspection of 2,264 pesticide producing establishments; collection of 4,823 samples for chemical analysis; inspections at 465 ports of entry; observations of 1,162 pesticide applications; observations of 299 experimental use applications; and investigations at 2,947 marketplaces. As a result of these efforts, the following enforcement actions were taken: 73 Section 14 notices of warning for misuse; 135 import detentions; 324 civil actions for product/producer violations; 1,047 Section 9 establishment inspection warnings; and 239 recalls.

In FY 1976, the Agency developed cooperative enforcement agreements with certain States. Under these agreements, States performed 522 use and reentry investigations.

The Agency also published in the Federal Register four Pesticides Enforcement Policy Statements (PEPS), which set forth Agency policy for the enforcement of various statutory provisions; initiated efforts to develop Memoranda of Understanding with other Federal agencies for exchange of information; developed a legal manual and revised the case proceedings manual; and published Notices of Judgment. In addition, the Agency published in the Federal Register a notice of the availability of Federal funds for States for the enforcement of the FIFRA.

1977 Program

The FY 1977 pesticides enforcement program has three major focuses: (1) ensuring product and producer compliance with the registration and labeling requirements of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended; (2) ensuring applicator compliance with label directions for use; and (3) developing Federal/State cooperative agreements for the enforcement of the FIFRA, as amended.

The FY 1977 planned resource level for this activity is $5 million and 165 positions. Contract funds in the amount of $210,000 will be used for ADP support, public affairs, preparation of an Enforcement Review Manual, and for regional training in use observation activities.

To ensure product and producer compliance, 1,420 establishments will be inspected, 1,558 market places will be investigated, and 418 ports of entry will be inspected. To ensure user compliance, 813 use applications and 278 experimental use applications will be observed.

Finally, approximately 17 State cooperative enforcement agreements will be developed in FY 1977. These agreements will provide for participation by the States in all areas of the pesticides enforcement program. Under these agreements, States are expected to perform 850 establishment inspections, 2,635 use/reentry and experimental use observations, and 680 market place investigations.

1977 Explanation of Changes from Budget Estimate

The increase of $255,000 over the budget estimate results from several actions. Regional operating adjustments resulted in an increase of $72,000 in order to reflect the changing regional priorities; $130,000 was reprogrammed from other media by the headquarters offices to support growing litigation activity and to develop a coordinated approach to toxic substances control; and an increase of $53,000 was reprogrammed from other pesticides activities to support increased salary costs.

1978 Plan

In FY 1978, the Agency intends to significantly increase the scope of the pesticides enforcement program and the role of the States. Enforcement activities will be directed at compliance with newly implemented sections of the FIFRA, as amended: registration and classification (Section 3) and certification of applicators (Section 4).

The FY 1978 budget for this activity is $10,398,000 and 185 positions, an increase of $5,397,800 and 20 positions. About $800,000 will be used for contracts for operation and maintenance of ADP systems, for economic impact studies of the program, and for support for increased enforcement use activities.

With an increase of 20 positions, the pesticides enforcement program will expand in the areas of use/reentry and experimental use observations, and import investigations. The establishment inspection and market place investigation programs will continue, although with a lower emphasis at the Federal level. In addition, a new program to verify test data submitted by registrants in support of product registrations will be introduced. This program will guarantee that data received by the Agency are in fact representative of actual product testing.

With an increase in funding of $4 million to a total of $5 million, the number of Federal/State cooperative agreements is expected to increase substantially over the FY 1977 level. With the additional operating agreements, the States will take on a highly significant role in the areas of establishment inspections, use/reentry and experimental use observations, market place investigations, and data verifications activities.

Research and Development

SECTION TAB

PESTICIDES

Research and Development

Health and Ecological Effects

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Health Effects.....	$5,204	$5,377	$5,596	$5,696	+$100
Ecological Effects.....	2,518	2,560	2,560	2,560	...
Substitute Chemicals...	1,107	2,950	2,500	2,500	...
Total.....	8,829	10,887	10,656	10,756	+100
Permanent Positions					
Health Effects.....	90	72	71	66	-5
Ecological Effects.....	48	50	50	50	...
Substitute Chemicals...	30	35	35	35	...
Total.....	168	157	156	151	-5

Budget Request

The 1978 resource level for this program is projected to be about the same as 1977, with the exception of a $100,000 increase and a reduction of five positions. The Agency is considering various options for taking the position reduction.

Program Description

This program supports the Agency's regulatory activities with respect to pesticides and includes: the development of data required to support administrative reviews and litigation; monitoring; development of new methods of pest control; and development of long-term pesticides research strategy. Major areas of ongoing research include: (1) determination of human health effects; (2) development of pesticide residue analytical methods; (3) development of model ecosystems; (4) determination of ecological effects; and (5) health and ecological investigations of substitute chemicals as alternatives for those pesticides under litigation or review as potentially detrimental.

Research programs investigating the health effects of pesticide exposure are extensively by the Agency in its regulatory decision making. In addition to the Agency's need to document the environmental impact of exposures to persistent pesticides, considerable attention is focused on the potential health hazards associated with the use of pesticides in agricultural situations. A number of accomplishments in these areas of research have provided a sound basis for the Agency's administrative decisions on the regulation of pesticides.

Specific programs include: the evaluation (for safety) of both pesticides considered as substitutes for those whose registrations are not being renewed and new generation pest control agents, such as insect viruses and pathogenic bacteria, sterility agents, attractants and pheromones; development and validation of new toxicological and analytical methods; and, a major effort, provision of technical support to the Offices of Pesticide Programs, Enforcement, and the regional offices by providing expertise in pesticides research for use in administrative decisions pertinent to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

Pesticide research supported under FIFRA is also utilized by other segments of the Agency interested in regulating pesticides under different legislative authorities. For example, results from the program are used to support toxic effluent standards, issuance of permits, water quality criteria for fresh, estuarine, and coastal waters under the Federal Water Pollution Control Act (P.L. 92-500). Data are also used in support of pending regulations under the Safe Drinking Water Act (P.L. 523).

The ecological effects pesticide research program consists of two parts: study of the ecological effects of pesticides; and determination of the ecological effects of candidate substitute pesticide chemicals. These programs provide information to aid the Agency in the reregistration of pest control agents and in the formulation of policies involving the registration process.

The ecological effects portion of the program deals with the determination of fate, transport, and effects of pesticides and substitute chemicals in ecosystems. As part of this work, the program develops, validates, and utilizes suitable methods and techniques to assess the ecological effects of pesticides and substitute chemicals.

The substitute chemicals program deals with determining the adequacy, suitability, and availability of substitute pesticides to act as replacements for uses of other pesticides considered problematic by the Agency. The Office of Research and Development transfers funds to Office of Pesticides Programs for some of these purposes.

HEALTH EFFECTS

1976 Accomplishments

1976 resources included approximately $730,900 in contracts, $1,073,000 in grants, and $525,600 in interagency agreements. The 1976 accomplishments in health effects research include the following:

- In responding to the Kepone emergency, analytical techniques were developed and used for analysis of Kepone in water, sediments and soils, fish and shellfish, air, human sebum, and human blood. Analytical support was also provided in the identification of metabolites and transformation products of Kepone in human and environmental samples. Among the documentation produced were preliminary reports on Kepone levels found in environmental samples from the Hopewell, Virginia, area and in human blood from the general population of Hopewell.

- Because pesticides are applied by spraying, inhalation is an important route of exposure; therefore, environmentally controlled exposure chambers for pesticide inhalation studies were designed and developed. The facility will enable evaluations of acute, subacute, and chronic inhalation toxicities using laboratory animals. Acute inhalation toxicities of six priority pesticides have already been determined, including organic arsenical herbicides and a chlorinated hydrocarbon fungicide. Results indicate the acute LC_{50} values are sufficiently high enough not to pose an acute or chronic hazard to the general population and probably not to occupationally exposed workers. Studies to determine the teratogenic potential of Captan and folpet administration in inhalation have also been performed. Results for Captan show that although the incidence of fetal mortality was apparently greater than for the control group, no other important difference was found between the litters of the two groups. The completion of the report on folpet awaits the teratological investigation and histopathological evaluation of maternal tissues.

- A new and improved procedure has been developed for measuring exposure to organophosphorus pesticides. This methodology is of particular value in estimation of exposure of agricultural workers who reenter treated fields after pesticides have been applied. This technique is being used in several field validation projects involving a total of 7,000-8,000 people.

- Other work in the pesticides program includes that with Baygon, the active ingredient in many household pesticides, and mirex, used for controlling the fire ant. Baygon, for example, was observed to produce an abnormal electroencephalogram in Rhesus monkeys, while mirex was found to be transmitted to neonatal rats through mothers' milk and produced cataracts in young animals.

1977 Program

The 1977 resource level for health research is $5,596,300 and 71 positions. Those resources include approximately $1,286,300 in contracts, $981,000 in grants, and $100,000 in interagency agreements.

In the 1977 health effects pesticides research program, toxicological studies are being conducted to determine the acute effects of pesticides on mammals, the potential hazards from "new generation" pest control agents, the identification of pesticide metabolites, and the distribution and effects of pesticides and their metabolites in animal tissues. Studies will also address their biochemical effects on metabolic activity and central nervous function, and their potential for causing gene mutations and cancer. Inhalation toxicology studies are continuing to assess the importance of inhalation exposures to pesticides as compared with ingestion and skin contact. These studies will yield determination of the acute effects of at least eight pesticide aerosols of controlled particle sizes, and measurement of the distribution of the parent compound and its metabolites in body tissues, urine and feces. The program is also conducting acute and toxic, mutagenic, and metabolic studies on substitute or suspect chemicals. The results from these studies will be analyzed and compared with the chemicals which the substitute is to replace.

In the area of the analytic techniques, attention is being given to the development of a sensitive, specific detector for pesticides containing chloride, sulfur and/or nitrogen; an efficient system for collecting and determining pesticides in air; and anlytical methods for determining dioxins in tissues, environmental media, and pesticide formulations. Other objectives include completing a manual for analysis of pesticides in waste water which includes the use of multiresidue analytical procedures for carbamate and organophosphate pesticides, and establishing standardized procedures for identification of insect viruses in tissues.

1977 Explanation of Changes from Budget Estimate

The increase of $219,000 results from several actions. $450,000 was transferred from the substitute chemicals activity for accelerated toxic and mutagenic studies on substitute chemicals; $100,000 was transferred to the air media for support of Biological and Climatic Effects Research (BACER); and a reprogramming of $131,000, contingent upon Committee approval as appropriate, to cover increased costs associated with efforts such as the Kepone incident, dioxin disposal, and certain regional oxidant transport studies.

1978 Plan

The 1978 resource level for health effects research will be $5,696,000 and 66 positions. These resources will include approximately $1,386,000 in contracts, $1,031,000 in grants, and $100,000 in interagency agreements.

The 1978 health effects research program in pesticides will:

- Continue analytic methodology research to improve quality control activities and to detect new generation and other pesticide agents in mammalian tissues, soil, sediment, biological samples, and ambient air.

- Continue study of toxicological effects of commonly used pesticides on laboratory animals and cell cultures, the toxicological effects of substitute chemicals, inhalation toxicology, and potential hazards of new generation pesticides.

- Complete the joint EPA-NCI study of possible carcinogenic effects of rotenone using hamsters and rats as test animals.

- Perform studies based upon clinical investigations of pesticide poisoning cases, health status surveys of agricultural workers, and field methods of measuring pesticide exposure.

- Publish comprehensive reports on the health effects in animals and man from field and garden pesticide exposures.

- Continue the acute and toxic, mutagenic, and metabolic studies on substitute or suspect chemicals. Results will be analyzed and compared with the chemicals which the substitute is to replace.

- Evaluate human exposures from handling pesticides, and conduct field trials to assess techniques for measuring and minimizing human exposure, such as the use of protective clothing in agricultural operations and decontamination of spills.

The 1978 budget provides for a reduction of five positions in pesticides health research in order to release positions for nonresearch Agency functions. This reduction will be taken at the Health Effects Research Laboratory located at Research Triangle Park, North Carolina. As a result of this reduction, more work will be done on an extramural basis.

The $100,000 increase in the 1978 budget results from a FY 1977 reprogramming to meet the Biological and Climatic Effects Research (BACER) program funding requirements. The increase in the 1978 budget returns the program to the FY 1977 level prior to the reprogramming action.

ECOLOGICAL EFFECTS

1976 Accomplishments

1976 resources included approximately $6,900 in contracts and $729,200 in grants. The 1976 accomplishments in ecological effects research included the following:

- Bioassay procedures were developed for use in the pesticide registration/reregistration process. In addition, these methods were published as procedures for use by EPA's ocean disposal permit program. These procedures evaluate not only the toxicity of pesticides but also wastes considered for ocean disposal.

- Research was undertaken to determine the toxic effects of Kepone on estuarine organisms and its fate and persistence in the aquatic environment. Results from the studies are made available as they are developed for use by EPA and the State of Virginia in setting food tolerances, in evaluating the impact of the occurrence of Kepone in the James River estuary and in devising strategies to reduce present levels.

- Chronic and acute exposures to short lived pesticides for aquatic organisms. Effects on lifetime exposure at a given pesticide concentration were found to be equal to those effects observed with exposure to three times that concentration over only one-third the life cycle. These results give a more rational basis for evaluating toxicity and estimating safe concentrations of degradable pesticides for aquatic organisms.

- Studies suggest that food uptake of pesticides can exceed bioaccumulation by absorption directly from the water medium for certain aquatic organisms. Thus, food input should be taken into consideration when water quality criteria are determined.

- Effects were examined of a combination of a long-lived pesticide, Endrin, and a short-lived pesticide, Malathion, on an aquatic organism. Results indicate that long-term toxic action of pesticide mixtures cannot always be extrapolated from their short-term actions. For short-term exposures, the toxic effects of one insecticide were not increased or decreased by the presence of the other. For long-term exposures, synergistic effects were indicated by a 20-30 percent reduction in the survival rate of the organism tested.

- Results of the toxicity and bioconcentration of chlordane and heptachlor with respect to estuarine organisms were determined. It was indicated, for example, that these substances were associated with significant mortality in fish at a low number of parts per billion exposure concentrations. Bioconcentration results indicated an 18,000-fold increase of chlordane uptake in test fish tissue over that in the fishes' water, with a similar increase of 21,000-fold for heptachlor. These data were used to establish water quality criteria and for the pesticide cancellation hearings on heptachlor and chlordane.

- A technique was developed for testing chronic toxicity using estuarine shrimp. This marks the first occurrence of conducting chronic exposures using an invertebrate species and significantly enhances EPA's capability to assess the impact of chronic pollutant stress on important estuarine organisms. This technique will be used for establishing pesticide registration and ocean disposal guidelines, and water quality criteria and for comparative testing of substitute chemicals and complex wastes.

- Preliminary testing of a system to enable chemical manufacturers to screen new pesticides and to evaluate their environmental impacts prior to marketing was completed. The system, which may be available for wide scale application by the end of calendar year 1977, uses terrestrial microcosms in a laboratory setting and employs radioactive tracers to follow pesticides as they move through soil, plants and animals.

- A significant effort was devoted to preparing and contributing expert testimony for the State of New York on the polychlorinated biphenyl (PCB) problems in the Hudson River. As a result of the hearings, continued PCB discharges into the river from an industrial plant were prevented.

- Terrestrial microecosystems in the form of specially constructed boxes containing a mix of soil, plants, and animals have been developed. This laboratory simulation is an important part of a broader study to develop methods for evaluating the fate and effects of chemicals introduced into the environment. The research was initiated in an effort to provide an effective way to screen potential problem chemicals which may be used as pesticides.

1977 Program

The 1977 resource level for ecological research is $2,560,000 and 50 positions. These resources include approximately $55,000 in contracts and $394,000 in grants. The 1977 ecological effects pesticides research program emphasizes:

- Completion of studies on the effects of Kepone in marine and estuarine ecosystems.

- Determination of the effects of selected pesticides on marine and fresh water organisms and ecosystems to permit enhanced management of economically valuable resources.

- The determination of the effects of antifouling biocides and disinfectants on estuarine organisms and ecosystems to quantify damage in critical shallow water "nursery" areas for ecologically and economically important organisms.

- Development and validation of field methods and techniques for assessing harmful and/or beneficial ecological effects of designated candidate substitutes as they are transported to terrestrial, estuarine/marine, and fresh water ecosystems.

1977 Explanation of Changes from Budget Estimate

There is no change. Funds for the original budget estimate were previously reflected under health effects; the ecological effects portion is now reflected herein for comparability purposes.

1978 Plan

The 1978 resource level for ecological effects research will be $2,560,000 and 50 positions, the same level as in 1977. These resources will include approximately $60,000 in contracts and $400,000 in grants. The proposed 1978 plan in ecological effects will be similar to the 1977 research program:

- Marine and estuarine studies on the fate and effects of synthetic organic compounds on aquatic ecosystems will determine the effects of selected pesticides on planktonic organisms. Studies on acute and chronic effects of organic and inorganic compounds to establish "no effect" levels and dose response relationships on estuarine biota will continue. These studies will be comparable to studies which determine the environmental optima for marine and estuarine organisms under unstressed conditions. Strong program emphasis will be placed upon development of a balanced laboratory ecosystem to be used for determination of pollutant effects on estuarine ecosystems.

- Research on pesticide microbial interactions in the estuarine environment will determine pesticide effects on microbial activity and determine pesticide breakdown rates and residual products.

- Increased technical support will be provided to the Office of Pesticide Programs in 1978 for its reregistration program.

- Research on the occurrence of carcinogens, teratogens, and mutagens in the marine environment will be continued. The effects of selected pesticides and related compounds on ATPase inhibition is planned. ATPase is an important enzyme in living organisms.

- Work will continue on the development of terrestrial microcosms to evaluate ecological effects of substitute pesticide chemicals on terrestrial flora and fauna.

- Work will continue on the effects of pesticides in water as related to development of water quality criteria.

- Work will continue on the development and validation of field methods and techniques for assessing harmful and/or beneficial ecological effects of designated candidate substitutes as they are transported to terrestrial, estuarine/marine, and fresh water ecosystems.

SUBSTITUTE CHEMICALS

1976 Accomplishments

1976 resources include approximately $400,000 in contracts and interagency agreements. These resources are allocated to the Office of Pesticide Programs (OPP). The 1976 accomplishments on substitute chemicals include the following:

- Heretofore unpublished scientific data are being voluntarily contributed by industrial sources specifically to support the program review needs, greatly enhancing the Agency's base of decision data in an efficient manner.

- Review reports have been published and are available for public distribution for the following pesticides: parathion, methyl parathion, aldicarb, malathion, bromacil, crotoxyphos, monuron, and captan.

- Reviews of methyl parathion, parathion, malathion, bromacil, phorate, demeton, guthion, azodrin, dimethoate, crotoxyphos, chlorpyrifos, carbofuran, disulfoton, dacthal, MSMA/DSMA, Cacodylic acid, monuron, captan, PCNB and Folpet conducted to date have fully verified the suitability of these chemicals to act as substitutes for certain problem pesticide uses.

- A unique data gathering system to seek information from the local user level has been developed with the help of the USDA State Extension Services and the EPA regional offices.

1977 Program

The 1977 resource level for substitute chemicals, administered by the OPP, is $2,500,000 and 35 positions. These resources include approximately $1,700,000 in contracts and interagency agreements. In 1977 the substitute chemical program focuses on:

- Analysis of problematic pesticide use situations for selected herbicides and insecticides;

- Simplification of scientifically credible screens for carcinogenesis and mutagenesis;

- Development of analytical techniques to qualitatively and quantitatively identify multiple residues of the pesticides under consideration by the program;

- Selective toxicological and environmental studies of pesticides to help in the evaluation and decision process; and

- Evaluation of the suitability of major and minor uses of an additional registered pesticide to act as a substitute for a problem pesticide for man and his environment.

The Office of Research and Development research effort in substitute chemicals is described under the pesticides health and ecological activities.

1977 Explanation of Changes from Budget Estimate

The $450,000 decrease from the budget estimate reflects a transfer to the pesticides health effects program for accelerated toxic and mutagenic studies on substitute chemicals.

1978 Plan

The 1978 resource level for substitute chemicals program, administered by the OPP, will be $2,500,000 and 35 positions, the same level as in 1977. These resources include approximately $1,700,000 in contracts and interagency agreements. The 1978 substitute chemicals program will be similar to the 1977 program:

- Work will continue on evaluating the suitability of the major and minor uses of an additional registered pesticide to act as a substitute for problem pesticides;
- Follow-up analysis on selected herbicides and insecticides;
- Continue to simplify screening techniques for carcinogenesis and mutagenesis; and
- Conduct select toxicological and environmental studies of pesticides to help in the evaluation and decision process.

Radiation

SECTION TAB

Radiation

	Ford Submission Pos.	Ford Submission Amount (dollars in thousands)	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount (dollars in thousands)
Abatement and Control:	174	4,815	184	4,815
Radiation Criteria, Standards, and Guidelines.....	51	1,229	51	1,229
Environmental Standards.....	(25)	(625)	(25)	(625)
Federal Radiation Guidelines.....	(26)	(604)	(26)	(604)
Environmental Impact Assessment.....	123	3,586	133	3,586
Federal Activities/Environmental Impact Statement Assessment.....	(16)	(398)	(16)	(398)
Monitoring and Analysis.....	(58)	(1,400)	(58)	(1,400)
Technology Assessment.....	(24)	(975)	(24)	(975)
State Program Support.....	(25)	(813)	(35)	(813)
Research and Development:	30	830	30	830
Health and Ecological Effects.....	30	830	30	830
Health Effects.....	(30)	(830)	(30)	(830)

RADIATION

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$4,707	$4,022	$4,551	$4,815	+$264
Permanent Positions...	184	174	174	174	...
Transition Quarter....	1,589	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	1,515	879	830	830	...
Permanent Positions...	45	30	30	30	...
Transition Quarter....	498	N/A	N/A	N/A	N/A
Total, Radiation Program:					
Appropriation.....	6,222	4,901	5,381	5,645	+264
Permanent Positions...	229	204	204	204	...
Transition Quarter....	2,087	N/A	N/A	N/A	N/A
Outlays.....	7,492	5,270	6,400	5,930	-470
Authorization Levels..	Authorization is by virtue of the Appropriation Act.				

OVERVIEW AND STRATEGY

Exposure to ionizing radiation principally results from naturally occurring sources, some of which have been enhanced through man's intervention in mining and manufacturing processes; from medical and industrial applications of x-rays and radioactive materials; and from various aspects of the nuclear power industry. EPA accepts as a prudent health assumption the concept that any radiation exposure results in some adverse health effects. While some public exposure to radiation is inevitable, no avoidable risk due to radiation exposure should occur to individuals, to the population at large, or to the environment without the existence of offsetting benefits.

The current annual incidence of serious health effects from natural, medical, and occupational exposures is estimated to be about 11,000, 10,000, and 100, respectively--a total of about 21,000 health effects per year. Most of the potential health effects from natural exposure result from uncontrollable background levels. However, an estimated 100 to 500 health effects per year resulting from increased exposure above usual background levels due to industrial processes can be avoided through various control measures. Previous efforts to reduce unnecessary exposure to x-rays have been in the form of HEW performance standards for equipment. Improved medical practices in the use of x-rays could avoid an additional 1,000 health effects each year. The health effects impact of improved occupational exposure control has not been quantified.

Although the potential health impact from the existing nuclear energy sector is low, EPA estimates that projected nuclear growth could greatly increase this problem. The estimates indicate that as many as 13,500 serious health effects could be caused by a combination of krypton, tritium, iodine-129 and carbon-14 releases from nuclear industry activities by the year 2000, given no additional controls beyond those currently in effect.

EPA has the mandate to protect public health and the environment from any adverse effects due to radiation exposure. The two principal authorities for setting radiation standards are (1) the authority transferred from the Atomic Energy Commission under Reorganization Plan #3 of 1970 to establish generally applicable environmental standards for the protection of the general environment from radiation and radioactive materials, and (2) the Federal radiation protection guidance function for Federal activities, as enunciated in 42 USC 20221(H). Other authorities which mandate activities of the EPA radiation program are contained in the Federal Water Pollution Control Act, the Ocean Dumping Act, the Clean Air Act, the Public Health Service Act, and the National Environmental Policy Act. These legislative authorities set out a standard-setting, environmental assessment and technology assessment role for EPA. Enforcement responsibilities are set out for other agencies, notably the Nuclear Regulatory Commission. Therefore, EPA has no radiation enforcement activities under the Atomic Energy Act and depends upon the Nuclear Regulatory Commission for the implementation of its standards through enforcement of compatible regulations. However, EPA does maintain some overview to insure that established standards and guidance are followed. Enforcement of drinking water standards and effluent

discharge limits in navigable waters is, of course, carried out by appropriate EPA offices.

EPA's principal efforts towards achieving its objective of preventing unnecessary radiation exposure are directed towards the control of radiation exposure from naturally-occurring sources not covered under the Atomic Energy Act and from exposures associated with all phases of nuclear power generation. With completion of the development of the uranium fuel cycle standard for control of planned releases from nuclear power generation activities, increased emphasis is being placed on environmental problems surrounding the management of radioactive wastes. A major effort to develop criteria and standards for various classes of wastes and alternative disposal techniques will continue through FY 1978 and beyond. Other significant activities are directed toward development of guidance of medical x-rays and nuclear medicine applications in Federal health care facilities, the development of guidance for acceptable radiation levels in structures built on reclaimed phosphate mined land and toward investigating ambient levels of nonionizing radiation and attendant health effects. A decision on the need for standards for population exposure to nonionizing radiation is projected for FY 1977; standard development, if needed, will take place in FY 1978.

EPA's FY 1978 radiation research and development program is limited to the area of nonionizing radiation. Although no detrimental effects have yet been observed in the general population exposed to nonionizing radiation from environmental sources, e.g., TV, radio, and radar, EPA research has observed demonstrable effects from chronic, low-level exposure in laboratory studies. Furthermore, this emerging data is beginning to confirm results reported internationally, particularly by the Soviets. In FY 1977, the research is directed toward verifying this preliminary data. An effort in FY 1978 will be directed at determining the effects of broader exposure levels and frequencies, and at determining potential effects of low-level, chronic exposures.

SUMMARY OF INCREASES AND DECREASES

	(in thousands of dollars)
1977 Radiation Program.....	$5,381
Abatement and Control..... The increase will provide for the maintaining of a level-of-effort program with some additional funds for personnel costs and activities associated with radioactive waste management.	+264
1978 Radiation Program.....	5,645

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

In 1978, a total of $5,645,000 is requested. This request, by appropriation account, is as follows:

Abatement and Control.....	$4,815,000
Research and Development.....	830,000

This request represents an increase of $264,300 from the 1977 radiation program which will provide for increased personnel costs and radioactive waste management.

2. Changes from Original 1977 Budget Estimate

Changes from the original budget are as follows:

	(in thousands of dollars)
Original 1977 estimate.....	$4,901
Congressional increase.....	+500
Regional reprogramming.....	+29
Office of Research and Development transfer...	-49
Current 1977 estimate.....	5,381

The congressional add-on of $500,000 to the budget restored a proposed decrease to the technical assistance to States' activities.

Regional reprogrammings were as a result of adjusting the budget to actual operating conditions. The cumulative effect of these regional changes on the radiation program is +$29,000.

A proposal will be submitted to the Committee, as appropriate, for separate consideration for the research and development reprogramming of -$49,000 in order to meet increased program costs in other media.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations	$6,222	$7,667
Net effect of increases and decreases, as listed above	-20	...
Change in amount of carryover funds available	+2,145	-2,286
Reduction of costs due to program decrease	-680	...
Program increase requested	...	+238
Total estimated obligations	7,667	5,619
(From new obligation authority)	(5,204)	(5,442)
(From prior year funds)	(2,463)	(177)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The increases and decreases to the 1977 budget estimate, as detailed previously, result in a net change of -$20,000 to obligations in 1977.

The major change in obligations results from the carryover funds available for obligation. Carryover funds effecting obligations after FY 1976 result in a change of +$2,145,000; obligations in 1977 from carryover funds are expected to be $2,463,000. In 1978, these obligations are expected to be $177,000, a decrease of $2,286,000.

The 1977 budget included a program decrease from the 1976 level. The effect of the decrease on obligations is estimated to be -$680,000.

The requested program increase for radioactive waste management is expected to increase obligations by $238,000.

Abatement and Control

SECTION TAB

RADIATION

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977	Page
			(dollars in thousands)			
Appropriation						
Radiation Criteria, Standards, and Guidelines	$1,251	$1,254	$1,216	$1,229	+$13	R-6
Environmental Impact Assessment.....	3,456	2,768	3,335	3,586	+251	R-9
Total.....	4,707	4,022	4,551	4,815	+264	
Permanent Positions						
Radiation Criteria Standards and Guidelines	46	51	51	51	...	
Environmental Impact Assessment.....	138	123	123	123	...	
Total.....	184	174	174	174	...	

Purpose

The radiation program's abatement and control activities focus primarily on establishment of specific standards for environmental radiation and the development of Federal guidance which forms the basis for all Federal radiation protection programs. Complementing the criteria and standards-setting effort, EPA conducts programs of surveillance and monitoring to determine levels of environmental radiation reviews Federally supported or licensed projects which are sources of environmental radiation, and provides technical assistance to other government agencies.

The principal objective of the radiation abatement and control program is to reduce the risk of individuals, the population at large, and the environment to avoidable radiation exposure without jeopardizing off-setting benefits. From 1,100 to 1,500 serious health effects can be avoided annually from unnecessary exposure to medical, occupational, and natural radiation sources which have been exacerbated by man's intervention.

The radiation abatement and control activities are categorized into two major areas, environmental impact assessment and standard-setting activities. Environmental assessment activities relate to the collection of information and the evaluation of public health and environmental impact from both ionizing and nonionizing radiation sources. Technical information is gathered via monitoring from the ambient environment as well as through special field studies to determine levels of radiation and the present and potential exposure for both population and the environment. This technical information provides a base of knowledge from which substantive reviews of environmental impact statements are performed and from which decisions are made related to setting required standards, guidelines or general criteria. The monitoring activity also aids in determing conformance with EPA standards.

The radiation standard-setting activity relates to the development and issuance of (1) environmental standards for the protection of the general environment from radioactive materials, (2) water quality criteria, (3) Federal radiation guidance to other Federal agencies, and (4) drinking water standards. Also included are effluent guidelines for control of radioactive discharges, development of general criteria for waste management, and environmental

standards for disposal of various classes of wastes. These criteria, standards, and guidelines are based on technical information regarding population exposure and control technology, and on economic information developed through cost-benefit analyses.

State radiation control programs are supported through the provision of consultation, laboratory analysis and assistance on specific problems. This includes support in the development of each States' emergency response capabilities and the evaluation of State programs.

RADIATION

Abatement and Control

Radiation Criteria, Standards, and Guidelines

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Environmental Standards.....	$652	$713	$618	$625	+$7
Federal Radiation Guidelines.....	599	541	598	604	+6
Total.....	1,251	1,254	1,216	1,229	+13
Permanent Positions					
Environmental Standards.....	24	29	25	25	...
Federal Radiation Guidelines.....	22	22	26	26	...
Total.....	46	51	51	51	...

Budget Request

The resources requested for this subactivity are $1,229,000 and 51 positions to continue the program at the FY 1977 level of effort with a minor increase of $13,100 for personnel costs.

Program Description

Activities within this subactivty are related to the development and promulgation of standards and guidelines for the protection of the general environment from radioactive materials. Environmental standards established for materials in nuclear fuel cycles are enforced by the Nuclear Regulatory Commission at licensed facility sites; EPA is responsible for enforcement of radiation limits established under the Federal Water Pollution Control Act (FWPCA) and the Safe Drinking Water Act. Water quality criteria and drinking water standards are established to control radioactivity in water pathways, including domestic water supplies. Effluent guidelines regulate the discharge of radioactive materials under the Federal Water Pollution Control Act.

Federal radiation guidance authority (Sec. 204 of the Atomic Energy Act) directs the Administrator to advise the President with respect to radiation matters directly or indirectly affecting health, including guidance for all Federal agencies in the formulation of radiation standards. EPA has the responsibility to assess the impact of radiation sources, develop policies for their control, and to document radiation levels and exposures that occur. Selection of sources requiring guidance is based on the extent to which the source contributes to the total public exposure to radiation, anticipated growth in sources, or development of new information on control techniques or health effects.

ENVIRONMENTAL STANDARDS

1976 Accomplishments

In FY 1976, EPA completed the final generally applicable standard for the uranium fuel cycle, but negotiations with other agencies delayed its publications until FY 1977. Final interim regulations for radioactivity in drinking water were published.

1977 Program

The current estimate for this program element is $617,500 and 25 positions. In FY 1977, EPA plans to publish standards for carbon-14 from the uranium fuel cycle, an effluent not covered in the original standards. The Agency will also consider covering radon and uranium in its drinking water standards. A large effort in 1977 will be the development and Federal Register publication of proposed environmental standards for disposal of high-level radioactive wastes.

1977 Explanation of Changes from Budget Estimate

The decrease of $95,000 is a result of operating adjustments required to adjust the budget to actual operating conditions. In the process of applying the budget to the specific needs of each regional office, laboratory, and headquarters program office, it is often necessary to make small adjustments to the planned budget. This decrease is the effect of these changes on this program element in 1977; the transfer of funds was kept within the radiation program under the environmental impact assessment activity ($57,000) and the Federal radiation guidelines program element ($38,000).

1978 Plan

Resources required for this activity in FY 1978 are $625,000 and 25 positions, a slight increase of $7,500 for personnel costs. Final standards for carbon-14 from the uranium fuel cycle and environmental standards for disposal of high-level radioactive wastes will be published. The data bases for radon standards, for a plutonium recycle standard, and for standard defense-related and commercial usage of plutonium will be completed.

FEDERAL RADIATION GUIDELINES

1976 Accomplishments

Contracts totaling $120,000 were negotiated to study problems of radioactivity in various fossil fuels and construction materials, and to help determine the need for additional work towards guidelines in these areas. The issuance of two reports on medical x-ray applications in Federal health care facilities will form the basis of proposed Federal guidance for these areas. Protective action recommendations encompassing gaseous releases resulting from nuclear reactor accidents were issued for use by States in radiation emergency response planning. Two Federal Register notices were published recommending limits to occupational exposure to radon in caverns and the other recommending interim screening levels covering radon emanations from reclaimed phosphate mining lands.

1977 Program

The FY 1977 estimate for this element is $598,400 and 26 positions. Federal guidance for radiation protection in Federal health care facilities covering prescription and technique for medical x-rays will be sent to the President. Recommendations for cleanup, restoration, and occupancy of areas contaminated by plutonium will be published. Protective action guidelines covering particulates in the reactor plume resulting from nuclear reactor accidents will be developed and issued for State use. Completion of the assessment of radioactivity levels in various fossil fuels, and their potential population impact, will permit a determination of the need for guidance for those radiation sources. Final recommendations will be made on corrective measures for existing structures on reclaimed phosphate mined lands, and on screening measures for structures planned to be built in undeveloped areas.

1977 Explanation of Changes from Budget Estimate

The increase of $57,000 over the budget estimate is a result of operating adjustments required to adjust the budget to actual operating conditions. This increase is the effect of these changes on this program element in 1977; the transfer of funds was kept within the radiation program from the environmental impact assessment activity ($19,000) and within the criteria standards and guidelines activity ($38,000).

1978 Plan

Resources required for this element in FY 1978 are $604,000 and 26 positions, a slight increase of $5,600 for personnel costs. The program to control naturally occurring radiation which, because of man's activities, has the potential to expose people, will consist of the issuance of Federal guidance for the use of land containing elevated concentrations of radioactivity and for acceptable radioactivity concentrations in building materials. The program will also issue a report on the extent of radioactivity in fossil fuels, implications for increased utilization of these fuels, and the need for guidance.

Environmental criteria for radioactive waste management will be developed. While the nature of the criteria for radioactive waste management have not as yet been completely determined, such criteria would include parameters for defining the degree of protection that should be afforded to present and future generations and for specifying risk limits from such activities. Protective action guides for food and water contaminated by particulates released by a nuclear accident will be issued to further assist States in developing emergency response capabilities.

FEDERAL ACTIVITIES/ENVIRONMENTAL IMPACT STATEMENT ASSESSMENT

1976 Accomplishments

A review of the NRC Reactor Safety Study (WASH-1400) was completed and a final report was issued. Environmental impact statements for advanced applications, including the light water breeder, the liquid metal fast breeder reactor, the Hanford reservation, and the Lincoln experimental satellites 8/9 were reviewed and comments were provided. Regional office personnel were assisted in the review of light water reactors within their jurisdictions.

1977 Program

The current estimate for this program element is $351,000 and 16 positions. Review of and comment on all environmental impact statements involving nuclear facilities will be made. Those involving generic issues or advanced applications are expected to include the generic statement for waste management, the last part of Offshore Power Systems, and the Generic Environmental Statement for Mixed Oxides (GESMO). Advanced applications will be reviewed for the Idaho Nuclear Engineering Lab, the Savannah River Plant, Uranium Fuel Fabrication Facility, Portsmouth Gaseous Diffusion Plant, the spent fuel storage, and the Exxon Reprocessing Plant. EIS reviews for light water reactors will be performed in the regional offices.

1977 Explanation of Changes from Budget Estimate

The decrease of $92,000 from the budget estimate is a result of operating adjustments required to adjust the budget to actual operating conditions. Of the net decrease, $74,000 is a result of transferring positions to the regions for increased regional capabilities. The transfer of funds was kept within the radiation program environmental impact assessment activity.

1978 Plan

Resources required for this program element are $398,000 and 16 positions, an increase of $47,000 for personnel costs. This level of resources will provide a continuation of the FY 1977 program. In FY 1978, review of EIS's for advanced applications of nuclear technology will be performed as needed; issues expected to be included relate to the generic mixed oxides statement, safeguards, proliferation and reprocessing. Light water reactor EIS's will be reviewed as necessary by the regional office staff.

MONITORING AND ANALYSIS

1976 Accomplishments

Monitoring of ambient ionizing radiation and surveys of nonionizing radiation were continued. The first annual Radiological Quality of the Environment Report was published documenting environmental radiation levels as identified in a variety of surveillance systems. Dose models were validated through field studies at Cooper Nuclear Power Station, Nebraska (direct external exposure), and Quad Cities, Iowa (radioactive pathways in boiling water reactors).

1977 Program

The current estimate for this program element is $1,328,900 and 58 positions. In FY 1977, monitoring efforts will be continued; the second annual Radiological Quality of the Environment Report will contain trends analyses. Industry influence on pollution of the environment by natural radionuclides will be reported. Data analyses will be performed for selected nuclear facilities. Low-level nonionizing radiation surveys will continue on the West Coast.

RADIATION

Abatement and Control

Environmental Impact Assessment

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Federal Activities/ Environmental Impact Statement Assessment....	$251	$443	$351	$398	+$47
Monitoring and Analysis...	1,696	1,428	1,329	1,400	+71
Technology Assessment.....	644	516	842	975	+133
State Program Support.....	865	381	813	813	...
Total.....	3,456	2,768	3,335	3,586	+251
Permanent Positions					
Federal Activities/ Environmental Impact Statement Assessment....	15	18	16	16	...
Monitoring and Analysis...	58	58	58	58	...
Technology Assessment.....	30	21	24	24	...
State Program Support.....	35	26	25	25	...
Total.....	138	123	123	123	...

Budget Request

The resources requested for this subactivity are $3,586,000 and 123 positions, an increase of $251,200 for personnel costs and work on radioactive waste management. These resources essentially reflect a continuation of the program at the FY 1977 level.

Program Description

Data collection and analysis provide the basis for identifying the need for standards and determining conformance with established standards. In addition to information collected through the Environmental Radiation Ambient Monitoring System (ERAMS), EPA collects and analyzes data from specialized sources to determine the scope of a problem, the need for remedial action, and the effectiveness of the applied remedy. The system is also used to determine the nature and extent of radioactive fallout from atmospheric detonation of nuclear devices.

A major focus of EPA's radiation protection program is the collection of information needed to develop criteria for radioactive waste disposal and environmental standards for disposal of high-level radioactive waste. A second activity is the review of environmental impact statements (EIS's) prepared under provisions of the National Environmental Policy Act for generic issues and advanced applications for nuclear facilities licensed or operated by other Federal agencies. The ability to make intelligent reviews of EIS's and establish environmental standards which are technically feasbile requires maintenance of a base level of information acquired through study of new and developing technologies, such as new types of power reactors, designs of fuel reprocessing plants, and waste disposal facilities. Review of EIS's for design, construction, and operation of light water reactors is performed in the regional offices. The State program support activity deals with States in the development phases of their radiation control programs, including technical information and assistance on localized problems. In addition to the assistance provided by small regional office staffs, this effort includes the provision of laboratory support for radiochemical analysis of air, water, soil, food, and milk samples.

1977 Explanation of Changes from Budget Estimate

The decrease of $99,000 from the budget estimate is a result of operating adjustments required to adjust the budget to actual operating conditions. This decrease is the effect of these changes on this program element in 1977; the transfer of funds was kept within the radiation program environmental impact assessment activity.

1978 Plan

Resources required for this element are $1,399,700 and 58 positions, an increase of $70,800 for personnel costs. In FY 1978 monitoring operations to collect data on both ionizing and nonionizing radiation levels will continue, with data and trends analysis included in the annual Radiological Quality of the Environment Report. A report of nonionizing radiation exposures based on West Coast site surveys will be published. Environmental measurements will also be reported to assure conformance with safe drinking water standards. A guidance manual on sampling procedures will be issued, and data analyses for selected nuclear facilities will be published.

TECHNOLOGY ASSESSMENT

1976 Accomplishments

Contracts amounting to $125,000 were negotiated to study problems associated with radioactive waste disposal and transportation. In FY 1976, EPA published reports on the evaluation of low-level radioactive waste burial sites and environmental transport of radioactive wastes at ocean dumping sites. A review of the NRC Reactor Safety Study (WASH-1400) was completed and a final report issued; transportation accident risks in the nuclear power industry for the years 1975-2020 were also evaluated and a report published.

1977 Program

The current estimate for this program element is $841,600 and 24 positions. Contracts totaling $300,000 will be used to study new technologies for radioactive waste disposal, principally for low-level waste and for activities under the Ocean Dumping Act. In FY 1977, EPA will complete and publish the background considerations report and supporting documents needed for the promulgation of fundamental environmental criteria for radioactive waste management. Additional waste efforts will be directed toward assessments of the Maxey Flats, Kentucky, and West Valley, New York, disposal sites; developing and reporting on an environmental model of high-level waste disposal in geological formations; publishing reports on shallow land burial of low-level wastes; and on ocean site-specific waste packaging studies.

1977 Explanation of Changes from Budget Estimate

The increase of $326,000 was used to fund contracts primarily to study new technologies for low-level radioactive waste disposal.

1978 Plan

Resources required for this program element are $975,000 and 24 positions, an increase of $133,400 for personnel costs and work on radioactive waste management. Radioactive waste management will continue to be emphasized. Developmental work necessary for the publication of criteria for disposition or stabilization of uranium mine and mill tailings at active and abandoned sites will be continued. Regulations will be published on site selections and base line monitoring for ocean dumping of low-level radioactive wastes. The development plan for technical analysis of the thorium fuel cycle in support of a standard will be completed.

STATE PROGRAM SUPPORT

1976 Accomplishments

States were assisted in the use of protective action guides in developing and implementing emergency response plans for nuclear facilities. State and EPA enforcement personnel were also supported, as necessary, in the area of radiation standards for drinking water.

1977 Program

The current estimate for this program element is $813,300 and 25 positions. Technical assistance to States, particularly with regard to application of EPA standards, will be provided as will laboratory support for radiochemical analyses. States will be assisted in the use of protective action guides and in implementing emergency response plans if dictated by further weapons testing in the atmosphere.

1977 Explanation of Changes from Budget Estimate

The net increase of $432 thousand over the budget estimate is a result of a $500,000 congressional add-on to the 1977 budget for restoration of a reduction originally proposed in the budget estimates. Offsetting this increase is a decrease of $97,000 reprogrammed within this subactivity to support technology assessment contracts. The regional offices reprogrammed +$29,000 into the radiation program as a result of adjusting the budget to actual operating conditions.

1978 Plan

Resources required for this area are $813,300 and 25 positions, representing no change from the 1977 level. The regional office staff will provide technical assistance to States in efforts such as emergency response planning and stimulation of training efforts. Other technical assistance requests, such as site surveys and remedial actions, recommendations for site-specific problems such as uranium tailings, and phosphate mining operations will be honored where possible.

Research and Development

SECTION TAB

RADIATION

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Health and Ecological Effects.....	$1,515	$879	$830	$830	...
Permanent Positions					
Health and Ecological Effects.....	45	30	30	30	...

Purpose

The establishment of guidelines for permissible environmental levels of radiation to which the public may be exposed is an EPA responsibility. Reorganization Plan No. 3 of 1970 transferred all functions of the Federal Radiation Council to EPA. It also transferred to the Administrator authority, under provisions of the Public Health Service Act, as amended in 1970, to conduct research to provide scientific data needed for the formulation of radiation standards. Further, because of great concern about the potential biological hazards of electromagnetic radiation, the Office of Telecommunications Policy (OTP), Executive Office of the President, initiated and is coordinating a multiagency program to assess the hazards of nonionizing radiation. EPA has been assigned the responsibility to conduct research on health effects associated with frequencies of potential environmental consequence.

Budget Request

An appropriation of $830,000 is requested for 1978, the same as the 1977 resource level.

Program Description

The health and ecological effects radiation program has been reoriented to eliminate research on ionizing radiation. This reorientation allows the Agency to capitalize on the extensive body of knowledge available on ionizing radiation and on information from ongoing programs of the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission (NRC). EPA's limited laboratory studies on the toxicity of radionuclides, support of epidemiological studies conducted by the Atomic Bomb Casualty Commission, and research on radiation exposure pathways were phased out by the end of FY 1976. Efforts were then fully concentrated on the health effects of exposure to nonionizing radiation, a relatively new, complex, and growing area of concern. The program of studies on nonionizing radiation focuses on the potential biologic effects of exposure to electromagnetic radiation (EMR) as shown through toxicological investigations and on the mechanisms of interaction of EMR, including frequency dependence, with biological and biochemical systems.

One additional aspect of the program is ionizing radiation research and radiological surveillance which EPA performs on a reimbursable basis for ERDA in the areas adjacent to ERDA's Nevada Test Site. The ionizing radiation research program is primarily aimed at determining the biological availability of transuranic radionuclides, with special emphasis on human food webs. The surveillance program operates three kinds of sampling networks--routine, special, and test oriented. In the routine surveillance program, sampling (air, milk, and water) and radiation

exposure measurement networks are maintained to record existing environmental radiation levels and their variations. Special surveillance includes monitoring for possible migration of test-related radioactive debris in ground water on and around the site and soil sampling programs. The test oriented program involves positioning radiation monitoring teams in the areas most likely to be affected by a release of radioactive material to the atmosphere, and includes sampling by aircraft and long range tracking of debris in the event of a radioactive release. Salaries and expenses for personnel performing these functions are included in the Agency's reimbursable account.

1976 Accomplishments

Approximately $120,000 in extramural resources is reflected in the 1976 funds. Results emerging from the program preliminarily tend to confirm earlier, internationally reported data indicating effects at exposure levels much lower than current guidance in this country. Among the observations in 1976 were the following:

- Mice exposed to microwave oven radiation throughout gestation have shown an increased incidence of encephaloceles, a gross fetal abnormality.

- Lymphoblastic transformation rates were found to increase in Chinese hamsters exposed to microwave radiation at levels below the occupational exposure guides. Such changes in cell development suggest an effect on immune mechanisms.

- The learning and performance of rats chronically exposed to microwave power densities at the maximum permissible occupational exposure level for several months, and subsequently exposed to somewhat higher levels, were markedly affected by exposure to EMR.

1977 Program

The 1977 resource level for health effects research is $830,000 and 30 positions. This includes approximately $55,000 in extramural resources.

In the health effects program on nonionizing radiation, biological and biochemical systems are employed to determine which specific frequencies of EMR are absorbed and to detect effects on structures such as brain tissue and cell membranes and on processes such as cell repair and genetic alterations. Further, the health effects of chronic, low-level exposures of EMR will be evaluated through animal studies which will focus on teratologic, neurophysiologic, behavioral, and immunologic responses.

1977 Explanation of Changes from Budget Estimate

The $49,000 reduction from the budget estimate resulted from minor reprogramming and is to be reassigned to the program management program to meet increased costs, contingent upon Committee approval, as appropriate.

1978 Plan

The 1978 resources level for health effects research will be $830,000 and 30 positions, the same level as for 1977. This includes a projected $55,000 for extramural research.

In 1978, EPA will continue to concentrate on the health effects of nonionizing radiation. Although no detrimental effects to humans have yet been demonstrated in the general population exposed to nonionizing radiation from environmental sources, e.g., TV, radio and radar, preliminary animal data reported in 1976 have for the first time shown demonstrable effects of chronic low-level exposure. These results suggest a significant potential human health problem and must be evaluated further. In 1978, the program will build on data and results from 1977 studies. Particular emphasis will be directed towards teratologic, behavioral, and neuro-physiologic endpoints, the response parameters which appear to be of concern.

As a result of the reduction in the allocation of positions across the research and development program, consideration must be given to closing certain EPA facilities and reducing staffing and activities at others as well as other alternatives. When these decisions are made, it may be necessary to modify or terminate the current reimbursable agreement with the ERDA.

Noise

SECTION TAB

Nois

	Ford Submission		1978 Revised Carter Final	
	Pos.	Amount (dollars in thousands)	Pos.	Amount (dollars in thousands)
Abatement and Control:	78	$9,957	77	$9,994
Environmental Noise Strategies and Standards..	45	6,957	44	6,994
Regulation of Indoor Noise Sources.....	(13)	(1,937)	(12)	(1,937)
Regulation of Outdoor Noise Sources.....	(29)	(4,864)	(28)	(4,864)
Regulation of Protective and Control Devices	(3)	(156)	(4)	(193)
Program Implementation.....	33	3,000	33	3,000
Federal Agency Coordination.....	(9)	(672)	(9)	(672)
Noise Strategies Implementation.....	(22)	(2,082)	(22)	(2,082)
Noise Strategy Evaluation.....	(2)	(246)	(2)	(246)
Enforcement:	25	832	24	888
Noise Enforcement.....	25	832	24	888
Noise Enforcement.....	(25)	(832)	(24)	(888)

NOISE

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$5,240	$9,576	$9,570	$9,957	+$387
Permanent Positions.....	65	74	75	78	+3
Transition Quarter.....	2,525	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	385	709	707	832	+125
Permanent Positions.....	18	21	21	25	+4
Transition Quarter.....	364	N/A	N/A	N/A	N/A
Total, Noise Program:					
Appropriation.....	5,625	10,285	10,277	10,789	+512
Permanent Positions.....	83	95	96	103	+7
Transition Quarter.....	2,889	N/A	N/A	N/A	N/A
Outlays.....	5,817	10,285	9,200	10,300	+1,100
Authorization Levels.....	15,400	10,285	14,619	*	

* Authorization pending.

OVERVIEW AND STRATEGY

The overall objective of the national noise control program is to achieve an environment free from noise which jeopardizes health or welfare.

Noise, like other pollutants, is a waste product generated by the activities of modern industrialized society, except for some signalling or warning applications. It is defined in the EPA Report to the President and Congress on Noise as "any sound that may produce an undesired physiological effect in an individual and that may interfere with the social ends of an individual or group". Noise is an extremely pervasive pollutant.

Harmful effects from noise include:

- Noise can cause permanent damage to the inner ear, resulting in hearing loss that ranges from mild to severe, depending upon the level of duration of exposure.
- Noise can cause interference with spoken communication and can interfere with the enjoyment of watching television and listening to radio.
- Noise can disturb sleep.
- Noise can disrupt the performance of certain jobs, especially those that require concentration or spoken communication.
- Noise can be a source of annoyance.

The actual number of people with noise-induced hearing loss is unknown, as is the incidence of other health problems caused by noise. However, noise-induced hearing loss is a recognized problem in the military, in highly mechanized industries, and in other high noise-exposure occupational situations. An estimated 14.7 million American workers are exposed to 8-hour average sound levels (Leg (8) above 75 decibels (dB)), which pose a possible hazard to hearing. An estimated 13.5 million Americans are exposed to Leg (8) of 75 dB or greater as operators of or passengers in transportation or recreational vehicles.

Annoyance reactions to noise are highly subjective, and individuals react differently. However, community annoyance has provided a powerful impetus to noise abatement when substantial portions of the exposed population verbalized their annoyance. Their number can be expected to

increase as public awareness of the noise problem is heightened. For example, the Census Bureau's 1974 Annual Housing Survey reported noise as a leading cause of dissatisfaction with neighborhood conditions, far surpassing such problems as crime. Of the 60,000 respondents surveyed, 34 percent cited noise as a "condition existing in this neighborhood". Of those reporting the conditions, 60 percent felt that street noise was disturbing, harmful, or dangerous, and 18 percent felt that noise was so objectionable that they would like to move. In addition, 20 percent of the respondents reported airplane noise as an existing condition in their neighborhood; 34 percent of that number were disturbed by it and six percent wished to move because of it.

The EPA-identified level for protection of the general population with an adequate margin of safety against activity interference is a day-night sound level (Ldn) of 55 dB. Outdoor noise levels above Ldn 55 dB are likely to interfere with speech communication, sleep, relaxation, and privacy, which is manifested as community annoyance. An estimated 103 million Americans are exposed to an Ldn of 55 dB or greater; this is virtually half the Nation's population.

Without coordinated Federal, State, and local programs to abate and control noise:

- Urban noise levels can be expected to increase roughly in proportion to growth in population density.

- Airport noise will continue to be a major source of noise even with the short-term improvements that will result from the introduction of larger numbers of new, quieter wide-body jets. The estimated number of people exposed to noise levels of Ldn 65 dB or greater due to aircraft noise will remain essentially unchanged in the year 2000 unless further actions are initiated now.

- The number of residents adjacent to freeways and/or highways who will be exposed to noise levels of Ldn 65 dB or greater by the year 2000 will increase by three to four-fold.

- A 50 percent increase will occur in the number of person-hours of exposure to construction noise above 55 Ldn by the year 2000.

Federal regulations promulgated to date have served to mitigate these trends. For example, it is estimated that over 27 million people are exposed to construction site noise levels that jeopardize their health or welfare. Compliance with the recently promulgated EPA air compressor noise limit will reduce the impact upon people from construction site noise by 14.7 percent. Regulations of medium and heavy duty trucks and wheel and crawler tractors should increase this total reduction to 45 percent. Still further reduction will depend on regulation of other construction site sources and EPA's regulatory program is designed to cover these. Similar noise reduction efforts are being undertaken for other areas of exposure, such as surface transportation noise.

EPA's general noise abatement objectives are:

- Reduce environmental (nonoccupational) noise exposure of the population to an Ldn value of no more than 75 dB as soon as possible. This will essentially eliminate risk of hearing loss due to community noise and will reduce annoyance and activity interference for the population most severely impacted. Emphasis will be placed on reducing noise characterized by very brief exposure to high sound levels (noise intrusiveness).

- As a long-term objective, reduce environmental noise exposure levels to Ldn 65 dB or less. As the national noise abatement program progresses, it may be feasible to lower this objective to an Ldn level of 55 dB, which would be most desirable to achieve health and welfare protection.

EPA's major efforts for the first five years of implementation of the Act have been focused on the establishment of national standards for interstate motor carriers, railroads, and for the following new products: medium and heavy trucks, portable air compressors, buses, motorcycles, solid waste compactors, truck-mounted refrigeration units, and dozers and loaders.

Although for the long-term, national emission source standards can make a significant reduction in the number of people exposed to levels that jeopardize health and welfare, the problem is of such magnitude and complexity that national source standards cannot by themselves provide sufficient protection of public health and welfare. A comprehensive program involving State and local agencies, as well as other Federal agencies, is needed to provide the requisite relief. A national noise abatement program must therefore include actions that can be utilized in conjunction with new product emission standards, so that the noise impacts from a spectrum of products can be steadily reduced both in the near and long-term.

Therefore, other objectives of the EPA noise program are:

- Identifying complementary use and operational restrictions and encouraging State and local jurisdications to adopt them; instituting an active labeling program and associated educational program so as to allow consumers to make intelligent decisions concerning the noise characteristics of products they buy.

- Utilizing the authorities implicit in other Federal agency mandates.

The overall noise program strategy for FY 1978 and beyond outlines a process of continuing Federal noise emission regulations for various products, instituting an active labeling program, and growth in the implementation of necessary noise control measures at the State and local level (e.g., use restrictions, zoning, etc.) with related Federal support. Expanding Federal efforts will include product labeling, Federal research coordination oriented toward defining health effects and advanced noise control technology needs, coordination of Federal agency noise control actions, assurance that production of new products meet Federal limits, and overall noise strategy coordination.

The EPA noise enforcement program is responsible for Federal enforcement of noise standards and labeling requirements applicable to new products. The main emphasis of the EPA enforcement effort in 1978 will be on enforcing new product noise emission standards for portable air compressors and medium and heavy-duty trucks through production verification and auditing of noise emission performance of such new products, and on development of enforcement regulations for identified products. An EPA Noise Enforcement Test Facility will be used to support new product noise enforcement.

SUMMARY OF INCREASES AND DECREASES	(in thousands of dollars)
1977 Noise Program	$10,277
Abatement and Control The increase is for expanding regulatory efforts in the labeling of products, to strengthen economic analysis associated with product regulation, and to expand the development of State and local programs.	+387
Enforcement The increase will be used primarily for enforcement of new product noise emission standards for medium and heavy-duty trucks and portable air compressors.	+125
1978 Noise Program	10,789

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of $10,789,000 is requested for 1978. This request, by appropriation account, is as follows:

Abatement and Control	$9,957,000
Enforcement	832,000

This request represents an increase of $511,800 over the 1977 noise program and provides for the expansion of regulatory effort on product labeling; strengthening economic analysis in the area of product regulation; expansion of the development of State and local programs; and for the enforcement of new product noise emission standards for medium and heavy-duty trucks and portable air compressors.

2. Changes from Original 1977 Budget Estimate

Changes from the original budget are as follows:

	(in thousands of dollars)
Original 1977 estimate	$10,285
Transfer of function	+45
Operating adjustments	-53
Current 1977 estimate	10,277

The noise coordination function was transferred from the Office of Research and Development, interdisciplinary media, in order to consolidate all noise control activities under the Office of Noise Control.

Operating adjustments were required in the application of the budget to operating needs at the beginning of the fiscal year.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations	$5,625	$14,313
Decrease due to program reduction	-228	...
Change in amount of carryover funds available	+8,916	-4,036
Program increases	...	+435
Total estimated obligations	14,313	10,712
(From new obligation authority)	(9,728)	(10,163)
(From prior year funds)	(4,585)	(549)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The 1977 budget estimate included program reductions from the 1976 level which are expected to result in a decrease of $228,000.

Carryover funds effecting obligations after FY 1976 result in a change of +$8,916,000; obligations in 1977 form carryover funds are expected to be $4,585,000. In 1978, obligations from carryover funds are estimated to be $549,000, a decrease of $4,036,000.

The increases in 1978 for product labeling and regulation, development of State and local programs, and noise enforcement activities are estimated to increase obligations by $435,000.

NOISE

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
PROGRAM LEVELS					
Develop enforcement strategies for new products.....	7	8	11	19	+8
Issue test orders for medium and heavy duty trucks and portable air compressors....	...	20	...	12	+12
Monitor production verification and SEA tests for trucks and compressors.....	...	...	...	15	+15
Review production verification reports.....	...	...	...	300	+300
Conduct SEA testing pursuant to test requests.....	...	...	...	1	+1
Conduct PV Tests.....	...	...	...	5	+5
Conduct tampering investigations.....	...	...	...	2	+2

Abatement and Control

SECTION TAB

NOISE

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977	Page
			(dollars in thousands)			
Appropriation						
Environmental Noise Strategies and Standards.....	$4,019	$8,342	$6,904	$6,957	+$53	N-7
Program Implementation.....	1,221	1,234	2,666	3,000	+334	N-11
Total.....	5,240	9,576	9,570	9,957	+387	
Permanent Positions						
Environmental Noise Strategies and Standards.....	38	49	42	45	+3	
Program Implementation.....	27	25	33	33	...	
Total.....	65	74	75	78	+3	

Purpose

The Abatement and Control appropriation provides for regulation development and implementation programs directed toward preventing the escalation of source noise generation and reducing the number of people exposed to harmful and annoying levels of environmental noise. These activities include identifying major sources of noise and subsequent new product emission regulations, which are intended to protect the public health and welfare through the application of the best available technology, taking into account the cost of compliance. Labeling regulations will be set for products which emit noise capable of adversely affecting the public health and welfare and for which new product regulations are unnecessary of insufficiently protective. Labeling will also be required for products which are sold on the basis of their effectiveness in reducing noise.

The Abatement and Control appropriation provides for technical assistance to other Federal agencies and to State and local governments for the development and implementation of their noise control programs. It also provides for technical assistance to the States in preparation for their complementary in-use enforcement role both in areas where new product regulations have been established and in localized problem areas more susceptible to State than to Federal enforcement.

Abatement and control activities include direct guidance to State and local agencies, environmental assessments relating to defining the noise problem and provision of environmental source data for use in developing new product regulations, and advice and assistance to programs of other Federal agencies which have noise control implications.

EPA has identified eight products as major sources of noise, promulgated regulations for two products (portable air compressors and medium/heavy-duty trucks) and will propose regulations for the other six products in FY 1977 (motorcyles, buses, wheel type loaders and dozers, track type loaders and dozers, truck mounted solid waste compactors, and truck mounted refrigeration equipment). Recommended regulations have been proposed to the FAA to control aviation noise. A labeling regulation for hearing protectors will be proposed in FY 1977.

ircraft noise were submitted to the FAA, three concerning approach a
ations and one operational regulation for the control of noise gener
ay SST's.

: and technology studies were initiated on a number of products incl
d hydraulic tools, automobiles, light trucks, and snowmobiles to det
ility for formal identification for regulatory or labeling actions.

1977 budget for this program is 28 positions and $4,888,100. Contra
lopment of outdoor noise regulations have been allocated $3.8 millic
is being spent for problem definition and assessment and $1.1 milli
sportation sources, with the remainder to be utilized for regulation
equipment, small engine powered equipment, electrical and electron
evelopment of labeling of outdoor noise sources, and for control tec
on and development.

977 planned activities include Federal Register publication of Noti
making (NPRM) for the six products identified in FY 1976 as major s
lers and dozers, buses, truck mounted compactors and refrigerator un
es).

on the economic and technology studies initiated in FY 1976, major
ns for either regulatory or labeling actions will be issued. Some
cts under consideration for identification are lawnmowers, pavement
ls, automobiles, light trucks, and snowmobiles.

ification economic and technology studies on rapid rail transit sy
ll be initiated. Three additional regulations for reduction of air
will be proposed to the FAA in early FY 1977. These include modif
ke off procedures, and an airport regulation.

describing special local conditions permitting exceptions to the In
r Carrier regulations will be published in the Federal Register.
ing activity, currently available noise control technology will be
research, development, and demonstration programs, in the Federal
universities. Critical noise programs will be identified and tech
programs will be initiated in conjunction with other Federal agenc
appropriate, to meet the long-range needs for noise abatement throu

ion of Changes from the Budget Estimate

ent estimate shows a decrease of $3,072,000. This change reflects
given to investigation of indoor machinery and household and cons
control, with special emphasis on possible labeling of these prod
ch source regulation; expanded airport noise abatement planning ass
fected by airport noise; increased coordination of other Federal p
lications; and increased support to State and local programs. The
decrease in activities related to emission regulations of products
door noise, which had been the Agency's initial noise emphasis and
urces, such as medium and heavy trucks and air compressors, were r
will be regulated in FY 1977. This also reflects the near complet
aircraft regulations for submission to the FAA. The shift furthe
t that an effective noise reduction program to provide adeguate he
tion requires complementary efforts at the State and local governm
on of all Federal Government research programs having noise implic
deral noise source standards.

Appropriation
Federal Agency Coordina
Noise Strategies
Implementation.....
Noise Strategy Evaluati

Total.....

Permanent Positions
Federal Agency Coordina
Noise Strategies
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Total.....

Budget Request

The resources request
33 positions, which reflec
and strategy, it is evider
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The "Quiet Communities Pro
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Airport noise will al
noise represent one of the
noise abatement planning p
the Nation's airports thro
EPA is already working wit
will be added in FY 1978.

Program Description

This subactivity incl
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model codes or model legis
specific noise control and
regulations and guidelines
requirements for which the

1978 Plan

The FY 197
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NOISE STRATEGIE

1976 Accomplish

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1977 Program

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Plans for
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airports which

Promulgation of regulations requiring labeling of products involves the development of measurement methodologies, testing requirements, and appropriate label content for products which either cause adverse health and welfare effects or which attentuate noise.

REGULATION OF INDOOR NOISE SOURCES

1976 Accomplishments

Resources were primarily allocated to product emission regulations development. These include investigations of such indoor noise sources as electrical and electronic equipment, household products, consumer products and industrial machinery. Work was initiated toward the development of a general strategy for labeling.

1977 Program

The FY 1977 budget for this program element is 12 positions and $1,906,000. Outputs planned for this fiscal year include: development of a general labeling strategy, including rating schemes and establishment of general labeling procedures; publication of reports on noise research and development in government, industry, and universities; continued investigation of household products, consumer products, and industrial machinery product groups for possible labeling or emission regulations; and continued work on health effects assessment related to product regulation. Contract funds to support investigations for possible emission on labeling regulations of indoor noise sources total $1.5 million.

1977 Explanation of Changes from Budget Estimate

$1,574,000 has been reprogrammed into this program element. This change reflects increased emphasis to be given to investigation of indoor machinery and consumer products noise control, with a special emphasis on possible labeling of products in these groups, as contrasted with noise emission regulations. This increase results from a decrease in activities related to emission regulations of products which are sources of outdoor noise, which had been the Agency's initial noise emphasis and for which a number of sources have been regulated in FY 1976 or will be regulated in FY 1977. This also reflects near completion of aviation regulations for submission to FAA.

1978 Plan

The resources requested for this program element for FY 1978 are 13 positions and $1,937,000 an increase of one position and $31,000 to support analyses of the economic impact of noise regulations. Of these funds, $1.4 million is for contract support for development of emission or labeling regulations to control noise from major sources of indoor noise. Development work has already begun on various product groups in FY 1977 and in FY 1978. It is expected that in FY 1978 regulations specifying emissions requiring labeling will be proposed for a number of indoor noise sources.

REGULATION OF OUTDOOR NOISE SOURCES

1976 Accomplishments

An estimated $5.1 million was allocated for contract support to develop noise regulations. Included were regulation of construction equipment, investigation of possible regulations of such sources as small engine powered equipment and outdoor electrical equipment, further problem definition and assessment and for identification of control technology for outdoor noise sources, development of airport and aircraft regulations for FAA proposals and analytical services (technical, economics, and benefits assessment) in support of regulations and development of a national noise control strategy. During FY 1976, final regulations were promulgated for newly produced medium and heavy trucks and portable air compressors. In addition, regulations governing noise emissions of interstate rail carriers were issued both for all rail cars in use and for newly manufactured locomotives and rail cars. Four additional proposed regulations for the

control of aircraft noise were submitted to the FAA, three concerning approach and landing operations and one operational regulation for the control of noise generated by present day SST's.

Economic and technology studies were initiated on a number of products including pneumatic and hydraulic tools, automobiles, light trucks, and snowmobiles to determine their suitability for formal identification for regulatory or labeling actions.

1977 Program

The FY 1977 budget for this program is 28 positions and $4,888,100. Contracts to support development of outdoor noise regulations have been allocated $3.8 million; $1.4 million is being spent for problem definition and assessment and $1.1 million for surface transportation sources, with the remainder to be utilized for regulation of construction equipment, small engine powered equipment, electrical and electronic equipment, development of labeling of outdoor noise sources, and for control technology identification and development.

The FY 1977 planned activities include Federal Register publication of Notices of Proposed Rulemaking (NPRM) for the six products identified in FY 1976 as major sources of noise(loaders and dozers, buses, truck mounted compactors and refrigerator units, and motorcycles).

Based upon the economic and technology studies initiated in FY 1976, major source identifications for either regulatory or labeling actions will be issued. Some of the primary products under consideration for identification are lawnmowers, pavement breakers and rock drills, automobiles, light trucks, and snowmobiles.

Preidentification economic and technology studies on rapid rail transit systems and chain saws will be initiated. Three additional regulations for reduction of aircraft and airport noise will be proposed to the FAA in early FY 1977. These include modifications to FAR 36, take off procedures, and an airport regulation.

An NPRM describing special local conditions permitting exceptions to the Interstate Rail and Motor Carrier regulations will be published in the Federal Register. To support the standard setting activity, currently available noise control technology will be developed from ongoing noise research, development, and demonstration programs, in the Federal Government, industry, and universities. Critical noise programs will be identified and technology demonstration programs will be initiated in conjunction with other Federal agencies or industry, as appropriate, to meet the long-range needs for noise abatement through source control.

1977 Explanation of Changes from the Budget Estimate

The current estimate shows a decrease of $3,072,000. This change reflects increased emphasis to be given to investigation of indoor machinery and household and consumer products noise control, with special emphasis on possible labeling of these products, as contrasted with source regulation; expanded airport noise abatement planning assistance to communities affected by airport noise; increased coordination of other Federal programs with noise implications; and increased support to State and local programs. These increases result from a decrease in activities related to emission regulations of products which are sources of outdoor noise, which had been the Agency's initial noise emphasis and for which a number of sources, such as medium and heavy trucks and air compressors, were regulated in FY 1976 or will be regulated in FY 1977. This also reflects the near completion of the development of aircraft regulations for submission to the FAA. The shift further reflects acknowledgement that an effective noise reduction program to provide aqeduate health and welfare protection requires complementary efforts at the State and local governmental levels, and coordination of all Federal Government research programs having noise implications, in addition to Federal noise source standards.

1978 Plan

The FY 1978 budget request for this program element is 29 positions and $4,864,000, an increase of one position and a decrease of $24,100. The position increase is to provide additional resources for development of economic analyses of proposed regulations; the decrease of $24,100 is a result of a slight contract effort decrease offset by the new position funding. Funds are primarily to be allocated to contract support for regulations development: $1.4 million for assessing outdoor noise emissions and effects from industrial equipment, surface transportation vehicles, small engine powered equipment and electrical and electronic equipment; and $2.4 million is for the purpose of developing cost and economic impact analyses to facilitate justification of standards, to develop data to enable identification of major noise sources, to update the Criteria and Levels Documents and for control technology identification and development.

The FY 1978 planned program includes intensive activity in various stages of the development, preparation, and issuance of new product regulations covering noise emissions from outdoor sources. In addition, revisions or amendments to previously issued standards will be prepared covering such areas as tampering and useful life provisions. Specific activities include the issuance of 10 final regulations, nine notices of proposed rulemaking, and a number of products for preidentification economic and technology study. A major output planned for FY 1978 is the updating of the Criteria and Levels Documents (first issued in early 1974) as a result of the availability of new information developed over the past three years and indicated by currently ongoing research efforts.

REGULATION OF PROTECTIVE AND CONTROL DEVICES

1976 Accomplishments

Resources were directed toward development of labeling regulations for hearing protectors and investigation of automobile mufflers for possible labeling.

1977 Program

The 1977 allocation to this program element is two positions and $110,000. NPRM's for the labeling of hearing protectors and for general labeling provisions will be published. Initial work will begin on development of labeling regulations for mufflers. Work on general labeling strategy will be carried out. Investigation will begin on possible labeling regulations for building materials.

1977 Explanation of Changes from Budget Estimate

The current estimate reflects a reprogramming of $60,000 into this program element. In addition to labeling of products which are protective and control devices, this increase emphasizes work on development of general labeling provisions while reflecting a decrease in activities related to emission regulations of products which are sources of outdoor noise and near completion of aviation regulations for submission to the FAA.

1978 Plan

The resources requested for this program element for FY 1978 are three positions and $156,000. This reflects an increase of one position and $46,000 from the FY 1977 current estimate for development of economic analyses for proposed regulations. It is expected that in FY 1978, the Agency will issue a final rule on labeling of hearing protectors, a proposed rule on labeling of mufflers, and a final rule setting out general labeling provisions. Work will also continue on labeling strategy refinement, i.e., determination of which products can be effectively controlled through labeling and what labeling techniques are most effective. Work may begin on labeling of building materials.

NOISE

Abatement and Control

Program Implementation

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Federal Agency Coordination..	$249	$205	$671	$672	+$1
Noise Strategies Implementation.....	907	828	1,750	2,082	+332
Noise Strategy Evaluation....	65	201	245	246	+1
Total.....	1,221	1,234	2,666	3,000	+334
Permanent Positions					
Federal Agency Coordination..	3	4	9	9	...
Noise Strategies Implementation.....	19	16	22	22	...
Noise Strategy Evaluation....	5	5	2	2	...
Total.....	27	25	33	33	...

Budget Request

The resources requested for this budget subactivity in 1978 are $3.0 million and 33 positions, which reflects an increase of $334,000. As indicated in the overview and strategy, it is evident that source standards cannot provide adequate health and welfare protection in the near future without complementary efforts at the State and local governmental levels. The resource levels requested will support the initiation of a "Quiet Communities Program" which will assist a few carefully chosen communities in the development and documentation of locally proposed noise programs or projects. The "Quiet Communities Program" will capitalize on the willingness of some communities to proceed with the establishment of noise control programs. These communities will then provide technical assistance to other communities in the establishment of similar programs.

Airport noise will also receive special attention in FY 1978. Airports and aviation noise represent one of the foremost noise problems in the country. EPA has developed a noise abatement planning process by which significant noise abatement can be achieved at the Nation's airports through action available to airport proprietors and local communities. EPA is already working with eight airports on a pilot basis and some additional airports will be added in FY 1978.

Program Description

This subactivity includes areas related to the development of State and local capability to implement noise abatement programs, including the development of guidelines and information, model codes or model legislation, consultation with State and local control programs on specific noise control and planning problems, and assistance in the interpretation of Federal regulations and guidelines. It also includes implementation of regulatory and statutory requirements for which the Federal Government has responsibility.

The Federal agency coordination function incorporates those activities and outputs related to: (1) the coordination of other Federal agencies' activities in implementing Section 4 of the Noise Control Act, (2) the responsibilities for monitoring other Federal facilities' noise abatement activities; and (3) the review of other Federal agency environmental impact statements (EIS) insofar as their noise impacts are concerned.

FEDERAL AGENCY COORDINATION

1976 Accomplishments

Resources were allocated for contract work related to Federal noise program coordination such as work on EIS review manuals and guidelines for Federal agency noise control.

The preparation of several manuals and guidance documents was initiated to assist EPA regional personnel and other agencies in evaluating and implementing the requirements of various Federal noise regulatory actions. For example, a methodology for describing and assessing blast noise was developed in conjunction with the National Research Council and the Department of Defense and recommendations were submitted to the Departments of Defense, Housing and Urban Development, and Interior to utilize this common methodology in future blast effects research programs. Recommendations for improvements to the Federal Highways Administration's (FHWA) noise regulations were accepted by the FHWA, including the use of the EPA recommended noise description (leq) methodology.

1977 Program

$100,000 is allocated for contract support for development of materials for general assistance to other Federal agencies' noise control programs and $300,000 will be spent for joint demonstration programs with other Federal agencies. Studies of other Federal agency noise programs will be carried out to assist these agencies in assessing the adequacy of their programs in carrying out the national noise abatement effort. This will be used for the basis of coordinating Federal noise programs as an integral element into the Agency's national noise abatement strategy. Other support material will also be produced; examples include a manual for reducing noise impact of off-road vehicles in recreational areas and a manual on techniques for reducing noise impact from highways. The joint demonstration projects are designed to improve the effectiveness of the Federal noise abatement effort through the pooling of resources toward common ends and to demonstrate the effective use of Federal authorities for the purpose of noise control. An example of the joint demonstration projects with other Federal agencies which are now being discussed is a proposed demonstration project using cost-effective methods of mitigating construction site noise on Federal construction projects to be carried out with the Department of Transportation and the Department of Defense. Through such demonstration projects, the Agency expects to both increase Federal Government noise control efforts and to demonstrate available noise control techniques to Federal and non-Federal institutions.

1977 Explanation of Changes from Budget Estimate

The current estimate shows a reprogramming of $466,000 into this program element. This shift in funds is designed to support increased Federal coordination activities and to initiate joint demonstration programs with other Federal agencies.

This change reflects increased emphasis to be given to coordination of the total Federal Government noise control program as required in Section 4 of the Noise Control Act of 1972. These changes result from a decrease in activities related to emission regulation of products which are sources of outdoor noise and the near completion of the development of aviation regulations for submission to the FAA.

1978 Plan

The FY 1978 request for this program is 9 positions and $672,000. There is no change in positions and a minor increase of $1,000. The 1978 resources will include $100,000 funding for contract support for continued development of manuals and guidelines for Federal agencies and others to use in noise control efforts. $300,000 will be used to continue joint demonstration programs with other Federal agencies begun in FY 1977 and to initiate some new demonstrations.

NOISE STRATEGIES IMPLEMENTATION

1976 Accomplishments

Contract support was provided for development of concepts and materials for use by State and local noise control programs (such as model legislation, manuals on control of various sources, and noise surveys and assessments). Several documents to facilitate the establishment of State and local ordinances to complement and supplement the Federal new product regulations were published and distributed. These include a model community Noise Control Ordinance, which provides the basic criteria to enable local communities to develop specific noise ordinances designed to meet their individual needs. A summary report on State and municipal noise control activities was prepared to permit these jurisdictions to evaluate what others are doing to abate noise and to provide some stimulation to initiate similar programs within their communities. A detailed methodology was developed to assist airport operators and local communities to assess the magnitude of the airport noise problem in their communities and to indicate the potential benefits of specific remedial actions.

1977 Program

$1.1 million of the current estimate is for contract funds. A comprehensive noise control strategy will be developed identifying the options and alternatives for an optimum mix of Federal regulatory actions, State and local operational restrictions and individual consumer contributions to reducing noise from all sources. Utilizing the airport analysis methodology developed in 1976, technical assistance will be provided to seven participating airports to develop noise abatement plans to minimize the effects of aircraft noise on the local communities. In the area of consumer education, a diverse program will be developed including publication and distribution of pamphlets and brochures and the production of an airport film for presentation at community functions and television outlets. Objectives are to heighten the awareness of the public as to the effects of noise and the actions necessary to abate it and to enable the public to make use of the information communicated through the labeling program.

Plans for FY 1977 include development of reports on the status of State and local legislation across the country; support of noise control workshops in the EPA regional offices; development of an initial consumer education program to accompany the EPA product labeling program; and two proposed noise abatement plans for six airports which are to implement pilot noise abatement projects.

1977 Explanation of Changes from Budget Estimate

The current estimate shows a reprogramming of $922,000 into this program element. This shift in resources reflects increased emphasis to be given to extending assistance to airport noise impacted communities to support noise abatement planning and increased support to State and local programs. This reflects acknowledgement that an effective noise reduction program to provide adequate health and welfare protection requires complementary efforts at State and local governmental levels.

1978 Plan

The FY 1978 request for this program element is 22 positions and $2,082,000. The increase of $331,600 is primarily for contract support and brings the 1978 level of contract support to $1.5 million. In FY 1978, the Agency will begin a program which will focus on demonstrating how balanced local and State noise control programs (using proper methods) can effectively lower urban noise levels in selected communities. It is then planned that jurisdictions which have developed programs through this "Quiet Communities Program" will assist other nearby jurisdictions through the Agency's ECHO (Each Community Helps Others) program begun in FY 1977. Some of these communities will focus their effort under the "Quiet Communities Program" on perfecting one element of their noise control program such as the implementation of a program of property line standards, motor vehicle inspection, etc. Others will develop comprehensive programs.

Support will be provided to additional airports for the development of noise abatement plans utilizing the abatement methodology previously developed. Coordination with Federal agencies responsible for planning grant programs will be initiated to insure the proper use of those programs to further implement the community noise control planning strategy element of the airport planning process. The consumer education program developed in 1977 will be fully implemented nationwide to tie in with the planned labeling regulatory actions.

NOISE STRATEGY EVALUATION

976 Accomplishments

Work carried out during FY 1976 included development of a manual for use by local officials in measuring and assessing community noise, development and testing of measurement methodologies and data gathering activities, and development and issuance of a report assessing interior noise levels in transportation systems.

1977 Program

The resources include $185,000 in contract support. Planned outputs include development of a national monitoring protocol for both physical measurements and additional surveys of noise impact; an assessment of noise exposures experienced by typical populations through various daily cycles; an assessment of the effectiveness of regulations to control noise impact from highways; development of a protocol for assessment of the effectiveness of EPA's air compressor regulation which will go into effect in 1978; and continued collection of data on noise source emissions in support of EPA standard setting.

1977 Explanation of Changes from Budget Estimate

The current estimate reflects an increase of $44,000 to provide for the transfer of the noise coordination function from the Office of Research and Development to the Office of Noise Control.

1978 Plan

The FY 1978 request for this program is two positions and $246,000, which reflects a slight increase of $1,300 over the 1977 estimate. Planned outputs include pilot implementation of physical and social surveys for data collections and assessment of the national noise environment; implementation of data collection and assessment programs in selected communities; assessment of the effectiveness of the EPA interstate motor carrier regulations; and continued collection of data on noise source emissions in support of EPA standard setting activities.

Enforcement

SECTION TAB

NOISE

Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Noise Enforcement.....	$385	$709	$707	$832	+$125
Permanent Positions					
Noise Enforcement.....	18	21	21	25	+4

Budget Request

The request for $832,000 and 25 positions will provide for enforcement of new product noise emission standards for medium and heavy duty trucks and portable air compressors (effective in 1978), development of enforcement regulations for future new product and labeling regulations, participation in the coordination of State, local, and regional office activities, and operation of the Noise Enforcement Facility.

Program Description

The noise enforcement program provides for the enforcement of new product noise emission standards and labeling regulations pursuant to Sections 6 and 8, respectively, of the Noise Control Act of 1972. It also provides for development of enforcement regulations for new product noise emission standards and for labeling requirements as necessary, tampering inspections, surveillance activities, recalls, and continued participation in providing assistance to States and local jurisdictions for the development of in-use noise enforcement programs.

1976 Accomplishments

$41,000 was allocated for contracts in support of the noise enforcement effort. In 1976, noise emission standards and enforcement regulations were promulgated for medium and heavy duty trucks (April 13, 1976) and for portable air compressors (January 13, 1976). The standard for medium and heavy duty trucks becomes effective on January 1, 1978. For portable air compressors with a delivery rate equal to or less than 250 cubic feet per minute (cfm), the standard becomes effective on January 1, 1978; for compressors with a delivery rate greater than 250 cfm the effective date is July 1, 1978. Development of enforcement regulations for five products (wheel and crawler tractors, mobile solid waste compactors, truck refrigeration units, motorcycles, and buses) was initiated. Additionally, development of regulations for the enforcement of labeling regulations for hearing protectors was started.

Construction of the Noise Enforcement Facility (NEF) at NASA's Plum Brook Station in Sandusky, Ohio, was completed. NEF has the capability to test products in accordance with applicable noise emission test procedures. Additionally, the first Mobile Noise Enforcement Facility (MoNEF) was received and placed in operation. MoNEF has the capability to test both compressors and trucks at manufacturers' facilities and to perform in-use surveillance. A correlation testing program between NEF and manufacturers' test sites was initiated with both truck and compressor manufacturers.

Assistance was provided for the development of a local community noise workbook. Program guidance to the regions and support to the Office of Noise Abatement and Control concerning assistance to State and local governments in the development of in-use enforcement programs was initiated.

1977 Program

The FY 1977 resources are $707,000 and 21 positions. Of this amount, $191,000 is allocated for contracts. This money will be used for modification and development of the NEF to accommodate testing of additional products, for contractor support for surveillance testing, for new and replacement instrumentation, and for general supplies, services, and maintenance.

New product noise emission regulations for buses, motorcycles, loaders/dozers, truck mounted refrigeration units, and solid waste compactors will be proposed in the second quarter of FY 1977. Public hearings will be held for each of these new product regulations. Enforcement regulations will be developed in coordination with the development of noise emission limits for various additional products. Regulations regarding the importation of regulated new products will be developed and coordinated with the Department of Treasury. Administrative hearing procedures will also be developed. These regulations will set out the administrative procedures to be followed in all EPA enforcement actions initiated under authority of the Noise Control Act.

In FY 1977, planned activities include the development of strategies for Federal enforcement of new product noise standards in-use, and participation in assistance to State and local enforcement authorities in the adoption and enforcement of in-use noise emission standards. Federal recall, warranty, and tampering enforcement programs will be developed and guidance will be provided to regional personnel for any necessary investigations. Further, a program of noise emission test site studies with manufacturers of regulated products will continue. This site characterization program is conducted by the Noise Enforcement Facility in Sandusky, Ohio.

Additional activities include monitoring of production verification testing conducted by truck and compressor manufacturers in accordance with testing requirements of the regulations. The noise emission standards of these regulations become effective on January 1, 1978; however, manufacturers have indicated their plans to conduct production verification testing up to six months in advance of that date.

1977 Explanation of Changes from Budget Estimate

The decrease of $2,000 is a result of operating adjustments made in applying the budget to actual needs at the beginning of the fiscal year.

1978 Plan

In FY 1978, the resource levels requested for this program will be $832,000 and 25 positions, an increase of four positions and $125,000 over the 1977 estimate. This increase will be used primarily for the enforcement of new product noise emission standards for medium and heavy duty trucks and portable air compressors. Approximately $215,000 of the 1978 resources are contract funds to be utilized by the Noise Enforcement Facility to provide for the surveillance and investigation of in-use noise emissions and tampering and to modify the Noise Enforcement Facility to accommodate newly regulated products. The FY 1978 resource levels will be allocated to four main areas: enforcement of new product noise emission standards for medium and heavy duty trucks and portable air compressors, development of enforcement regulations for future new product and labeling regulations, participation in the coordination of State, local, and regional office noise enforcement activities, and the operation of the Noise Enforcement Facility.

The noise emission standards for trucks and smaller compressors will become effective on January 1, 1978. For larger compressors the standard will become effective on July 1, 1978. Six positions will be allocated to ensure that only complying products are distributed in commerce. The positions will allow EPA to monitor a small portion of the Production Verification (PV) testing that manufacturers must do and to review approximately 300 PV reports that manufacturers must submit. Additionally, a minimum of 12 Selective Enforcement Audit (SEA) test requests will be issued to manufacturers of trucks and compressors to ensure that compliance is continued after the initial PV. Furthermore, it will be necessary to conduct investigations, prepare administrative orders, and participate in administrative hearings and prosecutions.

The development of noise emission standards for a number of additional products is scheduled. Enforcement regulations in support of these standards are required and the request will allow for six positions for this activity.

Two positions will be used to participate in the coordination of the enforcement efforts of the regional offices, and State and local agencies to ensure that regulated products do not unreasonably degrade in-use. Without a strong State and local enforcement effort with respect to the use of regulated products, the overall effectiveness of the Agency's noise abatement program will be reduced.

The Noise Enforcement Facility will provide technical support that will be necessary for enforcement of the new product noise emission standards for trucks and compressors. Also, the Facility must develop the capability to provide technical support for future noise emission standards for five products. To provide this support, 11 positions are allocated for staffing the Noise Enforcement Facility.

Modification of the Noise Enforcement Facility will include the purchase of new instrumentation, primarily weather instrumentation, and the replacement of instrumentation damaged or worn out equipment. Miscellaneous other needs such as tools, supplies, and services are included herein as well.

To support enforcement of the truck and compressor standards, NEF will monitor 10 PV tests and five SEA tests and conduct five PV tests and one SEA test. This is a minimal but necessary effort to guard against any potential conflict of interest since the regulated industries have control of PV testing and the reporting of test results. NEF will also conduct two tampering investigations and correlate 20 manufacturers' test facilities with its test facility.

Interdisciplinary

SECTION TAB

Interdisci ry

	Ford Submission Pos.	Ford Submission Amount (dollars in thousands)	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount (dollars in thousands)
Abatement and Control:	152	$13,983	143	$13,983
Preparation of Environmental Impact Statements.....	152	13,983	143	13,983
Regulatory and New Source NEPA Compliance.....	(50)	(4,955)	(44)	(4,955)
Waste Water Management Programs NEPA Compliance.....	(102)	(9,028)	(99)	(9,028)
Research and Development:	188	25,773	201	26,063
Health and Ecological Effects.....	6	5,230	8	5,272
Ecological Processes and Effects.....	(2)	(246)	(2)	(246)
Health Effects.....	(4)	(4,984)	(6)	(5,026)
Industrial Processes.....	28	5,566)	38	5,650
Renewable Resources.....	(28)	(5,566)	(38)	(5,650)
Public Sector Activities.....	10	1,599	10	1,599
Environmental Management.....	(10)	(1,599)	(10)	(1,599)
Monitoring and Technical Support.....	144	13,378	145	13,547
Measurement, Techniques and Equipment Development.....	(21)	(1,441)	(21)	(1,441)
Quality Assurance.....	(67)	(5,355)	(56)	(5,355)
Technical Support.....	(42)	(5,882)	(54)	(6,051)
Science Advisory Board.....	(14)	(700)	(14)	(700)

INTERDISCIPLINARY

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$3,946	$10,664	$11,483	$13,983	+$2,500
Permanent Positions.....	123	137	143	152	+9
Transition Quarter.....	5,516	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	23,010	25,355	26,288	25,773	-515
Permanent Positions.....	203	213	228	188	-40
Transition Quarter.....	8,556	N/A	N/A	N/A	N/A
Total, Interdisciplinary Program:					
Appropriation.....	26,956	36,019	37,771	39,756	+1,985
Permanent Positions.....	326	350	371	340	-31
Transition Quarter.....	14,072	N/A	N/A	N/A	N/A
Outlays.....	15,534	26,500	36,200	30,100	-6,100
Authorization Levels.....	Authorizations are contained within amounts authorized for Federal Water Pollution Control Act, Clean Air Act, Solid Waste Disposal Act, Federal Insecticide, Fungicide, and Rodenticide Act, Safe Drinking Water Act, as well as certain portions by virtue of the Appropriation Act.				

OVERVIEW AND STRATEGY

Effective management of environmental programs frequently requires cutting across the usual media lines. Although most problems are best approached directly by specific media programs, there are frequently cases where either the problem, skill, or technique for addressing it is not readily assignable to a particular media. A multimedia or interdisciplinary approach is consequently the most efficient and effective vehicle for Agency action. EPA applies this concept primarily in the research and development area where both the problems and tools are frequently multidisciplinary.

The interdisciplinary program in health and ecological effects includes the development of pollutant assessment documents and the funding for EPA's contribution to the National Center for Toxicological Research (NCTR). Multimedia documents are prepared assessing the scientific and technical information on health and environmental pollutant effects to assist the Agency in regulating environmental pollutants. In addition, special studies will be carried out to advance the methodology available for determining the optimum levels for setting pollution control standards and the benefits of pollution control. The National Center for Toxicological Research is funded jointly by the Food and Drug Administration, HEW and EPA. NCTR is a national research endeavor to study long-term effects of low doses of chemical toxicants by various exposure routes. This toxicological program will provide research on carcinogensis, mutagenesis, teratogenesis, comparative metabolism, and improved toxicological testing methodology addressing EPA priority needs in those research areas.

The renewable resources research program conducts, in cooperation with other Federal agencies, research related to control of environmental pollution associated with agricultural and forestry production. The program encompasses: (a) the assessment, development and demonstration of total management systems, including Best Management Practices (BMP's) and pollution control predictive methodologies to control water, land and air pollution associated with the production and harvesting of food, fiber, wood and their related residual wastes; (b) the assessment of probable trends in the production of there renewable resources and their resulting environmental impacts;

and (c) the development of integrated pest management controls to reduce runoff of agricultural pesticides and to reduce reliance on pesticides for controlling urban pests. This research is supportive of the requirements of P.L. 92-500 for controlling pollution from nonpoint sources and the Section 208 needs to assess areawide waste management alternatives. The FY 1978 program will continue to emphasize technical coordination with other Federal agencies to Agency programs, planning agencies and other user groups. The FY 1977 initiatives to intensify model verification and evaluation of cost effective implementation options are continuing.

Environmental management research provides environmental planners and managers with methods to determine alternative solutions for specific environmental problems and develops techniques for evaluating and selecting effective, efficient, and equitable solutions. The research focuses on the development of improved multimedia planning techniques, improved methods for the collection and analysis of environmental quality and economic information, evaluation of alternative institutional arrangements, and development of comprehensive systems analysis and evaluation methodologies. Included in the requirements of current Federal environmental quality programs that relate to this research are the development of statewide continuing planning processes (Section 303(e) of the Federal Water Pollution Control Act), areawide waste management plans related to water quality management (Section 201 of the Federal Water Pollution Control Act), solid waste plans, and State implementation plans (Section 110 of the Clean Air Act), including air quality maintenance and transportation management plans. The program in FY 1978 will emphasize primarily the implementation and postimplementation evaluation of environmental management research results.

Monitoring techniques and equipment development research is geared to monitoring systems development for operational use. The basic objective of this effort is to develop cost-effective and efficient monitoring systems and techniques which will provide the information required by EPA in meeting its regulatory and enforcement roles under present and anticipated legislative mandates. This objective will be met by application of optimization techniques and systematic approaches which permit clear identification and quantitative definition of the relationships between pollutant sources, their environmental path ways, and exposure to dose-response relationships of the critical receptor(s), i.e., population(s) at risk. FY 1978 emphasis will be in the development of methodologies to cheaply and accurately monitor nonpoint discharges from urban runoff and agricultural sources.

Quality assurance research addresses the operational monitoring needs of the Agency. The objective of this activity is to provide the reference or standard monitoring methods, quality control procedures, associated standard reference materials, and quality control program audits needed by the Agency's monitoring program in the acquisition of accurate and legally defensible ambient and source environmental quality data. Emphasis will be given to the promulgation of reference and equivalent methods and quality control procedures and the production of standard reference materials needed to enforce the standards and regulations now in existence and being planned for adoption. FY 1978 emphasis on the water supply and air monitoring quality assurance needs of the Agency are noteworthy.

Interdisciplinary technical support includes several types of discrete activities which serve ORD and Agency needs. These include technical information dissemination, technology transfer, minority institution research support, and multimedia technical support. As these are service and supportive activities to ORD and other units of the Agency, the FY 1978 program is a continuation of FY 1976-1977 initiatives.

A multimedia or interdisciplinary approach is being applied to the preparation of environmental impact statements. Although this activity is often media specific, the focus is continually shifting from problem to problem and media to media. Accordingly, it can be managed more effectively and efficiently from an interdisciplinary stance than by assigning resources to each media and reprogramming every time a change occurs.

SUMMARY OF INCREASES AND DECREASES

	(in thousands of dollars)
1977 Interdisciplinary Program.....	$37,771
Abatement and Control..... The requested increase will provide for additional environmental impact statements for construction grants, new source discharge permits, and other selected regulatory programs.	+2,500
Research and Development..... The decreased funding request for interdisciplinary research and development corresponds to a $300 thousand reduction in socioeconomic research to determine the benefits of pollution abatement and a $500 thousand reduction in the renewable resources in irrigated crop production and animal production research which are entering less costly phases. The $285 thousand increase in monitoring and technical support results from restoration of the program to the FY 1977 budget level subsequent to the action which reprogrammed funds to the air media to support the BACER program.	-515
1978 Interdisciplinary Program.....	39,756

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of $39,756,000 is requested for 1978. This request, by appropriation, is as follows:

Abatement and Control.....	$13,983,000
Research and Development.....	25,773,000

This represents an increase of $1,984,600 over the 1977 interdisciplinary program. This net increase results from an increase of $2,499,600 for the preparation of additional environmental impact statements and environmental appraisal; from a decrease of $500,000 in the industrial processes activity, irrigated crop production and animal production programs; from a decrease of $300,000 in the health and ecological effects activity, to reduce the socioeconomic work on pollution control benefits; and from an increase of $285,000 to restore the funds transferred in 1977 to the BACER project from the technical support activity.

2. Changes from Original 1977 Budget Estimate

Changes from the original budget estimate are as follows:

	(in thousands of dollars)
Original 1977 estimate.....	$36,019
Congressional add-on.....	+400
Operating adjustments.....	+511
Transfer for BACER.....	-285

Transfer noise function.....	-45
Transfer to program management and support media.....	-545
Transfer to quality assurance activity.....	+822
Transfer to technical support.....	+894
Current 1977 estimate.....	37,771

The Congress added-on $400,000 for an environmental impact study of the proposed coal-fire thermal power development project near the East Poplar River north of Montana, in Canada.

Operating adjustments were made by the regional and headquarters offices in order to reflect actual operating condition requirements. The cumulative change of these adjustments to the interdisciplinary media is +$511,000.

A transfer of $285,000 to the air media was made to support the Biological and Climatic Effects Research program (BACER).

The reprogramming of $45,000 to the Office of Noise Control reflects the transfer of the noise coordination function from the interdisciplinary media.

A proposal will be submitted to the Committee, as appropriate, for separate consideration for the research and development reprogrammings of -$545,000 to the program management and support media for increased costs; +$822,000 in the quality assurance activity for the water supply lab certification program; and +$894,000 in the technical support activity for increased costs for major projects such as the Kepone incident, dioxin disposal and certain regional oxidant transport studies.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations.....	$26,956	$36,763
Change in amount of carryover funds available.....	+10,620	+1,008
Net change of 1977 program increases and decreases in budget estimate.....	-1,455	...
Adjustment for congressional add-ons.....	-440	...
Miscellaneous increases and decreases, as listed above.....	+1,082	...
Net change of 1978 program increases and decreases	...	+1,610
Total estimated obligations.....	36,763	39,381
(From new obligation authority).....	(32,459)	(34,069)
(From prior year funds).....	(4,304)	(5,312)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

A change in the amount of carryover funds effecting obligations after FY 1976 results in an increase of $10,620,000. Obligations from carryover funds in 1977 are estimated to be $4,304,000; in 1978, obligations are expected to be $5,312,000, an increase of $1,008,000.

The 1977 budget estimate included program increases and decreases to the 1976 level which are expected to result in a reduction of obligations in 1977, -$1,455,000.

The one-time congressional add-on in 1976 and the 1977 add-on for an environmental impact study results in a net change of -$440,000 to 1977 obligations.

The increases and decreases detailed in the changes to budget are expected to reflect a net change of +$1,082,000 to 1977 obligations.

The 1978 increase for additional environmental impact statements and for research monitoring and technical support, combined with the 1978 decreases for socioeconomic research and irrigated crop production and animal production research, are expected to result in a net increase of $1,610,000 in obligations.

INTERDISCIPLINARY

Abatement and Control

Number of Draft and Final EIS's Filed with
Council on Environmental Quality

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
PROGRAM LEVELS					
Regulatory and New Source NEPA Compliance.....	14	130	68	114	+46
New Source Water Discharge Permits.....	(2)	(100)	(35)	(72)	(+37)
Other Regulatory Actions.....	(12)	(30)	(33)	(42)	(+9)
Waste Water Management Programs NEPA Compliance.....	64	179	113	186	+73
Construction Grants.....	(64)	(179)	(95)	(115)	(+20)
Section 208 Areawide Planning.....	...	...	(11)	(45)	(+34)
Clean Lakes Demonstration Grants..	...	...	(7)	(26)	(+19)

Abatement and Control

SECTION TAB

INTERDISCIPLINARY

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977	Page
			(dollars in thousands)			
Appropriation						
Preparation of Environmental Impact Statements.....	$3,946	$10,644	$11,483	$13,983	+$2,500	I-8
Permanent Positions						
Preparation of Environmental Impact Statements.....	123	137	143	152	+9	

Purpose

With certain exceptions, the National Environmental Policy Act of 1969 requires that all Federal agencies prepare environmental impact statements on all of their proposed major actions which would significantly affect the environment. Accordingly, EPA has undertaken the preparation of EIS's (or negative declarations in instances where no significant environmental impact is involved) for municipal waste water treatment plant grants and for the issuance of new source discharge permits (NSDP). In addition, the Agency has announced a policy of voluntarily preparing EIS's for major regulatory actions even though they are not required by law.

INTERDISCIPLINARY

Abatement and Control

Preparation of Environmental Impact Statements

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Regulatory and New Source NEPA Compliance.....	$2,210	$2,767	$3,328	$4,955	+$1,627
Waste Water Management Programs NEPA Compliance..	1,736	7,897	8,155	9,028	+873
Total.....	3,946	10,664	11,483	13,983	+2,500
Permanent Positions					
Regulatory and New Source NEPA Compliance.....	69	38	44	50	+6
Waste Water Management Programs NEPA Compliance..	54	99	99	102	+3
Total.....	123	137	143	152	+9

Budget Request

The budget request for this subactivity is $13,983,000 and 152 positions, an increase of $2,499,600 and nine positions, which will provide for the preparation of additional environmental impact statements and environmental appraisals related to construction grants, new source discharge permits, regulatory and standard setting actions, and other selected regulatory programs.

Program Description

The National Environmental Policy Act of 1969 (NEPA) requires that all agencies of the Federal Government prepare detailed environmental impact statements on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. NEPA requires that agencies include in their decision making process an appropriate and careful consideration of all environmental aspects of proposed actions, an explanation of potential environmental effects of proposed actions and alternative actions considered for public understanding, a discussion of ways to avoid or minimize adverse effects of proposed actions, and a discussion of how to restore or enhance environmental quality as much as possible.

EPA's compliance with NEPA requires environmental reviews culminating in the preparation of environmental impact statements, or negative declarations with environmental appraisals in instances where no significant environmental impact is involved, for (1) municipal waste water treatment plant construction grants, (2) areawide waste water management planning grants, (3) clean lakes demonstration grants, (4) solid waste management activities, (5) legislative proposals, and (6) the issuance of new source discharge permits. Although not required by NEPA, EPA has a policy of voluntarily preparing EIS's for many of its major regulatory actions.

Activities include consulting with EPA grantees and contractors to ensure that environmental assessments are accurate and complete; performing environmental reviews and issuing notices of intent; preparing draft and final EIS's, or negative declarations with environmental impact appraisals; holding public hearings on EIS's; and developing Agency policies and guidelines for NEPA compliance.

REGULATORY AND NEW SOURCE NEPA COMPLIANCE

1976 Accomplishments

A total of 14 EIS's, both drafts and finals, were filed with CEQ: two EIS's on water new source discharge permits and 12 voluntary EIS's on proposed EPA regulations. More efficient contract procedures were established to expedite the preparation of new source EIS's and ocean dumping

site regulatory EIS's. In our regulatory programs, efforts have been directed toward integrating all the analyses performed during the development of the standards and publishing them in a single document that will meet NEPA and all other statutory requirements.

Guidelines on the content of EIS's on new radiation regulations were completed, and work was initiated on guidelines for the content of pesticide and ocean dumping site regulations EIS's. Final revisions were completed on regulations for water new source permit EIS preparation; substantial progress was made on new procedures for preparing voluntary EIS's on pesticides cancellation.

1977 Program

The resources allocated to this program are $3,327,800 and 44 positions. A total of 68 draft and final EIS's are expected to be filed with CEQ, including 35 water new source permit EIS's and 33 voluntary regulatory EIS's. Most of the volunary regulatory EIS's initiated will be for stationary air new source performance standards. Additional EIS's will be initiated on the ambient air lead standards and vehicle and product noise standards. Efforts will continue on integrating all the analyses performed during the development of the standards and publishing them in a single document that will meet NEPA and all other statutory requirements. EIS preparation guidelines for ocean dumping sites will be completed, and new guidelines for toxic substances and solid waste regulatory EIS preparation are anticipated. The development of new EIS pesticides regulations will be completed. Water new source permit EIS preparation technical guidelines will be developed for specific industries, and final regulations will be promulgated.

1977 Explanation of Changes from Budget Estimate

The increase of $561,000 over the budget estimate results from several factors. The Congress added-on $400,000 for an environmental impact study of the proposed coal-fire thermal power development project near the East Poplar River north of Montana, in Canada. The remaining +$161,000 are adjustments resulting from the application of the budget estimate to actual operating conditions.

1978 Plan

The resources in this program will be $4,955,000 and 50 positions, an increase of $1,627,200 and six positions. Approximately 114 draft and final EIS's are expected to be filed with CEQ, an increase of over 60 percent, including 72 water new source permit EIS's and 42 regulatory EIS's.

A significant increase in the number of EIS's prepared on ocean dumping site designations is expected. The first EIS's on toxic substances and solid waste are anticipated. A continued high level of EIS activity is expected on stationary air new source standards development.

Available projections of the number, type, and complexity of water new source discharge permit applications are tentative, reflecting economic uncertainties over the rate of industrial expansion. However, EPA expects to almost double output on new source EIS preparation.

WASTE WATER MANAGEMENT PROGRAM NEPA COMPLIANCE

1976 Accomplishments

A total of 64 construction grants EIS's were filed with CEQ, including 27 finals and 37 drafts. More efficient contracting procedures were established to expedite EIS preparation. Policy guidance was issued on concurrent facility planning EIS preparation ("piggybacking") for construction grant EIS preparation, and several EIS's were initiated using this method.

Technical guidelines for projecting the secondary socio-economic impacts of waste water treatment plant siting and construction were initiated, and policy guidance on clean lakes demonstration grants and section 208 planning grants EIS's was initiated.

1977 Program

The resources allocated to this program are $8,155,600 and 99 positions. The total number of draft and final EIS's filed with CEQ will increase to 113, including 95 construction grant EIS's, 11 section 208 EIS's, and possibly seven clean lakes demonstration grant EIS's. New contracting procedures for expediting the preparation of construction grant EIS's will be fully implemented. Work will begin on the development of technical guidelines for evaluating the secondary impacts on the physical environment from waste water treatment plant siting and construction, specifically for wetlands, floodplains, and endangered species.

1977 Explanation of Changes from Budget Estimate

The increase of $258,000 over the 1977 budget estimate reflects the additional regional funding required to support the increased workload of the construction grants activity and the new work generated by Section 208 and Clean Lakes policies.

1978 Plan

The resources in this program are $9,028,000 and 102 positions, an increase of $872,400, and three positions. The total number of draft and final EIS's filed with CEQ will increase to 186, an increase of over 50 percent including 115 construction grant EIS's, 45 section 208 grant EIS's, and 26 clean lakes demonstration grant EIS's. The number of draft EIS's on Step 1 construction grant awards and clean lakes demonstration grants will continue to increase. The bulk of final EIS's on 208 areawide planning grants will be filed with CEQ during FY 1978.

Technical guidelines on secondary impacts of siting waste water treatment plants in floodplains or wetlands will be completed. In addition, revisions to EPA's regulations on construction grant EIS preparation will be completed to bring them into compliance with recently issued CEQ guidelines, National Parks Service regulations on historic preservation, and proposed revisions to Executive Order 11296 on floodplain development.

Research and Development

SECTION TAB

INTERDISCIPLINARY

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Health and Ecological Effects.....	$5,908	$5,573	$5,530	$5,230	-$300	I-12
Industrial Processes...	6,303	6,416	6,066	5,566	-500	I-15
Public Sector Activities.....	717	1,794	1,599	1,599	...	I-20
Monitoring and Technical Support.....	10,082	11,572	13,093	13,378	+285	I-23
Total.....	23,010	25,355	26,288	25,773	-515	
Permanent Positions						
Health and Ecological Effects.....	5	14	16	6	-10	
Industrial Processes...	35	31	38	28	-10	
Public Sector Activities.....	7	12	10	10	...	
Monitoring and Technical Support.....	156	156	164	144	-20	
Total.....	203	213	228	188	-40	

Purpose

The interdisciplinary research program is designed to provide a wide range of assessment vehicles--theoretical, operational, and managerial--across common property environmental resources, i.e., air and water. The program considers the interrelationship of these resources through multidisciplinary, multimedia research activities in health and ecological effects, environmental management of nonpoint source pollution and its socioeconomic impact, i.e., renewable resources of food and fiber, and monitoring techniques and equipment. The program develops quality assurance procedures for use in regional and State programs, provides standard setting methodologies, and produces assessment documents on pollutants for which standards may be established. Through this regional program, environmental planners and managers are provided with methods to determine alternative solutions for specific environmental problems. Technical support under this program makes available to Agency operating programs technical services in response to specific requests and technical information to users throughout the public and private sectors.

INTERDISCIPLINARY

Research and Development

Health and Ecological Effects

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Health and Ecological Processes and Effects...	$5,908	$5,573	$5,530	$5,230	-$300
Permanent Positions					
Health and Ecological Processes and Effects...	5	14	16	6	-10

Budget Request

The 1978 request for this program is $5,230,000 and six positions, a decrease of $300,000 and 10 positions.

Program Description

This program consists of assessment documentation development, socioeconomic research, and support for the National Center for Toxicological Research (NCTR).

The major portion of this research consists of projects at the National Center for Toxicological Research, funded jointly by the Food and Drug Administration (FDA) and the Environmental Protection Agency as a national facility to study the long-term effects of low doses of chemical toxicants. Previous research efforts associated with toxicants have concentrated on acute studies with high doses and their effects on man. The scientific community continues to be concerned about the possibility that much more severe damage to man and the environment may be occurring through low dose exposure to toxicants over a long period of time. NCTR is undertaking research to evaluate such cumulative, low dosage chronic effects.

Assessment documents are prepared to synthesize and assess the available scientific and technical knowledge on major pollutants, as well as to summarize the validity and significance of such data prior to initiating action to develop regulations.

Socioeconomic research is undertaken to develop and demonstrate improved methodology for quantifying the benefits of pollution control expenditures and for other means of assessing tradeoffs in pollution control management. The Agency uses this research to establish and adjust the goals and priorities for national pollution abatement activities.

1976 Accomplishments

Assessment documents accomplishments included:

- Two new panels were established by the National Academy of Sciences to prepare multimedia assessment documents on nonfluorinated halomethanes and nitrates. These documents will comprehensively assess the scientific, technical, and cost-benefit information available on these compounds for use in EPA review of them for regulatory purposes.

- A report has been completed which outlines two systems for rapid ranking of the relative environmental problems posed by various pollutants and makes an initial application of one of them.

Socioeconomic research accomplishments included the completion of reports, as follows:

- Economic impacts of urban noise;

- Recreation benefits of urban water quality improvements;

- Application of a benefit-risk framework to some alternatives for cadmium and asbestos regulation;

- Air damage functions for sulfurdioxide and total suspended particulates; and

- Case studies of alternative control strategies for mobile source air pollutants.

National Center for Toxicological Research accomplishments included:

- A two year age sensitivity study of 2-acetylamino fluorine to determine potential differences in susceptibility to tumors was completed which contributed to an ongoing effort to establish test methods and protocols for carcinogens.

- Other work was completed in the area of test protocol development, including a pilot study to determine the experimental dose range for tumorigenesis for selected estrogens such as estradiol. Based on this work, larger scale studies were initiated.

- Long-term teratogenic studies for the herbicide 2,4,5-T were completed.

- Development of an automatic data system for teratology data was completed.

- Baseline data for morphologic and histologic parameters was established for populations of animal species to be used in further studies, wherein experimental observations can be compared to the baseline observations for analysis of results.

1977 Program

The 1977 resource level for health and ecological effects research was $5,530,000 and 16 positions. Those resources include approximately $1,023,000 in contracts and $4,000,000 in interagency agreements.

Included in the program at NCTR are chronic lifetime and multigeneration studies to determine the relationship between levels of exposure and biological effects; carcinogenic, teratogenic, and mutagenic evaluations of environmental pollutants; and metabolic studies to compare chemical breakdown and common metabolic pathways between different animal species and man.

The 1977 non-NCTR emphasis continues to be on assessment documents preparation and on economic research. The assessment document program is to include the completion of multimedia reports reviewing the literature on at least six suspect pollutants or classes of pollutants and assessing the pollution problems posed by at least two of them, as well as completion of the NAS halomethane and nitrate assessments. The economic research emphasizes methodology development to estimate the benefits of pesticides control and to determine the benefits and costs of controlling particular pollutants.

1977 Explanation of Changes from Budget Estimate

The decrease of $43,000 from the budget estimate reflects the transfer of the noise coordination function to the Office of Noise Control (-$45,000), and a minor shift of funds (+$2,000) within the interdisciplinary media to adjust to actual operating conditions.

1978 Plan

The 1978 program for this subactivity is planned at $5,230,000 and six positions, including $4,000,000 in interagency agreements and $850,000 in grants.

Research support for NCTR will continue at a $4,000,000 level in 1978 to provide toxicologic data on long-term, low level exposures to various possible carcinogens, teratogens, and mutagens using mice and rats as test animals.

In 1978, non-NCTR work will include completion of about 10 combined literature reviews on pollutants, primarily those being considered for point source control in effluents, as well as completion of assessments of the environmental problems posed by several of them. The economic research program will emphasize benefits methodology development at both the program and pollutant levels. Major reports on water pollution benefits and methodology development for determining air pollution benefits in the Western United States are expected.

The $300,000 and 10 position reduction from the 1977 level reflect a management decision to reduce the socioeconomic work on pollution control benefits and to increase the extent to which extramural effort is used to execute the remainder.

INTERDISCIPLINARY

Research and Development

Industrial Processes

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Renewable Resources....	$6,303	$6,416	$6,066	$5,566	-$500
Permanent Positions					
Renewable Resources....	35	31	38	28	-10

Budget Request

In 1978, $5,566,000 and 28 positions are requested for the renewable resources program. This is a decrease of $500,000 and 10 positions from the 1977 resource level. The position reduction will be taken at the Robert S. Kerr Environmental Research Laboratory in Ada, Oklahoma.

Program Description

The renewable resources research program conducts research related to control of environmental pollution associated with agricultural and forestry production. This research program is integrated with those of the Departments of Agriculture and Interior and State universities and land grant colleges. The program encompasses:

(a) the evaluation and development of total management systems, including Best Management Practices (BMP's) and pollution control predictive methodologies, to control water, land, and air pollution from the production and harvesting of food, and fiber, and from their related residual wastes;

(b) the assessment of probable trends in the production of renewable resources and their resulting environmental and socioeconomic impacts, including crop production on both irrigated and nonirrigated lands, forest management practices, and animal production; and

(c) the development of integrated pest management controls to reduce runoff of agricultural pesticides and usage of chemical pesticides.

Research conducted on a near-term basis is essential to support development of guidelines for identifying and evaluating the nature and extent of agricultural and forestry nonpoint sources of pollution, along with the necessary processes, procedures, and methods to control pollution from these sources, as required in Section 304(e) of the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500. Also vital is the requirement in Section 208 to support assessment and management of pollutants emanating from nonpoint sources, as required of State and local agencies in the execution of their areawide waste management responsibilities. As a result of mounting pressure for increased production of renewable resources, efforts must be initiated now to better understand the potential environmental impacts of alternative approaches to increased production in order to maintain desirable levels of environmental quality.

In order to develop a basis for selecting and justifying local management techniques for controlling nonpoint source pollutants related to agricultural and forestry production, it will first be necessary to:

(a) develop methodologies to estimate or determine background levels of pollution in agriculture and forestry production regions;

(b) provide tools for the planner/decision makers to determine the probable environmental consequences of the major agricultural and forestry pollutants including appropriate predictive methods;

(c) provide tools to evaluate both the pollution and cost effectiveness of individual and combined management systems;

(d) develop cost effective methods (i.e., BMP's) that minimize agricultural and forestry pollution by evaluating and demonstrating different systems at different locations; and

(e) develop, evaluate and demonstrate implementation strategies (including socioeconomic and institutional aspects) for candidate BMP's.

1976 Accomplishments

1976 resources were allocated among five subprograms: nonirrigated crop production, irrigated crop production, animal production, forest management and integrated pest management. Resources included $400,000 for contracts, $3,400,000 for grants, and $1,500,000 for interagency agreements.

Nonirrigated crop production--The nonirrigated crop production subprogram concentrated in the areas of: (1) predictive modeling: completion of a simulation model for pesticide transformation and downward movement in agricultural lands, and development of a gross basin scale sediment model; (2) chemical/sediment management systems: technical reports were completed on methods for prediction and measurement of organics adsorption by soil and sediment; and (3) trends assessment: several studies were initiated to develop the capability to assess and predict the environmental effects of existing and advanced technologies necessary for increased production of renewable resources at the State, regional, and national levels. An interagency agreement with USDA-ARS produced Volume I of a manual for guideline development for selection of controls for water pollution from croplands.

Irrigated crop production--The irrigated crop production area included an interagency agreement with the USDA-Salinity Lab and grants devoted primarily to the evaluation of irrigated system management methods and to the development of predictive methods for management and reduction of mass pollutant emissions in irrigation return flow systems. An evaluation, including recommended changes was initiated on the legal constraints associated with western water laws and the implementation of salinity control technology. Fertilizer management studies under irrigation practices were completed in Southern Plains (Texas) and Pacific Northwest.

Animal production--In animal production, cooperative work with USDA-ARS has produced a manual on pollution potential from application of animal wastes to land and is assessing the problem of pasture runoff with respect to animal wastes. The Economic Research Service initiated an economic analysis of cost effective techniques for land application of animal wastes. Other work undertaken by grant and contract is assessing and developing environmentally safe techniques for land application of animal wastes considering both optimum crop utilization and disposal where crop production is not a governing factor, and management techniques for animal wastes from small unconfined feeding operations not covered by the NPDES program.

Forest management--An interagency agreement was initiated with the U.S. Forest Service to identify, evaluate, and consolidate into a user manual, information on currently available cost effective methods to reduce or control the environmental impact of forestry production activities.

Integrated pest management--The objective of the integrated pest management program is to assess alternative methods for integrated pest control for a variety of agronomic and horticultural crops. Research was primarily devoted to investigating alternatives for controlling pests in eight crop ecosystems, including the major ecosystems of cotton and corn.

1977 Program

Resources devoted to the renewable resources industry subactivity in 1977 are planned to be $6,066,000 and 38 positions. Research continues in the same five areas as outlined above. Resources include funds for contracts, $400,000; grants, $3,100,000; and interagency agreements, $1,300,000.

Nonirrigated crop production--Twelve positions and $1.8 million have been allocated to this area. In nonirrigated crop production, through an interagency agreement with USDA, the report, Control of Water Pollution from Cropland for use by the local agricultural community in the development of water pollution management guidelines, is to be completed. An economic evaluation of alternative implementation strategies for control of agricultural nonpoint sources of sediment and nutrients in the corn belt, a cost-effectiveness analysis of pesticide use monitoring and compliance strategies, and an assessment and cost-effectiveness analysis of soil and water conservation practices to prevent or control environmental pollution from agriculture are also being completed. These socioeconomic studies provide the kinds of tools needed to evaluate both the pollution potential and cost effectiveness of individual and combined management systems and implementation strategies for determining BMP's for nonpoint source control. In the predictive modeling area, the pesticide watershed model (ARM-2) and user's manual are being verified for Piedmont and Great Lakes Regions.

Research to expand assessment of long and short-term trends in agricultural and forestry production as they impact environmental quality is focusing on specific analyses of environmental impacts from agricultural systems of highest priority, such as conversion of marginal lands to cropland, chemical/energy intensive practices, and the likely increase in the use of crop irrigation. The annual assessment of recent developments in agriculture (i.e., irrigated and nonirrigated crop production, and animal production) and forest management is emphasizing the socioeconomic aspects of the trends on a nationwide basis, will be reported.

Irrigated crop production--Twelve positions and $1.5 million have been allocated to this area. Efforts in the irrigated crop production subprogram are completing a salinity control project in the Upper Colorado River Basin, including evaluation of the various demonstrations of salinity control measures, evaluation of the socioeconomic and institutional constraints to irrigation water management reform and salinity control, and development of a multilevel optimization model for cost effective salinity control measures which integrates desalinization.

Animal production--Eleven positions and $1.1 million have been allocated to this area. In cooperation with the Economic Research Service of USDA, a manual is being developed for evaluating cost effective techniques for land application of animal wastes including management of subsequent runoff. An evaluation of the environmental impact resulting from unconfined animal production, and Phase I of a manual on storage-retention design and model for waste holding structures for animal production facilities, are to be completed.

Forest management--Two positions and $300,000 have been allocated to this area. In forest management, a complete but general forest management planning model is being synthesized by integrating pollutant loading models with forest resources management and appropriate water quality models. In cooperation with the U.S. Forest Service, a user manual that includes a methodology for economic evaluation of alternative control strategies (BMP's) for forestry nonpoint sources of sediment, plus a complete list of forest management R&D needs relative to environmental protection, is being completed.

Integrated pest management--One position and $1.4 million have been allocated to this area. The integrated pest management efforts include an annual report for six major crop ecosystems, a vector ecological study, a study on juvenile hormones, an analysis of alfalfa weevil viruses, a study on pheromone control, and an analysis of urban pest management.

1977 Explanation of Changes from Budget Estimate

The $350,000 decrease from the budget estimate, contingent upon Committee approval, as appropriate, is to cover increased program management support costs.

1978 Plan

The 1978 program for this subactivity is planned at $5,566,000 and 28 positions, a decrease of $500,000 and 10 positions from the 1977 resource level. Research will continue to assess the agricultural and forestry nonpoint source problem and to develop and assess best management practices to alleviate such problems. Resources include funds for contracts, $100,000; grants, $3,000,000; and interagency agreements, $1,200,000.

Nonirrigated crop production--Twelve positions and $1,586,000 are allocated to this area. In nonirrigated crop production, an assessment of agricultural chemical practices for selected regions (Piedmont and Great Lakes) in terms of effectiveness for pollution control; a one state assessment of the implications of placing a marginal, submarginal, and "soil bank" land reserves into crop production; a state-of-the-art evaluation of minimum/no tillage as a pollution control measure; and the verification of a plant nutrient watershed model (ARM-2) and user's manual for the Piedmont and Great Lakes Regions are to be completed. The development of a watershed-scale agricultural chemical and biodegradable organics model (ARM-3) is to begin.

Irrigated crop production--Seven positions and $1,290,000 are allocated to this area. In irrigated crop production, the following efforts will be completed: an evaluation of State quality control strategies and agencies with regard to implementation of irrigation return flow quality control; salinity control project in the Upper Rio Grande Basin; development of management manuals including cost effectiveness of recommended practices for control of sediments, nutrients, and salinity in the Pacific Northwest; report integrating phosphorus and organic nitrogen submodels into the U.S. Bureau of Reclamation-Irrigation Return Flow (USBR-IRF) model package; and further verification of the IRF model package. The reduction in resources from the 1977 level and the resulting transfer of this program to another laboratory will likely delay some of these efforts.

Animal production--Six positions and $900,000 are allocated to this area. An interim manual will be developed on the integrated cost effective animal waste application techniques and runoff control measures for use by planners/decision makers in the determination of best management practices. Phase II (land application practices scheduling) of the manual on waste holding structures for animal production facilities, will be completed, as will a final manual on waste management systems for unconfined animal production operations, i.e., those not covered by the Agency's permit program, and an analysis of State laws, regulations, and other codes impacting the management of animal wastes. Due to a reduction in program resources, some delay in outputs will occur.

Forest management--Work with the U.S. Forest Service in the forest management subprogram will result in the completion of a user's manual for the highest priority timber production regions outlining detailed methodology for the selection of nonpoint source controls of all major pollutants resulting from forestry production activities. Field evaluation of an integrated forest resource management model developed earlier will be initiated.

Integrated pest management--One position and $1.3 million are allocated to this area. The integrated pest management will continue work on additional crop ecosystems, urban pest management systems, and pest ecosystem models/control systems. New work will be initiated on the nonchemical control of weeds. Work with USDA and NSF will continue.

The 1978 resource level in the renewable resources program is $500,000 and 10 positions less than the 1977 level. The position reduction is part of the overall reduction of positions in the Office of Research and Development directed at conducting more research on an extramural basis in order to release positions for other Agency activities. The position reduction will be taken at the Robert S. Kerr Laboratory in Ada, Oklahoma. The $500,000 reduction includes a $250,000 reduction in personnel costs related to the 10 position reduction and a $250,000 reduction in the irrigated crop production and animal production programs. This reduction is part of a longer term trend to decrease the resources in these two programs, since the more costly technology development work is being completed, and the programs' emphases will shift to implementation of demonstrated control technologies.

INTERDISCIPLINARY

Research and Development

Public Sector Activities

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Environmental Management...	$717	$1,794	$1,599	$1,599	...
Permanent Positions					
Environmental Management...	7	12	10	10	...

Budget Request

The request for 1978 is $1,599,000 and 10 positions, the same level as 1977.

Program Description

The objective of this program is to provide regional environmental planners and managers with methods to determine alternative solutions for specific environmental problems and to provide techniques for evaluating and selecting effective, efficient, and equitable solutions. The research focuses on the development of improved multi-media planning techniques, improved methods for the collection and analysis of environmental quality and economic information, evaluation of alternative institutional arrangements, and development of comprehensive systems analysis and evaluation methodologies. Important efforts involve:

(1) investigation of the systematic interrelationships among various residuals (solids, liquids, and gases) generated and discharged by communities to the environment;

(2) the design of integrated environmental management systems, including analytic planning techniques, alternative implementation techniques, and administrative and institutional considerations; and

(3) the evaluation of the impacts (both positive and negative) on all media (air, water, land,) of single media pollution control strategies.

1976 Accomplishments

In 1976, $363,900 was utilized for extramural contracts and $22,700 for grants.

A special Section 208 project was undertaken for the purpose of focusing environmental management research on the substantive and methodological problems of Section 208 planning. The first task of the project was to bring together into a single user's document the state-of-the-art knowledge, information, and procedures available for carrying out Section 208 planning. During fiscal year 1976, the part of the document dealing with evaluation of the water quality impacts of runoff was completed and published separately in order to accelerate the diffusion of knowledge to the Section 208 planners. The complete user's manual will be published in 1977.

During 1976, a number of other projects were completed, resulting in reports dealing with such subjects as:

(1) an assessment of the potential impact of the disposal of air pollution control residuals on surface and ground water quality;

(2) development of procedures for design of practical, implementable parking management plans for the reduction of automobile use and reduction of mobile source air pollution;

(3) theoretical economic analysis of land use and its control, and analysis of potential changes in the incentive structure to improve environmental quality;

(4) handbooks describing methods for estimating secondary impacts of municipal waste water treatment projects;

(5) assessment of the uncertainties associated with current mobile source emissions control enforcement programs; and

(6) development and demonstration of quantitative methods for managing the effluent permit compliance monitoring program.

1977 Program

The current estimate for 1977 is $1,599,000 and 10 positions. Of this total figure, $753,000 is for contracts, $200,000 for interagency agreements, and $300,000 for grants.

During 1977 the program is to focus on three primary areas:

(1) effective multimedia implementation incentives: to develop and evaluate alternative methods for implementing and enforcing integrated land use management and multimedia environmental management strategies, for use by regional and local governments;

(2) improved evaluation methods: to develop and demonstrate methods for the evaluation of the physical and economic effects of community environmental quality management plans, and to extend single media systems modeling techniques to other media; and

(3) comprehensive planning guidelines: to examine joint air shed and water basin planning; evaluate air quality data collection and management systems on a regionwide basis; review population forecasting procedures; and examine methods for defining ambient water quality standards.

Achievements during 1977 will include:

(1) completion of a report of the administrative and institutional aspects of implementing regional environmental quality management programs. This document discusses alternative types of governmental structures, regulations, administrative procedures, economic incentives, and enforcement programs applicable to integrated environmental management. It is to be prepared in a format suitable for use bv State, local, and regional governmental officials in designing their own programs, and will be used as a major section of the Regional Environmental Management Handbook, to be published in early 1978;

(2) the special Section 208 project is to be completed, resulting in an Areawide Assessment Procedures Manual, which will be a user-oriented catalog of available technical, economic, and management information necessary for conducting 208 planning; and

(3) procedures for local governments to use in dealing with the social and economic aspects, of alternative waste water sludge disposal options and decisions on the design and scheduling of alternative domestic waste water management systems (home, neighborhood, municipal, and regional) are also being developed.

1977 Explanation of Changes from Budget Estimate

The decrease of $195,000 from the budget estimate, contingent upon Committee approval, as appropriate, is to cover increased costs incurred in the program management media.

1978 Program

The estimated 1978 budget is $1,599,000 and 10 positions. Of this amount, $549,000 is for extramural contracts and $700,000 for interagency agreements.

Early 1978 will see as a major accomplishment, the publication of the Regional Environmental Management Handbook, which summarizes and presents relevant environmental management research and experience occurring over the past decade for use by governmental authorities and consultants at all levels concerned with environmental quality.

With many of the major "first-round" regional environmental planning efforts nearing completion throughout the Nation, the 1978 Environmental Management Research Program will be emphasizing primarily the implementation, enforcement, and post-construction evaluation problems of environmental management.

Based on theoretical analyses conducted over the past few years, research on economic incentive mechanisms as substitutes or complements to traditional regulatory enforcement systems will be undertaken.

A low-level effort in the "planning" subprogram will be directed at improving the reliability of small-area population and economic activity forecasting to provide better bases for environmental plans.

INTERDISCIPLINARY

Research and Development

Monitoring and Technical Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
		(dollars in thousands)			
Appropriation					
Measurement, Techniques and Equipment Development..	$1,273	$1,777	$1,441	$1,441	...
Quality Assurance.....	3,052	4,533	5,355	5,355	...
Technical Support.....	5,225	4,652	5,597	5,882	+$285
Science Advisory Board.....	532	610	700	700	...
Total.....	10,082	11,572	13,093	13,378	+285
Permanent Positions					
Measurement, Techniques and Equipment Development..	21	39	21	21	...
Quality Assurance.....	77	52	67	67	...
Technical Support.....	46	51	62	42	-20
Science Advisory Board.....	12	14	14	14	...
Total.....	156	156	164	144	-20

Budget Request

Resources of $13,378,000 and 144 positions are requested for 1978. This is an increase of $285,000 and a decrease of 20 positions from the FY 1977 program. The Agency is considering various options as to where the position reduction will be taken.

Program Description

The components of this program activity include: (1) pollution monitoring measurement techniques and equipment development; (2) monitoring quality assurance, methods and procedures preparation; (3) technical support, which includes technical services, technical information and technology transfer, and the Minority Institutions Research Support (MIRS) program; and (4) the Science Advisory Board.

The objective of the interdisciplinary measurement techniques and equipment development program is to develop, demonstrate, and evaluate advanced and multimedia monitoring systems, techniques and equipment for monitoring all aspects of the environment. The program supports Agency monitoring requirements through the development, design, optimization and evaluation of new multimedia monitoring systems and networks, airborne and remote sensing techniques, automated field in-situ techniques and associated data handling systems, and monitoring instruments and equipment including the adaptation of available analytical techniques to measure pollutants in all media and receptors.

The quality assurance program, serving all environmental monitoring activities of the Agency, standardizes the monitoring methods, provides quality control procedures for operational use, supplies standard reference materials, performs quality control audits, develops quality control guidelines and manuals, conducts on-site evaluation of all regional laboratories, administers laboratory performance tests, develops laboratory certification procedures and laboratory automation instruments and data handling systems, and participates in regional quality control workshops. The Agency uses the procedures, protocols, and materials generated by the quality assurance program to assure that the data generated from the use of measurement systems is scientifically valid and accurate, intercomparable, and legally defensible.

The technical support program is responsible for assuring that the state-of-the-art knowledge gained from the on-going research, the expertise of ORD personnel and the specialized equipment and instruments in ORD are made available to Agency operating programs in response to their specific requests for support. This program, which also includes air and water quality elements, plans for and provides resources and staff to respond to unique and highly specialized requests from the Agency operating programs.

Most of the interdisciplinary technical services required by the Agency and provided under this program element is dependent upon maintaining a highly sophisticated, airborne, remote-sensing capability for multimedia monitoring which is employed for both short-term and long-term investigations.

The technical support area includes the technical information and technology transfer which is responsible for managing and coordinating the effective dissemination and transfer of the findings and products of the research and development program to a variety of dependent users both within the Agency and throughout the public and private sectors. The program involves the entire range of general scientific and technical information dissemination activities including the publication and general distribution of scientific and technical reports, responding to requests for specific information, and positive information dissemination whereby proven marketing techniques are used to match available information or technology to the expressed needs of particular user groups such as local community decision officials who frequently do not possess technical or scientific backgrounds and the professional engineering community. Appropriate information transfer products such as specialized publications or tailored seminars are also developed in a form designed to be most useful and readily understandable to the targeted user.

The Minority Institutions Research Support (MIRS) program in the technical support area awards research grants to minority institutions to stimulate environmental research consistent with EPA requirements and to enhance the competence of these institutions to acquire Federal support under conditions of open competition. To assure that grants are based upon actual requirements, they are funded on a cost-sharing basis between this program and the EPA unit sponsoring the research requirement. Requirements are made known to minority institutions, and those possessing expertise in the necessary disciplines are encouraged to develop appropriate research proposals.

The Science Advisory Board was established to provide a strong, direct link between EPA's Administrator and the scientific community. The Science Advisory Board renders independent advice to the Administrator on the Agency's major scientific programs, performs special tasks and program review assignments for the Agency, provides advice on broad scientific and policy matters concerning emerging environmental problems and assesses the results of specific research efforts to solve these problems.

MEASUREMENT, TECHNIQUES AND EQUIPMENT DEVELOPMENT

1976 Accomplishments

1976 resources included $400,000 for contracts.

Accomplishments for the measurement techniques and equipment development program include:

(a) Development of techniques and equipment for monitoring stack plumes, atmospheric mixing heights and for detecting particulate signatures;

(b) Development of remote sensing environmental interpretation keys for pollution monitoring;

(c) Development of nonpoint source monitoring techniques for oil shale development areas;

(d) Improved design of integrated monitoring biological systems linking sources of pollution to exposure and effects; and

(e) Initiation of a program to develop active and passive sensors and systems for measuring water quality parameters in fresh and marine waters and estuaries.

1977 Program

Resources for interdisciplinary measurement, techniques and equipment development are planned to be $1,441,000 and 21 positions, including $500,000 in contracts.

The measurement, techniques and equipment development program is planned to include:

(a) The design and field evaluation of a Differential Absorption System (DAS), and the development of a technique for remote quantitative sensing of nonvisible gaseous pollutants;

(b) Field evaluation of an algae and dye dispersion laser system;

(c) Testing and validation of operational nonpoint source monitoring techniques;

(d) Design and construction of a general purpose laser fluorosensor;

(e) Design and development of air deployable instrumentation packages for characterization of toxic substances;

(f) Continuation of integrated monitoring systems research for monitoring remote areas such as oil storage facilities in wetlands;

(g) State-of-the-art analysis for optimizing the design of monitoring networks using simulation models;

(h) Development of a remote sensing system for plume identification by particle signature and for measuring plume mixing patterns;

(i) Testing of an air deployable package for measuring surface temperature sensors;

(j) Develop and validate guidelines for an optimized integrated monitoring network for air and water monitoring;

(k) Develop and apply systematic multimedia monitoring concepts for toxic substances and carcinogens; and

(l) Development of a LIDAR method for monitoring ozone to measure transport of oxidants.

1977 Explanation of Changes from Budget Estimate

The $336,000 reduction from the budget estimate reflects funds reassigned to interdisciplinary technical support to meet increases in technical support requirements involving major projects such as the Kepone incident, dioxin disposal, and certain regional oxidant transport studies.

1978 Plan

The 1978 plan for this subactivity includes resources of $1,441,000 and 21 positions, of which $400,000 will be allocated for contracts. These resources reflect the same level as in 1977.

The resources applied to the measurement, techniques and equipment development program in 1978 will be used to:

(a) Develop a helicopter deployable laser fluorosensor system for monitoring pollutants such as algae and specific toxic chemicals whose characteristic signatures are detectable;

(b) Develop a differential absorption system for monitoring pollutants such as sulfur dioxide and particulates from airborne platforms;

(c) Develop nonpoint source monitoring techniques for oil shale development areas;

(d) Develop and apply integrated multimedia monitoring concepts to measure high priority pollutants such as toxic substances, carcinogens and hazardous wastes;

(e) Develop and validate guidelines for optimization of air and water monitoring networks including applications of modeling and data interpretation techniques for station siting and network design;

(f) Identify, develop and validate appropriate biological response organisms as monitors of pollutant exposures, and integrate the biological techniques with operational multimedia monitoring systems; and

(g) Study laser ramon scattering techniques for monitoring toxic substances.

QUALITY ASSURANCE

1976 Accomplishments

1976 resources included $800,000 for contracts, $100,000 for grants, and $30,000 for interagency agreements. Accomplishments for the quality assurance program include:

- Evaluation and collaborative testing of measurement methods and systems for determining the presence of Cesium, Strontium, Potassium and other radionuclides in water, soil, milk, and biological samples and publication of guidelines and quality control procedures for their use;

- Completion of an ozone calibration procedure;

- Preparation and distribution of approximately 100,000 water quality control samples containing various concentrations of pollutants for use as references for determining performance of laboratories and calibration of instruments;

- Conduct of quality control audits of EPA regional laboratories for 35 chemical parameters;

- Established the traceability of radionuclide quality control samples with the National Bureau of Standards to assist States, utilities, and the Nuclear Regulatory Commission in licensing of nuclear facilities;

- Initiated a water supply quality assurance program and provided support to the regional offices to begin developing procedures for water supply laboratory certification;

- Conducted performance surveys of 23 continuous sulfur dioxide monitoring instruments at eight industrial sites;

- Developed a quality control sample repository for use in calibration of instruments and measurement methods designed to measure sulfur dioxide, nitrogen dioxide, carbon monoxide, sulfates, nitrates, lead, and arsenic; and

- Developed a biological laboratory evaluation protocol for evaluation of State laboratories engaged in studies of water quality.

1977 Program

Resources for the quality assurance subactivity are planned to be $5,355,000 and 67 positions. These resources include funds for contracts, $1,200,000; interagency agreements, $600,000; and grants, $100,000.

Significant activities and planned outputs resulting from the 1977 program are to include:

- Development and implementation of an interim measurement methods equivalency program to support the National Pollution Discharge Elimination Systems (NPDES) required under Subsection 304(g) of the Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500;

- Validate procedures for the collection and preservation of water and waste water samples;

- Completion and preliminary evaluation of currently available methodologies to measure the 65 Consent Decree pollutants;

- Continuation of a measurement methods equivalency program for stationary air pollution emission sources;

- Standardized and validated measurement systems for air, water, waste water, pesticides, and radionuclides as determined by monitoring program priorities;

- Procedures and acceptance criteria for testing and officially approving alternatives to reference methods promulgated by the EPA;

- Develop a national work plan and committee to coordinate and carry out the functions of the Pilot Secretariat for pollution measurement under the authority and auspices of the International Organization of Legal Metrology. This is a treaty organization to which the United States is a signatory, and this activity is responsive to an Agency commitment to the Department of Commerce in the area of pollution metrology;

- Manual of measurement methods for ambient air and stationary emission sources;

- Manual of evaluation procedures and acceptance criteria to certify the capability and performance of laboratories analyzing public drinking water under the Safe Drinking Water Act, Public Law 93-523 (laboratory certification program);

- Develop and maintain repositories of reference and quality control samples and materials for air, water, pesticides, radionuclides, and other measurements and, as needed, for calibrations, testing, and quality control;

- Quality control guidelines for the measurement of nitrogen dioxide (NO_2) in ambient air, and a technical guidance document for the use of continous NO_2 monitors;

- Performance specifications and performance evaluation reports for continuous water quality monitors and automated samplers; continuation of interlaboratory performance/tests for air and water measurements and cross-check samples studies for radiochemical measurements to include support to the Nuclear Regulatory Commission;

- Technical assistance to the regions/States to upgrade environmental laboratories relative to performance and quality control; the conduct of semiannual meetings of all regional quality control coordinators; participation in planning and conducting quality assurance workshops and seminars; and direct technical assistance to solve operational monitoring problems and to provide the on-site evaluation of laboratories particularly for laboratories making radiochemical measurements; and

- Additional intra and interlaboratory quality control samples and performance check materials are to be developed and made available to environmental laboratories. New quality control guidelines and protocols are being developed as criteria for a laboratory certification program.

1977 Explanation of Changes from Budget Estimate

The $822,000 increase over the budget estimate was provided for the water supply laboratory certification program, a requirement which was realized subsequent to the budget request.

1978 Plan

Planned resources for this category in 1978 are the same level as 1977, $5,355,000 and 67 positions, which includes $1,200,000 for contracts, $200,000 for grants, and $600,000 for interagency agreements.

Significant activities and planned outputs for this program in 1978 will include:

- Develop performance evaluation samples for organic nitrogen and phosphorus pesticides, minerals and nutrients;

- Production of approximately 50,000 quality control samples for use in instrument and methods calibration and laboratory performance evaluation;

- Standardization of methods for specfic pollutants in response to the requirements of Section 304(g) of the Federal Water Pollution Control Act Amendments of 1972;

- Addition of mass spectral data for toxic compounds and chemical abstracts registry numbers to the Mass Spectral Search System;

- Development of a standard biological tissue sample for analysis of toxic substances;

- Development of specifications for effluent monitoring instruments and evaluate capabilities of commercially available instruments for this purpose;

- Development and modification of radiological methods for measuring radionuclides in phosphate manufacturing facilities and wastes from coal fired plants;

- Continuation of the water supply quality assurance program and the provision of support to regional offices for certification of state and local drinking water laboratories; and

- Preparations of quality assurance guidelines governing the use of LIDAR systems to measure water quality parameters.

TECHNICAL SUPPORT

1976 Accomplishments

1976 resources for this category included $1,800,000 for contracts and $500,000 for grants.

The technical services program in 1976 improved its responsiveness to the scientific and technical needs of the Agency by successfully conducting numerous monitoring and source inventory mapping activities with airborne remote sensing techniques. Projects included aerial surveillances for the purposes of delineating land-use patterns and pollution sources, surveys of strip mine areas to determine causes and sources of acid mine wastes and effects of rehabilitation practices; and studies of sanitary landfills to determine the movement of leachate. More specific accomplishments included contact sensing and sampling to determine the impact of aircraft operations on air quality, vegetation and soil at a major municipal airport; assessment of agriculture and silviculture practices based on aerial photography surveys; and the determination of transport and dispersion of effluent plumes from certain power plants.

An important accomplishment of the technical information program was the completion and distribution of the publication, Choosing the Optimum Financial Strategy for Pollution Control Investments, designed to aid industrial plant managers, particularly those in smaller firms, in analyzing the financial implications for their companies when faced with the necessity of acquiring and installing pollution control equipment, often involving substantial capital investment. Another significant publication distributed during 1976 was Waste Water Treatment Alternatives. This document, prepared in semitechnical language, was specifically targeted to assist local decision makers to identify, evaluate and choose appropriate pollution control technology from available alternatives which will best meet the specific needs of their local communities. The 1976 program also included substantial effort in the area of land treatment of municipal waste effluents. This topic is of particular concern because of the legal requirement that this technology be considered as a possible alternative before Federal funding may be approved for municipal waste treatment projects. To assure that the latest information on this subject was available, a series of special seminars was held throughout the Nation in the 10 EPA regions. These seminars reached an audience of more than 3,000 consulting engineers and a three volume summary of the seminars has been distributed to more than 5,000 requestors.

In addition, a comprehensive five year plan for the management of automated data processing resources used throughout the research and development program was completed to facilitate maximum productivity and cost effective utilization of the resources which are available for ADP.

A final major activity is the Strategic Environmental Assessment System (SEAS), a comprehensive environmental model designed to assist national policy makers in environmental forecasting and policy impact analysis. During 1976, a number of energy demand and supply modules were incorporated into the system to support EPA studies of environmental and energy relationships and a series of user application guides were designed to assist the transition of SEAS from a research mode to an operational system. This program was terminated in fiscal year 1976.

The MIRS program awarded research grants totaling $500,000 to 21 minority institutions. Second and third year grants totaled $200,000 and $300,000 went to new starts.

1977 Program

The 1977 resources for this program are $5,597,000 and 62 positions, including $2,000,000 for contracts, $700,000 for grants, and $200,000 for interagency agreements.

The 1977 technical services program of airborne monitoring and surveillance includes on-going projects and support for studies related to plant thermal discharge mapping; wetlands inventory of six coastal states; spill prevention control and counter measures, surveys, and studies of sanitary landfills to determine the movement of leachates delineation of land use patterns and pollution sources; surveys of strip mine areas to determine causes and sources of acid mine wastes and effects of rehabilitation processes; a 100 site study for noise regulation model verification and a hazardous material disposal site survey. A portion of the technical services program is nonspecific to allow for support of urgent and unforeseen activities as they occur.

The technical information program follow-up activity in the area of land treatment of waste water by continuing a joint effort involving EPA and the Corps of Engineers initiated during 1976 to produce a detailed technical design manual for use by military and civilian engineers. This major publication is scheduled for completion by the end of 1977. Support of the Urban Consortium for Technological Initiatives, a policy level group of local officials representing the 33 largest municipal and county jurisdictions in the Nation, continues into 1977 and includes the involvement of local officials in the Federal environmental R&D program to assess common problems for large urban centers on a priority basis, to direct future research activities toward solutions of those problems and to assist the rapid transfer of these solutions to those who need and will use them. In a parallel effort an experimental program to assess the feasibility of utilizing the existing and substantial capabilities of land grant college and university extension programs as an environmental information dissemination mechanism for transferring needed technology and other technical information to local decision officials in smaller, rural communities is planned.

A total of nine national seminars are planned which relate to technological advances in municipal waste water treatment. The principal subjects of these seminars include upgrading waste treatment lagoons, advances in physical-chemical treatment and nitrogen control. In addition to these national seminars, 10 regional seminars are planned to support the needs of local participants in the various areawide planning agencies established as required by Section 208 of the Federal Water Pollution Control Act, as amended. Additional specialized seminars will be presented in selected regions which relate to water supply and treatment technology, analytical methods for environmental monitoring, and pollution control technology for the metal finishing industry. Several specific information transfer publications will be completed including: a methods manual for the measurement of organic compounds in water and waste water; a two volume Power Industry Manual on latest development of pollution control for that industry; a similar manual for the textile industry; and an air monitoring handbook.

The MIRS program will award research grants to minority institutions to stimulate environmental research consistent with EPA requirements, and the resource level will remain constant.

1977 Explanation of Changes from Budget Estimate

The $945,000 increase over the budget estimate results from an increase of $1,230,000 required to cover increased costs for major projects such as the Kepone incident, dioxin disposal and certain regional oxidant transport studies, offset by a transfer of $285,000 to the air media for support of the Biological and Climatic Effects Research program (BACER).

1978 Plan

The 1978 planned resources for this activity are $5,882,000 and 42 positions, an increase of $285,000 and a decrease of 20 positions from the 1977 level. The resources include $700,000 for grants, $2,000,000 for contracts, and $200,000 for interagency agreements.

The technical services program has historically provided airborne monitoring and surveillance of sources and distribution of pollution in air, water and on the land; and provided resources for responding to immediate needs for technical services. In 1978, this technical services program, as well as the closely related technical support activities funded under the air and water quality medias, will undergo a restructuring and be largely handled on an extramural basis.

The 1978 technical information program will continue to emphasize the transfer of environmental information specifically tailored to user audience needs. Significant efforts shall again be devoted to the area of waste water control for both municipalities and industries and this activity shall continue at least through 1980 to achieve maximum impact as the 1983 and 1985 milestones of the Federal Water Pollution Control Act P.L. 92-500 approach. Anticipated specific projects shall include seminars and publications on alternative disinfection techniques which have increasing importance under the Safe Drinking Water Act. Increasing emphasis shall be placed on the transfer of information and technology on the environmental implications of the national thrust in energy development. Specific activities shall deal with the transfer of air pollution control technologies, energy aspects of waste water control and nonpoint source management. The development of a program to package and disseminate known information regarding toxic and hazardous substances is also being planned.

The MIRS program will remain unchanged in 1978 continuing its emphasis on awarding research grants to minority institutions to stimulate environmental research activity.

The 20 position reduction in interdisciplinary monitoring is part of an overall reduction in research and development positions in order to release positions for other higher priority activities. The reduction will result in more of the research being implemented on an extramural basis.

The $285,000 increase is the result of a FY 1977 reprogramming action to meet the funding requirements of the Biological and Climatic Effects Research program (BACER). This increase restores the interdisciplinary technical support program to the FY 1977 level of funding prior to the BACER transfer.

SCIENCE ADVISORY BOARD (SAB)

1976 Accomplishments

During FY 1976, the Board provided advice to the Agency on the scientific aspects of a variety of regulatory problems. These include, for example, reports on organic chemicals in water supply, nitrosamines in the environment, the scientific basis for air quality standards, the effects of disposal of waste water treatment sludges, and research programs in ecological effects.

1977 Program

The FY 1977 program continues the active use of the Science Advisory Board as the Agency's principal link with the independent scientific community. Activities are underway on a number of topics. Examples include, mutagenicity testing and interpretation, criteria for airborne lead, hazards of recombinant DNA activities, environmental monitoring program strategies, and the quality of extramural scientific and technical activities.

1977 Explanation of Changes from Budget Estimate

The $90,000 increase over the budget estimate reflects the now fully operational status of all member advisory committees and resulting operating increases.

1978 Plan

The 1978 request is $700,000 and 14 positions. The Science Advisory Board will continue to provide for consultation with the scientific community on matters of concern to the Agency. Such consultation will, as in the past, largely be in response to requests from policy level Agency officials. It is anticipated that scientific issues relevant to new legislation, such as TSCA, will serve as one major source of questions which will be referred to the SAB.

Toxic Substances

SECTION TAB

Toxic Subs[illegible]ces

	Ford Submission Pos.	Ford Submission Amount (dollars in thousands)	1978 Revised Carter Final Pos.	1978 Revised Carter Final Amount (dollars in thousands)
Abatement and Control:	311	$21,000	256	$24,803
Toxic Substances Strategies	311	21,000	256	24,803
Toxic Substances Strategies.....	(311)	(21,000)	(256)	24,803
Research and Delevelopment:	6	1,388	45	1,944
Health and Ecological Effects.....	6	1,388	45	1,944
Health Effects.....	(6)	(1,068)	(45)	(1,624)
Ecological Effects.....	...	(320)	...	(320)
Enforcement:	5	370	13	1,259
Toxic Substances Enforcement.....	5	5	13	1,259
Toxic Substances Enforcement.....	5	(5)	13	1,259

TOXIC SUBSTANCES

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$4,732	$6,012	$5,883	$22,500 ~~$21,000~~	+ 16,617 ~~+$15,117~~
Permanent Positions....	32	45	137	311	+174
Transition Quarter.....	3,081	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	...	...	...	370	+370
Permanent Positions....	...	...	...	5	+5
Transition Quarter.....	...	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	759	1,355	1,388	1,388	...
Permanent Positions....	4	7	6	6	...
Transition Quarter.....	690	N/A	N/A	N/A	N/A
Total, Toxic Substances Program:					
Appropriation.....	5,491	7,367	7,271	24,258 ~~22,758~~	+ 16,987 ~~+15,487~~
Permanent Positions....	36	52	143	322	+179
Transition Quarter.....	3,771	N/A	N/A	N/A	N/A
Outlays.....	5,289	5,100	6,100	~~17,140~~ 17,940	~~+11,040~~ + 11,840
Authorization Levels...	*	*	11,600*	~~12,625*~~ 14,125*	

* Additional authorizations are contained within authorizations under the Federal Water Pollution Control Act, the Clean Air Act, the Safe Drinking Water Act, and the Federal Insecticide, Fungicide, and Rodenticide Act.

OVERVIEW AND STRATEGY

The Toxic Substances Control Act, which became law October 11, 1976, authorizes EPA to acquire information on and to regulate many types of chemicals. This new statutory authority was granted in recognition of the existence of significant gaps in the Federal Government's ability to protect public health and environmental quality against unreasonable risks arising from human exposure to, and environmental releases of, potentially toxic chemicals. It is estimated that there are already more than 20,000 chemicals in commercial use in the United States and that approximately 1,000 additional chemicals are introduced each year. Their uses are many and varied; their value to the Nation is inestimable, but their potential dangers all too often are unknown. Events in recent years have resulted in identification of previously unsuspected hazards of many chemicals, including, for example, asbestos, vinyl chloride, and polychlorinated biphenyls (PCB's). Prior to the enactment of the Toxic Substances Control Act, EPA's authority to prevent or correct such problems consisted largely of authority to regulate environmental discharges from sources such as factories, motor vehicles, sewage treatment plants, etc. Only in the pesticides area did EPA have any authority to regulate the production and use of chemicals.

The Toxic Substances Control Act greatly expands and strengthens EPA's ability to deal with environmental and health problems associated with chemicals. It gives EPA authority to control the introduction and use of toxic chemicals. It enables EPA to require the testing of new and existing chemicals that might present an unreasonable risk to human health or the environment. It also requires manufacturers of new chemicals or existing chemicals with new uses to notify EPA 90 days before beginning commercial production. This will enable EPA to evaluate any risks the chemical may pose. In support of this program, the law also authorizes EPA to undertake needed research and development activities, as well as activities designed to ensure compliance with regulatory restrictions applied to the production, processing, distribution, use, and disposal of chemicals.

A comprehensive strategy for implementation of this new Act is being developed. It is already clear, however, that certain basic principles will have to guide EPA's implementation activities. EPA will have to provide leadership in the area of toxic substances control, but

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It will also have to encourage other governmental agencies and industry to make full use of their capabilities. EPA will have to intensify its efforts to develop the best possible information on the production, use, and disposal of chemicals and on their potential for causing environmental and human health problems, but it will have to concentrate on developing information that is truly needed for, and can be effectively used in, the implementation of the Act. In addition, EPA clearly will have to share the information it develops with other Federal agencies having regulatory responsibilities related to toxic chemicals and will have to rely heavily on such agencies to share with EPA the information they have acquired and will acquire in the future. Finally, because the number of chemicals already in commercial use and the number of new ones being introduced every year are so large, it is clear that EPA will have to be selective in exercising both its data gathering and regulatory authorities.

SUMMARY OF INCREASES AND DECREASES	(in thousands of dollars)
FY 1977 Toxic Substances Program	$7,271
Abatement and Control	~~+15,117~~ +16,617
The increase is for implementation of the new Toxic Substances Control Act including the initial efforts required under its substantive provisions such as testing requirements, premarket notification, regulations (e.g., PCB's and fluorocarbons), reporting requirements, etc.	
Enforcement	+370
This increase is for enforcement participation in the implementation of the Toxic Substances Control Act including response to toxic substances emergencies, participation in regulations development, preparation of enforcement policies and guidance, and control of specific toxic substances.	
FY 1978 Toxic Substances Program	~~22,758~~ 24,258

The Toxic Substances Control Act became law October 11, 1976. In the short period since that time, EPA has been intensively applying its efforts to the development of an implementation strategy for the new law. It is expected that the outcome of the strategy development process and initial Agency program efforts will significantly impact the resources required for various toxic substances activities, necessitating the future reprogramming of resources among these initial allocations.

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of ~~$22,758,000~~ $24,258,000 is requested for 1978. This request, by appropriation account, is as follows:

Abatement and Control	~~$21,000,000~~ $22,500,000
Enforcement	370,000
Research and Development	1,388,000

This represents an increase of ~~$15,487,400~~ $16,987,400 from the 1977 toxic substances program and will provide for the implementation of the recently enacted Toxic Substances Control Act.

2. Changes from Original 1977 Budget Estimate

Changes from the original budget estimate are as follows:

	(in thousands of dollars)
Original 1977 estimate	$7,367
Transfer of resources to water quality media for grant	-135
Transfer within research and development	+33
Operating adjustments	+6
Current 1977 estimate	7,271

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A transfer of $134,700 was made to the water quality media to support a grant for the administrative and technical support of Agency sponsored conferences.

A proposal will be submitted to the Committee, as appropriate, for separate consideration for the research and development reprogramming of +$33,000 to supplement studies to evaluate human hazards to toxic substances.

Operating adjustments are changes required to adjust the budget to actual operating condition. In the process of applying the budget to the specific needs of each regional office, laboratory, and headquarters program office, it is often necessary to make small adjustments to the planned budget. The $5,300 increase is the cumulative effect of these changes on toxic substances programs in 1977.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations.....	$5,491	$10,084
Changes in amount of carryover funds available.....	+4,670	-2,813
Miscellaneous increases and decreases to budget estimate listed above.....	-77	...
Additional cost of program increases.....	...	~~+14,710~~ + 16,110
Total estimated obligations.....	10,084	~~21,981~~ 23,381
(From new obligation authority).....	(7,271)	~~(21,981)~~ (23,381)
(From prior year funds).....	(2,813)	(...)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

A major change in obligation results from the prior year funds available for obligation. Carryover funds effecting obligations after FY 1976 result in a change of +$4,670,000; carryover funds expected to be obligated in 1977 are $2,813,000. There are none projected for FY 1978.

The increases and decreases to the budget estimate, as detailed previously, are expected to result in a net decrease of -$77,000 in 1977 obligations.

Other changes in the 1978 budget due to the recently enacted Toxic Substances Control Act are expected to increase obligations by ~~$14,710,000.~~ $16,110,000.

(Revised 2/24/77)

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Other changes in the 1978 budget due to the recently enacted Toxic Substances Control Act are expected to increase obligations by $14,710,000.

TOXIC SUBSTANCES

PROGRAM LEVELS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Regulations affecting the production, processing, distribution, use, or disposal of chemicals.....	...	...	5	8	+3
Requirements for testing of chemicals to identify and evaluate potential adverse effects.....	...	...	3	6	+3
Premarket notifications reviewed.....	...	...	...	800	+800
Special reports on problem chemicals.....	6	...	6	6	...
Procedural regulations for TSCA implementation.....	...	...	10	5	-5

Abatement and Control

SECTION TAB

TOXIC SUBSTANCES

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Strategies.....	$4,732	$6,012	$5,883	$22,500 ~~$21,000~~	$16,617 ~~+$15,117~~
Permanent Positions					
Strategies.....	32	45	137	311	+174

Budget Request

An appropriation of ~~$21~~ $22.5 million and 311 positions is requested for 1978. This represents an increase of $16,617,400 and 174 positions over the 1977 appropriation. The increase will permit EPA to begin approaching full implementation of the Toxic Substances Control Act.

Program Description

In general, the purpose of the toxic substances program is to acquire data that will permit EPA to identify and assess the human and environmental effects of chemicals and to regulate the production, processing, distribution, use, and disposal of chemicals in order to prevent unreasonable risks of injury or imminent hazards to human health and the environment. The Toxic Substances Control Act instructs EPA to consider the environmental, economic, and social impact of actions taken to implement the Act.

EPA may require testing of chemical substances if they may present unreasonable risk of injury to health or the environment or if there are substantial quantities produced, resulting in significant exposure to humans or the environment; and if there are insufficient data and experience for determining or predicting the health and environmental effects; and if testing is necessary to develop such data. An interagency committee is established by the Act to recommend chemical substances for testing. Testing requirements must be established by regulation after opportunity for public comment and hearing; they must specify the health and environmental effects and information relating to chemical characteristics for which data are to be developed. Also standards for data development to assure its reliability and adequacy are to be prescribed, to the extent necessary. In addition, the Agency is required to respond to industry petitions for the issuance of testing standards for new chemical substances.

Manufacturers of "new" chemical substances must give EPA 90 days notice before starting to manufacture them. EPA may also by rule designate a new use of an existing chemical as a significant new use based on consideration of the anticipated extent and type of exposure to human beings or the environment. Any person who then intends to manufacture or process a chemical for such a significant new use must also report 90 days before marketing the chemical for that use. In addition, the Administrator may publish by rule a list of new chemicals or classes of new chemicals and any significant new uses which present or may present an unreasonable risk of injury to health or the environment if they are introduced into commerce. Notices submitted by the manufacturers for new chemicals or significant new uses of existing chemicals are to include specified information, including information on the health and environmental effects, to the extent that the manufacturer has such information. In addition, if a rule requiring testing of the chemicals or members of its chemical class has been promulgated, the manufacturer must also submit the required test data. When a manufacturer of a new chemical which is on the risk list submits his premarket notice, he must also submit data which he believes show that the chemical or significant new use will not present such a risk. Exempt

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from the premarket notification requirement are chemicals which are not "new" or are produced in small quantities solely for experimental or research and development purposes or are used for test marketing purposes or are determined not to present an unreasonable risk. EPA will have to establish criteria for judging exemption requests. In the first years of implementation, the major effort will involve development and refinement of a system for handling and evaluating this information.

EPA may determine that there is inadequate information to evaluate the health or environmental effects of a new chemical; in this case it may issue an order 45 days before the expiration of the premarket review period to prohibit or limit the manufacture, processing, distribution in commerce, use, or disposal of the chemical, pending acquisition of additional data. If the manufacturer or processor files objections to the order, EPA may seek a court injunction to prevent marketing of the chemical until data are developed which indicate that the substance does not present an unreasonable risk. EPA may also find that there is a reasonable basis to conclude that a new chemical presents or will present an unreasonable risk of injury to health or the environment. In that event, the Agency may issue an order and, if appropriate, initiate court action to prohibit the manufacture of the chemical. If a total ban does not appear necessary, EPA may propose a rule which becomes immediately effective limiting the manufacture or use of a chemical or regulating its distribution, use, or disposal.

In the long run, the effectiveness of EPA's handling of premarket notifications will largely determine whether this legislation provides environmental benefits that outweigh the costs to society. The premarket review system must ensure rapid processing while providing reasonable confidence that significant problem chemicals are identified.

If EPA finds that there is a reasonable basis to conclude that the manufacture, processing, distribution, use, or disposal of a chemical substance or mixture, or that any combination of such activities, presents or will present an unreasonable risk of injury to health or the environment, it may impose, through rulemaking, appropriate regulatory requirements to the extent necessary to protect adequately against such risk. Analyses of the ecological and health effects of the chemical substances and mixtures, identification of sources and exposed populations and exposure levels, evaluation of possible substitutes, and assessment of economic and technological factors will have to be performed as part of the regulatory process. In proposing regulatory actions, EPA must provide an opportunity for comments by all interested parties, including an opportunity for oral presentation of facts and arguments.

The information-gathering provisions of the Act authorize EPA to issue rules requiring manufacturers and processors of specified chemicals to report to EPA such information as chemical names and identity, proposed uses, estimates of production levels, descriptions of byproducts, health and environmental data, number of workers exposed, and disposal methods. Manufacturers of chemical mixtures and research chemicals are exempt from these requirements unless EPA determines such reporting is necessary to enforce the Act. Similarly, in the absence of a determination that reporting is necessary because of an unreasonable risk, small manufacturers are exempt from reporting, except for chemicals that are subject to proposed or promulgated testing requirements or limitations under the regulatory provisions of the Act. These reporting rules are to be promulgated within 180 days of the Act's effective date.

The Act also requires EPA to make rules under which any person who manufactures, processes, or distributes any chemical substance or mixture must keep records of significant adverse reactions to health or the environment that allegedly were caused by the chemical. EPA may also issue rules requiring that any health and safety studies on specific chemicals known or available to any person who manufactures, processes, or distributes such chemicals, be submitted. In addition, if such a person has information which indicates that a chemical presents a substantial risk of injury to health or the environment, he must notify the Agency.

EPA is required to publish an inventory list of all existing chemicals by November 1977. This list, which will be continually updated, will contain all chemicals manufactured or processed for commercial purposes in the United States or imported into the United States within the last three years. Chemicals not on the initial inventory list will be considered "new" for pre-market notification purposes.

In addition to designing, establishing, and coordinating through an interagency committee, a data system within EPA for data submitted under the Act, EPA is responsible for designing, establishing, and coordinating a system for toxicological and other scientific data accessible to all Federal and other departments and agencies. Over the first two years, systems will have to be established that can handle the inventory of existing chemicals, premarket notifications, test data, and data collected in support of regulatory actions.

EPA may determine that an unreasonable risk presented by a chemical may be prevented or sufficiently reduced by action under a Federal law administrered by another Federal agency. In such cases, EPA must request the other agency to determine whether the risk exists and if the agency's actions would sufficiently reduce the risk. If the agency finds no risk or takes action directed to the risk, EPA may not take any regulatory action directed to the same risk. The law also directs EPA to use other laws it administers to protect against unreasonable risks, such as the Federal Water Pollution Control Act or the Clean Air Act, unless the Agency determines that it is in the public interest to protect against such risks under the Toxic Substances Control Act.

Confidential data, such as trade secrets and privileged financial data, will be protected from disclosure by EPA. All health and safety information on chemicals in commerce submitted under the Act is subject to disclosure. A person submitting other types of data to EPA may designate any part of it as confidential. If the claims of confidentiality are subject to question or if the release of such data is essential for the protection of health or the environment, EPA must notify the person who submitted the data in advance of any contemplated release.

Not later than 60 days after a rule is promulgated, any person may file a petition for judicial review of such rule. Any person may bring a civil suit to restrain a violation of the Act by any party or to compel EPA to perform any nondiscretionary duty required by the Act. In addition, any person may petition the Administrator to issue, amend, or repeal, a rule under the testing, reporting or restrictions sections of the Act. EPA has 90 days to respond to a petition. If the Agency takes no action or denies a petition, the party has the opportunity for judicial review in a U. S. district court.

EPA is required to establish an office to provide technical and other nonfinancial assistance to chemical manufacturers and processors regarding EPA's requirements under the Act, Agency policies for implementation and administration of the Act, and means of complying with them. EPA is also required to perform or support various special studies and to conduct public hearings on proposed rulemaking actions.

In support of the establishment of regulatory requirements necessary to carry out the Act, the participation of EPA's legal counsel, research and development, and enforcement staffs will be necessary. EPA's procedures for the development of regulations give a leadership role to the program office principally responsible for implementation of a particular statute but require the involvement of other program offices that may be affected or may have expertise in the areas in question. EPA's regional offices also are called upon to participate in this process to some extent their activities in support of implementation of the Toxic Substances Control Act will also include a role in providing technical assistance to affected industries, data-gathering, encouraging public participation in policy development and rulemaking, and, ultimately, in enforcement of Agency requirements.

1976 Accomplishments

Prior to the enactment of the Toxic Substances Control Act, the Agency's toxic substances activities were focused largely on identifying and characterizing chemical problems, studying techniques that would permit the Agency to anticipate such problems, and assessing and dealing with special problem situations involving chemicals released into the environment. Funds obligated in 1976 amounted to $4,732,100, which included contracts and IAG's to support chemical

identification, chemical characterization, and development of preventive and corrective approaches to deal with chemical problem aspects of the program. Accomplishments included continued implementation of programs to clarify and reduce the risks associated with chemicals such as asbestos, vinyl chloride, PCB's, benzidine, and others; assistance to various States in determining the magnitude of specific chemical problems and developing means of dealing with them; publication of reports describing the scope and character of governmental programs dealing with selected toxic chemicals; and start-up of programs to examine the potential hazards of nonfuel uses of synthetic fuels and the use of flame retardants in textile products.

1977 Program

Of the 1977 resources, $3.7 million will be used for grants, contracts, and IAG's to support the activities listed below.

In 1977, EPA's efforts will include the development of a comprehensive strategy for implementation of the Act; development of an inventory of existing chemicals; development of various procedural rules and regulations necessary to establish a framework for future actions and define industry's responsibilities (in areas such as premarket notification and data reporting); development of procedures for interagency coordination of actions related to toxic substances control; setting up a system to handle and disseminate information submitted to EPA under the Act and to obtain relevant information from other governmental agencies; issuance of three to five sets of requirements for testing of chemicals to identify their potential for adverse effects on human health and the environment; issuance of proposed regulations dealing with PCB's, fluorocarbons, and, possibly, other chemicals found to deserve priority attention; responding to citizens' petitions requesting specific testing or regulatory action; and intensive recruiting of talented scientific personnel to help with all activities under the Act.

1977 Explanation of Changes from Budget Estimate

The decrease of $129 thousand from the 1977 budget estimate resulted from the transfer of $135 thousand to the water quality grants assistance program to support a grant for the administrative and technical support of Agency sponsored conferences; offsetting this decrease is a slight increase as a result of applying the budget to actual operating needs at the beginning of the fiscal year.

1978 Plan

Of the $21 million requested, $13 million will be used for contracts, grants, and IAG's. The increase of 174 positions and $15.1 million over the 1977 level is required to implement the activities called for by the Toxic Substances Control Act in 1978. A final inventory of chemicals manufactured or processed in the United States will be published. Its publication will trigger the requirement for premarket notification to EPA with respect to new chemicals; this means that EPA will have to review and make decisions on an estimated 1,000 new chemicals within stringent time constraints. With the inventory completed, EPA will also have to initiate the process of gathering data on, and making assessments of, many of the chemicals listed in order to determine whether they should be tested and/or regulated in any respect. EPA will also have to respond to the recommendations of the interagency committee regarding chemicals which should be tested; this group may recommend testing of as many as 50 chemicals at any one time. Based on information received from premarket notification, industry reporting, and other sources, EPA expects to find it necessary to initiate the regulatory process with respect to 10 to 15 chemical substances or classes. It is expected that approximately eight actions will be completed in 1978. In regard to all the activities to be undertaken in 1978, requirements for acquisition and evaluation of scientific and technical data and identification and assessment of regulatory alternatives will constitute a very significant workload. Added to these requirements is the necessity for coordination with other governmental agencies, implementation of various requirements of the Act for studies in specific areas, conducting public hearings to provide opportunities for interested and affected parties to participate in the regulatory process, and providing responses to what is expected to be a very large volume of requests for information from industry and the public.

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The decrease of $129 thousand from the 1977 budget estimate resulted from the transfer of $135 thousand to the water quality grants assistance program to support a grant for the administrative and technical support of Agency sponsored conferences; offsetting this decrease is a slight increase as a result of applying the budget to actual operating needs at the beginning of the fiscal year.

1978 Plan

Of the $21 million requested for program activities, $13 million will be used for contracts, grants, and IAG's. The increase of 174 positions and $15.1 million over the 1977 level is required to implement the activities called for by the Toxic Substances Control Act in 1978. A final inventory of chemicals manufactured or processed in the United States will be published. Its publication will trigger the requirement for premarket notification to EPA with respect to new chemicals; this means that EPA will have to review and make decisions on an estimated 1,000 new chemicals within stringent time constraints. With the inventory completed, EPA will also have to initiate the process of gathering data on, and making assessments of, many of the chemicals listed in order to determine whether they should be tested and/or regulated in any respect. EPA will also have to respond to the recommendations of the interagency committee regarding chemicals which should be tested; this group may recommend testing of as many as 50 chemicals at any one time. Based on information received from premarket notification, industry reporting, and other sources, EPA expects to find it necessary to initiate the regulatory process with respect to 10 to 15 chemical substances or classes. It is expected that approximately eight actions will be completed in 1978. In regard to all the activities to be undertaken in 1978, requirements for acquisition and evaluation of scientific and technical data and identification and assessment of regulatory alternatives will constitute a very significant workload. Added to these requirements is the necessity for coordination with other governmental agencies, implementation of various requirements of the Act for studies in specific areas, conducting public hearings to provide opportunities for interested and affected parties to participate in the regulatory process, and providing responses to what is expected to be a very large volume of requests for information from industry and the public.

The new Toxic Substances Control Act implicitly requires EPA to move in the direction of better integration of all Agency programs dealing with toxic chemicals in the environment. It is becoming increasingly apparent that increased emphasis must be given to a coordinated approach whenever problems involve specific pollutants, whether nationally, regionally, or at the State level. At the State envrionmental program level, the need for such coordination is is accentuated by the more serious limitations on resources and expertise usually available.

The Act authorizes EPA to make grants to assist States in the establishment and operation of programs to prevent or eliminate unreasonable risks to health or the environment associated with toxic substances. EPA is soliciting from the States their ideas on how grant funds might be most effectively utilized in dealing with toxic chemicals problems. It is apparent that States will need some additional funds and manpower in order to make real progress in the direction of integrated toxic substances controls programs. Grant funds of $1.5 million are requested in FY 1978 for priority State grant needs based on the seriousness and extent of the toxic substances problem within the States.

Research and Development

SECTION TAB

TOXIC SUBSTANCES

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977	Page
			(dollars in thousands)			
Appropriation						
Health and Ecological Effects.....	$759	$1,355	$1,388	$1,388	...	
Permanent Positions						
Health and Ecological Effects.....	4	7	6	6	...	

Purpose

EPA's major toxic substances research efforts include development of predictive techniques for early identification of substances most likely to pose a hazard to man or the environment; implementation of methods for monitoring air, water, and soil for selected toxic chemicals; and development of strategies under a variety of Federal authorities to control multimedia toxic pollutants.

This program determines the effects of toxic pollutants and their metabolites on human health and ecosystems. The research produces protocols for testing substances to determine the potential hazards of their release into the environment, provides information on the transport and persistence of toxic substances as well as their health and ecological effects, and develops analytical chemistry methods to measure and identify these pollutants.

Research is being conducted to develop improved techniques for assessing the environmental acceptability of toxic chemicals. Research is conducted into the health and ecological effects of selected toxic substances and their metabolites to provide short and long-term data on chemicals of current concern, and background to support future regulatory efforts. Development of test protocols and methodologies is emphasized.

Studies are carried out in animal model systems to evaluate the hazard to humans of selected, high-priority toxic materials. These studies emphasize acute toxicity through studies of oral, dermal, and respiratory exposure routes, and possible long-term effects through evaluations of teratogenic and mutagenic potential.

Emphasis is also placed on the development, characterization, and use of model ecosystems to evaluate toxic substances. These ecosystems will be capable of simulating a range of key ecosystem-level processes and parameters, and will be suitable as screening tools for toxic contaminants.

The Office of Research and Development's toxic substances research program has been carried on under the authorities granted in the Agency's major legislative mandates. The focus of the program is currently being shifted toward support of the Toxic Substances Control Act in areas such as the development of screening methods for toxicological screening of toxic substances.

TOXIC SUBSTANCES

Research and Development

Health and Ecological Effects

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Health Effects.....	$439	$1,035	$1,068	$1,068	...
Ecological Effects.....	320	320	320	320	...
Total.....	759	1,355	1,388	1,388	...
Permanent Positions					
Health Effects.....	4	7	6	6	...
Ecological Effects.....	...	...	...	...	...
Total.....	4	7	6	6	...

Budget Request

The FY 1978 resources for this program will remain at the same level as 1977, six positions and $1,388,000.

Program Description

A limited research program is being conducted to determine the adverse effects of toxic substances and their metabolites on human health. This includes the assessment of the toxicity of metals and of inorganic and organic nonpesticide pollutants which reach man through different routes of exposure. The program includes developing protocols for improved toxicity testing of substances, validating these protocols, and establishing criteria for determining which substances should be declared hazardous to human health.

In the ecological effects portion of the program, currently available microcosms are being used to advantage in estimating the environmental behavior of toxic pollutants. However, there is a need for microcosms representing other systems and for microcosms with controlled reproducibility. In an attempt to meet this need, multimedia microcosm techniques (tools to predict pollution transport and distribution) are being tested and evaluated to determine the impact of size, ecological structure, and abiotic components on the system responses. The stability and reproducibility of microcosms in relation to the above factors are being determined. The degree of reliability of aquatic and terrestrial microcosms to predict pollutant transport and distribution will be determined and improved microcosm utilization techniques will be developed. The data resulting from this research program will be used to study the ecological effects of toxic substances and provide a scientific basis for criteria for toxic substances.

HEALTH EFFECTS

1976 Accomplishments

In 1976, resources included approximately $17,533 in contracts and $56,512 in grants. The major 1976 accomplishments for health effects research were as follows:

- The effects of contaminants in technical grade pentachlorophenol (PCP), such as dioxins and polychlorinated dibenzofurans, were compared with relatively pure PCP. The results of studies on the liver led to the conclusion that the presence of synthetic compounds, whose potency is so great that parts-per-million-level contamination can dramatically alter biological activity, makes it essential that careful chemical definition be undertaken before assigning toxicological properties to such substances.

- Low and high resolution gas chromatographic/mass spectrophotometric (GCMS) analysis has determined the presence of 2, 3, 7, 8 tetrachlorodibenzo-p-dioxin (TCDD) in environmental samples. TCDD, an extremely toxic material, is a possible contaminating by-product in manufacturing processes utilizing tetrachlorobenzene, and in the manufacture of herbicides containing esters of 2, 4, 5 trichlorophenoxyacetic acid. Among the studies conducted was a comparison of chronic versus acute exposure, where chronic dosing was apparently cumulative in terms of effects and was a prerequisite to the development of phenomenon seen in hexachlorobenzene poisoning.

- A facility was completed at the Health Effects Research Laboratory, Research Triangle Park, North Carolina, to examine amphibole material contained in taconite iron ore in order to determine whether the material has harmful biological characteristics similar to a related asbestos material. Serpentine and amphibole minerals are common in the earth's crust. The physical and chemical characteristics of these substances vary from place to place and in some areas resemble commercial asbestos. The completed facilities will permit research with pathogen-free animals and with high security for personnel involved.

1977 Program

The resource level under the 1977 appropriation for health effects research is $1,068,000 and six positions. These resources include approximately $506,500 in contracts, $235,000 in grants, and $6,800 in interagency agreements.

The health research program selectively evaluates hazards of human contact with toxic substances by conducting animal toxicology studies of selected high priority toxic materials. In support of the Toxic Substances Control Act, the program is to develop and improve laboratory methods for toxicological screening of toxic substances to identify which compounds are likely to persist in the environment or have adverse effects on man. Studies to assess whether fibrous amphiboles are carcinogenic or co-carcinogenic are being continued.

1977 Explanation of Changes from Budget Estimate

A planned $33,000 reprogramming into the health program, contingent upon Committee approval, as appropriate, is intended to supplement studies to evaluate human hazards to toxic substances.

1978 Plan

Six positions and $1,068,000 is requested in FY 1978, the same level as 1977. Epidemiological and experimental data developed to date gave a clear indication of health effects associated with exposure to asbestos. Health hazards may also be associated with asbestos-like fibers and man-made fibers. The more important question, in the case of persons with nonoccupational exposures to asbestos and other amphiboles, is whether there is an increased risk of malignancies. A study will be conducted to evaluate whether certain amphiboles are carcinogenic or co-carcinogenic. These particles, UICC chrysotile particles and iron oxide particles, will be administered to animals, and the biological effects due to these particles will be compared during the life span of the animals. In support of the Toxic Substances Control Act, the program will continue work on toxicological screening methods for toxic substances to identify which compounds are likely to persist in the environment or have adverse effects on man.

ECOLOGICAL EFFECTS

1976 Accomplishments

The 1976 resources included approximately $69,691 in contracts and $250,000 in interagency agreements. The major 1976 accomplishments for ecological effects research were as follows:

- In a terrestrial microcosm, it was shown that lead contamination causes a loss of carbon dioxide and leaching of nutrients from the soil at lead levels below those that have discernible effects on soil microorganism populations. This provides an important new parameter for assessing low level lead contamination.

- In an aquatic microcosm, it was found that the rate of arsenic absorption in bottom sediments is directly correlated with the concentration of organic material in the sediment. This is an important step in the determination of the best substrates for use in microcosms for testing trace contaminant fate and transport.

1977 Program

The resource level under the 1977 appropriation for ecological effects research is $320,000, which includes $250,000 in interagency agreements.

The 1977 ecological effects research involves characterization of existing model ecosystems and microcosms as to replicability, effect of size and structure, applicability of results to real-world ecosystems, and suitability for criteria development and as screening tools for toxic contaminants. Toxic contaminants will be screened by use of model ecosystem/microcosms, to provide ecosystem-level criteria data on specific environmental stressing factors. The program also includes development and characterization of new model ecosystems and microcosms capable of simulating a range of key ecosystem-level processes and parameters. These microcosms will be suitable for evaluating major categories of ecological stressing factors.

1978 Plan

The 1978 ecological effects research will remain the same as 1977, $320,000, and the distribution of extramural resources is not expected to change significantly.

In 1978, the ecological effects portion of this program will evaluate terrestrial and aquatic microcosms as research and screening tools for use in assessing potential environmental transport and distribution of toxic pollutants. Evaluation of flowing aquatic microcosms for delineating transport and distribution of toxics will continue.

Homogeneity and stability studies will be conducted for the microcosms being evaluated. Final reports on the developmental phase of the research are expected to be completed during 1978 and will provide valuable information for the direction of future studies. Screening of selected substances in model ecosystems or microcosms, developed in the earlier phase, for fate and effects is expected to begin in late 1978. These data will be available for establishment of criteria, based on ecosystem-level responses.

Enforcement

SECTION TAB

TOXIC SUBSTANCES

Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
		(dollars in thousands)			
Appropriation					
Toxic Substances Enforcement.....	...	...	...	$370	+$370
Permanent Positions					
Toxic Substances Enforcement.....	...	...	...	5	+5

Budget Request

The 5 positions and $370,000 requested for toxic substances enforcement in FY 1978 reflect the minimal enforcement needs to participate in the implementation of the Toxic Substances Control Act (TSCA) as well as to provide some enforcement response to toxic emergency problems.

Program Description

The EPA toxic substances enforcement program is administered pursuant to the Toxic Substances Control Act. For purposes of administering the Act, EPA may conduct inspections and may also subpoena witnesses, documents, and other information as necessary to carry out the Act.

Enforcement may also be undertaken regarding imported or exported chemicals subject to the Act. Any person who fails or refuses to comply with any requirement made under the law may be subject to civil and/or criminal penalties. Civil actions concerning violations or lack of compliance with the Act may be brought in a U.S. District Court for judicial review. Any chemical substance or mixture which was manufactured, processed, or distributed in commerce in violation of the Act may be subject to seizure.

The toxic substances enforcement program is responsible for providing enforcement input into the implementation of TSCA and for implementing the Act's enforcement provisions. This involves substantial enforcement input in the development and promulgation of regulations, and the control of specific chemical substances and mixtures, as well as the preparation and establishment of general and specific enforcement policy and guidance.

The program is also responsible for directing and coordinating enforcement authorities against toxic substances pollution in the environment. As such, the program will augment and systematize the current enforcement procedures so that the full thrust of available enforcement authorities can be brought to bear against a toxic problem in an intermedia coordinated manner.

1978 Plan

The FY 1978 resource level for toxic substances enforcement is 5 positions and $370,000, of which $260,000 will be for contracts to assist enforcement in obtaining and assessing compliance monitoring data and technical program data, as well as to provide assistance in developing guidance packages and in determining program direction.

The FY 1978 toxic substances enforcement program will have two major focuses: (1) directing and coordinating the enforcement activities within EPA against toxic substances problems, and (2) providing enforcement input into the implementation of the Toxic Substances Control Act.

The toxic substances enforcement program will provide an organizational and procedural framework within the Office of Enforcement by which toxic substance problems may be effectively and expeditiously solved. In addition, the program will perform analyses of available legislation to determine which authority should be used to control specific toxic pollutants.

Enforcement efforts regarding TSCA will be involved in overall strategy and procedures development. Procedures for the conduct of investigations, import/export activities, assessment of penalties, and specific enforcement and seizure, must be developed. The toxic substances enforcement program will also participate in and provide input to work groups established (1) to implement various sections of TSCA, and (2) to regulate and control certain chemical substances, e.g., PCBs and chlorofluorocarbons. Specific enforcement actions also may be undertaken in those cases where regulations are in place.

Energy

SECTION TAB

ENERGY

	Ford Submission		1978 Revised Carter Final	
	Pos.	Amount	Pos.	Amount
	(dollars in thousands)		(dollars in thousands)	
Research and Development:	123	$96,427	123	$96,427
Energy	123	96,427	123	96,427
Extraction and Processing Technology	(46)	(24,350)	(46)	(24,350)
Conservation, Utilization and Technology Assessment	(64)	(30,550)	(64)	(30,550)
Health and Ecological Effects	(5)	(39,200)	(5)	(39,200)
Technical Support	(8)	(2,327)	(8)	(2,327)

ENERGY

PROGRAM HIGHLIGHTS

	Actual 1976*	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
		(dollars in thousands)			
Research and Development:					
Appropriation.....	$83,036	$96,427	$96,362	$96,427	+$65
Permanent positions.....	143	123	123	123	...
Transition quarter.....	63,191	N/A	N/A	N/A	N/A
Outlays.....	65,687	120,000	106,000	101,000	-5,000
Authorization Levels....	Authorization is contained within Federal Water Pollution Control Act and Clean Air Act. Authorization levels for these Acts are shown under the water quality and air media descriptions.				

*1976 and Transition Quarter resources were funded under the appropriation Energy Research and Development.

OVERVIEW AND STRATEGY

As the Nation strives to reduce its dependence on foreign energy supplies, environmental problems arising from domestic energy development become increasingly important. A major mission for the Agency is protecting public health and welfare from the adverse environmental effects of energy systems. Research and development efforts toward this end are mandated by the Clean Air Act, the Federal Water Pollution Control Act, and the Resource Conservation and Recovery Act. Such protection must be accomplished through a multimedia approach so that the control of one form of pollution does not result in other unacceptable impacts. Environmental protection must be accomplished in a reasonable manner and at acceptable cost compatible with other national interests.

As the Nation attempts to meet its serious energy needs and problems several approaches have been proposed. These approaches include:

(a) the increased use of coal through direct burning;

(b) the replacement of dwindling oil and gas supplies with synthetic gas and liquid fuels derived from coal;

(c) the use of alternate sources of energy such as solid waste, geothermal steam and nuclear fission; and

(d) more efficient energy extraction and utilization processes.

Because of the potentially acute health and ecological effects associated with these energy initiatives, and with both existing and new technologies for fuel processing, conversion, and utilization, the Environmental Protection Agency (EPA) has made a major commitment to ensuring that the environment and human health are protected. Further, since many of the problems are long-term (e.g., many technologies will not be available or in commercial use before 1985), EPA must have programs under way now to develop the health and technical data necessary to support energy-related environmental quality standards and source discharge or emission regulations. The lead times for health assessment and control technology development are such that research programs must be implemented now if energy development is to be compatible with environmental protection.

Several long-term problem areas are anticipated for the regulatory and enforcement components of the Agency. The increased reliance on substitute fuels from coal and oil shale, requiring cleaning, gasification, liquefaction, and other processing techniques, can generate new pollutants whose effects are not known and must be defined. For example, coal gasification processes may emit unacceptable quantities of carcinogenic materials. Another problem area concerns the potentially cumulative chronic health and ecological effects of new and emerging energy sources such as advanced combustion systems and geothermal facilities.

The Agency must also address many energy-related environment problems in the near-term. The decreased supply of domestic oil and increased dependence upon foreign oil may result in converting a number of oil-fired boilers to coal. Significant conversion from oil to coal will result in the additional emission of particulates, nitrogen oxides, sulfur compounds, and other combustion pollutants. The increased use of coal and oil shale will accelerate mining in semiarid western areas, raising serious questions about restoration of mined lands and degradation of the quality of available ground and surface water resources. The expanded interest in offshore oil may lead to increasing the severity of the environmental problems associated with petroleum extraction and transportation and with coastal refining facilities.

The primary goals of the energy research and development program are: (1) to provide a sound data base necessary for the Agency to establish regulations and incentives to encourage the use of environmentally acceptable practices in extraction, processing and utilization of energy resources, and (2) to provide environmental control options, as soon as practicable, for those extraction, processing and utilization practices which cause significant health and ecological damage.

The approach for addressing the near-term pollution problems involves reducing the air and other pollution associated with expanded coal use. This will primarily entail completing reliability testing and sludge disposal research and development on current generation stack gas scrubbers and demonstrating improved scrubbers which generate more easily disposed or marketed by-products. Assessment activities will determine the potential environmental problems associated with currently unregulated coal combustion pollutants (e.g., trace elements, organics, sulfates, etc.) In addition, information on the health and ecological effects of coal and oil shale extraction and on environmentally protective mining and reclamation techniques will be developed.

The definition of the environmental problems and requirements for control of the longer-term energy supply systems is of particular importance. EPA is not responsible for energy technology development, per se, but must work in concert with the Energy Research and Development Administration (ERDA) and other agencies. The approach used is to: (1) conduct environmental assessments of emerging energy extraction, processing, and utilization techniques to identify new pollutants and determine their potential health and ecological effects; (2) develop an adequate scientific basis for new environmental regulations; (3) provide guidance on control technology requirements to Federal and industry groups developing new technologies; (4) assist in the development of control technologies especially where the Office of Research and Development (ORD) has special expertise; and (5) assess the adequacy of existing control technologies.

The implementation scheme used to maximize the useful output of the program involves an extramural approach with EPA relying heavily on expertise available within both the Federal and industrial sectors. In fact, EPA manages, coordinates, and integrates the efforts of 16 Federal agencies under the auspices of the interagency energy/environment program. In addition to the major interagency components of the program, much of the research and development program is performed by industrial organizations and universities via contracts and grants.

Each of the participating Federal agencies or departments has its own charge (e.g., management of the federally owned energy resources, management of Federal lands, the development of new fuel sources or cycles, etc.). In pursuing their own programs and responsibilities, each agency must have access to the available information on the environmental effects of energy development and must also perform the research ncessary to provide needed additional data. The EPA management of an interagency program attempts to minimize the overlap of the separate research programs and to assure a reasonably comprehensive coverage of all environment/energy questions. In addition, the results of the multiagency research program are disseminated and reviewed through a system of publications and joint conferences or symposia supported by the Office of Energy, Minerals and Industry (OEMI/EPA) management function.

The overall interagency energy/environment program is structured to implement the November 1974 recommendations of the two Council on Environmental Quality (CEQ)/Office of Management and Budget (OMB) energy task force reports.

SUMMARY OF INCREASES AND DECREASES	(in thousands of dollars)
1977 Energy Program.....	$96,362
Research and Development.....	+65
This increase restores the program to its FY 1977 appropriation level.	
1978 Energy Program.....	96,427

SUMMARY OF BUDGET ESTIMATE

1. Summary of Budget Request

An appropriation of $96,427,000 is requested for 1978 under the Research and Development appropriation account. This represents an increase of $65,000 which is for program operating costs to restore the program to its 1977 level.

2. Changes from Original 1977 Budget Estimate

Changes from the original budget are as follows:

	(in thousands of dollars)
Original 1977 estimate.....	$96,427
Reprogramming to air media.....	-65
Current 1977 estimate.....	96,362

A transfer of -$65,000 was made to the air program to support funding of the Biological and Climatic Effects Research program (BACER) and has been submitted to the Committees for their consideration.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS (in thousands of dollars)

	Current Estimate 1977	Estimate 1978
Prior year obligations.....	$83,036	$115,680
Change in amount of carryover funds available.....	+44,857	-19,318
Reduction due to program decrease.....	-3,573	...
Change due to rate of contractual obligations.....	-8,640	+4,700
Total estimated obligations.....	115,680	101,062
(From new obligation authority).....	(91,574)	(96,274)
(From prior year funds).....	(24,106)	(4,788)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The major change is due to the amount of carryover funds available for obligation. Carryover funds effecting obligations after FY 1976 result in a change of +$44,857,000; obligations from carryover funds in 1977 are estimated to be $24,106,000. In 1978, obligations are expected to be $4,788,000, a decrease of $19,318,000.

The 1977 budget estimate included a program decrease from the 1976 level which is expected to reduce the 1977 obligations by $3,573,000.

The 1977 obligations are estimated to be reduced by $8,640,000 due to a change in the expected rate of obligation and nonrecurring awards. The 1978 obligations will reflect the rate of obligation returning to previous levels.

Research and Development

SECTION TAB

37,850
30,550
+1,300 Supplemental

37,200
39,200
-2,000 Supplemental

ENERGY

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Extraction and Processing Technology	$20,890	$24,227	$25,400	$24,350	-$1,050	E-8
Conservation, Utilization and Technology Assessment	27,075	36,000	32,700	30,550	-2,150	E-15
Health and Ecological Effects	34,179	33,700	35,200	39,200	+4,000	E-22
Technical Support	892	2,500	3,062	2,327	-735	E-29
Total	83,036	96,427	96,362	96,427	+65	
Permanent Positions						
Extraction and Processing Technology	51	24	46	46	...	
Conservation, Utilization and Technology Assessment	71	76	64	64	...	
Health and Ecological Effects	13	23	5	5	...	
Technical Support	8	...	8	8	...	
Total	143	123	123	123	...	

Budget Request

An appropriation of $96,427,000 and 123 positions is requested for 1978. This is a $4,000,000 increase in the health and ecological effects program and decreases of $1,050,000 in the extraction and processing technology program, of $2,150,000 in the conservation, utilization and technology assessment program, and $735,000 in technical support.

Program Description

The energy research and development program is designed to determine the environmental implications and effects of the Nation's energy development efforts. This energy/environment research and development program involves 16 Federal agencies. A comprehensive plan based on a multidimensional matrix to classify program content and resources has been developed to assure that the entire range of Federal energy/environment research and development is woven together into a manageable framework. The interagency energy/environment program also includes the development of appropriate cost-effective control technologies for emerging energy systems.

In addition to its activities with other agencies, EPA conducts, within its own laboratories, a widely diversified program. EPA coordinates with other Federal agencies now performing related research and development. This is accomplished by annual reviews resulting in updated program planning documents which, when approved, serve to obligate that year's "pass-through" funds. EPA coordination minimizes the duplication of efforts of the other Federal agencies.

The program is divided into two broad segments. The health and ecological effects program consists of the research activities associated with the behavior and effects of energy-related pollutants once they are in the environment. The remainder of the research program is designed to provide information on the types and quantities of pollutants released by energy supply activities and to develop control options where necessary. This technology research program is further divided to group research on the activities associated with fuel extraction and processing separately from those associated with energy conservation and utilization.

The specific objectives of the program's major components are discussed below:

Extraction and Processing Technology--The fuel processing program contributes to the development of advanced technologies for fuel processing by providing environmental technology development and environmental assessment. The major processes considered are physical/chemical coal-cleaning, fluidized bed combustion (FBC), and synthetic fuel generation. The program for synthetic fuel and oil shale technologies includes identifying and quantifying the discharges from processes under development and evaluating or developing new control options.

The energy resource extraction program deals with the technologies and processes for obtaining fuels, particularly oil and natural gas extraction and oil shale, and coal mining. The major purposes of the research program are: (1) to assess the existing and potential adverse environmental impacts from active and planned oil and gas production, storage and transportation; (2) to develop methods, technology and equipment to prevent, control and abate environmental pollutants from these operations (including spill clean-up); and (3) to demonstrate and document the technical/operational feasibility and cost effectiveness of environmental control options.

Conservation, Utilization and Technology Assessment--The utility and industrial power program has as its overall objectives the identification, characterization, assessment and development, where appropriate, of control technology for pollutants associated with electric utility and industrial combustion sources. A multimedia approach is taken and gaseous, liquid, and solid wastes are characterized in detail. Both primary pollutants (effluents from combustion systems) and secondary residuals (effluents from control technologies) are carefully considered.

The energy conservation and advanced systems program provides environmental assessments and contributes to the development of environmentally compatible advanced technologies. Specific elements of the program include control technologies for waste recovery, analysis of the indoor air quality implications of energy conservation, and environmental assessments of geothermal energy. Techniques and technologies are under development by ERDA, the Federal Energy Administration (FEA), the Department of Housing and Urban Development (HUD), and other agencies in each of these areas. Environmental assessment and some process development support are provided under the EPA program.

The integrated technology assessments program provides summary analyses of the environmental, economic, and social consequences of energy supply and use alternatives. These studies use the results of the environmental research program in evaluating the cost/risk/benefit trade-offs of energy production and pollution control alternatives.

Health and Ecological Effects--The health effects program examines possible carcinogenic, mutagenic, teratogenetic and respiratory effects on humans from existing and emerging energy technologies. Information about the effects of previously unanticipated pollutants related to fossil fuel combustion is specifically sought.

The ecological effects subarea addresses the environmental aspects of freshwater, marine, and terrestrial ecosystem responses to energy-related activities. Freshwater studies concentrate on impacts from coal and oil shale extraction and from coal gasification and liquefaction. Near-term marine research is designed to establish background contaminant levels in both ocean and estuarine dwelling organisms and their habitats. The terrestrial portion of the program emphasizes the ecosystem impacts of pollutants from coal combustion and effects of strip mining and mined land reclamation practices.

The transport processes subarea traces the transmission by air, water, and soil of pollutants emitted from energy operations from their sources to their destination in man and the environment. Additionally, it covers the physical and chemical changes that the pollutants undergo during their transport. Emphasis in air transport research is on conversion of sulfur and nitrogen oxides, chiefly from coal-burning power plants, to sulfates and nitrates. Transport of photochemical oxidants from various energy sources is also emphasized.

The monitoring and instrumentation program subarea is directed toward identifying and quantifying pollutants related to energy production or use and to the improvement of pollutant measurement capabilities. The two main objectives in this area are to accelerate development of new and improved sampling and analysis methods for energy-related pollutants and to identify, measure, and monitor pollutants associated with rapid implementation of emerging energy technologies.

Technical Support--The expertise developed through the energy related environmental research and development program provides the basis for technical support to EPA's regional and program offices and other governmental entities. This program employs a multitude of different mechanisms, ranging from cooperative, regionally oriented research and development projects, to development of scientific data for regulatory functions, provision of expert witness testimony, conduct of conferences and program seminars, and provision of executive reports relating to salient regional and technological energy/environmental concerns.

ENERGY

Research and Deveeopment

Extraction and Processing Technology

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation.....	$20,890	$24,227	$25,400	$24,350	-$1,050
Permanent Positions....	51	24	46	46	...

Budget Request

An appropriation of $24,350,000 is requested for FY 1978, representing a decrease of -$1,050,000 from the 1977 level.

Program Description

The program covers the technological aspects of pollutants discharged from fuel extraction and processing operations. The extraction activities include off-shore oil and gas drilling, eastern and western coal mining and oil shale mining. The fuel processing activities include coal cleaning, fluidized bed combustion, and synthetic fuel generation from coal and oil shale.

1976 Accomplishments

As of June 30, 1976, obligations included $15,600,000 in contracts, $965,000 in grants, and $2,886,000 in interagency agreements.

Half of the resources were used to obtain detailed characterization of the emissions and effluents from the bench-pilot scale and commercial advanced fossil fuel facilities operating in the United States and abroad. In addition, the fluidized bed combustion (FBC) miniplant was operated for its first year, the Meyers process coal cleaning pilot-scale test facility design was completed, the chemically active fluidized bed (CAFB) residual oil clean-up/combustion process demonstration was initiated, and the construction of a bench-scale coal gasification sulfur control test facility was begun. New programs started in fiscal year 1975 in oil shale and nuclear waste environmental assessment were continued. More detail on the 1976 accomplishments is provided in the subprogram narratives which follow.

1977 Program

For fiscal year 1977, the total resource allocation is $25,400,000. Of this amount, $16,500,000 is for contracts, $2,700,000 for grants, and $3,200,000 will be used by other Federal organizations through interagency agreements. The fiscal year 1977 program continued the detailed characterization program and initiated new control technology development efforts for fluidized bed combustion and synthetic fuels. Bench-scale environmental test facilities are to be designed for coal liquefaction, for conversion waste water treatment and for high pressure/high temperature sampling and analysis in FBC systems. The allocation of 1977 funds in the extraction and processing program is given below:

Extraction.....		$6,700,000
Fuel Processing:		
Coal Cleaning.....	$4,500,000	
Fluid Bed Combustion.....	5,930,000	
Advanced Oil Combustion..	2,660,000	
Synthetic Fuels.....	5,610,000	
Subtotal.....		18,700,000
Total.....		25,400,000

More detail on the 1977 program is provided in the subprogram narratives which follow.

1977 Explanation of Changes from Budget Estimate

The increase of $1,173,000 in this program element over the original 1977 budget estimate results primarily from acceleration of the environmental assessment and control technology program relating to fluidized bed combustion and coal cleaning. Both of these options offer the potential for allowing the combustion of coal with a minimum of environmental damage from sulfur oxide emissions. The transfer of funds came from within the energy program.

1978 Plan

The total resource allocation for the extraction and processing program will be $24,350,000. Of this amount, $15,650,000 will be expended through contracts, $2,500,000 through grants, and $3,200,000 will be used by other Federal agencies through interagency agreements. Fiscal year 1978 will be the first year in which major results of the extraction and processing technology program will emerge. Sufficient environmental data will have been accumulated on advanced fossil fuel technologies to define the magnitude of environmental problems which require control technology. The currently available control technology will be thoroughly characterized in standard-of-practice manuals which will be used to guide ERDA and industry and to provide information for setting standards. The allocation of 1978 funds in the extraction and processing program is given below:

Extraction.....		$6,200,000
Fuel Processing:		
Coal Cleaning.....	$4,360,000	
Fluid Bed Combustion.....	6,000,000	
Advanced Oil Combustion.....	1,200,000	
Synthetic Fuels.....	6,590,000	
Subtotal.....		18,150,000
Total.....		24,350,000

Our effort in the area of advanced oil processing will have been reduced. The reduction in this area is mainly in oil denitration and chemically active fluid bed (CAFB). CAFB was well funded initially and will require only minimal additional current and out year support.

A shift in emphasis will also be made in the area of synthetic fuels. Funding levels have been increased in the environmental assessment of oil shale technology because of recent developments in the in-situ processing. This technology promises to have a more limited environmental impact than above-ground processes. Funding of environmental assessment and control technology development for coal derived synthetic fuels has been reduced because of a delay in ERDA's demonstration and commercialization program. We are coordinating with ERDA and its contractors as they assess the environmental impact of first and second generation coal conversion plants.

More detail on the 1978 plan is provided in the subprogram narratives which follow.

EXTRACTION

The extraction portion of the research program is devoted to an assessment of the environmental problems of oil and gas and coal extraction. The major program areas are acid mine drainage, western mining problems, surface reclamation and oil spill control.

1976 Accomplishments

Major 1976 accomplishments occurred in controlling the environmental effects of surface and deep mining for coal.

- The final report on the treatment of acid mine drainage by the Alumina-Lime-Soda process was completed. This process shows promise as a technologically feasible alternative for treating acid mine drainage. The costs of the process, however, may not be compatible with wide use.

- The use of sewage sludge to control acid mine drainage was demonstrated at the Troga River Mine. This technique provides the option of reducing the overall discharge associated with a given mine.

- Evaluation was completed of the watershed clean-up demonstration at Dent's Run, West Virginia. This project demonstrated methods of reclaiming strip mined lands and methods of controlling infiltration from deep mines.

- A demonstration project was completed on the use of fly ash as a soil additive for surface mine reclamation at Hillman State Park, Pennsylvania. The use of fly ash neutralizes mine waste and accelerates reclamation.

1977 Program

For fiscal year 1977, the total allocation for this program area is $6,700,000. Major 1977 outputs are planned in the areas of reclamation procedures for surface and deep coal mines, run-off problems for eastern surface mines and environmental assessments of coal transportation practices. Planned activities include:

- Completion of a long-term evaluation of Elkins, West Virginia, abandoned surface-mine demonstration project.

- Completion of a Manual of Practices for sediment ponds, pre-mining planning, geologic prediction of acid mine drainage and underground mine close-down procedures.

- Completion of active surface mine demonstration projects on steep slope mining and sediment control using debris basins. These projects are providing techniques for controlling erosion in eastern surface mining operations.

- Completion of underground mine demonstration projects on permeable limestone seals and connector wells to dewater mines. These projects are providing techniques to eliminate future acid mine drainage problems.

- Completion of an assessment of the environmental impact of the transportation of solid fossil fuels.

1977 Explanation of Changes from Budget Estimate

There is no change.

1978 Plan

For fiscal year 1978 the total allocation for this program area is $6,200,000. During fiscal year 1978 the extraction research program will produce summary documents on acid mine drainage and surface mining practices. The program plans to:

- Complete the summary of all available treatment techniques for acid mine drainage from coal production. This document will provide information on the technology available for and costs of treating acid mine drainage;

- Complete an environmental instruction package for control agencies and operators concerned with surface mining. This manual will provide a basis for State regulations as well as a training program to assist in implementation; and

- Complete assessments of environmental impact of western coal development on areas of the Northern Great Plains.

FUEL PROCESSING

This portion of the control technology research and development includes the assessment of new coal technologies. Specifically, the potential environmental problems and benefits of coal cleaning, fluidized bed combustion, residual oil processing and synthetic fuel generation (i.e., coal liquefaction and gasification) are studied. The goal of the program is to assure the investigation and understanding of the environmental consequences of potential technologies for coal use.

1976 Accomplishments

Major 1976 accomplishments occurred in the areas of fluidized bed combustion, synthetic gaseous and liquid fuels, and chemical coal cleaning and oil shale development.

- The 0.63 megawatt (MW) fluidized bed combustion miniplant in Linden, New Jersey, completed two successful runs of 100 hours and 250 hours. EPA is presently using this facility to study pollutant formation and control. The successful performance established the viability of the process for generating the data needed to assess the potential to control sulfur oxide and nitrogen oxide emissions.

- Environmental testing was underway at two ERDA-sponsored fluidized bed combustion process development unit facilities. A comprehensive analysis is to be made of all pollutants emitted from the process early in the FBC development program. Presently, this technology appears to have notable environmental, economic, and energy benefits.

- A joint program with ERDA was initiated to perform environmental measurements on the Hygas coal gasification and the Solvent Refined Coal liquefaction pilot plants operated by ERDA. Similar joint programs were expected in 1977 for the Synthane and Bi-gas gasification pilot plants.

- A joint project with an electric utility was undertaken to demonstrate the chemically active fluidized bed two-stage combustion/clean-up process for environmentally acceptable combustion of high sulfur/high metal residual oils.

- The final design for the Meyers process chemical coal cleaning pilot test facility was completed. Construction started in October 1976. This process offers the capability of desulfurizing many coals to meet sulfur emission standards for electric utility boilers.

- A comprehensive environmental characterization test program at full-scale of the Lurgi coal gasification process at Prinstina, Yugoslavia, was begun. This will provide the first comprehensive environmental data obtained from a Lurgi plant. The plant is modern and contains many units which will be part of the United States plants.

- A joint EPA/U.S. Bureau of Mines (USBM) physical coal cleaning test facility was being designed for construction at the USBM facility at Bruceton, Pennsylvania. This facility will advance the state-of-the-art of physical desulfurization for medium and high-sulfur coals. It will also permit potential users of the technology to clean their coals and determine the achievable degree of sulfur removal.

- Environmental guidance was given to ERDA on the Coalcon clean fuels demonstration plant and on their coal research and development program through participation in environmental task forces.

- A report was published on the capabilities of different high temperature/pressure particulate control methods. Such technology is critical for environmentally acceptable operation of low-BTU gasifier and high-pressure fluidized bed systems.

- An updated report was published on the sulfur reduction of United States coals achieved by physical coal cleaning techniques. This is a fundamental data book used by all who are contemplating using coal cleaning.

- A memorandum of understanding was signed with two electric utility companies to undertake a three-year project, demonstrating physical coal cleaning, at the Homer City Power Plant (1850 MW) in Pennsylvania as a cost-effective method for meeting Federal and State air pollution standards.

- An environmental sampling and analysis program was completed at the Paraho Oil Shale Retort at Anvil Points, Colorado. This program was designed to characterize the emission and effluents associated with this oil-shale retorting process.

- The oil-spill research staff provided technical assistance for land protection, clean-up, and restoration at oil or hazardous material spills at the Hackensack River, New Jersey, at the Duwamish Waterway, Seattle, Washington, and at Hopewell, Virginia. In addition, a mobile laboratory was constructed to provide analytical capability for emergency response.

1977 Program

For fiscal year 1977, the total allocation for this program area is $18,700,000. In 1977, this program is to have available test facilities and initial testing results on coal cleaning, coal gasification and chemically active fluidized bed coal conversion. Planned activities include:

- Publication of a report on environmental problems identified by testing the operation of eastern and midwestern coal cleaning plants. This data is to support development of standards and retrofit control technology for operating coal cleaning plants.

- Completion of the program to identify novel technologies for the removal of hazardous trace materials from coal. This is being done at laboratory scale. Promising technologies are to be studied further at bench-scale.

- Initiation of a test program at the Homer City power plant to demonstrate the multistream physical coal cleaning strategy to meet Federal/State standards. This is the first full-scale application of coal cleaning to meet power plant standards and is expected to be a significant impetus for this technology.

- Completion of construction of the Meyers process chemical coal cleaning test facility. This is the most advanced second generation coal cleaning technology and has several advantages over physical coal cleaning.

- Completion of environmental testing of the fluidized bed combustion facilities at Morgantown, Pennsylvania, and at Leatherhead, England. These are both process development units and represent two distinct types of FBC.

- Operation of the Exxon miniplant to provide environmental data and to provide access to ERDA to obtain engineering and operating data. This second-year of operation is mainly funded by ERDA to support their development program.

- Completion of the development of pollutant sorbent regeneration and alternate sorbents for FBC systems. In FBC, presently, the combustor sorbent is disposed of by land fill with consequent environmental problems. Regeneration is needed to minimize disposal.

- Completion of a report on evaluation of high temperature/pressure particulate control methods. These are needed to make low BTU gasification and pressurized FBC environmentally acceptable.

- Completion of construction of the chemically active fluid bed two-stage combustion and clean-up process. This process removes sulfur and metals from residual oil and produces a clean burning gaseous fuel for existing boilers. This system provides a retrofit SO_x control technology alternative for utility and industrial boilers.

- Completion of a report on development of oil desulfurization/denitrification/demetallization technology.

- Completion of Phase I environmental testing of the Yugoslovian Lurgi and the ERDA Hygas coal gasification facilities and the ERDA solvent refined coal liquefaction process.

- Completion of construction of the in-house bench-scale coal gasification acid-gas clean-up test facility. This facility is to be used to characterize environmentally the fate of pollutants such as H_2S, COS, CS_2, NH_3, mercaptans, etc. in the sulfur removal control technologies.

1978 Plan

For fiscal year 1978, the total allocation for this program area is $18,150,000. During 1978 this program will complete publications on physical coal cleaning and fluidized bed combustion. Test results on ERDA gasification facilities will also be obtained. The program plans to:

- Complete the initial environmental assessment of the multistream coal cleaning demonstration at the Homer City power plant. Publish a report containing the cleaned coal characteristics, cleaning plant costs, energy consumption and the environmental controls of the Homer City facility.

- Publish standard-of-practice manuals for best available environmental control technology for physical coal cleaning plants and for fluidized bed combustion facility.

- Complete first year of Meyers process operation. Provide cleaned coal to utility and industrial users for combustion testing. Publish a report on the economics of the Meyers process in comparison with flue gas cleaning and the Homer City coal cleaning demonstration.

- Complete environmental testing of the ERDA-sponsored Rivesville 30MW fluidized bed combustion pilot plant. This is the largest FBC unit under construction. The data from this testing is expected to lead to standards for atmospheric FBC units.

- Complete initial evaluation and environmental assessment of the combined combustor, regenerator and granular filter in the Exxon fluidized bed miniplant. This will be the first operation of a completely integrated pressurized FBC system. It is at the process development unit scale.

- Complete initial report on the environmental assessment of the chemically active fluid bed (CAFB) process for converting high sulfur oil and coal to clean burning low BTU gas.

- Complete Phase I environmental testing of the British gas slagging Lurgi plant, two fixed-bed gasification pilot plants at Morgantown and Grand Forks, the ERDA second generation Synthane and Bi-gas plants and the ERDA funded industrial gasification demonstration plants.

- Prepare standard-of-practice manuals for best available environmental control technology for synthetic fuels processes for coal and oil shale.

- Complete construction of the in-house bench-scale coal liquefaction environmental test facility and the waste water treatment test facility. These facilities will permit studies of the behavior of pollutant chemicals and processes equipped with different control technologies.

- Continue environmental testing of emerging fuel processing technologies and development of a data base to support new source performance standards and effluent guidelines.

- Complete assessment of the environmental effects of coal slurry pipelines.

- Complete a final report assessing the environmental impacts from, and control technology requirements of, oil shale development.

ENERGY

Research and Development

Conservation, Utilization, and Technology Assessment

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
		(dollars in thousands)			
Appropriation.....	$27,075	$36,000	$32,700	$30,550	-$2,150
Permanent Positions...	71	76	64	64	...

Budget Request

An appropriation of $30,550,000 is requested for FY 1978, representing a decrease of $2,150,000 from the 1977 level.

Program Description

This program includes research and development relating to utility and industrial power; energy conservation and advanced energy systems; and integrated technology assessments. The utility and industrial power program emphasizes the characterization and control technology development for fossil-fuel-combustion related pollutants. Flue gas desulfurization along with nitrogen oxide, particulate and thermal control technologies are being developed. In the energy conservation and advanced energy systems portion of the effort, major thrusts are the development of waste-as-fuel technology, evaluation of the environmental impact of industrial conservation technology and the environmental assessment of geothermal and other advanced energy systems. Integrated technology assessments provide summary analyses of the environmental, economic and social consequences of energy supply and use alternatives.

1976 Accomplishments

As of June 30, 1976, obligations included $15,647,000 for contracts, $2,800,000 for grants, and $6,200,000 to other Federal organizations for interagency agreements. More detail on 1976 accomplishments is provided in the subprogram narratives which follow.

1977 Program

The total resource allocation for this program is $32,700,000 in 1977. Of this amount, $15,600,000 is for contracts, $2,800,000 for grants, and $6,200,000 is for interagency agreements. The allocation of 1977 funds in the conservation, utilization and technology assessment program is given below:

Utility and Industrial Power:		
Flue Gas Desulfurization.....	$4,940,000	
Waste Heat/Waste Products.....	3,770,000	
NO_x Control.....	9,740,000	
Fine Particulates.....	3,550,000	
Combustion Pollutant Assessment.....	1,600,000	
Subtotal.....		$23,600,000
Conservation and Advanced Systems.....		6,300,000
Integrated Technology Assessment.....		2,800,000
Total.....		32,700,000

More detail on the 1977 program is provided in the subprogram narratives which follow.

1977 Explanation of Changes from Budget Estimate

The $3,300,000 decrease in this program from the original 1977 budget estimate resulted from two changes in orientation within the energy program.

(1) The research related to monitoring, transport and health effects of airborne sulfates was increased since preliminary information indicates sulfates may be the most important of the sulfur compound air pollutants. Funds were

reprogrammed from the utility and industrial power program to the health and ecological effects program.

(2) Funds in the thermal pollution and flue gas desulfurization (including sludge disposal) areas were reprogrammed into areas of higher priority, fluidized bed combustion and coal cleaning.

1978 Plan

The total resource allocation planned for this program is $30,550,000 in fiscal year 1978. Of this amount, $21,550,000 is planned for contracts, $2,800,000 for grants, and $3,200,000 for interagency agreements. The allocation of the 1978 funds in the conservation, utilization, and technology assessment program is given below:

Utility and Industrial Power:		
Flue Gas Desulfurization.....	$3,200,000	
Waste Heat/Waste Products.....	2,500,000	
NO_x Control.....	10,100,000	
Fine Particulates.....	3,900,000	
Combustion Pollutant Assessment.....	1,900,000	
Subtotal.....		$21,600,000
Conservation and Advanced Systems.....		5,750,000
Integrated Technology Assessment.....		3,200,000
Total.....		30,550,000

In the conventional combustion control technology area, flue gas desulfurization funding has dropped from $25,000,000 in 1975 to a planned $3,200,000 in 1978. Major demonstrations have been successfully undertaken and no new ones are scheduled. The program is shifting from hardware procurement to a period of testing, evaluation and technology transfer to the user community.

No new programs are planned for the thermal pollution control area to support waste heat utilization studies. Previous demonstrations by this Agency and others have successfully shown that waste heat can be used in growing food crops in greenhouses.

In the wastes-as-fuel area, emphasis is focusing on near-term technology development and pollution assessments. Long-range technologies, such as biomass conversion and advanced pyrolysis systems, will receive reduced support.

More detail on the 1978 plan is provided in the subprogram narratives which follow.

UTILITY AND INDUSTRIAL POWER

This component of the control technology research and development program addresses the environmental problems of conventional fuel combustion systems. Combustion units varying in size from residential furnaces to steam-electric generating units are included. The conventional combustion pollutants -- SO_x, NO_x and particulates -- receive the largest portion of the research effort, followed by waste heat, ash and waste sludges. The program also includes emissions characterization for non-criteria pollutants.

1976 Accomplishments

Major 1976 accomplishments were in the areas of flue gas desulfurization and combustion modification for NO_x and CO control.

- A demonstration of the Wellman-Lord regenerable flue gas desulfurization process was begun at the Northern Indiana Public Service Company's Mitchell Power Plant. This process, installed on a 100 megawatt (MW) boiler, removes sulfur compounds from the flue gas and produces marketable elemental sulfur. If proven economic and reliable, this project will provide an attractive alternative to lime/limestone scrubber systems requiring sludge disposal.

- The final intensive tests of the General Motors industrial boiler double alkali SO_x scrubber systems were completed. The results are very encouraging with good chemical conversion, high solids content in the waste and low sodium loss.

- The Bahco lime scrubber on an industrial size boiler at Rickenbacker Air Force Base began operation. The initial operation showed 90 percent SO_x removal efficiency. This process offers one of the few control options now available for small industrial boilers.

- The EPA Industrial Environmental Research Laboratory in North Carolina developed an improved residential oil burner that will be used by the Department of Commerce's Office of Minority Business Enterprise as a commercial product to be manufactured by a newly formed company. The burner offers high efficiency, low carbonaceous emissions and 70 percent reduction of NO_x emissions.

- Guidelines for Residential Oil-Burner Adjustments and Guidelines for Commercial Oil-Fired Boiler Adjustments were published and have been extremely successful. The oil heating industry plans to use the guidelines for training burner service personnel. The guidelines have been reprinted in Fuel Oil and Oil Heat magazine.

- The combustion test program involving burning of western coal in small size utility boilers has been completed. The western coal showed lower NO_x but higher CO emissions and carbon carryover than Illinois coal under similar combustion conditions.

- A comprehensive technical report was issued on the assessment of Japanese flue gas treatment technology for NO_x control. Such technology offers the potential of high efficiency denitrification. The transfer of Japanese NO_x control technology to the U.S. will reduce the need for duplicative research programs.

- An environmental assessment program was initiated to evaluate the effect of NO_x combustion modification practices on emissions of other pollutants (such as carbon and CO) from fossil fuel burning stationary sources. An understanding of trade-offs among pollutant species is necessary to optimize conditions for reduction of adverse environmental impacts.

- Encouraging results were obtained for fine particulate removal using polyester nonwoven fabric filters and high-gradient-magnetic-field separation. These materials and processes should provide effective and reliable alternatives to conventional fabric filters.

- The demonstration of waste heat utilization in a greenhouse located at the Sherburne County Generating Plant at Becken, Minnesota, was successful. This project utilized energy conservation practices to economically recover heat that would otherwise be lost to the atmosphere through cooling towers.

1977 Program

The total allocation for this program area for 1977 is $23,600,000. Planned 1977 accomplishments include the completion of research projects on three FGD units and the development of improved particulate removal capability for electric utility flue gas.

- Completion of Shawnee advanced lime/limestone flue gas desulfurization test program and publication of final report. This program aims at identifying improved process variations capable of yielding improved SO_x removal, economics, reliability and sludge characteristics.

- Completion of the Shawnee sludge evaluation program. This involves pilot testing of three commercially offered sludge fixation processes with subsequent environmental evaluations. Such processes offer the potential for changing sludges into acceptable landfill materials.

- Completion of Bahco test program for lime scrubbing on a coal-fired industrial boiler and publication of final report. This program will evaluate a sulfur control option for the important smaller combustion sources. Small combustion sources are major emitters of sulfur dioxide and cost-effective technology options are few.

- Completion of Wellman-Lord FGD demonstration program final report. This report will summarize the operability and performance of the first application of this FGD technology to a coal-fired power plant. Marketable sulfur will be produced in this process.

- Issuance of final report on Louisville Gas and Electric laboratory and field FGD waste disposal studies. The objective is to understand and apply the unique chemistry of this successful unit to other applications and improve sludge disposal technology.

- Preparation of comprehensive report on the application of staged combustion NO_x control technology for tangentially-fired coal boilers.

- Update of a comprehensive report on assessment of Japanese flue gas treatment for NO_x control.

- Publication of application guides for electrostatic precipitators and for the turbulent contact absorber scrubber for particulate control at power plants.

- Completion of the development of control technology for high resistivity particulates from the combustion of low sulfur and cleaned coals.

- Completion of field testing of control technology for treating cooling tower blowdown. Blowdown represents an important water effluent from both fossil and nuclear power plants.

1978 Plan

The total allocation for this program area in fiscal year 1978 is $21,600,000. The major 1978 accomplishments will include the testing of two FGD facilities and a summarization of the research results on the FGD sludge problem. NO_x and particulate control options will also be evaluated. The program plans to:

- Initiate testing of the double alkali (non-regenerable) and aqueous carbonate (regenerable) full-scale flue gas desulfurization demonstration facilities. These second generation systems offer performance, economic and operability improvements over present systems.

- Prepare annual reports summarizing the EPA-sponsored FGD sludge effort. The activities encompass evaluation studies and pilot and prototype-scale testing of various sludge disposal technologies.

- Complete preliminary studies assessing the impact of flue gas, water and solid waste streams from a variety of combustion sources. Such studies aim at characterizing the problems associated with presently unregulated pollutants associated with combustion sources.

- Perform a comprehensive application testing program aimed at identifying means of controlling NO_x through retrofit operational modifications on a wide variety of combustion sources. Potentially controllable stationary combustion sources produce over one-half of man-made nitrogen oxide emissions.

- Develop and apply NO_x control technology employing combustion modifications to new utility boilers, commercial/industrial boilers, residential heating systems, stationary engines and advanced combustion processes. These combustion systems represent the major stationary source of nitrogen oxides emissions.

- Undertake programs to improve the effectiveness of conventional electrostatic precipitators, fabric filters and scrubbers for fine particulate removal. Fine particulates are potentially harmful and are difficult to control with conventional technology.

- Demonstrate, at the prototype level, a wet-dry and a dry cooling tower technology capable of dissipating waste heat from steam-electric plants while minimizing water consumption and pollution.

CONSERVATION AND ADVANCED ENERGY SYSTEMS

This component of the control technology research program addresses three major areas. The conservation research effort analyzes the environmental consequences of alternative industrial manufacturing processes and of using solid waste as an energy source. The research on advanced energy systems attempts to identify the environmental implications of new energy sources, principally geothermal power and fuels derived from oil shales.

1976 Accomplishments

Major 1976 accomplishments included a survey of the environmental consequences of industrial energy conservation, demonstration of refuse-derived fuels and the initiation of five environmenta assessments.

- Potential energy-conserving options in 13 industries and their potential environmental impact were identified. These manufacturing categories included aluminum, copper, olefins, fertilizer, phosphorus, ammonia, iron and steel, pulp and paper, textiles, petro-chemicals, chlorine, glass and cement production. A number of promising new industrial processes with favorable environmental aspects were revealed and two are now under development with EPA support. Also, major trends in industry pollution sources were documented including projected increases in fine particulates and NO_x.

- A project was initiated in which densified-refuse-derived-fuel was to be burned with coal to generate electricity and steam. If successful, the project will extend the application of refuse-derived fuel to stoker boilers. Stokers are generally located in smaller communities. These communities are likely to have waste disposal problems.

- Construction was completed on a pilot scale fluidized bed pyrolysis reactor which will convert mixed solid waste to fuels. This technology will enable the conversion of large quantities of agricultural wastes to fuel and alleviate pollution from these wastes.

- Programs were initiated to conduct five environmental assessments of advanced power cycles presently under development; geothermal systems; geopressure energy conversion; solar energy systems; and trace emissions from conventional combustion.

1977 Program

The total allocation for this program area for 1977 is $6,300,000. Major 1977 outputs include a summarization of the St. Louis co-firing tests, a completed assessment of bacteria and viral levels associated with waste used as fuel and the completion of one geothermal site assessment. Other activities include:

- Completion of development of the St. Louis Union Electric system for the co-firing of refuse and coal in a large utility boiler.

- Completion of final report on presence of bacteria and viruses in waste-as-fuel system. Unless controlled, these micro-organisms could inhibit utilization of energy-efficient waste-as-fuel processes.

- Completion of the combustion characterization of densified refuse-derived fuel mixed with coal in a stoker-fired boiler.

- Completion of construction of a pilot scale experimental facility for pyrolytic conversion of mixed wastes to fuel.

- Completion of environmental assessments of geothermal energy development at Imperial Valley, Klamath Falls and other sites.

1978 Plan

The total allocation for this program area in fiscal year 1978 is $5,750,000. The major 1978 planned accomplishments are in the waste-as-fuel area. The program plans to:

- Perform economic, technical and environmental evaluations of resource recovery systems, refuse-derived fuel processing and energy recovery equipment and systems. These evaluations will indicate the potential for successful implementation of the numerous systems being developed by EPA and private parties.

- Identify and characterize various waste streams and perform emission and residuals studies on pollutants inherent in wastes or produced in resource recovery and energy conservation processes. Develop pollution control techniques for waste reuse processes which cannot meet environmental standards.

- Develop systems for co-firing wastes with coal in industrial-sized boilers and for co-firing wastes with oil in large utility boilers. These systems, along with the

St. Louis technology already developed by EPA, should make possible conversion of 50 percent of the Nation's municipal solid wastes to energy.

- Develop an inexpensive processing system for producing fuel from refuse. For smaller and middle-sized communities, this system will make recovery of wastes competitive with disposal.

INTEGRATED TECHNOLOGY ASSESSMENT

1976 Accomplishments

Major 1976 accomplishments included the initiation of three major studies and the completion of the initial phase in two more.

- Three major technology assessments were initiated, two of which involve regional energy development (the Ohio River Basin, and the Northern Great Plains/Rocky Mountain coal and oil shale region) and one which addresses the future development of electric utility systems. The assessments were designed to identify the impacts of introducing or expanding energy technology and to analyze alternative means of mitigating undesirable impacts and enhancing benefits.

- A detailed and comprehensive work plan and a draft report describing the results of the first year's work of the technology assessment of energy development in the western U.S. were published. The work plan lays out a program for identifying all of the impacts of developing energy resources in the coal and oil shale areas of the West, and for examining alternative strategies to mitigate the adverse impacts of such development. The draft first year report evaluates the impacts of developing coal mines, oil-shale facilities, coal gasification and liquefaction plants, steam-electric power plants and other facilities at six selected sites and throughout the region.

- A comprehensive work plan for assessing the future activities of the electric utility industry was developed. The plan lays out a series of plausible scenarios for future national development of electric generation, and describes a program for evaluating their environmental, social and economic consequences.

1977 Program

The total allocation for this program area in fiscal year 1977 is $2,800,000. Major 1977 planned program achievements include the initiation of two studies and completion of the initial phases of three others: the Ohio River Basin, the western coal region and the electric utility industry studies. Other activities include:

- Initiation of a technology assessment of energy development in the Appalachian Region, in coordination with the Appalachian Regional Commission. The assessment will focus on fossil fuel, especially coal.

- Initiation of an integrated assessment which will produce a comparative evaluation of the environmental, energy and economic impacts of advanced coal-based energy technologies (such as high and low BTU gasification, fluidized-bed combustion, etc.).

- Initiation of at least one additional technology assessment dealing with regional energy development problems, emerging energy technologies, or energy conservation.

- Publication of reports describing the results of the first phases of efforts for the three technology assessments (western energy development, Ohio River Basin development, electric utility industry) initiated in fiscal year 1976.

1978 Plan

The total allocation for this program area in fiscal year 1978 is $3,200,000. In 1978 the integrated technology assessment of the western energy supply will be completed. In addition, the program plans to:

- Perform studies to evaluate the cost/risk/benefit trade-offs of energy production, conservation and pollution control alternatives.

- Complete the two technology assessments of energy development in the western U.S. and the activities of the electric utility industry. Publish comprehensive reports of the results and conduct seminars.

ENERGY

Research and Development

Health and Ecological Effects

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation	$34,179	$33,700	$35,200	$39,200	+$4,000
Permanent Positions.....	13	23	5	5	...

Budget Request

An appropriation of $39,200,000 is requested for FY 1978, representing an increase of $4 million over the 1977 level.

Program Description

The overall program has the goal of presenting the clearest possible statement of the nature and extent of the actual and potential changes in the human environment to be associated with ongoing and proposed energy development. To do this successfully, the program includes research on the laboratory characterization of the nature and effects of energy related pollutants and field studies to record the baseline and ecosystem responses to actual energy projects. As part of the overall effort, the research program also includes work on pollutant measurement and transport/transformation processes.

1976 Accomplishments

As of June 30, 1976, obligations included $21,237,000 for interagency agreements, $6,881,000 for contracts, and $4,052,000 for grants. More detail on 1976 accomplishments is provided in the subprogram narratives which follow.

1977 Program

The 1977 funds available for the interagency energy related health and ecological effects program were $35,200,000. Of these resources $20,337,000 are for interagency agreements, $6,880,000 for contracts, and $5,052,000 for grants. Allocation of these resources by program subarea is as follows:

Health Effects		
Hazardous Agent I.D.....	$1,525,000	
Dose and Damage Indicators.....	2,138,000	
Metabolism of Hazardous Agents.....	1,887,000	
Evaluation of Hazards to Man.....	5,230,000	
Damage/Repair/Recovery Processess.....	1,145,000	
Subtotal.....		$11,925,000
Ecological Effects		
Freshwater Effects.....	2,650,000	
Marine/Estuarine Effects.....	4,460,000	
Terrestrial Effects.....	3,600,000	
Subtotal.....		10,710,000

Transport Processes

Atmospheric Transport	2,160,000	
Aquatic Transport	1,560,000	
Marine Transport	1,050,000	
Subtotal		4,770,000

Monitoring and Instrumentation

Monitoring	3,440,000	
Instrumentation	2,780,000	
Quality Assurance	1,575,000	
Subtotal		7,795,000
Total		35,200,000

The 1977 program in energy related health and ecological effects was essentially a direct continuation of the 1976 program. More detail on the 1977 program is provided in the subprogram narratives which follow.

1977 Explanation of Changes from Budget Estimate

The $1,500,000 increase in the current 1977 estimate for health and ecological effects reflects the requirement for increased emphasis on sulfate research. Additional efforts were mounted in the areas of synthetic fuel screening, sulfate health research, sulfate instrumentation and the SO_x transport and transformation. The transfer of funds was from within the energy program.

1978 Plan

The 1978 appropriation requested for the health and ecological effects program is $39,200,000, an increase of $4,000,000 over the 1977 level. Of these resources, $21,366,000 are for interagency agreements, $9,380,000 for contracts, and $6,052,000 for grants. Anticipated allocation of these resources by program subarea is indicated as follows:

Health Effects

Hazardous Agent I.D.	$1,325,000	
Dose and Damage Indicators	2,388,000	
Metabolism of Hazardous Agents	1,687,000	
Evaluation of Hazards to Man	6,130,000	
Damage/Repair/Recovery Processess	1,745,000	
Subtotal		$13,275,000

Ecological Effects

Freshwater Effects	2,650,000	
Marine/Estuarine Effects	4,460,000	
Terrestrial Effects	3,600,000	
Subtotal		10,710,000

Transport Processes

Atmospheric Transport	3,160,000	
Aquatic Transport	1,560,000	
Marine Transport	1,050,000	
Subtotal		5,770,000

Monitoring and Instrumentation

Monitoring	$4,240,000	
Instrumentation	3,330,000	
Quality Assurance	1,875,000	
Subtotal		9,445,000
Total		39,200,000

The research program will enter a phase of summarization and evaluation during 1978. At this time the program should begin to yield comprehensive information on several topics including: (1) the documentation of air and water quality in energy producing areas; (2) the summarization of detection methods for the potential health and ecological effects of energy pollutants; and (3) an understanding of the transport and transformation characteristics of energy pollutants.

The resource reductions previously discussed in the extraction and processing technology and the conservation, utilization and technology assessment areas would permit a redirection of effort toward the health and ecological effects area in 1978. The $4 million increase would be allocated in the following manner:

Health Effects

Dose and Damage Indicators	$450,000	
Evaluation of Hazards to Man	900,000	
Subtotal		$1,350,000

Transport Processes

Atmospheric Transport		1,000,000

Monitoring and Instrumentation

Monitoring	800,000	
Instrumentation	550,000	
Quality Assurance	300,000	
Subtotal		1,650,000
Total		4,000,000

The 1978 increase is required primarily to keep pace with the developing coal gasification and liquefaction technologies. Three to five synthetic fuel plants consuming 10 to 15 million tons of coal annually are projected by 1980. Potentially carcinogenic compounds may be present in the organic fraction of these plant emissions or may result from the transport and transformation of emitted compounds. More detail on the 1978 plan is provided in the subprogram narratives which follow.

HEALTH EFFECTS

The Health Effects program examines possible carcinogenic, mutagenic, teratogenic and respiratory effects on humans from existing and emerging energy technologies. Information abou the effects of previously unanticipated pollutants related to fossil fuel combustion is specifically sought.

1976 Accomplishments

- Completed installation of Community Health Air Monitoring Program aerosol instrument array in prototype station. This station established the precedent for all of the field measurements to be taken in conjunction with epidemiologic studies.

- Demonstrated the potential value of rabbit lung tissue cytotoxicity test as a preliminary method of assessing toxicity of energy related air pollutants. This test may be widely used by parties interested in the toxicity of energy pollutant emissions.

- Continued series of toxicological and clinical studies to assess the risk to humans resulting from exposure to energy related agents (single and multiple stressor studies). These tests produced information on the effects of H_2SO_4 and energy related carcinogens in two animal species.

- Initiated accelerated effort to develop and utilize in vitro screening techniques for determination of the presence of carcinogenic, teratogenic, mutagenic and generally toxic agents in environmental samples. Such screening techniques will be valuable in reducing the number of expensive and time consuming studies required to develop quantitative dose response relationships necessary for decisions regarding control systems development and/or rulemaking activity.

- Contributed to development of sophisticated exposure facilities necessary for clinical studies under controlled conditions.

- Completed development of hazardous materials (e.g. amphiboles and carcinogens) experimentation facility to permit research with pathogen-free animals while providing high security for involved personnel.

1977 Program

Planned accomplishments include:

- Development of more sensitive diagnostic techniques for assessing long-term, low-level dose and damage to man from multiple stressors influenced by energy technology. Such technologies include use of Type I and Type II alveolar epithelial cells in vitro to assess potential toxicity and neoplastic transformation and enzymatic characterization of metabolic activation potential and identification of presumptive carcinogen metabolites.

- Determination of metabolism and fate of agents and mechanisms of damage and repair to refine techniques for estimating risk to man from data derived from animal experimentation, including studies on the relationship between carcinogen metabolism in the alveolal macrophage and the induction of lung cancer.

- Completion of installation of aerosol monitoring equipment in three air monitoring systems. These monitoring facilities complete the chemical and physical data acquisition systems to be used with all human epidemiology studies.

- Completion of the study of the effect of inhaled respirable particles and H_2SO_4 mist on host defense against pulmonary infection.

1978 Plan

An increase of $1,350,000 will be allocated to the health effects area. The health effects portion of the program is the single area where organics and specifically carcinogens have traditionally been emphasized. The recent OMB study to determine possible overlaps in the EPA administered interagency program and the ERDA program, however, has suggested areas within the health program that warrant attention.

The development of new energy technologies, specifically coal gasification, and liquefaction, will generate pollutants whose effects on both the worker community and general population are as yet unknown. To be able to adequately assess health impacts

of these emerging technologies in a time frame commensurate with anticipated development, emphasis must be placed on speeding the generation and utilization of diagnostic tools which can indicate early sublethal reparable changes. Emphasis in this area will be given to the hazardous organics associated with the synthetic fuel industry. Procedures and techniques will be developed to assess pollutant hazards based on their concentration and distribution and the reaction in experimental organisms. Finally, an additional emphasis is required to determine the effects of multiple pollutant stress on animals and to develop techniques to extrapolate these results to man.

ECOLOGICAL EFFECTS

The ecological effects sub-area addresses the environmental aspects of freshwater, marine, and terrestrial ecosystem responses to energy-related activities. Freshwater studies concentrate on impacts from coal and oil shale extraction and from coal gasification and liquefaction. Near-term marine research is designed to establish background contaminant levels in both ocean and estuarine dwelling organisms and their habitats. The terrestrial portion of program emphasizes the ecosystem impacts of pollutants from coal combustion and effects of strip mining and mined land reclamation practices.

1976 Accomplishments

- Completed assessment of chemical and biological field site studies of the effects on aquatic ecosystem of coal extraction at the Montana site. This study established the comprehensive environmental baseline for this semiarid ecosystem.

- Completed preliminary report on the immediate and long-term effects of waste heat in surface waters of the Great Lakes Basin on aquatic species and community populations. The report includes power plants (nuclear and fossil), refineries and other technologies releasing waste heat to the aquatic environment.

- Developed guidelines and methodology for the acquisition, synthesis, analysis, and interpretation of complex ecological and biological information relative to major coastal ecosystems.

1977 Program

Planned accomplishments include:

- Determination of chemical and biological effects on aquatic ecosystems from coal extraction at a Wyoming site.

- Determination of the effects on aquatic organisms of leachate from the weathering of western coal extraction spoils.

- Development of models for comparison of pollutant impact with natural population dynamics in marine fishes.

- Establishment of biological indices for pollutant effects on freshwater ecosystems from coal combustion and processing.

- Initiation of testing methods to determine, under controlled conditions, the maintenance "flows" required for biological/fishery stability in areas of the United States affected by increased energy development.

1978 Plan

- Preliminary report on results of chemical and biological field site studies of the effects on aquatic ecosystems from coal extraction at Colorado sites.

- Publication of final report on determining the immediate and long-term effects of waste heat in surface waters of the Great Lakes Basin on aquatic species and community populations. Sources will include power plants (nuclear and fossil), refineries and any other technologies releasing waste heat to the aquatic environment. Emphasis will be on relationship of larval entrainment to reproducing populations.

- Completion of preliminary thermal effects evaluation on marine organisms, stressing responses to co-exposures to heat and metals.

- Determination of the toxicity to marine organisms of petrochemicals and energy related organic compounds from offshore activities.

- The conduct of experiments on plants, including fast growing trees, to assess growth support capabilities of specific land reclamation sites in relation to water quality and soil characteristics.

TRANSPORT PROCESSES

The transport processes sub-area traces the transmission by air, water and soil of pollutants emitted from energy operations from their sources to their destination in man and the environment. Additionally, it covers the physical and chemical changes that the pollutants undergo during their transport. Emphasis in air transport research is on conversion of sulfur and nitrogen oxides-chiefly from coal-burning power plants--to sulfates and nitrates. Transport of photochemical oxidants from various energy sources is also emphasized.

1976 Accomplishments

- Results from Midwest Interstate Sulfur Transformation and Transport Study (MISTT) indicated: consistent conversion of SO_2 to sulfate in power plant plumes, in contrast to earlier studies; SO_2 conversion to sulfate increases after NO is nearly converted to NO_2 by ozone interaction; and urban plumes can be sampled beyond 250 km and power plant plumes beyond 60 km.

- Completed assessment of the effects of heat and vapor discharge from large-scale cooling systems on local weather, including fogging and icing.

1977 Program

- Determination of the persistence of organo-chlorine compounds in marine waters.

- Evaluation of data from Midwest Interstate Sulfur Transformation and Transport Study (MISTT); this will yield specific information on transformation coefficients and conditions leading to production of atmospheric sulfate.

1978 Plan

- Report on atmospheric chemistry of pollutants from oil refining complexes and their effects on oxidant-transport. Reevaluate sulfate/nitrate emphasis versus airborne organic fine particulate studies.

An increase of $1 million will be allocated to the air transport area. Existing efforts for determining the atmospheric transport and transformation of pollutants is now directed primarily toward sulfate emissions from fossil-fuel power plants. The additional 1978 effort is designed to identify and quantify the major organic components of airborne particulate matter. The study will be applicable to general urban industrial aerosols and will focus on particulate emissions from new technologies such as coal gasification and liquefaction. The study will focus on the key precursor conditions for transformation of organic aerosol fractions into potentially carcinogenic compounds and the transport and spatial distribution of these compounds. The study will also identity and quantify the major sources of airborne particulate matter in representative atmospheres and attempt to project the incremental contribution of the new synthetic fuel technologies.

MONITORING AND INSTRUMENTATION

The monitoring and instrumentation program sub-area is directed toward identifying and quantifying pollutants related to energy production or use and to the improvement of polluant measurement capabilities. The two main objectives in this area are to accelerate development of new and improved sampling and analysis methods for energy related pollutants and to identify, measure and monitor pollutants associated with rapid implementation of emerging energy technologies.

1976 Accomplishments

- Completed energy related air and water pollution source inventory, established numerous additional air and water monitoring stations and implemented a multi-laboratory interagency air and water measurement quality assurance program as part of the Western Energy/ Environment Baseline Monitoring Study in the Northern Great Plains and Rocky Mountains.

- Completed initial comprehensive survey of low level trace and potentially hazardous organic contaminants from oil shale, coal liquefaction, and coal gasification technologies.

1977 Program

- Complete initial evaluation of energy related air and water pollution monitoring stations and associated analytical laboratories as element of the multilaboratory, interagency Western Energy/Environment Study throughout the Northern Great Plains and Rocky Mountains Province. Evaluation reports to indicate remedial measures for ensuring consistent, valid data on a regional basis.

- Initiate annual coverage with rapid, automated interpretation of multispectral imagery to document progress and environmental protection measures for major western coal development areas.

- Initiate and evaluate limited sulfate/fine particulate baseline monitoring in Western Study Area where major coal combustion and conversion facilities are planned.

- Develop improved analytical methodology for collection and analysis of energy related carcinogenic vapors in ambient air.

- Develop long path instruments for differentiating power plant emissions from fugitive dust at distances up to 20 kilometers from the source.

1978 Plan

- Continuation of western air, water, and land use baseline monitoring studies and evaluation of the need to intensify (1) fine particulate and sulfate measurements; (2) specific waterborne toxic measurements; and (3) full scale automated multispectral analysis surveys.

- Completion of report evaluating ground water monitoring methodology requirements for western strip mines, oil shale, and geothermal developments.

- Evaluation of air and water pollutant measurement methodology and instrumentation development to determine if emphasis should be shifted from toxic elements and compounds to hazardous organics.

An increase of $1,650,000 is allocated to the monitoring and instrumentation area. Emphasis in the existing monitoring and instrumentation program has been on development of the instrumentation to measure sulfates in the atmosphere and toxic metals in water. In keeping pace with the emerging synthetic fuel industry an additional emphasis is required to develop rapid, accurate field monitoring, and laboratory analytical methods for the measurement of hazardous organic materials in both air and water. Standardized monitoring equipment must be developed before these technologies reach commercialization. A multimedia monitoring package will be developed to provide guidance on source and ambient monitoring procedures for network design, sampling procedures, analytical methods, quality assurance, and data management for the gasification and liquefaction technologies. This will assist in achieving a degree of consistency in monitoring emissions from new technologies for both regulated and nonregulated pollutants.

The initiation of a multimedia data baseline will be undertaken in those areas of the midwest and eastern United States where major new coal extraction and conversion activities have been planned. This is aimed particularly at establishing a valid environmental baseline in advance of the completion of new coal-mining, power plant, and gasification complexes.

ENERGY

Research and Development

Technical Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation.....	$892	$2,500	$3,062	$2,327	-$735
Permanent Positions.....	8	...	8	8	...

Budget Request

An appropriation of $2,327,000 is requested for FY 1978, a decrease of $735,000 from the 1977 level.

Program Description

The expertise developed through the energy-related environmental research and development program provides the basis for technical support to EPA's regional and program offices and other governmental entities. This program employs a multitude of different mechanisms, ranging from cooperative, regionally oriented research and development projects, to development of scientific data for regulatory functions, provision of expert witness testimony, conduct of conferences and program seminars, and provision of executive reports relating to salient regional and technological energy/environment concerns.

In 1976, the technical support program obligated approximately $800,000 for contract support operations. Support activities included program planning assistance, Interagency Program Sector Group support, technical assessments, and information handling activities.

The 1976 program included a number of major accomplishments. Among these were:

- Sponsorship of a major conference at which Interagency Program research managers from a dozen Federal agencies and departments exchanged program status information with each other and with the public. With a hundred government research managers and five times that number of the interested public in attendance, information transfer was effective.

- Production of several program status reports including an extensive analysis of both 1975 and 1976 Interagency Programs. These documents, together with a listing of the researchers' addresses and telephone numbers, served to open up lines of communication both within the Interagency Program and between the program and those who needed the information and technologies developed under the program's aegis.

- Assistance to EPA Regions IV and V to involve them in an extensive Integrated Technology Assessment of the overall impacts of energy development in the Ohio River Basin. The Ohio River Basin has been the site of extensive energy-related development activities, including synthetic fuel plants and additional electrical power generation facilities. So that the full impacts, environmental, social, and economic, of these developments can be taken into account in the regional and national decision-making process, the results of the ongoing integrated technology

assessments are to be transferred as they are developed, through direct support of the involvement of regional personnel in monitoring the research effort.

1977 Program

The 1977 technical support program includes a number of major planned accomplishments:

- Support of energy/environment issues analyses both for participants in the Interagency Program and for specific key audiences. These analyses, in either seminar or written form, are to provide program and technology status information in an efficient format.

- Support to EPA Regions IV, V, and VI to assure their direct involvement in major aspects of the Interagency Program research effort relevant to their particular information needs. This expanded effort to involve the regions includes such issue areas as developing information on the combustion of lignite (Region VI), performing integrated assessments of energy development in the Ohio River Basin (Regions IV and V), and transferring information between the regions and the Interagency Program.

- Development and implementation of an Interagency Program information transfer network within the program itself to assure proper distribution of information and quality of documentation. A centralized review of all of the hundreds of research reports scheduled to be produced by the Interagency Program in this fiscal year should help assure that the information in these reports is appropriately disseminated and is available prior to key program area reviews.

- Initiation of a series of publications designed to provide technical information in a decision-making context which is directed at managers in the energy/environment area. More than two dozen such reports are planned. These range from program status reports and executive reports to issue papers and research report summaries. This effort is aimed at assuring that the hundreds of millions of dollars of research funded under the Interagency Program produces information which is both comprehensible and useful to its various constituencies.

1977 Explanation of Changes from Budget Estimate

The increase of $562,000 from the budget estimate to the current estimate is caused by several factors, including:

The acceleration of the production schedule for the Interagency Program executive reports and issue papers. As the last two years of the orginal five-year program approach, the interim results of the Interagency Program will be reviewed. Useful documentation should be available on the issues addressed by Interagency Program projects. Another convocation of the major participants in the Interagency Program is planned for 1977. Based upon a belief that the Interagency Program has developed adequate information on results to date to justify an output-oriented (as contrasted with a planning-oriented) session, this convocation is planned for late in the fiscal year.

Information on the environmental aspects of various energy development decisions should and will be available to the informed public and in a usable format. Major energy decisions will be made soon, and an informed public will play a significant role in these decisions.

These items were increased by $627,000. Offsetting this increase is a transfer of -$65,000 to the air program to support funding of the Biological and Climatic Effects Research program (BACER) which has been submitted to the Committees for their consideration.

1978 Plan

The 1978 program in technical support will continue to support, with research and information, EPA's regional and program offices. The 1978 resource level for this subactivity is $2,327,000. Of these resources, approximately $1,800,000 will be allocated to contract activities.

This program will continue to employ a number of different technical support devices, ranging from cooperative regional research and development projects, provision of scientific data for regulatory functions, provision of expert witness testimony and production of executive reports and seminars on salient energy/environment issues. The main thrust of the efforts will be to assure that the expertise developed under the auspices of the Interagency Program is communicated efficiently to the appropriate decision-making audiences.

The program includes several major initiatives of great import to the Interagency Program including the following:

- Conduct a major review of the Interagency Program. This review will involve all of the participating research managers from the 16 Federal agencies and departments which are part of the program. This review will serve to assure the appropriateness, relevance, and comprehensiveness of the Interagency Program. The major results of this review will be a documented set of corrections to the future course of the Interagency Program.

- Publish a compendium of research projects status reports in a format which will allow effective communication of the entire scope of the Interagency Program and its findings to date.

The decrease of $735,000 is a result of the acceleration of several aspects of the program. Activities originally planned for 1978 have, in fact, been initiated in 1977.

Among the activities being initiated in 1977 are the production of seven Interagency Program executive reports and issue papers and a convocation of the major participants in the Interagency Program. The implementation of these activities in 1977 allows some of the resources originally allocated in the 1978 budget to be part of the initiative to increase research on the health and ecological effects of energy development.

	1,042	$71,800	1,857	$72,846
Agency Management and Support.....	1,315	58,356	1,330	59,295
Agency Management.....	(1,315)	(47,354)	(1,330)	(48,266)
Agency Support.....	...	(11,002)	...	(11,029)

Regio

PROGRAM MANAGEMENT AND SUPPORT

Program Management and Support

SECTION TAB

PROGRAM MANAGEMENT AND SUPPORT

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Abatement and Control:					
Appropriation.....	$30,275	$34,692	$39,015	$38,171 ~~$39,040~~	~~+$825~~ -844
Permanent Positions..	162	168	169	169	...
Transition Quarter...	10,454	N/A	N/A	N/A	N/A
Enforcement:					
Appropriation.....	14,168	16,042	14,760	14,856 ~~15,489~~	~~+729~~ +96
Permanent Positions..	158	176	172	173	+1
Transition Quarter...	1,340	N/A	N/A	N/A	N/A
Research and Development:					
Appropriation.....	16,507	16,461	18,398	18,118 ~~18,822~~	~~+424~~ -280
Permanent Positions..	139	142	141	141	...
Transition Quarter...	2,631	N/A	N/A	N/A	N/A
Total, Program Management and Support Program:					
Appropriation.....	60,950	67,195	72,173	71,145 ~~74,157~~	~~+1,978~~ -1028
Permanent Positions..	459	486	482	483	+1
Transition Quarter...	14,425	N/A	N/A	N/A	N/A
Outlays.....	67,320	65,150	70,546	~~71,506~~ 69,506	~~+960~~ -1040
Authorization Levels.	Authorization is by virtue of the Appropriation Act.				

OVERVIEW AND STRATEGY

This media encompasses the overall management of the action oriented programs described in the foregoing media sections. Resources for the Assistant Administrators, their principal deputies, office directors, and their immediate staffs are provided directly through the program management and support media, rather than through charges to each of the program media. Management functions covered include the development of program policies and strategies, planning of media activities, monitoring and review of program performance, including that performed in the regions, and the direction of program activities carried out in headquarters. In the enforcement area, program management also includes the staffing and funds for EPA's Office of General Counsel at headquarters and Offices of Regional Counsel in the 10 regions. This media also includes support costs for program activities not otherwise covered by centralized agency support.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1977 Program Management and Support Program..... $72,173

Abatement and Control..... ~~associated with~~ ~~+825~~ -844

This decrease is primarily ~~to fund~~ this appropriation's share of ~~increased~~ GSA space rental charges.

Enforcement..... ~~+729~~ +96

This increase is primarily to fund ~~this appropriation's share of increased GSA space rental charges, and~~ additional costs associated with the new toxic substances legislation, offset by a decrease of this appropriation's share of GSA space rental charges.

(Revised 2-24-77)

Research and Development..... associated with ~~424~~ -280
This decrease is primarily ~~[illegible]~~ this appropriation's share of increased GSA space rental charges.

1978 Program Management and Support Program..... ~~74,151~~ 71,145

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of ~~$74,151,300~~ $71,145,300 is requested in 1978. This request, by appropriation account, is as follows:

Abatement and Control.....	~~$39,040,300~~ $38,171,300
Enforcement.....	15,489,000
Research and Development.....	18,822,000

This represents an ~~increase~~ decrence of ~~$1,970,500~~ $1,028,600 over the 1977 program management and support activity and includes net decreases for the prorated share of the support services, primarily for ~~increased~~ costs of leasing additional space ~~(+$1,613,300)~~ (-1,393,700), additional costs associated with the new toxic substances legislation (+$389,200), and a slight decrease (-$24,000) due to a reduction in program management costs.

2. Changes from the Original 1977 Budget Estimate

Changes from the original budget estimate are as follows:

	(in thousands of dollars)
Original 1977 estimate.....	$67,195
Transfer from Agency and Regional Management..	+1,908
Proration adjustments.....	+1,032
General/Regional Counsel.....	+137
Transfer to other media for increased workloads.....	-225
Research and development lab support.....	+2,196
Operating adjustments.....	-70
Current 1977 estimate.....	72,173

The +$1,908,000 transfer from the Agency and Regional Management appropriation represents the reprogramming of the funds which were added-on by Congress for relief in pay cost absorption; this transfer restored funds which had been reduced due to the estimated absorption.

"Bookkeeping" adjustments were made to the support prorations to more accurately reflect the users by appropriation account; the total support account did not change, the share applied to the Abatement and Control, Enforcement, and Research and Development appropriations was adjusted +$1,032,000. This amount is transferred from the Agency and Regional Management appropriation support account.

A reprogramming of $137,000 was made to the General/Regional Counsel to meet additional legal support requirements, primarily in support of cancellation hearings and new toxic substances legislation.

$225,000 was transferred to other media, as follows: $110,000 to pesticides enforcemeent in support of new toxic substances legislation; $40,000 to the permit program in support of second generation permit issuance; and $75,000 to stationary source enforcement and water enforcement to meet growing litigation burdens.

(Revised 2/24/77)

A proposal will be submitted to the Committee, as appropriate, for separate consideration for the research and development reprogramming of +$2,196,000 in order to meet anticipated costs of research and development program management and support. When the research and development program was reorganized in FY 1976, funding for this media was decreased; subsequent experience indicates that, to maintain efficient operations, it is necessary to partially restore these funds.

Operating adjustments of -$70,000 were required to adjust the budget estimate for the program management account in order to reflect actual operating conditions.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations	$60,950	$71,304
1977 budget estimate program increases and decreases	+237	...
Change in amount of carryover funds available	+4,307	+869
Net changes of increases and decreases as listed above	+4,978	...
1978 program increases and decreases	...	~~+1,780~~ -1226
Change in estimated rate of obligations	+832	...
Total estimated obligations	71,304	~~73,953~~ 70,947
(From new obligation authority)	(69,588)	~~(71,368)~~ (68,362)
(From prior year funds)	(1,716)	(2,585)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The 1977 budget estimate included program increases and decreases from the 1976 level which are expected to change 1977 obligations by +$237,000.

The amount of carryover funds effecting obligations after FY 1976 results in an increase of $4,307,000. Obligations in 1977 from carryover funds are expected to be $1,716,000; in 1978, obligations are expected to be $2,585,000, an increase of $869,000.

The increases and decreases detailed in the section on budget estimate changes are estimated to have a net increase of $4,978,000 on 1977 obligations.

The increases and decreases requested in 1978 ~~for~~ due to GSA space rental charges and additional management costs associated with the new toxic substances legislation are expected to result in a net ~~increase~~ decrease of ~~$1,780,000~~ $1,226,000 in 1978 obligations.

In 1977, obligations are expected to increase by $832,000 due to a change in the estimated rate of obligations.

(Revised 2/24/77)

Abatement and Control

SECTION TAB

PROGRAM MANAGEMENT AND SUPPORT

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Program Management.....	$4,767	$6,022	$6,018	$5,994	-$24	PMS-5
Program Support.....	25,508	28,670	32,997	~~33,846~~ 32,177	~~+849~~ -820	PMS-6
Total.....	30,275	34,692	39,015	~~39,840~~ 38,171	~~+825~~ -844	
Permanent Positions						
Program Management.....	162	168	169	169	...	
Program Support.....	...	...	...	...	...	
Total.....	162	168	169	169	...	

Purpose

This subactivity provides the resources for management of each of the media programs funded through the Abatement and Control appropriation and for unique support services not otherwise covered by centralized Agency support.

(Revised 2/24/77)

PROGRAM MANAGEMENT AND SUPPORT

Abatement and Control

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Program Management.....	$4,767	$6,022	$6,018	$5,994	-$24	PMS-5
Program Support.....	25,508	28,670	32,997	33,846	+849	PMS-6
Total.....	30,275	34,692	39,015	39,840	+825	
Permanent Positions						
Program Management.....	162	168	169	169	...	
Program Support.....	...	...	...	...	...	
Total.....	162	168	169	169	...	

Purpose

This subactivity provides the resources for management of each of the media programs funded through the Abatement and Control appropriation and for unique support services not otherwise covered by centralized Agency support.

PROGRAM MANAGEMENT AND SUPPORT

Abatement and Control

Program Management

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation.....	$4,767	$6,022	$6,018	$5,994	-$24
Permanent Positions....	162	168	169	169	...

Budget Request

An appropriation of $5,993,700 and 169 positions is requested for 1978. This represents a decrease of $24,000 from 1977 due to a reduction in costs for the Office of Air and Waste Management management activities.

Program Description

This subactivity provides for the overall management of the Office of Air and Waste Management and the Office of Water and Hazardous Materials, including program planning, policy and strategy development, performance monitoring and review (including those portions of the program carried out in the 10 regional offices), and direction of headquarters activities. To carry out these functions, managerial positions are provided to each office as follows:

	1977	1978
Office of Air and Waste Management.....	35	35
Office of Air Quality Planning and Standards.....	11	11
Office of Mobile Sources Air Pollution Control...	13	13
Office of Solid Waste Management Programs.....	7	7
Office of Radiation Programs.....	14	14
Office of Noise Abatement and Control.....	8	8
Total, Office of Air and Waste Management.....	88	88
Office of Water and Hazardous Materials.....	29	29
Office of Water Programs Operations.....	6	6
Office of Water Planning and Standards.....	5	5
Office of Pesticides Programs.....	30	30
Office of Toxic Substances.....	5	5
Office of Water Supply.....	6	6
Total, Office of Water and Hazardous Materials.	81	81

1977 Explanation of Changes from Budget Estimate

The decrease of $4,000 from the budget estimate results from operating adjustments required to support actual operating conditions.

PROGRAM MANAGEMENT AND SUPPORT

Abatement and Control

Program Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation.....	$25,508	$28,670	$32,997	$32,177 ~~$33,846~~	-$820 ~~+$849~~
Permanent Positions.....	...	...	...	...	...

Budget Request

$19,900

An appropriation of ~~$33,846,600~~ $32,177,600 is requested for 1978. This represents a ~~increase~~ decrease of ~~$849,100~~ attributable to the prorated share of increased lease costs to GSA. ~~As discussed under the section on Agency Support, a difference has become evident in the SLUC charges computed by EPA and the charges estimated by GSA. This difference is now being reviewed by OMB, EPA, and GSA. EPA will advise the Committees as to the correct amount as soon as the review is completed.~~

Program Description

This subactivity includes the prorated share of EPA's total funding requirements of common support services. These funding requirements cover certain agencywide and regional leases, communications, and other common service costs which are managed through a single headquarters and 10 regional accounts. These requirements are fully described in the section covering Agency and Regional Management. The prorated share charged under this element represents that portion required to support the programs funded and conducted under the Abatement and Control appropriation account.

1977 Explanation of Changes from Budget Estimate

The increase of $4,327,000 over the budget estimate is a result of several actions. $980,000 was transferred from the Agency and Regional Management appropriation from the funds which were added-on by Congress for relief in pay cost absorption; this transfer restored funds which had been reduced due to the estimated absorption. In addition, a "bookkeeping" adjustment was made to the support proration to more accurately reflect the "users" by appropriation account; the total support account did not change, the share applied to the Abatement and Control appropriation was adjusted +$3,347,000.

(Revised 2/24/77)

Enforcement

SECTION TAB

PROGRAM MANAGEMENT AND SUPPORT

Enforcement

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Program Management.....	$4,483	$4,697	$4,881	$5,270	+$389	PMS-8
Program Support.....	9,685	11,345	9,879	10,219	+340	PMS-10
Total.....	14,168	16,042	14,760	15,489	+729	
Permanent Positions						
Program Management.....	158	176	172	173	+1	
Program Support.....	...	...	...	...	...	
Total.....	158	176	172	173	+1	

Purpose

This activity encompasses the overall management of media programs funded under the Enforcement appropriation. It also provides for the staffing and funding of EPA's Office of General Counsel in headquarters and the Office of Regional Counsel in the 10 regions.

PROGRAM MANAGEMENT AND SUPPORT

Enforcement

Program Management

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation.....	$4,483	$4,697	$4,881	$5,270	+$389
Permanent Positions....	158	176	172	173	+1

Budget Request

An appropriation of $5,270,100 is requested for 1978. This represents an increase of $389,200 from the 1977 level.

Program Description

This subactivity provides for the overall management of the Office of Enforcement, including the development of program policies and strategies, the overall planning of enforcement activities, the monitoring and review of the program including those activities performed in the regions, and the direction of the program activities performed in headquarters. It also covers the staffing of the Office of General Counsel and Regional Counsel which serve the legal needs of all components of the Agency.

To carry out these functions, positions are allocated as follows:

	1977	1978	Change
Office of Enforcement.....	26	26	...
Office of General Counsel.....	91	92	+1
Office of Regional Counsel.....	55	55	...
Total.....	172	173	+1

1976 Accomplishments

The role of Regional Counsel was greatly strengthened in 1976 as Regional Administrators and their staffs became more reliant on their Regional Counsel for legal advise and support, especially with respect to legal interpretation of construction grant documents. Agency legal staff continued to provide legal assistance to all Agency programs such as construction grant projects and the requirements for environmental impact statements. Necessary legal support was also provided for public hearings required by pesticides and water legislation.

1977 Program

The top priority requirement for the current year will be the legal review of the recent Resource Conservation and Recovery Act and the Toxic Substances Control Act. Effort will continue to meet the demand for public hearings associated with pesticides and water legislation, strengthen the legal review procedure for various grant programs with special emphasis on construction grants, and promote Regional Counsel authority and responsibility by decentralization.

The increase of $184,000 over the budget estimate is a result of several factors. A reprogramming of +$137,000 was made to the General/Regional Counsel to meet additional legal support requirements, primarily in support of cancellation hearings and new toxic substances legislation; -$110,000 was transferred to pesticides enforcement in support of new toxic substances legislation; -$40,000 was transferred to the permit program in support of second generation permit issuance; -$75,000 was transferred to stationary source enforcement and water enforcement to meet growing litigation burdens; and -$17,000 was transferred due to operating adjustments required to adjust the budget to actual operating conditions. In addition, an increase of $289,000 was made to the General/Regional Counsel and enforcement management activities from the agency management funds which were added-on by Congress for relief in pay cost absorption.

1978 Plan

FY 1978 will see a continuation of legal support for public hearings, review of grant programs, and expansion of Regional Counsel support to regional offices. The Toxic Substances Control Act will increase the workload within the Office of General Counsel significantly; the increase requested is required to meet this additional workload.

The increase of one position and $389,200 is associated with the new toxic substances legislation. As a result of the new legislation, an additional four positions were authorized for the last half of this year to interpret the legal aspects of the Act. These four positions, plus the additional position planned for FY 1978, will be programmed to provide the legal support for the toxic substances' public hearings anticipated for FY 1978. The $389,200 is required to cover salaries and associated funds for these positions, plus the legal costs associated with public hearings, such as court stenographers, transcripts, expert witnesses, etc.

PROGRAM MANAGEMENT AND SUPPORT

Enforcement

Program Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation.....	$9,685	$11,345	$9,879	$10,219	+$340
Permanent Positions....	...	...	...	...	...

Budget Request

An appropriation of $10,218,900 is requested for 1978. This represents an increase of $340,200 attributable to increased lease costs to GSA. As discussed under the section on Agency Support, a difference has become evident in the SLUC charges computed by EPA and the charges estimated by GSA. This difference is now being reviewed by OMB, EPA, and GSA. EPA will advise the Committees as to the correct amount as soon as the review is completed.

Program Description

This activity constitutes the prorated share of EPA's total funding requirements for common support services. These funding requirements cover certain agencywide and regional leases and communication and other common service costs which are managed through a single headquarters and 10 regional accounts. These requirements are fully described in the section covering Agency and Regional Management. The prorated share charged under this element represents that portion required to support the programs funded and conducted under the Enforcement appropriation account.

1977 Explanation of Changes from Budget Estimate

The decrease of $1,466,000 from the budget estimate results from several actions. $440,000 was transferred from the Agency and Regional Management appropriation from the funds which were added-on by Congress for relief in pay cost absorption; this transfer restored funds which had been reduced due to the estimated absorption. In addition, a "bookkeeping" adjustment was made to the support proration to more accurately reflect the "users" by appropriation account; the total support account did not change, the share applied to the Enforcement appropriation was adjusted, -$1,906,000.

PROGRAM MANAGEMENT AND SUPPORT

Enforcement

Program Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation.....	$9,685	$11,345	$9,879	~~$10,219~~ $9586	~~+$340~~ $-293
Permanent Positions....	...	...	...	...	...

Budget Request

An appropriation of ~~$10,218,900~~ $9,586,000 is requested for 1978. This represents a~~n increase~~ decrease of ~~$340,200~~ 293,800 attributable to ~~increased~~ lease costs to GSA. ~~As discussed under the section on Agency Support, a difference has become evident in the SLUC charges computed by EPA and the charges estimated by GSA. This difference is now being reviewed by OMB, EPA, and GSA. EPA will advise the Committees as to the correct amount as soon as the review is completed.~~

Program Description

This activity constitutes the prorated share of EPA's total funding requirements for common support services. These funding requirements cover certain agencywide and regional leases and communication and other common service costs which are managed through a single headquarters and 10 regional accounts. These requirements are fully described in the section covering Agency and Regional Management. The prorated share charged under this element represents that portion required to support the programs funded and conducted under the Enforcement appropriation account.

1977 Explanation of Changes from Budget Estimate

The decrease of $1,466,000 from the budget estimate results from several actions. $440,000 was transferred from the Agency and Regional Management appropriation from the funds which were added-on by Congress for relief in pay cost absorption; this transfer restored funds which had been reduced due to the estimated absorption. In addition, a "bookkeeping" adjustment was made to the support proration to more accurately reflect the "users" by appropriation account; the total support account did not change, the share applied to the Enforcement appropriation was adjusted, -$1,906,000.

(Revised 2/24/77)

Research and Development

SECTION TAB

PROGRAM MANAGEMENT AND SUPP

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	E
			(dollars in t	
ion				
nagement.....	$4,169	$4,456	$5,154	
pport.....	12,338	12,005	13,244	
.....	16,507	16,461	18,398	
Positions				
nagement.....	139	142	141	
pport.....	...	...	...	
.....	139	142	141	

activity provides the resources for management of
ch and Development appropriation and for unique su
centralized Agency support.

PROGRAM MANAGEMENT AND SUPPORT

Research and Development

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revis Estimate 1978
			(dollars in	thousands
Appropriation				
Program Management.....	$4,169	$4,456	$5,154	$5,154
Program Support.....	12,338	12,005	13,244	~~13,668~~
Total.....	16,507	16,461	18,398	~~18,822~~ 18,11
Permanent Positions				
Program Management.....	139	142	141	141
Program Support.....	...	...	...	...
Total.....	139	142	141	141

Purpose

This activity provides the resources for management of the medi
the Research and Development appropriation and for unique support se
covered by centralized Agency support.

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Agency and Regional Management

SECTION TAB

AGENCY AND REGIONAL MANAGEMENT

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Agency and Regional Management:					
Appropriation.....	$57,339	$67,538	$70,890	$71,456	+$566
Permanent Positions...	1,869	1,795	1,824	1,842	+18
Transition Quarter....	22,466	N/A	N/A	N/A	N/A
Outlays.....	65,498	66,000	71,000	75,700	+5,000
Authorization Levels..	Authorization is by virtue of the Appropriation Act.				

OVERVIEW AND STRATEGY

This program covers Agency wide policy direction and administration as it is carried out at both EPA headquarters and the 10 regional offices. It also covers certain common services and functions which serve Agency wide requirements. A meaningful way to classify the activities covered by this appropriation is in terms of those which involve management as opposed to those which are supportive in nature. Agency management activities are personnel related in that they include the salaries and related expenses of the Administrator and his immediate staff and staff offices, and components which provide centralized management and administrative services. These include program planning and evaluation, budgeting and financial management, personnel, contracts and grants management, audit, legislative liaison, and other activities' functions which are required for the effective management of all Agency programs. The full cost of these managerial activities is charged to the Agency and Regional Management appropriation.

Agency support activities do not involve personnel costs but consist of a wide assortment of common service requirements such as office and laboratory services, guard and janitorial services, facilities lease costs, and, in most instances, they cannot be readily associated with a specific organization or program. However, it is important that these costs in some way be associated with the programs which benefits from them. To accomplish this, the total costs are allocated on a prorata basis to the various appropriations where they are included under the budget activity, program management and support. The Agency and Regional Management appropriation includes only the prorata share of these support costs which can be allocated to Agency wide management activities.

The scope of these Agency wide management and support activities is, of course, set by the programs they serve. Consistent with this, the increases shown under this appropriation are confined to high priority needs or to mandatory increases.

SUMMARY OF INCREASES AND DECREASES

	(in thousands of dollars)
1977 Agency and Regional Management Program.....	$70,890
To adjust SLUC costs, provide for new loan guarantee function, and to provide for increased cost in areas such as contract compliance, program evaluation, and facilities rental.....	+566
1978 Agency and Regional Management Program.....	71,456

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of $71,456,000 is requested under the Agency and Regional Management appropriation. This represents an increase of $565,900 which includes an additional amount to cover studies aimed at evaluating the effectiveness of EPA technical assistance activities and the areawide planning activities carried out under Section 208 of the FWPCA (+$300,000); the cost of assuming the contract compliance activities now being performed by the USDA, the Bureau of Reclamation, and TVA (+$290,000); the cost of developing procedures, systems and controls for the loan guarantee program (+$300,000); offset by the reduction of the prorata share of increased lease costs which are allocated to this appropriation (-$324,100).

2. Changes from Original 1977 Budget Estimate

Changes from original budget estimate are as follows:

	(in thousands of dollars)
Original 1977 estimate	$67,538
Congressional add-on for pay costs	+2,634
Transfer for Cost of Clean Environment report	+125
Transfer to fund increased construction grant program support functions	+477
Adjustments to prorated shares of agency support	-983
Regional office reprogrammings	+992
Operating adjustments	+107
Current 1977 estimate	70,890

The principal change in the estimate for Agency and Regional Management is the congressional add-on for providing relief in the absorption of pay costs. A total of $5,462,000 was added-on to the Agency and Regional Management budget request with the understanding that the funds would be reprogrammed to other programs as needed. A total of $2,828,000 was transferred to other programs, leaving a net congressional add-on of +$2,634,000.

The responsibility and associated resources for the preparation of the Cost of Clean Environment report was transferred from the Office of Research and Development to the Office of Planning and Evaluation, +$125,000.

A portion of the new 1976 constuction grants positions were allocated to the Agency and Regional Management appropriation to provide for the increased support necessary in the management areas of audit and contracts and grants administration. The transfer of +$477,000 represents the funding necessary in 1977 as a result of the 1976 transfer.

Overall, the agencywide support accounts did not change from the budget estimate. However, the prorated shares of the four appropriations - Research and Development, Abatement and Control, Enforcement, and Agency and Regional Management - were adjusted to reflect a "bookkeeping" change of allocation by users once the actual operating conditions were applied. The effect on the Agency and Regional Management appropriation was - $983,000.

An increase of $992,000 was made by the regional offices when the budget estimate was applied to their management workload requirements.

Operating adjustments totalling +$107,000 are as a result of miscelleanous fund transfers from other programs.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations	$57,339	$70,890
Increases and decreases to budget estimate, as listed above	+2,722	...
Change in amount of carryover funds available	+10,829	...
Additional cost of management program increases:		
Contract compliance	...	+290
Program evaluation	...	+300
Facilities rental	...	-324
Loan guarantee program		+300
Total estimated obligations	70,890	71,456
(From new obligational authority)	(70,890)	(71,456)
(From prior year funds)	...	...

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

Increases and decreases to budget estimate -- reflects the net change of the items previously detailed under "Changes from Original 1977 Budget Estimate", +$2,722,000.

Change in amount of carryover funds available -- reflects the amount of carryover funds available at the end of FY 1976. There are no carryover funds in this appropriation in subsequent years, $10,829,000.

Additional cost of management program increases -- reflects the increased costs for the requested increases in 1978 for contract compliance, program evaluation, and the institution of the loan guarantee program, +$566,000.

AGENCY AND REGIONAL MANAGEMENT

Agency Management and Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Agency Management..	$35,664	$44,374	$46,764	$47,654	+$890	ARM-5
Agency Support.....	9,891	11,325	10,622	10,298	-324	ARM-9
Total.....	45,555	55,699	57,386	57,952	+566	
Permanent Positions						
Agency Management..	1,359	1,289	1,297	1,315	+18	
Agency Support.....	...	...	...	...	...	
Total.....	1,359	1,289	1,297	1,315	+18	

Purpose

The agency management and support activity covers the top level policy direction of agencywide programs provided by the Administrator and his immediate staff and staff offices, the agencywide management functions provided by the Office of Planning and Management, and the centralized administrative service and support activities which are provided to all operations located in Washington, D.C., Research Triangle Park, North Carolina, and Cincinnati, Ohio. It also provides for certain supporting costs budgeted and managed on an agencywide basis.

AGENCY AND REGIONAL MANAGEMENT

Agency Management and Support

Agency Management

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Agency Management.....	$35,664	$44,374	$46,764	$47,654	+$890
Permanent Positions					
Agency Management.....	1,359	1,289	1,297	1,315	+18

Budget Request

An appropriation of $47,654,300 is requested for FY 1978. This represents an increase of $890,000 and 18 positions over FY 1977.

Program Description

The agency management subactivity provides for the staffing, contract support, and other costs of the immediate office of the Administrator and those staff offices which report directly to the Administrator, and for those of the Office of Planning and Management.

Office of Administrator/Staff Offices

The Office of the Administrator is responsible for the establishment of major Agency policies, and for providing the overall guidance necessary for their implementation. The staff offices carry out functions which are closely allied with policy development and inplementation. These include legislative services and congressional relations, public information, international activities, direction of the Agency's civil rights program, liaison withother Federal agencies, coordination of agencywide education and manpower activities, coordination of regional office operations, and relations with State and local governments. The administrative law judges who preside over the Agency's quasi-judicial proceedings are also attached to the Office of the Administrator.

An increase of 13 positions and $290,000 is requested for the Office of Civil Rights. This reflects the Administration's plan to consolidate the government wide Contract Compliance Program so as to reduce the number of agencies involved in monitoring contractors' employment practices. As the result of a study made by the Department of Labor's Office of Federal Contract Compliance, it has been concluded that this program can be substantially strengthened by reducing the number of agencies involved from the current 16 to five. EPA has been designated as one of the five agencies and will assume the compliance monitoring responsibilities now assigned to portions of the Departments of Agriculture and Interior and the Tennessee Valley Authority. The FY 1978 budget estimates for these agencies are being adjusted to reflect this transfer of responsibility.

AGENCY AND REGIONAL MANAGEMENT

Agency Management and Support

Agency Management

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Agency Management.....	$35,664	$44,374	$46,764	$47,354	+$590
Permanent Positions					
Agency Management.....	1,359	1,289	1,297	1,315	+18

Budget Request

An appropriation of $47,354,300 is requested for FY 1978. This represents an increase of $590,000 and 18 positions over FY 1977.

Program Description

The agency management subactivity provides for the staffing, contract support, and other costs of the immediate office of the Administrator and those staff offices which report directly to the Administrator, and for those of the Office of Planning and Management.

Office of Administrator/Staff Offices

The Office of the Administrator is responsible for the establishment of major Agency policies, and for providing the overall guidance necessary for their implementation. The staff offices carry out functions which are closely allied with policy development and inplementation. These include legislative services and congressional relations, public information, international activities, direction of the Agency's civil rights program, liaison with other Federal agencies, coordination of agencywide education and manpower activities, coordination of regional office operations, and relations with State and local governments. The administrative law judges who preside over the Agency's quasi-judicial proceedings are also attached to the Office of the Administrator.

An increase of 13 positions and $290,000 is requested for the Office of Civil Rights. This reflects the Administration's plan to consolidate the government wide Contract Compliance Program so as to reduce the number of agencies involved in monitoring contractors' employment practices. As the result of a study made by the Department of Labor's Office of Federal Contract Compliance, it has been concluded that this program can be substantially strengthened by reducing the number of agencies involved from the current 16 to five. EPA has been designated as one of the five agencies and will assume the compliance monitoring responsibilities now assigned to portions of the Departments of Agriculture and Interior and the Tennessee Valley Authority. The FY 1978 budget estimates for these agencies are being adjusted to reflect this transfer of responsibility.

The resources associated with the Office of the Administrator and the staff offices are as follows:

	FY 1977		FY 1978		Change	
	Pos.	$(000)	Pos.	$(000)	Pos.	$(000)
Office of the Administrator.....	45	$1,588.9	45	$1,588.9	...	...
Office of Legislation.....	39	947.5	39	947.5	...	...
Office of Public Affairs.....	67	3,142.3	67	3,142.3	...	...
Office of International Activities	23	864.2	23	864.2	...	...
Office of Civil Rights.....	27	628.9	40	918.9	+13	+$290.0
Office of Federal Activities.....	39	1,252.1	39	1,252.1	...	...
Office of Regional and Intergovernmental Operations.....	9	474.1	9	474.1	...	...
Administrative Law Judges.....	12	408.2	12	408.2	...	...
Total.....	261	9,306.2	274	9,596.2	+13	+290.0

The significant contract activities carried out by the staff offices in FY 1977 and FY 1978 are listed below:

	FY 1977	FY 1978	Change	Purpose
	(in thousands of dollars)			
Office of Public Affairs..	$979.7	$1,050.3	+$70.6	Production and distribution of information/education material including publications, films, and TV and radio announcements; Documerica; Visitor Center maintenance; and press office support.
Office of International Activities.....	212.2	232.2	+20.0	Services provided by the Library of Congress and the National Technical Information Service in connection with the International Information Exchange.
Office of Federal Activities.....	90.0	90.0	...	Development of guidelines for EIS preparation and review.
Office of Regional and Intergovernmental Operations.....	166.0	166.0	...	Contracts with public interest groups and national organizations representing elected officials of State and local governments for seminars and similar activities on environmental programs.

Office of Planning and Management

The Office of Planning and Management performs the Agency wide management functions involved in planning and implementing EPA programs and provides the administrative services required by EPA headquarters and the two major field installations at Research Triangle Park, North Carolina, and Cincinnati, Ohio. The major organizational components within the Office of Planning and Management include the Office of Administration which provides services in the areas of personnel administration, contracts management, data systems management, facilities and support services; security, and general management and organization at each of the three locations named above; the Office of Resources Management which is concerned with the Agency's program analysis, budgeting, accounting, and grants administration functions; the Office of Planning and Evaluation which provides an Agency wide resource for economic analysis, program evaluations and the coordinated review of standards and regulations; and the Office of Audit which is responsible for the Agency's comprehensive audit program.

A five position increase is requested for the Office of Resources Management to permit the establishment of a small group which will set Agency wide statistical policies and methodologies and review statistical design and data development. Existence of this capability is expected to lead to significant improvements in the quality of the Agency's research, monitoring, and regulatory programs.

An increase of $300,000 is requested for two special studies to be performed by the Office of Planning and Evaluation. One of these studies will address the technical assistance which EPA provides to State and local governments. It will consider the scope and direction of on-going EPA assistance programs and the extent to which these activities are meeting the needs of the various State/local governments. The second study will consider the long-range impact of the Agency wide planning activities being carried out under Section 208 of the Federal Water Pollution Control Act. Particular attention will be given to nonpoint source pollution control, including control of storm water runoff in urban areas. An increase of $300,000 is requested to contract for assistance in the development of procedures, systems and controls for the newly established P.L. 94-558) loan guarantee program. The resources associated with organizations and functions described above are as follows:

	FY 1977		FY 1978		Change	
	Pos.	$(000)	Pos.	$(000)	Pos.	$(000)
Assistant Administrator for Planning and Management..	11	$324.6	11	$385.3	...	+$60.7
Office of Administration...	625	17,146.5	625	17,085.8	...	-60.7
Office of Resources Management.....	225	5,557.2	230	5,857.2	+5	+300.0
Office of Planning and Evaluation.....	68	5,763.8	68	6,063.8	...	+300.0
Office of Audit.....	107	8,666.0	107	8,666.0	...	...
Total.....	1,036	37,458.1	1,041	38,058.1	+5	+600.0

The major contracts for the Office of Planning and Management are summarized below:

	FY 1977	FY 1978	Change	Purpose
	(dollars in thousands)			
Office of Administration..	$609.0	$650.0	+$41.0	Executive development and supervisory training, specialized computer support, and administrative services.

Office of Resources Management..	96.7	96.7	...	Support of financial budget and grants information ADP systems.
	...	300.0	+300.0	Support of Agency loan guarantee program.
Office of Planning and Evaluation.....	3,531.8	3,531.8	...	Contracts to assess the economic impact of EPA regulations on major industries, the energy impact of environmental regulations, and the environmental impact of energy legislation.
Office of Audit.....	4,600.0	4,600.0	...	Contracts with CPA firms for the conduct of construction grant audits.

1977 Explanation of Changes from Budget Estimate

The net increase of $2,390,000 over the budget estimate results from a combination of several reprogrammings:

The Congress increased the agency management request by +$5,462,000 to reduce the absorption costs of pay increases by the Agency. It was understood that these funds would be reprogrammed to other programs, as required. A total of -$3,734,000 was transferred out of agency management, leaving a net increase of +$1,728,000 as a result of the congressional increase.

The responsibility for the congressionally mandated "Cost of Clean Environment" report was transferred from the Office of Research and Development to the Office of Planning and Evaluation resulting in an increase of +$125,000 to agency management.

Operating adjustments in the amount of +$107,000 were necessary when the budget was applied to actual operating conditions of the agency management offices.

A transfer of +$430,000 was made to the agency management accounts from the water quality media to support the 1976 new construction grants positions which were allocated in 1976 to the agency management function.

AGENCY AND REGIONAL MANAGEMENT

Agency Management and Support

Agency Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
		(dollars in thousands)			
Appropriation					
Agency Support.....	$9,891	$11,325	$10,622	$10,298	-$324
Permanent Positions					
Agency Support.....	...	...	...	...	...

Budget Request

An appropriation of $10,297,500 is requested for FY 1978. This represents a decrease of $324,100 from FY 1977.

Program Description

The agency support subactivity provides support services to all program operations at EPA headquarters, Research Triangle Park, N.C., and Cincinnati, Ohio. It also includes certain agencywide support costs which are managed at the headquarters' level. The agency support subactivity can be summarized as follows:

Office Services

Common services requirements for laboratory and office supplies, maintenance of office equipment, printing and duplicating, audio-visual equipment and contracts, motor pool, etc.

Building Services

Utilities, local telephone service, purchase and rental of equipment, building alterations and space relocations, building maintenance contracts, guard and janitorial service, employee health service contracts, etc.

Library Services

Books, journals, equipment and service contracts for the branch libraries at headquarters, RTP, and Cincinnati, as well as specialized ADP services, literature searches, technical reports processing, library systems development, etc. for the agencywide library system.

Nationwide Costs

Facilities rental, U.S. Postal Service charges, Federal telecommunications service, payments to the Civil Service Commission for security investigations, reimbursements to the Federal Employees Compensation Fund, payments to USPHS for personnel administration services for commissioned officers detailed to EPA, and payments to the USGS for payroll services.

ADP Services

Agencywide ADP services which are provided through time-sharing contracts or by in-house computer facilities and associated systems development/evaluation contracts.

Since Agency support costs are prorated to the various EPA appropriations according to their personnel levels, the amount requested above is reflective only of that portion of the total Agency support which is allocated to the Agency and Regional Management appropriation. However, in order to provide a more complete explanation of the total scope of the Agency's supporting activities the following discussion deals with the overall costs of providing support services.

The total cost of providing support services to the Agency is as follows:

	Current Estimate 1977	Estimate 1978	Change
	(in thousands of dollars)		
Office Services.....	$2,241.6	$2,241.6	...
Building Services.....	10,672.7	10,672.7	...
Library Services.....	1,043.0	1,043.0	...
Nationwide Costs.....	26,215.8	24,499.0	-$1,716.8
ADP Services.....	17,242.6	17,242.6	...
Total.....	57,415.7	55,698.9	-1,716.8

The distribution of the total amount budgeted for Agency support costs to the various EPA appropriations is as follows:

	FY 1977	FY 1978	Change
	(dollars in thousands)		
Abatement and Control.....	$28,603.2	$27,783.3	-$819.9
Enforcement.....	8,068.4	7,775.6	-292.8
Research and Development.....	10,122.5	9,842.5	-280.0
Agency and Regional Management.....	10,621.6	10,297.5	-324.1
Total.....	57,415.7	55,698.9	-1,716.8

1977 Explanation of Changes from Budget Estimate

A decrease of $703,000 from the budget estimate results from several reprogramming actions:

A transfer of +$280,000 was made from the agency management funds which were added on by Congress for relief in pay cost absorption; this transfer restored funds which had been reduced due to the estimated absorption.

A "bookkeeping" adjustment was made to the agency support proration to more accurately reflect the "users" by appropriation account; the total agency support account did not change, the share applied to the Agency and Regional Management appropriation was adjusted, -$983,000.

AGENCY AND REGIONAL MANAGEMENT

Regional Management and Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977	Page
			(dollars in thousands)			
Appropriation						
Regional Management	$10,951	$11,028	$12,693	$12,693	...	ARM-12
Regional Support...	773	811	811	811	...	ARM-14
Total.....	11,724	11,839	13,504	13,504	...	
Permanent Positions						
Regional Management	515	506	527	527	...	
Regional Support...	...	...	...	...	...	
Total.....	515	506	527	527	...	

Purpose

The regional management support activity provides for both the top level direction of program operations and the general administrative/management functions which are carried out in each of the Agency's ten regional offices. It also includes the support requirements of the regional offices which are not covered by agencywide common services costs described in the previous section covering the agency support subactivity.

AGENCY AND REGIONAL MANAGEMENT

Regional Management and Support

Regional Management

Appropriation	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Regional Management.....	$10,951	$11,028	$12,693	$12,693	...
Permanent Positions					
Regional Management.....	515	506	527	527	...

Budget Request

An appropriation of $12,692,900 is requested for FY 1978. This represents no change to the FY 1977 level.

Program Description

The regional management subactivity provides for the salaries and related expenses of the regional administrators and their immediate staffs as well as for those staff offices - intergovernmental relations, public affairs, and civil rights - which report directly to the regional administrators. It also covers the regions' management divisions which perform the centralized administrative functions - program planning and budgeting, personnel, financial management, procurement, and other service activities required to support regional operations. The resources required for these activities in each of the regional offices are as follows:

Region	Positions	Amount
I	48	$1,045,000
II	59	1,261,100
III	54	1,608,100
IV	64	1,500,000
V	66	1,746,000
VI	48	1,263,700
VII	56	1,085,300
VIII	43	1,120,500
IX	49	1,139,100
X	40	924,100
Total	527	12,692,900

The amounts required for regional management activities in terms of functions are allocated as follows:

Function	Positions	Amount
Regional Management.....	223	$6,699,500
Resources Management.....	102	2,091,700
Administrative Services....	202	3,901,700
Total	527	12,692,900

1977 Explanation of Changes from Budget Estimate

An increase of $1,665,000 over the budget estimate results from several reprogramming actions:

A transfer of +$626,000 was made from the agency management program representing the portion of the congressional add-on for pay costs required for the regional management function.

An increase of $992,000 was made by the regional offices when applying their budget targets to their actual operating conditions. These funds, as well as personnel, were transferred to the regional management staff to reflect the management workload requirements.

A transfer of +$47,000 from the water quality media to support the increased management services provided the construction grants program as a result of the 1976 new positions.

AGENCY AND REGIONAL MANAGEMENT

Regional Management and Support

Regional Support

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Appropriation					
Regional Support.....	$773	$811	$811	$811	...
Permanent Positions					
Regional Support.....	...	...	...	...	...

Budget Request

An appropriation of $811,300 is requested for FY 1978. This represents no change from the FY 1977 level.

Program Description

This subactivity covers the common services which are provided in all of the regional offices. These include local telephone service, office supplies and equipment, guard and housekeeping services and similar support required to operate regional offices. As in the case of Agency support, the total cost of the support services required by the regional offices is prorated to the various EPA appropriations on the basis of personnel strength; the amount requested above is only that which is allocated to the Agency and Regional Management appropriation. The distribution of the total amount budgeted for regional support costs to the various EPA appropriations is as follows:

Abatement and Control.....	$3,557,800
Enforcement.....	1,810,300
Research and Development.....	62,400
Agency and Regional Management	811,300
Total.....	6,241,800

1977 Explanation of Changes from Budget Estimate

There is no change from the budget estimate.

Buildings and Facilities

SECTION TAB

BUILDINGS AND FACILITIES

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Buildings and Facilities:					
Appropriation.....	$636	$2,100	$2,100	$1,142	-$958
Permanent Positions....	...	...	...	...	...
Transition Quarter.....	1,241	N/A	N/A	N/A	N/A
Outlays.....	554	2,000	3,000	2,500	-500
Authorization Levels...	Authorization is by virtue of the Appropriation Act.				

OVERVIEW AND STRATEGY

This appropriation covers design and construction of all new EPA owned facilities as well as necessary repairs and improvements to all federally-owned facilities which are occupied by EPA.

Existing federally owned facilities occupied by EPA include 23 separate installations, most of which are laboratories or other special purpose installations. During the period covered by these estimates, first priority is being given to those projects which are needed to protect the health and safety of EPA employees and to enable the Agency to meet applicable standards including those established by the Department of Labor under the Occupational Health and Safety Act of 1970. Lower priority is given to preventive maintenance projects and to those projects which are intended to improve the facilities' usefulness for program purposes. Since a number of repair and improvement projects of these latter types were funded in 1977 and prior years, a determination has been made to limit 1978 projects only to those needed to correct health and safety deficiencies.

SUMMARY OF INCREASES AND DECREASES

	(dollars in thousands)
1977 Buildings and Facilities Program.....	$2,100
Decrease relates to the decision to limit 1978 repair and improvement projects to those related to the correction of health and safety deficiencies.....	-958
1978 Buildings and Facilities Program.....	1,142

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of $1,142,000 is requested for the Buildings and Facilities account. This represents a decrease of $958,000 and provides for repairs and improvement projects ($642,000) at various locations which are required to eliminate hazardous working conditions, as well as for the design and construction of a laboratory building at the Environmental Research Laboratory at Gulf Breeze, Florida ($500,000). This latter facility will replace an existing frame structure which is not adequate for high hazard research activity.

2. Changes from Original 1977 Budget Estimate

There is no change from the original budget request.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(in thousands of dollars)	
Prior year obligations.....	$636	$5,047
Change in amount of carryover funds available.....	+4,411	-2,947
Reduction of costs due to program decrease.....	...	-958
Total estimated obligations.....	5,047	1,142
(From new obligation authority).....	(2,100)	(1,142)
(From prior year funds).....	(2,947)	...

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

Change in amount of carryover funds available -- reflects the increased carryover funds available over the 1976 level. In 1978, the decrease of carryover funds has been estimated.

Reduction of costs due to program decrease -- decrease due to limitation of repair and improvement projects to health and safety areas only.

BUILDINGS AND FACILITIES

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs 1977
			(dollars in thousands)		
Appropriation					
Repairs and Improvements.....	$514	$2,100	$2,100	$642	-$1,458
New Facilities.....	122	...	...	500	+500
Total.....	636	2,100	2,100	1,142	-958
Permanent Positions.....	...	...	...	...	...

Budget Request

An appropriation of $1,142,000 is requested in 1978. This represents a decrease of $958,000 from the 1977 level.

Program Description

This appropriation covers the design and construction of new EPA-owned facilities as well as necessary repairs and improvements to federally-owned installations which are occupied by EPA. Modifications and repairs to leased facilities, to the extent that they are paid for directly by EPA, are covered under the agency support subactivity under the Agency and Regional Management appropriation.

REPAIRS AND IMPROVEMENTS

1976 Accomplishments

In FY 1976, work was initiated on eight projects at an estimated cost of $514,000. All of these projects were for repairs and improvements required to correct health and safety deficiencies in existing facilities.

1977 Program

$2.1 million has been appropriated for this program. In FY 1977, work under this appropriation will consist of an anticipated 43 separate repair and improvement projects. Twenty-eight of these projects, requiring an estimated $765,000, over a wide variety of modifications to laboratories and other installations which are needed to protect the health and safety of employees as required by OSHA and other health and safety standards. Ten projects, totalling $885,000, are for preventive maintenance purposes and are intended to protect the government's investment in the various facilities occupied by EPA. Projects which were illustrative of this category of work include replacement of a sea wall at Gulf Breeze, Miss., elevator replacement, roofing repairs and the construction of storage facilities. Five projects, at an estimated $450,000 are for alterations required to improve the overall utility of various facilities so as to better serve program purposes. Projects of this type include the conversion of other office space to laboratories and the expansion of shop space.

1978 Plan

The FY 1978 repair and improvement requirements are based upon surveys of building conditions at EPA-owned facilities. Fifteen projects, amounting to $642,000, are planned to correct unsafe conditions, such as eliminating hazardous storage areas; safety modifications to doors, flooring, and sidewalks; heating and air conditioning system modifications; lighting improvements; and providing safety and showers and eyewash equipment.

Proposed FY 1978 projects include:

Location	Project Description	(in thousands of dollars)
Edison, N.J.	Repiping of drum lines	$55.0
Beltsville, Md.	Hazardous storage space	30.0
	Miscellaneous safety modifications	15.0
Bears Bluff, S.C.	Safety showers and eyewash	4.0
Gulf Breeze, Fla.	Repair and construct sidewalks	6.0
	Door modifications	14.0
Sandusky, Ohio	Vehicle exhaust system	7.0
	Welding shop exhaust system	2.0
	Paving markers	4.0
	Outside lighting	12.0
Duluth, Minn.	Modifications to heating and air conditioning system	150.0
Ada, Okla.	Modifications to lab ventilation and air conditioning system	185.0
Corvallis, Ore.	Construction of noncombustible lab space	83.0
Manchester, Wash.	Repairs to pier	75.0
	Total	642.0

In FY 1978, a decrease will be taken. Unobligated balances from previous years will provide some of the needed funds. A decision has also been made to limit repair and improvement projects in FY 1978 to those projects necessary to correct health and safety deficiencies.

NEW FACILITIES

1976 Accomplishments

During FY 1976, construction of the Environmental Research Center in Cincinnati, Ohio, and an extension to the Fish Toxicology Station in Newton, Ohio, was completed and both facilities became available for beneficial occupancy. Construction contracts were also awarded for an extension to the National Marine Water Quality Laboratory at Narragansett, Rhode Island, and for the Acquatic and Chemical Laboratory at Gulf Breeze, Florida; both of these facilities are about 60 percent completed.

1977 Program

No funds are allocated to this program in 1977. It is anticipated that both the extensions to the National Marine Water Quality Laboratory and the Aquatic and Chemical Laboratory will be completed by the close of FY 1977.

1978 Plan

A total of $500,000 is requested for FY 1978 which will provide for the design and construction of the replacement laboratory at the Gulf Breeze installation. The Environmental Research Laboratory at Gulf Breeze, Florida, is concerned with research on the effects of pollutants on estuarine and coastal marine environments. The laboratory is located on the site of a former PHS quarantine station and consists of several frame structures converted to laboratory use, together with a new aquatic and chemical analysis laboratory which is nearing completion. One of the frame structures now houses high hazard studies of toxic materials related to energy production and use and industrial effluents, particularly studies involving biological degradation of toxic materials and histopathology of exposed marine organisms. Many of the materials being studied are known carcinogens, mutagens, and teratogens and the present structure does not adequately provide for the safety of the scientific staff; it is totally unsuitable for further modification. It is proposed to design and construct a replacement facility to house this research program which would provide about 5,000 square feet of laboratory space. It will contain isolation areas, special air handling and water management equipment, and the other specialized facilities required for hazardous research of this type.

This project will be the first of three small laboratories which the Agency proposes to construct under a phased program intended to provide safe and adequate research facilities at the Gulf Breeze location. The two remaining facilities planned for subsequent years will accommodate physiology and bacteriology research.

The estimated costs and schedule for this project are:

Project Costs

Design	$35,000
Construction	450,000
Construction Inspection	15,000
Total	500,000

Project Time Schedule

Develop Requirements and Select Architect/Engineer	4 months
Design Project	8 months
Advertise for Construction Bids and Award Contract	3 months
Construction for Beneficial Occupancy	10 months
Total	25 months

Scientific Activities Overseas

SECTION TAB

SCIENTIFIC ACTIVITIES OVERSEAS

PROGRAM HIGHLIGHTS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Scientific Activities Overseas:					
Appropriation.....	$3,261	$6,000	$5,000	$5,000	...
Permanent Positions..	...	...	...	...	...
Transition Quarter...	820	N/A	N/A	N/A	N/A
Outlays.....	3,726	5,000	4,000	4,500	+500
Authorization Levels.	Authorization is by virtue of the Appropriation Act.				

OVERVIEW AND STRATEGY

Scientific Activities Overseas (SAO), developed and implemented under the Special Foreign Currency Program (SFCP), are funded from excess foreign currencies accruing to the United States under various U.S. programs. The use of these currencies enables EPA to capitalize on unique research opportunities and does not contribute to a balance of payments deficit or to domestic inflation. The cost effectiveness of the SAO program is increased in the recent economic climate of restrained government spending. It is likely that the need for fiscal restraint will continue and the value of SAO research projects that utilize excess foreign currencies will be even more important.

Currently there are 50 cooperative research projects being carried out in Egypt, Pakistan, Poland, Yugoslavia and Tunisia. These projects encompass practically all environmental concerns--air, water, solid waste, radiation, pesticides and noise abatement. Research and development programs by their nature involve a variety of separately indentifiable activities. The SAO program involved in all phases of environmental research activities--the identification of pollutants and the development of an effective data base, the impact assessment of pollutants on human health and the environment, the development of control technologies, and implementation of systems and procedures for monitoring ambient conditions.

The SAO review procedure for approving projects closely parallels the procedures for domestic programs. Official proposals are initiated by institutions in participating SAO countries after informal communications have identified mutual research interests. Scientific evaluations are made of each proposal by appropriate EPA scientists and engineers to determine their relevancy to domestic programs. University and industrial consultants are frequently invited to provide technical comments on the proposals. Official approval is made with the concurrence of the responsible EPA program element, the EPA Office of International Activities, and the Department of State.

In addition to the direct research benefits to EPA from SAO, this program also stimulates environmental protection activities in participating countries. Without exception, countries active within the SFCP have significantly increased mechanisms to deal with environmental problems.

Further, the SAO programs are recognized in the United States and in all participating countries as visible evidence of U.S. efforts to engage in peaceful endeavors directed toward the development of knowledge and technological advancement specific to our global environment.

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

It is requested that $5 million be appropriated for the Scientific Activities Overseas under the Special Foreign Currency Program.

2. Changes from Original 1977 Budget Estimate

The original budget estimate was $6 million; the $1 million reduction was made by the Congress.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1977	Estimate 1978
	(dollars in thousands)	
Prior year obligations	$3,261	$5,834
Additional cost of program increase	+1,000	...
Change in amount of carryover funds available	+1,456	-834
Accelerated rate of obligations	+117	...
Total estimated obligations	5,834	5,000
(From new obligational authority)	(5,000)	(5,000)
(From prior year funds)	(834)	(...)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

Additional cost of program increase--In 1977, an appropriation of $5 million was provided; this was an increase of $1 million over 1976. There is no change requested for 1978.

Change in amount of carryover funds available--In 1976, $198 thousand of carryover funds were available for obligation; in 1977, a total of $834 thousand is available. In 1978, it is estimated that there will be no funds brought forward.

SCIENTIFIC ACTIVITIES OVERSEAS

Special Foreign Currency Program

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
			(dollars in thousands)		
Program Level					
SAO Projects.....	11	24	14	12	-2
Technology Transfer Seminars.	2	4	4	4	...
Appropriation					
Poland.....	$1,830	$2,464	$1,935	...	-$1,935
Egypt.....	667	1,500	1,055	$2,500	+1,445
Pakistan.....	751	800	1,000	1,500	+500
Tunisia.....	2	100	...	...	...
India.....	11	1,136	1,000	1,000	...
Burma.....	...	...	10	...	-10
Total.....	3,261	6,000	5,000	5,000	...

Budget Request

An appropriation of $5 million is requested representing no change from the 1977 estimate.

1976 Accomplishments

- Published bilingual report on the Polish/EPA Symposium on Wastewater Treatment and Sludge Disposal held at the EPA Environmental Research Center, Cincinnati, Ohio. The Symposium highlighted mutual environmental research problems in waste water treatment, sludge utilization, and renovated water reuse. It provided a forum for scientists and engineers from environmental research institutions in both countries to exchange ideas, compare research results, and suggest new research efforts.

- Published a report on the International Marine Pollution Symposium held at the EPA Environmental Research Laboratory, Gulf Breeze, Florida. The Symposium focused attention on marine pollution research in Egypt, Pakistan, Yugoslavia, Poland, and the United States. Areas of potential international cooperation were identified, such as the need for collaborative monitoring of ocean and coastal waters, standardization of sampling, chemical analysis and bioassays, and the importance of scientific education and technology transfer relation to marine ecosystems.

- Developed cooperative programming with the Agency for International Development. This programming will support research training, seminars, and equipment needs of Special Foreign Currency projects in Egypt and Pakistan.

- Participated in Science and Technology (S&T), Sub-Commission meetings in India, Egypt, and Pakistan. S&T Sub-Commission activities offer the highest bilateral support for developing active SAO programs. These Commissions outline broad areas for cooperation and identify institutions as well as individuals on a national basis that can be targeted for project development.

- Initiated in Yugoslavia a cooperative research project on environmental assessment of the Lurgi coal gasification process. This project was funded with remaining funds deposited in the U.S./Yugoslav Joint Fund. The studies made will assess air, water, and solid waste pollutant discharges from the process.

- Complied with the U.S./Polish Energy Agreement by reprogramming SAO funds to initiate a limited energy related research program. Projects supported include a study of a microbiological bacteria that removes sulfur from solid and liquid fossil fuels, an air pollution monitoring program that will be coordinated with an epidemiology study, and a study of ground water contamination from strip mining.

- Polish investigators are completing analysis of data from radionuclide and heavy metal measurements of glacier samples. Data from a Peruvian expedition is being incorporated with data from past sampling expeditions in Europe and Asia. Information for this project will be used to establish baseline data for EPA in setting standards for toxic substances in environmental radiation.

1977 Program

During FY 1977, a concerted effort is being made to accelerate expenditures in Poland due to the termination of the excess currency designation. In Poland, program development focuses on energy related research projects such as reclamation of strip mining areas, waste water treatment from coal processing plants, and particulate pollution of the troposhere and stratosphere, as well as projects on water pollution from agricultural runoffs, health effects of contaminated drinking water, and watershed management practices.

The implementation of national and international legislative programs has created further recognition of problems associated with marine pollution. Accordingly, emphasis is being given to the development of marine studies in SAO countries that have marine environments similar to those in the United States. For example, in Pakistan the effects of natural siltation and petrochemicals on shrimp and other marine life are being studied; this research complements U.S. studies in the Gulf of Mexico on pollution affecting the shrimp industry. In Egypt, the effects of urban development and the growth of toxic substances in the marine environment is being analyzed. United States research on petrochemical pollution in the New York, New Jersey, and Delaware coastlines parallels these studies. In Poland, studies are made on water borne salt particles which trace the movement of pollutants from air masses to the ocean. This research is similar to the United States studies on ocean indicators in the Puget Sound area.

With the increased municipal and industrial demands on water, more attention is being given to water reuse and reclamation. Many of the SAO countries are water poor. In Egypt, there is a high interest in water renovation in food production, such as poultry processing. In Pakistan, research and experimentation is under way on the use of treated waste water for agricultural purposes. In Poland, the hyperfiltration process (reverse osmosis) is being studied to recycle waste water for use with dye and chemicals in the textile industry.

In India, seminars are being planned on waste water treatment, toxic and agrochemicals, and technical information exchange. These seminars are being scheduled as a part of research program development in the country.

1978 Plan

Egypt ($2.5 million)

The SAO Egyptian project, "Water Quality Studies of the River Nile/Lake Nasser" may be the most significant comprehensive study ever undertaken of the environmental effects of a man made lake. The multidisciplinary nature of this study has identified new environmental research initiatives. Industrialization and agronomic trends that have been developed as a result of the Aswan Dam construction have been identified as the most promising research areas. Water research will focus on the development and demonstration of technologies for open and closed cycle systems. Areawide combined water studies will demonstrate the economic and technical feasibility of combined point source waste water treatment management with special emphasis on developing technical criteria for pretreatment standards. The impact of environmental controls on agricultural economy is being assessed in studies dealing with irrigated and nonirrigated crop production, animal waste utilization, and other silviculture activities.

Cooperative projects are planned in several new areas of mutual interest, including:

- Drinking water quality--Studies of algae removal and viral disease transmission from water supply systems will be made, as well as studies to evaluate a pilot plant on an existing water works system to assess the various mechanical combinations of coagulation, sedimentation, filtration and chemical treatment to remove algae. In addition, virus removal from water systems and bacteriological or chemical indicators of viruses will be studied.

- Marine and estuarine ecosystems--An analysis will be made of the fate and effects of coastal and ocean disposal of waste materials, the distribution of carcinogenic compounds derived from petroleum hydrocarbons, and the ecological significance of community structure and population dynamics in the marine environment.

- Urban air pollution study--Investigations will be made on the correlation of indoor and outdoor air pollution and its effects on humans. Air pollutant sampling and determination will be cross-referenced with clinical health studies of urban residents living near highly developed commercial industrial complexes.

Pakistan ($1.5 million)

The establishment of the National Environment and Urban Affairs Division (NEUAD), Pakistan Ministry of Works, Housing and Urban Affairs, has focused attention on environmental program development. Environmental problems have been identified in the new Pakistan Constitution as "an area for national concern." A draft National Science and Technology Policy has suggested creating an "Environmental Research Council" to establish institutes for specific environmental studies significant to the country. The development of the Pakistan economy, particularly in industrial and agricultural production, additional port facilities in the Karachi Harbor, and the near completion of the Tarbela Dam, the world's largest earth filled dam, offers unique SAO program opportunities.

More than 20 research proposals have been submitted to EPA by the EUAD. These proposals include:

- Marine Pollution--Environmental impact assessment of sewage discharges into the Karachi Harbor. Studies will be made to identify industrial sources of water pollution from heavy metals and toxic substances concentrations. Various forms of biological organisms and transformations in marine life also will be studied to correlate aquatic life with various types of water pollution.

- Waste Water Utilization--Waste water reuse for irrigation and augmentation of ground water storage will be studied. Agricultural experimentation on crop use and the uptake in crops will be determined.

- Insecticides--Biological effects of the use of insecticides on small mammals will be studied. Short and long-term effects on the different organs of small mammals by insecticides such as DDT, DDE, Aldrin, and Dieldrin will be analyzed. Morphological and biochemical data will be compared with similar data in the United States.

- Industrial Waste Water Treatment--Biological and physical/chemical treatment methods will be tested on effluents from different types of industries. Treatment efficiency will be studied to determine types of discharge methods available and the possibilities of recycling materials and other useful products.

- Watershed Management--Experimentation will be done on the methods of controlling runoffs and increasing irrigation in semiarid regions. Studies will be conducted on various watershed management techniques to control rain water and aquifer storage.

- Solid Waste Utilization--Studies will be made on the possibility of land application of municipal solid wastes. Field observations will be conducted to determine the vegetation growth and plant uptake of toxic substances.

Seminars are planned to identify Pakistani research needs and priorities, on ecological effects of marine pollutants, and on municipal and industrial waste water treatment and reuse.

India ($1 million)

India has built a strong infrastructure of research and development facilities and has a substantial number of scientists and experts concerned with the abatement and control of pollution. These resources are being merged with EPA through the U.S/India Joint Commission on Science and Technology. EPA promotes scientifically sound environmental programs through the Commission and has succeeded in having environmental concerns among the top priorities for support by the Government of India. The political realities and sensitivities that effect the scientific community are recognized in formulating projects and programs. There is, however, mutual interest in five broad research areas:

- Development of air and water monitoring techniques;

- Determination of health impact of urban and industrial air pollution;

- Development of methods for safe and efficient disposal of solid waste and sludges;

- Development of economic methods for purification of drinking water; and

- Impact of pesticides in the environment.

Within these broad areas, specific research projects from Indian institutions include:

The National Environmental Engineering Research Institute (NEERI), Nagpur--Studies on the use and disposal of industrial solid wastes; comparison of various analytical methods for analysis of municipal solid wastes; efficacy of aquaculture in stabilization ponds; and ground water quality with special reference to chemical characteristics and possible physiological effects.

The Physical Research Laboratory, Ahmedabad--Studies of heavy metals in marine systems. These studies will define the fate of heavy metals in environmentally stressed and unstressed coastal and estuarine systems.

Post-Graduate Institute of Medical Education and Research, Chandigarh--Two proposals on environmental effects of pesticides and insecticides. One proposal concerns studies of pesticide levels and their biological effects. The other deals with the formation of N-nitroso-carbamate pesticides in vitro and in vivo in rats and primates.

Central Plant Protection Training Institute, Hyderabad--Studies on the preparation of analytical results obtained by gas liquid chromatography with thin-layer chromatography to obtain accurate quantification and tolerance levels for insecticides used under Indian conditions.

In addition to the specific projects, seminars are planned on the following subjects--waste water treatment, toxic chemicals in the environment, and modeling of the fate of agrochemicals. These seminars are to be held in India to bring together EPA and Indian scientists and engineers to exchange ideas and develop specific cooperative research projects. A seminar will be held in the United States on environmental information exchange.

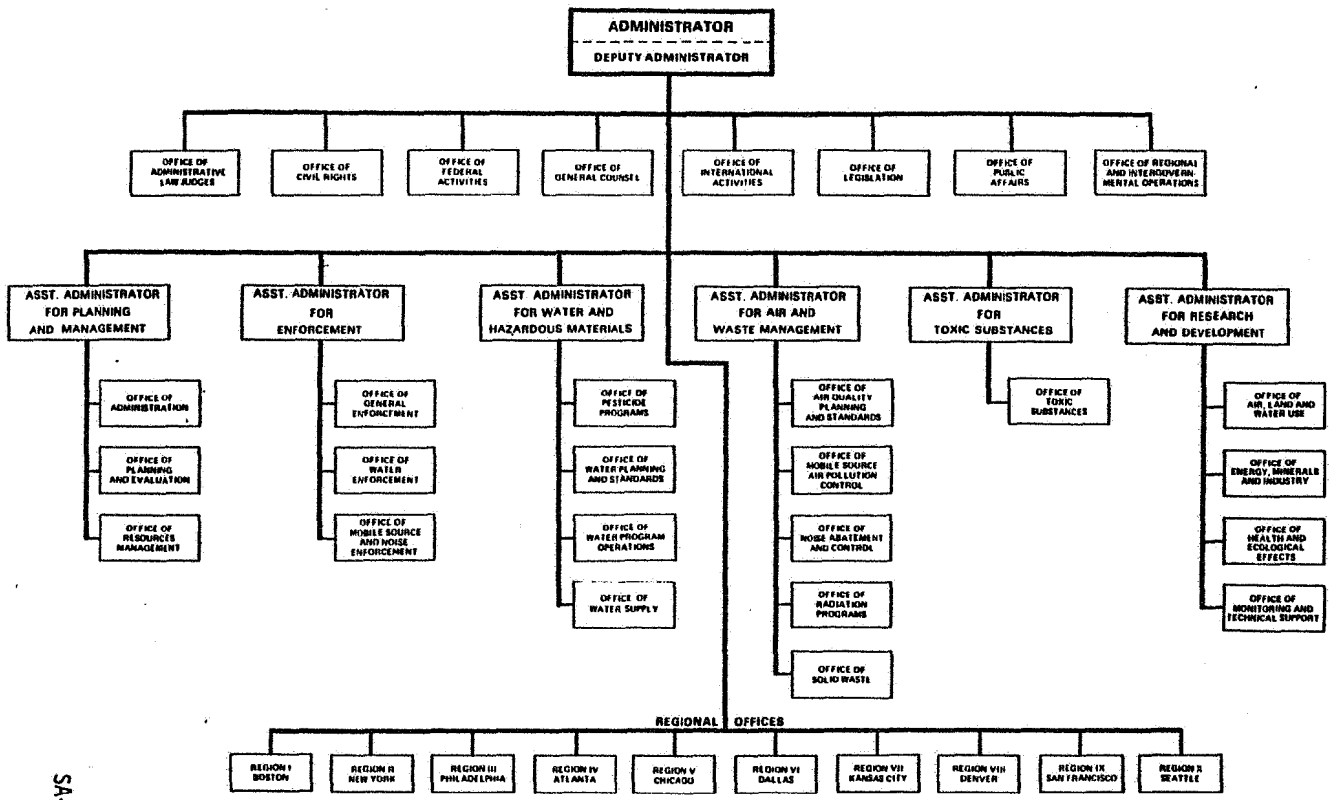
Special Analyses

SECTION TAB

SPECIAL ANALYSES

Contents

U. S. ENVIRONMENTAL PROTECTION AGENCY



EPA Regions
Locations and States

Region I	Headquarters, Boston, Massachusetts Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Region II	Headquarters, New York, New York New Jersey, New York, Puerto Rico, Virgin Islands
Region III	Headquarters, Philadelphia, Pennsylvania Delaware, Maryland, Pennsylvania, Virginia, West Virginia, District of Columbia
Region IV	Headquarters, Atlanta, Georgia Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee
Region V	Headquarters, Chicago, Illinois Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin
Region VI	Headquarters, Dallas, Texas Arkansas, New Mexico, Texas, Oklahoma, Louisiana
Region VII	Headquarters, Kansas City, Missouri Iowa, Kansas, Missouri, Nebraska
Region VIII	Headquarters, Denver, Colorado Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
Region IX	Headquarters, San Francisco, California Arizona, California, Hawaii, Nevada, American Samoa, Guam, Trust Territories of Pacific Islands, Wake Island
Region X	Headquarters, Seattle, Washington Alaska, Idaho, Oregon, Washington

Summary of Resources
(dollars in thousands)

	Actual 1976	Current Estimate 1977 b/	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Abatement and Control				
Budget authority	$384,155	$380,388 b/	$438,029	+$57,641
Obligations	326,593	441,000	442,149	+1,149
Outlays	315,088	410,000	481,400	+71,400
Contract authority	65,000	49,182	...	-49,182
End-of-year employment	4,064	4,324	4,982	+658
Enforcement				
Budget authority	52,263	56,331	68,115	+11,784
Obligations	48,865	56,432	68,115	+11,683
Outlays	51,264	57,000	72,500	+15,500
End-of-year employment	1,560	1,618	1,546	-72
Research and Development a/				
Budget authority	265,421	259,496	260,583	+1,087
Obligations	217,294	305,606	259,783	-45,823
Outlays	235,883	294,000	267,500	-26,500
End-of-year employment	1,857	1,798	1,664	-134
Agency and Regional Management				
Budget authority	62,711	70,890	71,456	+566
Obligations	57,338	70,890	71,456	+566
Outlays	62,082	71,000	75,700	+4,700
End-of-year employment	1,869	1,824	1,842	+18
Buildings and Facilities				
Budget authority	2,969	2,100	1,142	-958
Obligations	636	5,047	1,142	-3,905
Outlays	554	3,000	2,500	-500
Construction Grants				
Budget authority	...	680,000 b/	... c/	-680,000
Contract authority	...	...	...	...
Obligations	187,384	524,094	240,000	-284,094
Contract authority	4,141,844	5,594,657	1,000,000	-4,594,657
Outlays	662,905	650,000	340,000	-310,000
Contract authority	1,765,664	3,730,000	4,530,000	+800,000

	Actual 1976	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Scientific Activities Overseas				
Budget authority	4,000	5,000	5,000	...
Obligations	3,261	5,834	5,000	-834
Outlays	3,726	4,000	4,500	+500
Operations, Research and Facilities				
Obligations	11,071	6,500	2,077	-4,423
Outlays	20,803	20,000	8,000	-12,000
End-of-year employment	20	...	...	...
Revolving Fund				
Obligations	455	500	500	...
Outlays	-214	-40	...	+40
Trust Funds				
Budget authority	13	...	...	...
Obligations	12	20	53	+33
Outlays	15	20	28	+8
Reimbursements				
Obligations	4,625	6,800	6,800	...
End-of-year employment	111	116	116	...
Consolidated Working Fund				
Obligations	73	...	...	...
Outlays	161	53	...	-53
Total, Environmental Protection Agency				
Budget authority	771,532	1,454,205 b/	844,325 c/	-609,880
Obligations	857,607	1,422,723	1,097,075	-325,648
Contract authority	4,141,844	5,594,657	1,000,000	-4,594,657
Outlays	1,352,267	1,509,033	1,252,128	-256,905
Contract authority	1,830,664	3,779,182	4,530,000	+750,818
End-of-year employment	9,481	9,680	10,150	+470

Note: Includes comparative transfer of Environmental Impact Statement activities from Agency and Regional Management to Abatement and Control:

Budget authority	8,872
Obligations	3,416
Outlays	3,416
End-of-year employment	123

	Actual 1976	Current Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977

a/ Includes Energy Research and Development appropriation:

Budget authority.....	100,550
Obligations.....	83,436
Outlays.....	65,687
End-of-year employment.....	143

b/ Excludes proposed funds for 1977 supplemental needs:

Abatement and Control:

Budget authority.....	74,000
Obligations.....	74,000
Oultays.....	14,000.

(Supplemental positions under review)

Construction Grants:

Budget authority.....	4,500,000
Obligations.....	400,000
Outlays.....	50,000

c/ Excludes proposed construction grants legislation, $4.5 million.

END-of-year employment=permanent positions.

End-of-Year Employment and Budget Auth
By Media and Appropriation
1977
(dollars in thousands)

	Research and Development		Abatement and Control		Enforcement		Agency and Regional Management		Total	
	EOY	Amount	EOY	Amount	EOY	Amount	EOY	Amount	EOY	Amount
Air	460	$44,006.0	824	$89,458.1	492	$14,341.1	...	...	1,776	$147,805.2
Water Quality	546	44,242.7	1,774	153,483.2	756	21,368.9	...	...	3,076	219,094.8
Water Supply	86	13,227.0	203	31,214.1	7	154.1	...	...	296	44,595.2
Solid Wastes	22	4,098.0	188	11,663.8	5	...	...	...	215	15,761.8
Pesticides	156	10,656.3	637	24,066.7	165	5,000.2	...	...	958	39,723.2
Radiation	30	830.0	174	4,550.7	...	...	...	...	204	5,380.7
Noise	...	...	75	9,570.2	21	707.0	...	...	96	10,277.2
Interdisciplinary	228	26,288.0	143	11,483.4	...	...	...	...	371	37,771.4
Toxic Substances	6	1,388.0	137	5,882.6	...	...	...	...	143	7,270.6
Energy	123	96,362.0	...	...	...	...	...	...	123	96,362.0
Program Management and Support	141	18,398.0	169	39,015.2	172	14,759.6	...	...	482	72,172.8
Agency and Regional Management	...	...	...	...	...	...	1,824	$70,890.1	1,824	70,890.1
Subtotal	1,798	259,496.0	4,324	380,388.0	1,618	56,330.9	1,824	70,890.1	9,564	767,105.0
Buildings and Facilities	...	...	...	...	...	...	...	...	...	2,100.0
Scientific Activities Overseas	...	...	...	...	...	...	...	...	...	5,000.0
Reimbursements	...	...	...	...	...	...	...	...	116	...
Construction Grants	...	...	...	...	...	...	...	...	...	680,000.0*
Total	1,798	259,496.0	4,324	380,388.0**	1,618	56,330.9	1,824	70,890.1	9,680	1,454,205.0

*Excludes proposed $4.5 billion supplemental needs.
** Excludes proposed $74 million supplemental needs.

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(Revised 2/24/77)

End-Of-Year Employment and Budget Authority
By Media and Appropriation
1978
(dollars in thousands)

	Research and Development		Abatement and Control		Enforcement		Agency and Regional Management		Total	
	EOY	Amount	EOY	Amount	EOY	Amount	EOY	Amount	EOY	Amount
Air	400	$39,604.0	824	$94,065.7	489	$19,107.0	...	...	1,713	$152,776.7
Water Quality	512	44,769.0	1,768	149,872.0	657	21,398.0	...	...	2,937	216,039.0
Water Supply	91	15,200.0	229	37,800.0	7	154.0	...	...	327	53,154.0
Solid Wastes	22	7,718.0	188	27,815.0	5	1,000.0	...	...	215	36,533.0
Pesticides	151	10,756.0	637	24,050.0	185	10,398.0	...	...	973	45,204.0
Radiation	30	830.0	174	4,815.0	...	...	...	...	204	5,645.0
Noise	...	...	78	9,957.0	25	832.0	...	...	103	10,789.0
Interdisciplinary	188	25,773.0	152	13,983.0	...	...	...	...	340	39,756.0
Undistributed	...	...	452	15,000.0	...	...	...	...	452	15,000.0
Toxic Substances	6	1,388.0	311	22,500.0	5	370.0	...	...	322	24,258.0
Energy	123	96,427.0	...	...	...	...	...	...	123	96,427.0
Program Management and Support	141	18,118.0	169	38,171.3	173	14,856.0	...	...	483	71,145.3
Agency and Regional Management	...	...	...	...	...	...	1,842	$71,456.0	1,842	71,456.0
Subtotal	1,664	260,583.0	4,982	438,029.0	1,546	68,115.0	1,842	71,456.0	10,034	838,183.0
Buildings and Facilities	...	...	...	...	...	...	...	...	...	1,142.0
Scientific Activities Overseas	...	...	...	...	...	...	...	...	...	5,000.0
Reimbursements	...	...	...	...	...	...	...	...	116	...
Total	1,664	260,583.0	4,982	438,029.0	1,546	68,115.0	1,842	71,456.0	10,150	844,325.0*

(Revised 2/24/77)
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*Excludes construction grants proposed legislation.

Environmental Protection Agency

Total Funds Available, 1977

(in thousands of dollars)

	1977			
	Budget Authority[a]	Unobligated Balance Brought Forward	Unobligated Balance Carried Forward	Total Available
Abatement and Control	$380,388	$76,525	$10,421	$446,492
Air	89,459	22,649	14	112,094
Water Quality	153,484	30,324	2,474	181,334
Water Supply	31,214	7,294	1,441	37,067
Solid Wastes	11,663	3,489	...	15,152
Pesticides	24,066	1,754	371	25,449
Radiation	4,551	2,463	177	6,837
Noise	9,570	4,585	549	13,606
Interdisciplinary	11,483	107	5,187	6,403
Toxic Substances	5,883	2,736	...	8,619
Program Management and Support	39,015	1,124	208	39,931
Enforcement	56,331	101	...	56,432
Air	14,341	...	...	14,341
Water Quality	21,369	101	...	21,470
Water Supply	154	...	...	154
Pesticides	5,000	...	...	5,000
Noise	707	...	...	707
Program Management and Support	14,760	...	...	14,760
Research and Development	259,496	48,537	7,919	300,114
Air	44,006	7,495	400	51,101
Water Quality	44,243	9,364	...	53,607
Water Supply	13,227	1,552	126	14,653
Solid Wastes	4,098	807	4	4,901
Pesticides	10,656	348	99	10,905
Radiation	830	...	...	830
Interdisciplinary	26,288	4,197	125	30,360
Toxic Substances	1,388	76	...	1,464
Energy	96,362	24,106	4,788	115,680
Program Management and Support	18,398	592	2,377	16,613

	1977			
	Budget Authority a/	Unobligated Balance Brought Forward	Unobligated Balance Carried Forward	Total Available
Agency and Regional Management	70,890	...	...	70,890
Agency Management and Support.....	57,386	...	...	57,386
Regional Management and Support.....	13,504	...	...	13,504
Buildings and Facilities	2,100	2,947	...	5,047
Scientific Activities Overseas	5,000	834	...	5,834
Construction Grants (Appropriation) a/	680,000	124,094	280,000	524,094
Operations, Research, and Facilities	...	8,577	2,077	6,500
Trust Funds	...	73	53	20
Subtotal.....	1,454,205	261,688	300,470	1,415,423
Contract Authority				
Construction Grants.....	...	6,594,657	1,000,000	5,594,657
Total.....	1,454,205	6,856,345	1,300,470	7,010,080

a/ Excludes proposed funds for 1977 supplemental needs:
Abatement and Control, $74 million.
Construction Grants, $4.5 billion.

Environmental Protection Agency

Total Funds Available, 1978

(in thousands of dollars)

	1978			
	Budget Authority	Unobligated Balance Brought Forward	Unobligated Balance Carried Forward	Total Available
Abatement and Control	$438,029	$10,421	$12,964	$435,486
Air	41,516	14	90	41,440
Water Quality	99,872	2,474	2	102,344
Water Supply	13,300	1,441	...	14,741
Solid Wastes	20,865	...	...	20,865
Pesticides	24,050	371	371	24,050
Radiation	4,815	177	203	4,789
Noise	9,957	549	626	9,880
Interdisciplinary	13,983	5,187	4,897	14,273
Consolidated Program Grants	135,400	...	3,600	131,800
Toxic Substances	21,100	...	592	20,508
Program Management and Support	38,171	208	2,583	35,796
Undistributed	15,000	...	...	15,000
Enforcement	68,115	...	...	68,115
Air	19,107	...	...	19,107
Water Quality	21,398	...	...	21,398
Water Supply	154	...	...	154
Solid Wastes	1,000	...	...	1,000
Pesticides	10,398	...	...	10,398
Noise	832	...	...	832
Toxic Substances	370	...	...	370
Program Management and Support	14,856	...	...	14,856
Research and Development	260,583	7,919	2,056	266,446
Air	39,604	400	113	39,891
Water Quality	44,769	...	111	44,658
Water Supply	15,200	126	43	15,283
Solid Wastes	7,718	4	359	7,363
Pesticides	10,756	99	102	10,753
Radiation	830	...	...	830
Interdisciplinary	25,773	125	790	25,108
Toxic Substances	1,388	...	185	1,203
Energy	96,427	4,788	153	101,062
Program Management and Support	18,118	2,377	200	20,295

	1978			
	Budget Authority	Unobligated Balance Brought Forward	Unobligated Balance Carried Forward	Total Available
Agency and Regional Management	71,456	...	...	71,456
Agency Management and Support.....	57,952	...	...	57,952
Regional Management and Support.....	13,504	...	...	13,504
Buildings and Facilities	1,142	...	...	1,142
Scientific Activities Overseas	5,000	...	...	5,000
Construction Grants (Appropriation)	...	280,000	40,000	240,000
Operations, Research, and Facilities	...	2,077	...	2,077
Trust Funds	...	53	...	53
Subtotal.....	844,325	300,470	55,020	1,089,775
Contract Authority				
Construction Grants	...	1,000,000	...	1,000,000
Total.....	844,325	1,300,470	55,020	2,089,775

EPA

Positions By Grade and Average Employment

Grades	Actual 1976	Estimate 1977	Estimate 1978
Executive Level II	1	1	1
Executive Level III	1	1	1
Executive Level IV	5	6 *	6 *
Subtotal	7	8	8
GS-18	6	6	6
GS-17	33	33	33
GS-16	109	109	109
GS-15	435	462	461
GS-14	793	843	844
GS-13	1,232	1,312	1,311
GS-12	1,267	1,355	1,355
GS-11	976	1,043	1,044
GS-10	43	43	43
GS-9	878	947	947
GS-8	151	160	160
GS-7	787	850	851
GS-6	545	573	573
GS-5	898	954	953
GS-4	592	635	635
GS-3	245	264	264
GS-2	37	37	37
GS-1	2	2	2
Subtotal	9,029	9,628	9,628
Positions established by act of July 1, 1974 (42 U.S.C. 207):			
Assistant surgeon general grade, $21,654 to $31,565	2	2	2
Director grade, $16,052 to $27,727	85	85	85
Senior grade, $12,838 to $22,626	120	120	120
Full grade, $10,825 to $18,918	88	88	88
Senior assistant grade, $10,058 to $16,358	38	38	38
Assistant grade, $8,766, to $12,139	2	2	2
Subtotal	335	335	335

* Includes Executive Level IV position for Assistant Administrator for Toxic Substances, not reflected on President's Budget Appendix.

Grades	Actual 1976	Estimate 1977	Estimate 1978
Ungraded.....	179	179	179
Total permanent positions....	9,550	10,150	10,150
Average Employment:			
Permanent.....	9,256	9,344	9,514
Other.....	1,449	1,392	1,392
Total	10,705	10,736	10,906

Grades	Actual 1976	Estimate 1977	Estimate 1978
Ungraded.....	179	179	179
Total permanent positions....	9,550	9,680	9,698
Average Employment:			
Permanent.....	9,256	9,344	9,514
Other.....	1,449	1,392	1,392
Total	10,705	10,736	10,906

Budget Authority and Obligations by Appropriation by Media for Transition Quarter
July 1 - September 30, 1976
(dollars in thousands)

	Research and Development		Abatement and Control		Enforcement		Agency and Regional Management		Total	
	Budget Authority	Obligations	Budget Authority	Obligations	Budget Authority	Obligations	Budget Authority	Obligations	Budget Authority	Obligations
Air	$11,979.9	$19,293.7	$23,519.0	$44,707.1	$3,486.7	$4,315.8	...	...	$38,985.6	$68,316.6
Water Quality	11,189.3	21,638.0	38,527.7	45,582.1	5,076.7	5,874.3	...	...	54,793.7	73,094.4
Water Supply	3,074.7	6,487.9	5,431.0	4,733.6	21.0	20.5	...	...	8,526.7	11,242.0
Solid Wastes	1,023.4	2,064.6	3,176.9	3,045.9	...	...	...	...	4,200.3	5,110.5
Pesticides	2,793.7	4,209.7	8,012.4	13,240.7	1,068.9	1,159.7	...	...	11,875.0	18,610.1
Radiation	402.4	498.0	1,318.3	1,589.4	...	...	...	...	1,720.7	2,087.4
Noise	...	...	2,586.1	2,524.6	248.8	363.5	...	...	2,834.9	2,888.1
Interdisciplinary	6,982.4	9,897.5	...	82.7	...	...	...	...	6,982.4	9,980.2
Toxic Substances	308.1	690.3	1,880.0	3,081.1	...	...	...	...	2,188.1	3,771.4
Energy	21,000.0	63,190.5	...	...	...	...	...	...	21,000.0	63,190.5
Program Management and Support	5,092.1	4,795.9	8,882.0	10,573.1	3,920.5	4,566.9	...	...	17,894.6	19,935.9
Agency and Regional Management	...	...	...	...	...	...	$16,414.0	24,630.4	16,414.0	24,630.4
Subtotal	63,846.0	132,766.1	93,333.4	129,160.3	13,822.6	16,300.7	16,414.0	24,630.4	187,416.0	302,857.5
Buildings and Facilities	...	...	...	...	...	...	...	...	500.0	1,240.9
Scientific Activities Overseas	...	...	...	...	...	...	...	...	670.0	820.4
Reimbursements	...	...	...	...	...	...	...	...	2,715.0	1,734.5
Total	63,846.0	132,766.1	93,333.4	129,160.3	13,822.6	16,300.7	16,414.0	24,630.4	191,301.0	306,653.3

ABATEMENT AND CONTROL

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

	Actual 1976	Revised Estimate 1977	Revised Estimate 1978
Personnel Services	$81,660	$93,984	$99,499
Other Objects:			
21 Travel and transportation of persons	5,287	6,177	7,055
22 Transportation of things	509	1,381	1,265
23 Rent, communications, and utilities	(15,223)	(17,654)	(17,831)
23.1 Standard level user charges	7,398	8,561	6,753
23.2 Other rent, communications, and utilities	7,825	9,093	11,078
24 Printing and reproduction	1,851	2,604	2,674
25 Other services	54,605	124,439	139,381
26 Supplies and materials	2,830	3,760	2,296
31 Equipment	2,595	3,872	4,711
32 Lands and structures	109	...	...
41 Grants, subsidies, and contributions	158,507	265,129	167,437
42 Insurance claims and indemnities	1	...	...
Total, Other Objects	241,517	425,016	342,650
Total Obligations	323,177	519,000	442,149
Position Data:			
Average salary, GS positions	$18,482	$19,773	$19,962
Average grade, GS positions	9.74	9.74	9.74

EXPLANATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Personnel services	$81,660	$91,143	$93,984	$99,499	+$5,515

The decrease in the 1977 current estimate from the 1977 budget request is a result of:

Decrease of average paid employment	-$1,824
Decrease in overtime due to Agency's effort to reduce costs	-235
Subtotal	-2,059
Effect of 1977 supplemental needs	+4,900
Total	+2,841

The increase for 1978 is a result of:

Increase of average paid employment in 1978	+$2,116
Annualization of October 1976 pay raise cost	+133
Within grade increases	+1,122
Decrease of one extra day pay cost in 1978 over 1977	-338
Subtotal	+3,033
Result of new position increase	+2,482
Total	++5,515

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Travel and transportation of persons	$5,287	$6,277	$6,177	$7,055	+$878

The decrease in 1977 current estimate from the 1977 budget request is the result of a reevaluation to conform with overall Agency travel ceilings, using 1976 actual as a new base, -$200; effect of 1977 supplemental needs +$100; net change -$100.

The increase in 1978 is the result of an increase in staff and annualization of 1977 requirements, +$178; effect of new positions, +$700; net change +$878.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Transportation of things	$509	$450	$1,381	$1,265	-$116

The increase in the 1977 current estimate over the 1977 budget request is the result of a reestimate of costs due to expected relocation costs, +$931.

The decrease in 1978 reflects nonrecurring relocation costs, -$266; effect of new positions +$150; net change -$116.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Rent, communications, and utilities	$15,223	18,016	$17,654	$17,831	+$177

The decrease in the 1977 current estimate from the 1977 budget request is due to a reestimation of costs using 1976 actual as a base, -$362

The increase in 1978 is the result of additional prorated requirements in leased space costs as well as program increases and annualization of costs, +$1,846; result of SLUC review -$1,669; net change +$177.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Printing and reproduction	$1,851	$1,800	$2,604	$2,674	+$70

The increase in the 1977 current estimate over the 1977 budget request is the result of increased printing costs, +$804.

The slight increase for 1978 is for anticipated increased costs of printing, due to increased staff, +$25; effect of new positions, +$45; net change +$70.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Other services	$54,605	$64,163	$124,439	$139,381	+$14,942

The increase in the 1977 current estimate over the 1977 budget request is due to a change in the amount of carryover funds estimated to be available and due to an increase in services required, +$60,276.

The decrease in 1978 is due to a change in the amount of carryover funds available in 1978,and the proposed 1977 supplemental of $4 million for relief of pay cost absorption, -$9,296; effect of effluent guidelines, +$24,238; net change +$14,942.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Supplies and materials	$2,830	$3,036	$3,760	$2,296	-$1,464

The increase in the 1977 current estimate over the 1977 budget request is the result of increased costs of goods, +$724.

The decrease in 1978 should be reflected with "Other Services" related to the change in carryover forms. The 1978 level for supplies and materials should be the same as in 1977; effect of new positions +$35; net change -$1,464.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Equipment	$2,595	$3,214	$3,872	$4,711	+$839

The increase in the 1977 current estimate over the 1977 budget estimate is the result of new equipment requirements for the increased positions, as well as replacement of equipment, where necessary, +$658.

The increase in 1978 is the result of estimated additional equipment and replacement requirements, +$389; effect of new positions, +$450; net change +$839.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Lands and structures	$109	...	...	...	...

No change is estimated for this item.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Grants, subsidies, and contributions	$158,507	$142,450	$265,129	$167,437	-$97,692

The increase in the 1977 current estimate over the 1977 budget request is the result of congressional add-ons for control agency grants, for training, and for clean lakes, as well as a change in the estimate of available carryover funds, +$53,679; effect of 1977 supplemental needs, $69,000; net change +$122,679.

The decrease in 1978 is primarily due to the reduction of grant activity for training grants, area wide waste treatment management planning grants, the clean lakes program, and a reduction in the amount of carryover funds available, -$109,692; effect of consolidated grants +$12,000; net change -$97,692.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs 1977
Insurance claims and indemnities	$1	...	...	...	...

No change is estimated for this item.

ENFORCEMENT

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

	Actual 1976	Revised Estimate 1977	Revised Estimate 1978
Personnel Services	$31,492	$35,973	$36,263
Other Objects:			
21 Travel and transportation of persons	2,356	2,617	2,703
22 Transportation of things	193	406	325
23 Rent, communications, and utilities	(6,681)	(8,194)	(8,321)
23.1 Standard level user charges	3,324	4,065	2,552
23.2 Other rent, communications, and utilities	3,357	4,129	5,769
24 Printing and reproduction	356	403	473
25 Other services	5,776	6,124	12,609
26 Supplies and materials	1,104	929	899
31 Equipment	817	786	1,522
32 Lands and structures	48	...	...
41 Grants, subsidies, and contributions	38	1,000	5,000
42 Insurance claims and indemnities	4	...	...
Total, Other Objects	17,373	20,459	31,852
Total, Obligations	48,865	56,432	68,115
Position Data:			
Average salary, GS positions	$18,482	$19,773	$19,962
Average grade, GS positions	9.74	9.74	9.74

EXPLANATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Personnel Services	$31,492	$33,061	$35,973	$36,263	+$290

The increase in the 1977 current estimate over the 1977 budget request is the result of:

Increase in average paid employment of permanent positions	+697
October 1976 pay raise	+1,833
Within grade increases	+382
Total	+2,912

The increase for 1978 is the result of:

Annualization of average paid employment.....	+19
Annualization of October 1976 pay raise.....	+40
Within grade increases.....	+349
Increase overtime costs to support increased workload.....	+19
Decrease of one extra day pay cost in 1978 over 1977.....	-137
Total.....	+290

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Travel and transportation of persons.....	$2,356	$2,340	$2,617	$2,703	+$86

The increase in the 1977 current estimate over the 1977 budget request is due to a reevaluation of costs to conform with overall Agency travel ceilings and due to increasing workload, +$277.

The increase in the 1978 estimate is due to increased enforcement activities, +$86.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Transportation of things.....	$193	$200	$406	$325	-$81

The increase in the 1977 current estimate over the 1977 budget request is the result of anticipated shipments of materials, +$206.

The decrease in the 1978 estimate is due to nonrecurring costs anticipated for shipment of materials, -$81.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Rent, communications, and utilities.....	$6,681	$7,378	$8,194	$8,321	+$127

The increase in the 1977 current estimate over the 1977 budget request is the result of anticipated additional communications and rental costs, +$816.

The increase in the 1978 estimate is to support the prorated share of increased leased space costs as well as increased equipment rental costs, +$760; result of SLUC review, -$633; net change +$127.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Printing and reproduction	$356	$900	$403	$473	+$70

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reestimate based on the 1976 actual costs base, -$497.

The increase in the 1978 estimate is the result of anticipated increased printing costs, +$70.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Other services	$5,776	$7,544	$6,124	$12,609	+$6,485

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reestimate of requirements using 1976 actual costs as a base, -$1,420.

The 1978 increase is the result of program increases for contracts, +$6,485.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Supplies and materials	$1,104	$1,318	$929	$899	-$30

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reestimate of costs over the 1976 actual base, -$389.

The slight decrease in the 1978 estimate is due to an anticipated nonrecurring cost of supplies, -$30.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Equipment	$817	$610	$786	$1,522	+$736

The decrease in the 1977 current estimate from the 1977 budget request reflects estimated nonrecurring equipment requirements using the 1976 actual base, -$176.

The increase in the 1978 estimate is the result of new and replacement items, +$736.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Lands and structures	$48	...	...	...	...

No change is estimated for this item.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Grants, subsidies, and contributions	$38	$3,200	$1,000	$5,000	+$4,000

The decrease in the 1977 current estimate from the 1977 budget request is the result of an adjustment in the 1977 budget estimate which should have been reflected under other services, -$2,200.

The increase in the 1978 estimate results from support of Federal/State pesticides cooperative agreements, +$4,000.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Insurance claims and indemnities	$4	...	...	...	...

No change is estimated for this item.

RESEARCH AND DEVELOPMENT

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

	Actual 1976	Revised Estimate 1977	Revised Estimate 1978
Personnel Services	$46,124	$49,655	$47,505
Other Objects:			
21 Travel and transportation of persons	3,011	3,158	2,963
22 Transportation of things	462	1,101	1,094
23 Rent, communication, and utilities	(7,350)	(8,480)	(8,366)
23.1 Standard level user charges	3,399	3,905	2,851
23.2 Other rent, communications, and utilities	3,951	4,575	5,515
24 Printing and reproduction	1,197	1,644	1,637
25 Other services	109,029	181,759	140,891
26 Supplies and materials	4,932	4,909	5,023
31 Equipment	5,853	4,524	5,069
32 Lands and structures	713	909	793
41 Grants, subsidies, and contributions	32,201	43,467	42,442
42 Insurance claims and idemnities	2	...	...
Total Other Objects	164,750	249,951	208,278
Total Obligations	210,874	299,606	255,783
Position Data:			
Average salary, GS positions	$18,482	$19,773	$19,962
Average grade, GS positions	9.74	9.74	9.74

EXPLANATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Personnel services	$46,124	$42,753	$49,655	$47,505	-$2,150

The increase of $6,902 in the 1977 current estimate over the 1977 budget request is the result of the funds reprogrammed from other object classifications to absorb the October 1976 pay raise and a reestimate based on 1976 actual costs, +$6,902.

The decrease in 1978 is a result of:

Decrease of average paid employment into 1978	-$2,480
Annualization of October 1976 pay cost	+64
Within grade increases	+476
Decrease of one extra day pay costs in 1978 over 1977	-210
Total	-2,150

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Travel and transportation of persons	$3,011	$3,252	$3,158	$2,963	-$195

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reevaluation to conform with overall Agency travel ceilings, -$94.

The decrease in 1978 is the result of planned reductions in staff, -$195.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Transportation of things	$462	$475	$1,101	$1,094	-$7

The increase in the 1977 current estimate over the 1977 budget request is the result of anticipated transport of goods' costs, +$626.

The slight decrease in 1978 is the result of planned reductions in staff, -$7.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Rent, communications, and utilities	$7,350	$8,756	$8,480	$8,366	-$114

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reevaluation of costs using 1976 actual as a new base, -$276.

The increase in 1978 is the result of the prorated share of additional requirements for lease costs, as well as increased costs of rental equipment in the labs and headquarters, +$590; result of SLUC review, -$704; net change -$114.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Printing and reproduction	$1,197	$1,525	$1,644	$1,637	-$7

The increase in the 1977 current estimate over the 1977 budget request is the result of a reestimate of printing and reproduction costs, +$119.

The slight decrease in 1978 is the result of planned reductions in staff, -$7.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Other services	$109,029	$125,609	$181,759	$140,891	-$40,868

The increase in the 1977 current estimate over the 1977 budget estimate is the result of a change in the amount of carryover funds available for contracts, +$56,150.

The decrease in 1978 is the result of a change in the amount of carryover funds estimated to be available in 1977, -$40,868.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Supplies and materials	$4,932	$5,126	$4,909	$5,023	+$114

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reestimate of costs using 1976 actual as a new base, -$217.

The increase in 1978 is the result of a slight estimated increase in costs of goods, +$114.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Equipment	$5,853	$7,233	$4,524	$5,069	+$545

The decrease in the 1977 current estimate from the 1977 budget request is due to a reestimate of costs using 1976 actual as a new base, allowing for a decrease for nonrecurring equipment, -$2,709.

The increase in the 1978 estimate is the result of costs of new and additional equipment necessary, +$545.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Lands and structures	$713	$500	$909	$793	-$116

The increase in the 1977 current estimate over the 1977 budget request is due to a reestimate of costs based on 1976 actual, +$409.

The decrease in the 1978 estimate is due to nonrecurring requirements for lands and structures, -$116.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Grants, subsidies, and contributions	$32,201	$45,205	$43,467	$42,442	-$1,025

The decrease in the 1977 current estimate from the 1977 budget is due to a reestimate of costs using 1976 actual as a new base, allowing for a change in the estimated amount of carryover funds to be obligated, -$1,738.

The decrease in 1978 is the result of proposed program decreases, -$1,025.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Insurance claims and indemnities	$2	...	...	...	...

No change is estimated for this item.

AGENCY AND REGIONAL MANAGEMENT

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

		Actual 1976	Revised Estimate 1977	Revised Estimate 1978
Personnel Services		$40,946	$44,056	$44,543
Other Objects:				
21	Travel and transportation of persons	1,843	1,907	1,893
22	Transportation of things	183	672	710
23	Rent, communications, and utilities	(6,316)	(7,825)	(7,469)
23.1	Standard level user charges	3,496	4,291	2,851
23.2	Other rent, communications, and utilities	2,820	3,534	4,618
24	Printing and reproduction	457	631	721
25	Other services	9,696	16,406	14,001
26	Supplies and materials	778	925	1,145
31	Equipment	482	458	664
32	Lands and structures	49	...	...
41	Grants, subsidies, and contributions	...	...	...
42	Insurance claims and indemnities	4	10	10
	Total, Other Objects	19,808	28,834	26,613
	Total Obligations	60,754	72,890	71,156
Position Data:				
	Average salary, GS positions	$18,482	$19,773	$19,962
	Average grade, GS positions	9.74	9.74	9.74

AGENCY AND REGIONAL MANAGEMENT

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

		Actual 1976	Estimate 1977	Estimate 1978
Personnel Services		$40,946	$44,056	$44,543
Other Objects:				
21	Travel and transportation of persons	1,843	1,907	1,893
22	Transportation of things	183	672	710
23	Rent, communications, and utilities	(6,316)	(7,825)	(8,173)
23.1	Standard level user charges	3,496	4,291	4,941
23.2	Other rent, communications, and utilities	2,820	3,534	3,232
24	Printing and reproduction	457	631	721
25	Other services	9,696	16,406	14,001
26	Supplies and materials	770	925	1,145
31	Equipment	482	458	664
32	Lands and structures	49	...	...
41	Grants, subsidies, and contributions	...	...	...
42	Insurance claims and indemnities	4	10	10
	Total, Other Objects	19,808	28,834	27,317
	Total Obligations	60,754	72,890	71,860
Position Data:				
	Average salary, GS positions	$18,482	$19,773	$19,962
	Average grade, GS positions	9.74	9.74	9.74

EXPLANATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Personnel services	$40,946	$38,324	$44,056	$44,543	+$487

The increase in the 1977 current estimate over the 1977 budget request is the result of the increase in:

Annualization of increased man-years	+$2,909
October 1976 pay raise cost	+2,523
Special presonnel service payments	+300
Total	+5,732

The increase for 1978 is the result of:

Change of average paid employment into 1978	-$20
Annualization of October 1976 pay raise	+55
Within grade increases	+454
Decrease of one extra day pay cost in 1978 over 1977	-166
Increase in benefit percentages	+164
Total	+487

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Travel and transportation of persons	$1,843	$1,893	$1,907	$1,893	-$14

The slight increase in the 1977 current estimate over the 1977 budget request is due to a reevaluation of costs in order to conform to overall agency travel ceilings, using 1976 actual as a base, +14.

The slight decrease in the 1978 estimate is the result of minor program adjustments, -$14.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Transportation of things	$183	$150	$672	$710	+$38

The increase in the 1977 current estimate over the 1977 budget request is due to an estimated increase of costs for relocation of offices, +$522.

The slight increase in the 1978 estimate is the result of some relocation of headquarters and regional staff, +$38.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Rent, communications, and utilities	$6,316	$7,904	$7,825	$7,469	-$356

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reestimation of costs using 1976 actual as a new base, -$79.

The increase for 1978 is primarily the result of the prorated share increase for leased space costs, +$348; result of SLUC review -$704; net change -$356.

	Actual 1976	Budget Estimate 1977	Revised Estimate 1977	Revised Estimate 1978	Increase + Decrease - 1978 vs. 1977
Printing and reproduction	$457	$600	$631	$721	+$90

The increase in the 1977 current estimate over the 1977 budget request is the result of increased costs primarily as a result of increased printing costs, +$31.

The increase in 1978 is the result of anticipated increased costs of printing reports, statements, etc., +$90.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Transportation of things	$183	$150	$672	$710	+$38

The increase in the 1977 current estimate over the 1977 budget request is due to an estimated increase of costs for relocation of offices, +$522.

The slight increase in the 1978 estimate is the result of some relocation of headquarters and regional staff, +$38.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Rent, communications, and utilities	$6,316	$7,904	$7,825	$8,173	+$348

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reestimation of costs using 1976 actual as a new base, -$79.

The increase for 1978 is primarily the result of the prorated share increase for leased space costs, +$348.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Printing and reproduction	$457	$600	$631	$721	+$90

The increase in the 1977 current estimate over the 1977 budget request is the result of increased costs primarily as a result of increased printing costs, +$31.

The increase in 1978 is the result of anticipated increased costs of printing reports, statements, etc., +$90.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Other services	$9,696	$17,523	$16,406	$14,001	-$2,405

The decrease in the 1977 current estimate from the 1977 budget request is the result of a decrease in estimated contractual services using a new 1976 actual base, -$1,117.

The decrease for 1978 is primarily the result of the proposed 1977 supplemental of $2 million for relief of pay cost absorption, -$2,405.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Supplies and materials	$778	$704	$925	$1,145	+$220

The increase in the 1977 current estimate over the 1977 budget request is due to the annualization costs as a result of the increase in man-years, +$221.

The increase in 1978 is to support a portion of the additional costs required as a result of the increased cost of supplies, +$220.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Equipment	$482	$274	$458	$664	+$206

The increase in the 1977 current estimate over the 1977 budget request is the result of a reestimate based on 1976 actual costs, +$184.

The increase in 1978 is to support the estimated requirement for new and replacement equipment, +$206.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Lands and structures	$49	...	...	...	...

No change is estimated for this item.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Grants, subsidies, and contributions	...	$200	...	...	...

The decrease in the 1977 current estimate over the 1977 budget request is the result of a reestimate of requirements to support grants with public interest groups, -$200.

No change in the 1978 estimate is reflected.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Insurance claims and indemnities	$4	...	$10	$10	...

The increase in the 1977 current estimate over the 1977 budget request is the result of a reestimate of requirements based on 1976 actual, +$10.

No change in the 1978 estimate is reflected.

BUILDINGS AND FACILITIES

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

	Actual 1976	Estimate 1977	Estimate 1978
Other services:			
21 Travel and transportation of persons	$15	$30	$50
25 Other services	480	4,530	500
26 Supplies and materials	7	37	42
31 Equipment	20	150	300
32 Lands and structures	114	300	250
Total obligations	636	5,047	1,142

EXPLANATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Travel and transportation of persons	$15	$56	$30	$50	+$20

The decrease in the 1977 current estimate from the 1977 budget request is the result of a reevaluation of costs to conform to overall Agency travel ceilings, -$26.

The increase in the 1978 estimate is the result of required inspections of alternations and improvements at EPA facilities, +$20.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Other services	$480	$2,125	$4,530	$500	-$4,030

The increase in the 1977 current estimate over the 1977 budget request is primarily due to the change in the original amount of carryover estimated to be available, +2,405.

The decrease in the 1978 estimate is primarily due to a change in the amount of carryover funds available, -$4,030.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Supplies and materials	$7	$5	$37	$42	+$5

The increase in the 1977 current estimate over the 1977 budget request is due to a reevaluation of requirements, +$32.

The increase in the 1978 estimate is due to an anticipated increase in the costs of supplies and materials, +$5.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Iecrease + Decrease - 1978 vs. 1977
Equipment	$20	...	$150	$300	+$150

The increase in the 1977 current estimate over the 1977 budget request is due to a reestimate of new equipment requirements based on a change in the amount of carryover funds available, +$150.

The increase in the 1978 estimate is due to additional and replacement equipment requirements, +$150.

	Actual 1976	Budget Estimate 1977	Current Estimate 1977	Estimate 1978	Increase + Decrease - 1978 vs. 1977
Lands and structures	$114	...	$300	$250	-$50

The increase in the 1977 current estimate over the 1977 budget request is due to a change in the amount of carryover funds available, +$300.

The decrease in the 1978 estimate is due to nonrecurring costs, -$50.