

ENVIRONMENTAL PROTECTION AGENCY



**JUSTIFICATION OF APPROPRIATION ESTIMATES
FOR COMMITTEE ON APPROPRIATIONS,
FISCAL YEAR 1981**

1. The first of these is the fact that the
2. Government has been unable to secure the
3. necessary funds to carry out its policy.
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5. Government has been unable to secure the
6. necessary funds to carry out its policy.
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8. Government has been unable to secure the
9. necessary funds to carry out its policy.
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11. Government has been unable to secure the
12. necessary funds to carry out its policy.

1991 Budget Estimate
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Summary

Budget Summary

The U.S. Environmental Protection Agency's 1981 budget proposal totals \$5,341,317,000. The proposal includes \$1,391,317,000 for the Agency's operating programs, \$3.7 billion for the municipal waste treatment facilities construction program, and \$250 million to implement the Administrator's proposed oil and hazardous substance liability fund. The operating program proposed includes \$3,338,000 to support the U.S. Regulatory Council. The budget recognizes EPA's growing workload and, in addition to the proposed new appropriation for the oil and hazardous substances liability fund, includes increases of \$104,766,000 for the Agency's operating programs and \$300,000,000 million for the construction program.

In addition, EPA is requesting supplemental authority of \$26,507,000 in 1980, \$14,309,000 for the unabsorbed costs of the 1980 pay raise and \$12,000,000 to strengthen and accelerate EPA's promulgation of regulations this year under Subtitle C of the Resource Conservation and Recovery Act of 1976.

The most significant change reflected in the 1981 Budget for EPA is the increase and redirection of its resources toward abating pollution from industrial hazardous wastes and controlling their transport, storage and disposal as required by the Resource Conservation and Recovery Act (RCRA). The Budget requests an increase of \$47,338,106 and 368 full-time permanent work years to support the research, analysis, continued regulatory development, and enforcement capability which EPA needs to implement the hazardous waste control provisions of RCRA.

The proposed "superfund" legislation and the requested \$250,000,000 for its first year of operation complement the increases for RCRA implementation. RCRA addresses the problems of pollution by industrial hazardous wastes from current and future production. The "superfund" legislation and program begins to address the problems created by past abuses in the storage and disposal of hazardous wastes.

I. APPROPRIATION SUMMARY

In 1980 the Congress restructured EPA's appropriations to create a single appropriation for all salary and expense costs and to consolidate grants, contracts and other extramural costs for abatement, control and compliance activities under a single appropriation. The Congress's changes established eight appropriation accounts as follows.

EPA's Request by Appropriation Account

<u>Appropriation</u>	<u>1980</u> <u>Current Estimate</u> <u>\$</u>	<u>1981</u> <u>Budget Estimate</u> <u>\$</u>
Salaries & Expenses	\$521,513,000	\$562,542,000
Abatement, Control & Compliance	525,957,000	555,338,000
Research & Development	234,574,000	264,984,000
Scientific Activities Overseas	---	1,000,000
Buildings & Facilities	1,425,000	4,115,000
U.S. Regulatory Council	3,082,000	3,338,000
Operating Programs Subtotal	<u>1,286,551,000</u>	<u>1,391,317,000</u>
Construction Grants	<u>3,400,000,000</u>	<u>3,700,000,000</u>
Oil and Hazardous Substances		
Liability Fund	---	250,000,000
Total	<u>\$4,686,551,000</u>	<u>\$5,341,317,000</u>

The following briefly describes the content of each appropriation and the changes requested within each from the Agency's current 1980 estimates.

Salaries and Expenses

EPA requests an increase of \$41,029,000 for its Salaries and Expenses appropriation which finances salaries and related costs associated with administering the programs within the Environmental Protection Agency. It incorporates all costs exclusive of grant programs and program-specific contractual agreements.

Abatement, Control and Compliance

The Abatement, Control and Compliance appropriation finances contracts, grants, and cooperative agreements for pollution abatement, control and compliance activities. EPA requests an increase of \$29,381,000 for Abatement, Control and Compliance in 1981.

Research and Development

The 1981 budget proposed an increase of \$30,410,000 for the Research and Development appropriation. This appropriation finances EPA's research efforts through grants, contracts, and agreements with universities, industries, private commercial firms, non-profit organizations, State and local governments, and other Federal agencies, as well as through research and development at EPA's laboratories and field locations.

Scientific Activities Overseas

The Scientific Activities Overseas appropriation finances payments in foreign currencies, which the Treasury Department determines to be excess to the normal requirements of the United States, for necessary expenses of the Environmental Protection Agency. Excess foreign currencies, derived through sales of surplus agricultural commodities and other sources, support cooperative environmental pollution research and demonstration programs overseas. The 1981 budget provides \$1,000,000 for Scientific Activities Overseas.

Buildings and Facilities

EPA requests an increase of \$2,690,000 for the Buildings and Facilities appropriation which finances the construction, repair, improvement, extension, alteration, and purchase of fixed equipment of facilities owned, as well as existing facilities occupied by the Environmental Protection Agency.

U.S. Regulatory Council

The U.S. Regulatory Council appropriation finances the salaries and expenses of the U.S. Regulatory Council and its staff. The Council, established in October of 1978 at the direction of the President, is composed of the heads of those agencies within the Executive Branch that have regulatory responsibilities. Its purpose is to maintain an overview of regulatory activities within the Executive Branch and to assist the President in managing them in a coordinated way so as to limit potential adverse impacts on the economy. The budget requests an increase of \$256,000 for the U.S. Regulatory Council in 1981.

Construction Grants

The Construction Grants appropriation is for grants to local public agencies for construction of municipal wastewater treatment facilities to assist States and localities in attaining and maintaining water quality standards.

The 1981 budget requests \$3,700,000,000 for the Municipal wastewater facilities construction grants program. This request, in addition to more than \$3.0 billion available from prior year appropriations, will provide more than \$6,700,000 for obligation in 1981.

Oil and Hazardous Substances Liability Fund

The 1981 budget requests \$250,000,000 to support the first year's operation of the Administration's proposed Oil and Hazardous Substance Liability Fund legislation. The legislation consolidates existing federal authorities for notification, response, and liability for oil and hazardous substance releases into the environment and establishes a comprehensive program for combating the problems created by spills and inactive and abandoned disposal sites.

The proposed legislation establishes a four year, \$1.625 billion authorization for the fund, \$1.3 billion of which will be financed through fees levied on related segments of the oil and chemical industry. The remaining \$325,000,000 will be financed through federal appropriations. Of the \$250,000,000 proposed for the first year, \$200,000,000 will be financed through fees on industry.

II. MEDIA SUMMARY

Below the appropriation level the Environmental Protection Agency's activities are organized into eleven major media programs; air, water quality, drinking water, solid waste, pesticides, radiation, noise, interdisciplinary, toxic substances, energy, and management and support. Following is a summary of each media and the changes which the 1981 budget puts into place within the research and development, abatement and control, and enforcement functions of each.

Air

The 1981 request of \$248.5 million for the air program is a decrease of \$2.0 million from 1980. This reflects EPA's decision to focus the air program in 1981 on those areas of the country that need extensions of the air standards attainment date until 1987 and which, therefore will require approved implementation plans in 1982. The highlights of other proposed changes to the air program are as follows:

The request increases air research and development by \$3,347,300 to \$70,167,400 in 1981. The request includes an increase of \$2.4 million for research on the health effects of both criteria and noncriteria pollutants and expands the quality assurance program for ambient air quality monitoring.

The request decreases air abatement and control activities by \$3,818,000 to \$147,020,100. In 1980 the program received \$9.1 million to support nonrecurring work on new source performance emission standards for major stationary sources. Discounting this one-time investment, resources for the air abatement and control program's continuing operations increase by \$5.3 million.

EPA requests an increase of \$600,000 for mobile source in use compliance. EPA is concerned about the potential for widespread deterioration of automotive pollution control equipment due to tampering and the use of unleaded fuel, and will place major emphasis on enforcing and anti-fuel switching and anti-tampering provisions of the Clean Air Act.

The budget requests an increase of \$4.9 million in financial support to state and local control agencies, \$2 million of which will support expanded state enforcement against fuel switching. The remainder will assist states in meeting the Clean Air Act's requirements. The increase includes \$712,000 for additional confirmatory testing for fuel economy, reflecting the high priority of energy conservation. The budget proposes a reduction of \$443,000 for regional air management in 1981 as more States assume responsibility for the prevention of significant deterioration program.

Although the request of \$31,282,100 for air enforcement includes a decrease of \$1,549,300, EPA will continue its major source enforcement effort in 1981. This effort concentrates the Agency's stationary source enforcement program on those sources who have never come into compliance and who have not shown plans to comply with the requirements of the Clean Air Act. In addition, EPA expects to begin assessing administrative noncompliance penalties under section 120 of the Clean Air Act in FY 1981. These penalties provide a disincentive for sources to continue to pollute by requiring them to pay fines equal to the savings that they incur by their failure to install pollution control equipment.

Water Quality

The 1981 budget proposes a \$2.3 million decrease to the water quality program. The net decrease to the program masks a number of initiatives to further implementation of the 1977 Amendments.

The request of \$60,021,900 for water quality research and development is a decrease of \$5,133,900 from 1980. This reduction is made up of a decrease of \$2.6 million in the research supporting evaluation and analysis of best management practice alternatives for agricultural activities contributing to non-point source pollution and a \$1,989,300 decrease to the Great Lakes research and development program. A decrease of \$34,000 is also proposed for marine ecological effects research. This will reduce research on the impact of toxic materials on the marine environment.

The overall request for water quality abatement and control is \$241,004,000, a decrease of \$2,339,000. This decrease is primarily the result of a \$3.5 million reduction in water quality management planning/208 grants to eliminate construction related projects, and a \$1.5 million reduction in the Clean Lakes program. Increases include \$1,497,500 to improve the quality of permits for dredge and fill activities in the Nation's ecologically sensitive wetlands, and \$1,562,100 for effluent standards and guidelines to develop economic analyses and engineering surveys of synthetic fuel and industries leading to evaluation of pollution control regulatory options under consideration.

The total request for water enforcement of \$34,061,800 is an increase of \$5,185,400. An increase of \$2.9 million in contract funds is requested to support continued development and implementation of the pretreatment program which controls indirect toxic pollutant discharges to publicly owned treatment works.

An additional \$1.0 million is also proposed to process 301(h) requests for secondary treatment waivers from municipalities discharging effluents into marine waters. These waivers have the potential for saving municipalities significant amounts of money by not requiring construction of expensive secondary treatment plants.

The 1981 budget requests \$86,904,900 for the drinking water program, an increase of \$10,180,300.

Of the total increase, \$4,701,500 is proposed for drinking water research and development, bringing the program level to \$27,446,100 in 1981. This increase is to support the development of cost effective technology for small drinking water systems. These systems serve populations of less than 10,000 people and comprise as much as ninety percent (90%) of all drinking water systems. This increase will also support research on the affects of drinking water contaminants on human reproduction and early development.

The request of \$58,694,300 for drinking water abatement and control is an increase of \$5,651,500. The proposed increase contains \$4.2 million to support state underground injection control programs, and \$1.2 million to support rural water association.

The drinking water enforcement request for \$764,500 is decreased by \$172,700 from the 1980 level. This reduction reflects a small reduction in workyears and emergency response contract funds.

Solid Waste

A substantial increase of \$47,388,100 is included in the \$147,447,800 proposed for the 1981 solid waste program.

The request for solid waste research is \$26,445,800, an increase of \$12,203,300. This increase will support an intensive effort to establish techniques that will provide a sound scientific and legal basis for data required by the RCRA regulations and the uncontrolled hazardous waste site program. It will provide for remedial research and field testing of technologies available for abating pollution problems at uncontrolled waste sites, and will fund research to support RCRA regulation development for land fill, land treatment and thermal destruction. It will also support chemical, epidemiological, toxicological, and clinical tests to determine the health risks from hazardous waste sites.

The \$111,169,400 proposed for solid waste abatement and control is an increase of \$29,682,100. The budget requests \$9.6 million of this increase to support implementation of the hazardous waste (Subtitle C) section of RCRA and to oversee the 37 states expected to achieve equivalency with federal standards. Initial implementation efforts will emphasize assisting states to assume interim authorization for hazardous waste management programs. EPA and authorized states will also inaugurate a six year program to issue permits for an estimated 30,000 hazardous waste treatment, storage and disposal facilities nationwide and to implement the notification and manifest systems established to control the generation, transport, and disposal of hazardous wastes.

The increase also includes \$11.4 million for financial assistance to states for hazardous waste management. These funds will aid the states in developing and implementing hazardous waste management programs to control hazardous waste generation, transportation, treatment, storage, and disposal. The budget proposes a \$2 million reduction in financial assistance to states for solid waste management. This decrease is the second of the planned five-year phase out of Subtitle D grant funding as state programs mature. An increase of \$1.2 million is requested for the uncontrolled hazardous waste site program to respond to uncontrolled hazardous waste sites. This increase is primarily for special equipment for emergency response and investigative work by field offices.

The request of \$9,832,600 for the solid waste enforcement program is an increase of \$5.5 million. It will provide increased capability to ensure that all applicable facilities comply with standards established under RCRA. It will also allow us to regulate through permitting and enforcement actions, the transportation, treatment, storage and disposal of solid and hazardous waste, and to respond to uncontrolled sites posing an imminent and substantive danger to health and the environment.

Pesticides

The request of \$73,999,700 for pesticides programs reflects a net increase of \$5,843,500.

The overall proposal includes \$9,435,800 for pesticides research and development, a decrease of \$3,532,600. Most of the reduction, \$3,351,000 is planned in Pesticides health and ecological effects research and development programs, allowing for increased support in environmental exposure assessment and in the registration and RPAR programs. Part of this decrease is offset by applicable research performed under the toxic substances health research program.

The total request for pesticides abatement and control is \$49,343,100, an increase of \$6,290,800. A large portion of this increase, \$4 million, is requested on a one time basis to dispose of 37 tons of Silvex and 1-2 million gallons of Silvex materials in accordance with Section 15 of FIFRA.

An increase of \$2.3 million is proposed for the rebuttable presumption against registration review process. This will provide additional exposure analysis, benefit analysis, and other analysis associated with risk/benefit assessments of suspect chemicals. An increase of \$4.9 million is requested for developing and completing generic standards in 1981. This reflects a shift from in-house resources to extramural contracts. These resources will permit the completion of 20-40 standards started in 1979 and 1980 and the initiation of an additional 25-40 standards in 1981.

certification and training grants, thereby assuring continuation of the restricted use classification approach. This approach is essential to maintain high agricultural productivity while protecting applicators, farm workers, and consumers against dangerous chemicals. Responsibility for conducting these programs has shifted within EPA from the regulatory program to the enforcement program.

Radiation

The total request for radiation of \$17,782,200 includes a small increase of \$520,400. While the radiation research and development program will remain essentially at the 1980 level, an increase of \$471,300 is proposed for radiation abatement and control to fund the initiation of one additional Clean Air Act standard, and to support the Radiation Protection Council.

Noise

The 1981 request for the total noise program of \$12,927,000 continues the program at an operating level equivalent to that of 1980.

The noise program will place additional emphasis on nonauditory health effects research. Regulation development work will continue to concentrate on surface transportation and construction-type equipment. The regulation of property line standards for interstate rail carriers will be promulgated. Enforcement of new product noise standards, and informational labeling requirements applicable to new products, will continue. Sixteen states are expected to have assumed responsibility for running the Each Community Helps Others (ECHO) program.

Interdisciplinary

The 1981 budget request of \$27,240,600 provides an increase of \$899,800 for the interdisciplinary program.

The overall request for interdisciplinary research and development is \$22,844,100, an increase of \$131,300. The budget provides \$.8 million to establish a program of accelerated energy facilities review and permitting, it shifts effort from the anticipatory research program to toxic substances research but provides sufficient funds for EPA to continue some fresh water fate, marine science and cancer research activities on an extramural basis. A proposed increase of \$115,600 would authorize additional reproductive effects assessment work. The budget request for interdisciplinary abatement and control of \$4,396,500 continues EPA's preparation and review of environmental impact statements for all major federal actions having significant environmental impacts.

The total request for the toxic substances program of \$106,002,400 includes an increase of \$11,356,300.

The request for the research and development component of the toxic substances increases by \$8,946,200 to \$36,895,000. The program will focus on developing reliable, and cost effective techniques to be used for predicting transport, transformation, exposure concentration and adverse effects on human health and the environment resulting from exposure to toxic substances. With the increase, EPA will accelerate the development of research techniques for screening toxic substances. Further research will be done in predicting, measuring, and determining the significance of exposure to commercial chemicals, with the ultimate goal of preventing or reducing adverse human health effects.

The 1981 budget request for toxic substances abatement and control of \$63,915,800 includes an increase of \$1,162,300 for the regulatory development component of this program. This increase will provide for full operation of the toxic substances program, including a balanced emphasis on regulation of new and existing chemicals based upon the information base established in 1979 and 1980. EPA will continue to place high priority on full operation of the premanufacture review program at an improved level. Development of additional control actions for existing chemicals will receive high priority. Nonregulatory approaches, such as information dissemination and informal discussion, will be used when appropriate to provide protection from potential risks. There will be continued development of test rules and information requirements to obtain data to support assessment and regulation.

The overall request for toxic substances enforcement of \$5,191,600 increases by \$1,247,800 in line with the increase in the number of enforceable rules promulgated under the Act. In 1981, the toxic substances enforcement program again will have as its first priority the initiation of enforcement actions in emergencies involving substantial threats to public health, safety, or the environment. The increase also includes a \$1.0 million program of pilot cooperative enforcement grants to selected states.

Energy

The 1981 budget request for energy of \$107,598,600 provides an increase of \$6,234,200 for the program. The increase will support \$5.7 million in additional research on synthetic fuels. The Agency intends to publish guidance documents on oil shale processing, direct and indirect coal liquefaction and fluidized bed combustion for use by industry and permitting officials until appropriate standards are promulgated.

and economic data from commercial spray dryer sulfur dioxide control systems and to demonstrate the effectiveness of adipic acid as an additive to increase limestone flue gas desulfurization reliability. The request includes an increase of \$1.2 million to fund a new program of exposure monitoring to correlate fixed station monitoring data and actual human exposure to energy-related pollutants.

These increases are offset by proposed reductions of \$1 million in the nitrogen oxide control program which will eliminate funding for several demonstration projects, and \$1.5 million in the environmental assessment program which reflects an Agency decision to eliminate some biological and chemical testing from environmental assessments, and to reduce air modelling work related to coal combustion and coal supply.

Management and Support

The total 1981 request of \$223,518,000 for management and support includes an increase of \$25,603,000.

A major portion of the increase, \$10.3 million, is requested to strengthen the Agency's information management with support services for a major ADP procurement under A-109 to meet the Agency's systems needs over the next ten years. In addition, an increase of \$6.4 million in support services is requested for the increased costs of utilities, rent, and government purchased goods and services. An increase of \$2.7 million is proposed for buildings and facilities to cover the costs of safety repairs and pollution controls to federally owned installations. In FY 1981, work will start on 37 separate projects at 18 locations.

The request includes an increase of \$588,900 for management activities in the Agency's regional offices, reflecting a greater emphasis, on analytic capabilities to plan integrated environmental programs, to prepare and review economic and energy analyses, and to coordinate regional involvement in agency regulatory and management reform.

An increase of \$3,839,000 is proposed for headquarters analytic activities for benefits analyses of EPA regulations, for alternative fuels promotion, and to help regional offices accelerate their processes for the awarding of permits to energy facilities.

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Research and Development</u>			
Budget Authority.....	\$264,983	\$264,983	...
Obligations.....	263,000	263,000	...
Outlays.....	255,000	255,000	...
Permanent Workyears.....	...	...	...
Full-time Equivalency.....	...	...	...
<u>Abatement, Control and Compliance</u>			
Budget Authority.....	555,338	555,338	...
Obligations.....	542,931	542,931	...
Outlays.....	406,740	406,740	...
Permanent Workyears.....	...	...	...
Full-time Equivalency.....	72	72	...
<u>Salaries and Expenses</u>			
Budget Authority.....	562,545	555,545	-\$7,000
Obligations.....	562,542	555,545	-7,000
Outlays.....	529,000	522,000	-7,000
Permanent Workyears.....	11,162	11,162	...
Full-time Equivalency.....	13,659	13,659	...
<u>Buildings and Facilities</u>			
Budget Authority.....	4,115	4,115	...
Obligations.....	3,000	3,000	...
Outlays.....	2,500	2,500	...
<u>Construction Grants</u>			
Budget Authority.....	3,700,000	3,700,000	...
Obligations.....	4,500,000	4,500,000	...
Outlays.....	3,950,000	3,855,000*	-95,000
<u>Scientific Activities Overseas</u>			
Budget Authority.....	1,000	1,000	...
Obligations.....	1,200	1,200	...
Outlays.....	3,000	3,000	...
<u>Operations, Research and Facilities</u>			
Obligations.....	800	800	...
Outlays.....	3,200	3,200	...
Permanent Workyears.....	...	...	...
Full-time Equivalency.....	...	...	...

* Does not include reestimate of outlays made since the budget submission.



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Revolving Fund</u>			
Obligations.....	580	580	...
Outlays.....	50	50	...
Permanent Workyears.....	...	...	...
Full-time Equivalency.....	...	...	...
<u>Regulatory Council</u>			
Budget Authority.....	3,338	3,338	...
Obligations.....	3,338	3,338	...
Outlays.....	2,800	2,800	...
Permanent Workyears.....	11	11	...
Full-time Equivalency.....	26	26	...
<u>Trust Funds</u>			
Budget Authority.....	...	...	...
Obligations.....	25	25	...
Outlays.....	20	20	...
<u>Reimbursements</u>			
Obligations.....	...	...	...
Permanent Workyears.....	64	64	...
Full-time Equivalency.....	73	73	...
<u>Consolidated Working Fund</u>			
Obligations.....	...	...	...
Outlays.....	10	10	...
<u>Oil and Hazardous Liability Fund</u>			
Budget Authority.....	250,000	250,000	...
Obligations.....	250,000	250,000	...
Outlays.....	45,000	45,000	...
<u>Total, Environmental Protection Agency</u>			
Budget Authority.....	5,341,317	5,334,317	-7,000
Obligations.....	6,127,416	6,120,416	-7,000
Outlays.....	5,197,320	5,095,320	-102,000
Permanent Workyears.....	11,237	11,237	...
Full-time Equivalency.....	13,830	13,830	...



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Revolving Fund</u>			
Obligations.....	580	580	...
Outlays.....	50	50	...
Permanent Workyears.....	...	...	...
Full-time Equivalency.....	...	...	...
<u>Regulatory Council</u>			
Budget Authority.....	3,338	3,338	...
Obligations.....	3,338	3,338	...
Outlays.....	2,800	2,800	...
Permanent Workyears.....	11	11	...
Full-time Equivalency.....	26	26	...
<u>Trust Funds</u>			
Budget Authority.....	...	...	...
Obligations.....	25	25	...
Outlays.....	20	20	...
<u>Reimbursements</u>			
Obligations.....	...	...	...
Permanent Workyears.....	64	64	...
Full-time Equivalency.....	73	73	...
<u>Consolidated Working Fund</u>			
Obligations.....	...	...	...
Outlays.....	10	10	...
<u>Oil and Hazardous Liability Fund</u>			
Budget Authority.....	250,000	250,000	...
Obligations.....	250,000	250,000	...
Outlays.....	45,000	45,000	...
<u>Total, Environmental Protection Agency</u>			
Budget Authority.....	5,341,319	5,334,319	-7,000
Obligations.....	6,127,416	6,120,416	-7,000
Outlays.....	5,197,320	5,095,320	-102,000
Permanent Workyears.....	11,237	11,237	...
Full-time Equivalency.....	13,830	13,830	...



(dollars in thousands)

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Air</u>			
Budget Authority.....	\$248,470	\$248,082	-\$388
Obligations.....	248,470	248,082	-388
Outlays.....	211,500	211,112	-388
Permanent Workyears.....	1,888	1,888	...
Full-time Equivalency.....	2,246	2,246	...
<u>Water Quality</u>			
Budget Authority.....	335,088	334,445	-643
Obligations.....	328,084	327,441	-643
Outlays.....	285,300	284,657	-643
Permanent Workyears.....	3,032	3,032	...
Full-time Equivalency.....	3,676	3,676	...
<u>Drinking Water</u>			
Budget Authority.....	86,905	86,789	-116
Obligations.....	85,830	85,714	-116
Outlays.....	74,000	73,884	-116
Permanent Workyears.....	537	537	...
Full-time Equivalency.....	637	637	...
<u>Solid Waste</u>			
Budget Authority.....	147,448	147,272	-176
Obligations.....	145,000	144,824	-176
Outlays.....	125,500	125,324	-176
Permanent Workyears.....	774	774	...
Full-time Equivalency.....	978	978	...
<u>Pesticides</u>			
Budget Authority.....	74,000	73,811	-189
Obligations.....	73,156	72,967	-189
Outlays.....	63,000	62,811	-189
Permanent Workyears.....	914	914	...
Full-time Equivalency.....	1,034	1,034	...
<u>Radiation</u>			
Budget Authority.....	17,782	17,734	-48
Obligations.....	17,562	17,514	-48
Outlays.....	15,100	15,052	-48
Permanent Workyears.....	216	216	...
Full-time Equivalency.....	248	248	...
<u>Noise</u>			
Budget Authority.....	12,927	12,900	-27
Obligations.....	12,767	12,740	-27



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Air</u>			
Budget Authority.....	\$248,470	\$248,082	-\$388
Obligations.....	248,470	248,082	-388
Outlays.....	211,500	211,112	-388
Permanent Workyears.....	1,888	1,888	...
Full-time Equivalency.....	2,246	2,246	...
<u>Water Quality</u>			
Budget Authority.....	335,088	334,445	-643
Obligations.....	328,084	327,441	-643
Outlays.....	285,300	284,657	-643
Permanent Workyears.....	3,032	3,032	...
Full-time Equivalency.....	3,676	3,676	...
<u>Drinking Water</u>			
Budget Authority.....	86,905	86,789	-116
Obligations.....	85,830	85,714	-116
Outlays.....	74,000	73,884	-116
Permanent Workyears.....	537	537	...
Full-time Equivalency.....	637	637	...
<u>Solid Waste</u>			
Budget Authority.....	147,448	147,272	-176
Obligations.....	145,000	144,824	-176
Outlays.....	125,500	125,324	-176
Permanent Workyears.....	774	774	...
Full-time Equivalency.....	978	978	...
<u>Pesticides</u>			
Budget Authority.....	74,000	73,811	-189
Obligations.....	73,156	72,967	-189
Outlays.....	63,000	62,811	-189
Permanent Workyears.....	914	914	...
Full-time Equivalency.....	1,034	1,034	...
<u>Radiation</u>			
Budget Authority.....	17,782	17,734	-48
Obligations.....	17,562	17,514	-48
Outlays.....	15,100	15,052	-48
Permanent Workyears.....	216	216	...
Full-time Equivalency.....	248	248	...
<u>Noise</u>			
Budget Authority.....	12,927	12,900	-27
Obligations.....	12,767	12,740	-27



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Interdisciplinary</u>			
Budget Authority.....	27,240	27,177	-63
Obligations.....	27,241	27,178	-63
Outlays.....	23,200	23,137	-63
Permanent Workyears.....	250	250	...
Full-time Equivalency.....	353	353	...
<u>Toxic Substances</u>			
Budget Authority.....	106,002	105,838	-164
Obligations.....	104,691	104,527	-164
Outlays.....	90,200	90,036	-164
Permanent Workyears.....	744	744	...
Full-time Equivalency.....	853	853	...
<u>Energy</u>			
Budget Authority.....	107,598	107,554	-44
Obligations.....	106,268	106,224	-44
Outlays.....	105,000	104,976	-44
Permanent Workyears.....	149	149	...
Full-time Equivalency.....	250	250	...
<u>Management and Support</u>			
Budget Authority.....	219,404	214,262	-5,142
Obligations.....	219,404	214,262	-5,142
Outlays.....	185,940	181,798	-5,142
Permanent Workyears.....	2,559	2,559	...
Full-time Equivalency.....	3,302	3,302	...
<u>Facilities</u>			
Budget Authority.....	4,115	4,115	...
Obligations.....	3,000	3,000	...
Outlays.....	2,500	2,500	...
<u>Operations, Research and Facilities</u>			
Obligations.....	800	800	...
Outlays.....	3,200	3,200	...
Permanent Workyears.....	...	...	...
Full-time Equivalency.....	...	...	...
<u>Construction Grants</u>			
Budget Authority.....	3,700,000	3,700,000	...
Obligations.....	4,500,000	4,500,000	...
Outlays.....	3,950,000	3,855,000	-95,000



	<u>Original Estimate 1981</u>	<u>Revised Estimate 1981</u>	<u>President's Reduction</u>
<u>Interdisciplinary</u>			
Budget Authority.....	27,241	27,178	-63
Obligations.....	27,241	27,178	-63
Outlays.....	23,200	23,137	-63
Permanent Workyears.....	250	250	...
Full-time Equivalency.....	353	353	...
<u>Toxic Substances</u>			
Budget Authority.....	106,002	105,838	-164
Obligations.....	104,691	104,527	-164
Outlays.....	90,200	90,036	-164
Permanent Workyears.....	744	744	...
Full-time Equivalency.....	853	853	...
<u>Energy</u>			
Budget Authority.....	107,599	107,555	-44
Obligations.....	106,268	106,224	-44
Outlays.....	105,000	104,976	-44
Permanent Workyears.....	149	149	...
Full-time Equivalency.....	250	250	...
<u>Management and Support</u>			
Budget Authority.....	219,404	214,262	-5,142
Obligations.....	219,404	214,262	-5,142
Outlays.....	186,940	181,798	-5,142
Permanent Workyears.....	2,559	2,559	...
Full-time Equivalency.....	3,302	3,302	...
<u>Facilities</u>			
Budget Authority.....	4,115	4,115	...
Obligations.....	3,000	3,000	...
Outlays.....	2,500	2,500	...
<u>Operations, Research and Facilities</u>			
Obligations.....	800	800	...
Outlays.....	3,200	3,200	...
Permanent Workyears.....	...	...	...
Full-time Equivalency.....	...	...	...
<u>Construction Grants</u>			
Budget Authority.....	3,700,000	3,700,000	...
Obligations.....	4,500,000	4,500,000	...
Outlays.....	3,950,000	3,855,000	-95,000



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Scientific Activities Overseas</u>			
Budget Authority.....	1,000	1,000	...
Obligations.....	1,200	1,200	...
Outlays.....	3,000	3,000	...
<u>Revolving Fund</u>			
Obligations.....	580	580	...
Outlays.....	50	50	...
<u>Trust Funds</u>			
Obligations.....	25	25	...
Outlays.....	20	20	...
<u>Reimbursements</u>			
Obligations.....	...	...	...
Permanent Workyears.....	64	64	...
Full-time Equivalency.....	73	73	...
<u>Regulatory Council</u>			
Budget Authority.....	3,338	3,338	...
Obligations.....	3,338	3,338	...
Outlays.....	2,800	2,800	...
Permanent Workyears.....	11	11	...
Full-time Equivalency.....	26	26	...
<u>Consolidated Working Fund</u>			
Obligations.....	...	...	...
Outlays.....	10	10	...
<u>Oil and Hazardous Liability Fund</u>			
Budget Authority.....	250,000	250,000	...
Obligations.....	250,000	250,000	...
Outlays.....	45,000	45,000	...
<u>Total, Environmental Protection Agency</u>			
Budget Authority.....	5,341,317	5,334,317	-7,000
Obligations.....	6,127,416	6,120,416	-7,000
Outlays.....	5,197,320	5,095,320	-102,000
Permanent Workyears.....	11,237	11,237	...
Full-time Equivalency.....	13,830	13,830	...



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Scientific Activities Overseas</u>			
Budget Authority.....	1,000	1,000	...
Obligations.....	1,200	1,200	...
Outlays.....	3,000	3,000	...
<u>Revolving Fund</u>			
Obligations.....	580	580	...
Outlays.....	50	50	...
<u>Trust Funds</u>			
Obligations.....	25	25	...
Outlays.....	20	20	...
<u>Reimbursements</u>			
Obligations.....	...	...	...
Permanent Workyears.....	64	64	...
Full-time Equivalency.....	73	73	...
<u>Regulatory Council</u>			
Budget Authority.....	3,338	3,338	...
Obligations.....	3,338	3,338	...
Outlays.....	2,800	2,800	...
Permanent Workyears.....	11	11	...
Full-time Equivalency.....	26	26	...
<u>Consolidated Working Fund</u>			
Obligations.....	...	...	...
Outlays.....	10	10	...
<u>Oil and Hazardous Liability Fund</u>			
Budget Authority.....	250,000	250,000	...
Obligations.....	250,000	250,000	...
Outlays.....	45,000	45,000	...
<u>Total, Environmental Protection Agency</u>			
Budget Authority.....	5,341,319	5,334,319	-7,000
Obligations.....	6,127,416	6,120,416	-7,000
Outlays.....	5,197,320	5,095,320	-102,000
Permanent Workyears.....	11,237	11,237	...
Full-time Equivalency.....	13,830	13,830	...



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Research and Development</u>			
Budget authority.....	\$264,984	\$264,984	...
Permanent workyears.....	...	...	...
Full-time equivalency.....	...	...	...
<u>Abatement, Control and Compliance</u>			
Budget authority.....	555,338	555,338	...
Permanent workyears.....	...	...	...
Full-time equivalency.....	72	72	...
<u>Salaries and Expenses</u>			
Budget authority.....	562,542	555,542	-\$ 7,000
Permanent workyears.....	11,162	11,162	...
Full-time equivalency.....	13,660	13,660	...
<u>Building and Facilities</u>			
Budget authority.....	4,115	4,115	...
<u>Scientific Activities Overseas</u>			
Budget authority.....	1,000	1,000	...
<u>Reimbursements</u>			
Permanent workyears.....	64	64	...
Full-time equivalency.....	72	72	...
<u>U.S. Regulatory Council</u>			
Budget authority.....	3,338	3,338	...
Permanent workyears.....	11	11	...
Full-time equivalency.....	26	26	...
<u>Subtotal</u>			
Budget authority.....	1,391,317	1,391,317	...
Permanent workyears.....	11,237	11,237	...
Full-time equivalency.....	13,830	13,830	...
<u>Construction Grants</u>			
Budget authority.....	3,700,000	3,700,000	...
<u>Oil and Hazardous Liability Fund</u>			
Budget authority.....	250,000	250,000	...
<u>Total, Environmental Protection Agency</u>			
Budget authority.....	5,341,317	5,334,317	-7,000
Permanent workyears.....	11,237	11,237	...
Full-time equivalency.....	13,830	13,830	...



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>Research and Development</u>			
Budget authority.....	\$264,984	\$264,984	...
Permanent workyears.....	...	...	...
Full-time equivalency.....	...	...	...
<u>Abatement, Control and Compliance</u>			
Budget authority.....	555,338	555,338	...
Permanent workyears.....	...	...	...
Full-time equivalency.....	72	72	...
<u>Salaries and Expenses</u>			
Budget authority.....	562,545	555,545	-\$ 7,000
Permanent workyears.....	11,162	11,162	...
Full-time equivalency.....	13,660	13,660	...
<u>Building and Facilities</u>			
Budget authority.....	4,115	4,115	...
<u>Scientific Activities Overseas</u>			
Budget authority.....	1,000	1,000	...
<u>Reimbursements</u>			
Permanent workyears.....	64	64	...
Full-time equivalency.....	72	72	...
<u>U.S. Regulatory Council</u>			
Budget authority.....	3,338	3,338	...
Permanent workyears.....	11	11	...
Full-time equivalency.....	26	26	...
<u>Subtotal</u>			
Budget authority.....	1,391,317	1,391,317	...
Permanent workyears.....	11,237	11,237	...
Full-time equivalency.....	13,830	13,830	...
<u>Construction Grants</u>			
Budget authority.....	3,700,000	3,700,000	...
<u>Oil and Hazardous Liability Fund</u>			
Budget authority.....	250,000	250,000	...
<u>Total, Environmental Protection Agency</u>			
Budget authority.....	5,341,319	5,334,319	-7,000
Permanent workyears.....	11,237	11,237	...
Full-time equivalency.....	13,830	13,830	...



By Media
(dollars in thousands)

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981
<u>Air</u>				
Budget authority.....	\$268,272	\$255,810	\$250,490	\$248,470
Obligations.....	243,362	280,809	290,095	248,470
Outlays.....	228,855	232,100	209,600	211,500
Permanent Workyears.....	1,844	1,968	1,974	1,888
Full-time equivalency.....	2,154	2,347	2,360	2,246
<u>Water Quality</u>				
Budget authority.....	332,280	331,451	337,435	335,088
Obligations.....	387,170	335,961	325,850	328,084
Outlays.....	283,462	284,800	282,400	285,300
Permanent Workyears.....	3,101	3,173	3,088	3,032
Full-time equivalency.....	3,592	3,790	3,747	3,676
<u>Drinking Water</u>				
Budget authority.....	70,307	82,319	76,725	86,905
Obligations.....	67,687	82,051	79,054	85,830
Outlays.....	59,977	66,450	64,200	74,000
Permanent Workyears.....	440	505	518	537
Full-time equivalency.....	527	599	610	637
<u>Solid Waste</u>				
Budget authority.....	73,878	92,289	100,060	147,448
Obligations.....	62,520	70,792	103,882	145,000
Outlays.....	63,024	57,600	83,700	125,500
Permanent Workyears.....	272	396	404	774
Full-time equivalency.....	339	483	496	978
<u>Pesticides</u>				
Budget authority.....	68,234	62,250	68,156	74,000
Obligations.....	70,239	64,469	67,255	73,156
Outlays.....	58,210	58,600	57,000	63,000
Permanent Workyears.....	936	979	985	914
Full-time equivalency.....	1,044	1,116	1,128	1,034
<u>Radiation</u>				
Budget authority.....	10,068	17,201	17,262	17,782
Obligations.....	9,456	16,330	17,780	17,562
Outlays.....	8,589	13,000	14,400	15,100
Permanent Workyears.....	201	210	216	216
Full-time equivalency.....	216	253	252	248
<u>Noise</u>				
Budget authority.....	10,893	12,953	13,075	12,927
Obligations.....	10,768	12,913	13,283	12,767

Interdisciplinary

Budget authority.....	23,591	53,102	26,341	27,240
Obligations.....	25,244	53,006	26,601	27,241
Outlays.....	20,124	44,200	22,000	23,200
Permanent Workyears.....	219	266	260	250
Full-time equivalency.....	280	383	365	353

Toxic Substances

Budget authority.....	55,420	103,316	94,646	106,002
Obligations.....	61,531	105,951	93,398	104,691
Outlays.....	47,278	70,400	79,200	90,200
Permanent Workyears.....	377	649	659	744
Full-time equivalency.....	474	767	764	853

Energy

Budget authority.....	112,829	102,461	101,364	107,598
Obligations.....	112,588	102,537	101,423	106,268
Outlays.....	107,000	125,000	104,000	105,000
Permanent Workyears.....	167	137	154	149
Full-time equivalency.....	271	265	259	250

Management and Support

Budget authority.....	173,101	187,423	196,490	219,404
Obligations.....	183,450	187,406	197,315	219,404
Outlays.....	147,637	178,210	145,639	186,940
Permanent Workyears.....	2,440	2,557	2,577	2,550
Full-time equivalency.....	2,980	3,328	3,332	3,303

Facilities

Budget authority.....	1,172	1,425	1,425	4,115
Obligations.....	1,880	1,425	1,794	3,000
Outlays.....	2,357	2,000	2,000	2,500

Operations, Research andFacilities

Obligations.....	3,742	...	1,414	800
Outlays.....	6,156	5,000	5,000	3,200
Permanent Workyears.....	...	...	...	...
Full-time equivalency.....	...	...	...	...

Construction Grants

Budget authority.....	4,200,000	3,800,000	3,400,000	3,700,000
Obligations.....	4,256,558	3,600,000	4,800,000	4,500,000
Outlays.....	3,756,079	3,600,000	3,900,000	3,950,000

Scientific Activities Overseas

Budget authority.....	2,500	4,000	...	1,000
Obligations.....	2,719	4,000	3,204	1,200
Outlays.....	2,260	3,600	1,800	3,000

Revolving Fund

Obligations.....	580	580	580	580
Outlays.....	39	...	40	...

	<u>1977</u>	<u>1988</u>	<u>1989</u>	<u>1991</u>
<u>Trust Funds</u>				
Obligations.....	21	30	25	25
Outlays.....	36	80	20	20
<u>Reimbursements</u>				
Obligations.....	...	...	...	...
Permanent Workyears.....	91	62	64	64
Full-time equivalency.....	101	62	73	73
<u>Regulatory Council</u>				
Budget authority.....	...	3,238	3,082	3,338
Obligations.....	...	3,238	3,082	3,338
Outlays.....	...	2,600	2,400	2,800
Permanent Workyears.....	...	10	11	11
Full-time equivalency.....	...	16	26	26
<u>Consolidated Working Fund</u>				
Obligations.....	...	...	10	10
Outlays.....	...	...	10	10
<u>Oil and Hazardous Liability Fund</u>				
Budget authority.....	...	...	...	250,000
Obligations.....	...	...	...	250,000
Outlays.....	...	...	...	45,000
<u>Total, Environmental Protection</u>				
<u>Agency</u>				
Budget authority.....	5,402,545	5,109,238	4,686,551	5,341,317
Obligations.....	5,499,515	4,921,498	6,126,035	6,127,416
Outlays.....	4,800,436	4,753,960	4,984,309	5,197,320
Permanent Workyears.....	10,178	11,015	11,015	11,237
Full-time equivalency.....	<u>12,107</u>	13,587	13,587	13,830

(dollars in thousands)

	Current Estimate <u>1980</u>	Estimate <u>1981</u>	Increase + Decrease -
<u>Research and Development</u>			
Budget authority.....	\$234,574	\$264,984	+\$30,410
Permanent workyears.....	...	...	...
Full-time equivalency.....	...	...	...
<u>Abatement, Control and Compliance</u>			
Budget authority.....	525,957	555,338	+29,381
Permanent workyears.....	...	...	...
Full-time equivalency.....	72	72	...
<u>Salaries and Expenses</u>			
Budget authority.....	521,513	562,542	+41,029
Permanent workyears.....	10,940	11,162	+222
Full-time equivalency.....	13,416	13,660	+244
<u>Buildings and Facilities</u>			
Budget authority.....	1,425	4,115	+2,690
<u>Scientific Activities Overseas</u>			
Budget authority.....	...	1,000	+1,000
<u>Reimbursements</u>			
Permanent workyears.....	64	64	...
Full-time equivalency.....	73	72	-1
<u>U.S. Regulatory Council</u>			
Budget authority.....	3,082	3,338	+256
Permanent workyears.....	11	11	...
Full-time equivalency.....	26	26	...
<u>Subtotal</u>			
Budget authority.....	1,286,551	1,391,317	+104,766
Permanent workyears.....	11,015	11,237	+222
Full-time equivalency.....	13,587	13,830	+243
<u>Construction Grants</u>			
Budget authority.....	3,400,000	3,700,000	+300,000
<u>Oil and Hazardous Liability Fund</u>			
Budget authority.....	...	250,000	+250,000
<u>Total, Environmental Protection Agency</u>			
Budget authority.....	4,686,551	5,341,317	+654,766
Permanent workyears.....	11,015	11,237	+222
Full-time equivalency.....	13,587	13,830	+243

(in thousands of dollars)

	<u>1979</u>	<u>1980</u>	<u>1981</u>
Construction Grants.....	\$1,400,000	\$1,500,000	\$1,700,000

Air

	1981	1981	Reduction
(dollars in thousands)			
<u>Appropriation</u>			
Salaries and Expenses.....	\$75,816	\$75,428	-\$388
Research and Development.....	44,109	44,109	...
Abatement, Control and Compliance....	128,545	128,545	...
Total.....	248,470	248,082	-388
<u>Program Highlights</u>			
Health and Ecological Effects:			
Salaries and Expenses.....	15,490	15,433	-57
Research and Development.....	29,753	29,753	...
Industrial Processes:			
Salaries and Expenses.....	1,069	1,064	-5
Research and Development.....	3,030	3,030	...
Monitoring and Technical Support:			
Salaries and Expenses.....	9,500	9,464	-36
Research and Development.....	11,325	11,325	...
Total, Research and Development Program:			
Salaries and Expenses.....	26,059	25,961	-98
Research and Development.....	44,108	44,108	...
Total.....	70,167	70,069	-98
Air Quality and Stationary Source Planning and Standards:			
Salaries and Expenses.....	8,698	8,646	-52
Abatement, Control and Compliance..	20,218	20,218	...
Mobile Source Standards and Guidelines			
Salaries and Expenses.....	6,820	6,787	-33
Abatement, Control and Compliance..	4,578	4,578	...
State Programs Resource Assistance:			
Salaries and Expenses.....	419	417	-2
Abatement, Control and Compliance..	88,334	88,334	...
Air Quality Strategies Implementation:			
Salaries and Expenses.....	8,655	8,599	-56
Abatement, Control and Compliance..	221	221	...
Mobile Source Preproduction Compliance Verification:			
Salaries and Expenses.....	3,662	3,643	-19
Abatement, Control and Compliance..	922	922	...



Trends Monitoring and Progress

Assessment:

Salaries and Expenses.....
Abatement, Control and Compliance...

1981 1981 Reduction
(dollars in thousands)

3,883 3,861 -22
610 610 ...

Total, Abatement and Control Program:

Salaries and Expenses.....
Abatement, Control and Compliance...

32,137 31,953 -184
114,883 114,883 ...

Total.....

147,020 146,836 -184

Stationary Source Enforcement:

Salaries and Expenses.....
Abatement, Control and Compliance...

13,736 13,652 -84
10,697 10,697 ...

Mobile Source Enforcement:

Salaries and Expenses.....
Abatement, Control and Compliance...

3,883 3,861 -22
2,967 2,967 ...

Total, Enforcement Program:

Salaries and Expenses.....
Abatement, Control and Compliance...

17,619 17,513 -106
13,664 13,664 ...

Total.....

31,283 31,177 -106



AIR

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>	<u>Page</u>
	(dollars in thousands)					
<u>Appropriation</u>						
Salaries and Expenses...	\$64,996	\$72,417	\$77,186	\$75,816	-\$1,370	
Research and Development.....	33,506	46,270	39,529	44,109	+4,580	
Abatement, Control and Compliance.....	144,860	137,123	133,775	128,545	-5,230	
Total.....	243,362	255,810	250,490	248,470	-2,020	
Permanent Workyears....	1,844	1,968	1,974	1,888	-86	
Full-time Equivalency..	2,154	2,347	2,360	2,246	-114	
Outlays.....	228,855	232,100	209,600	211,500	+1,900	
Authorization Levels...	351,197	236,500	236,500	200,000		

Program HighlightsHealth and Ecological
Effects:

Salaries and Expenses.....	9,926	14,521	16,755	15,490	-1,265	A-15
Research and Development.....	19,737	32,103	25,388	29,753	+4,365	

Industrial Processes:

Salaries and Expenses.....	1,128	1,150	1,133	1,069	-64	A-31
Research and Development.....	2,860	2,900	2,934	3,030	+96	

Monitoring and
Technical Support:

Salaries and Expenses.....	7,443	10,022	9,403	9,501	+98	A-36
Research and Development.....	10,910	11,267	11,207	11,324	+117	

Total, Research and
Development Program:

Salaries and Expenses.....	18,497	25,693	27,693	27,291	-1,231	
Research and Development.....	33,507	46,270	39,529	44,107	+4,578	

Total.....	52,004	71,963	66,820	70,167	+3,347	
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	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
(dollars in thousands)						
Air Quality and Sta- tionary Source Planning and Standards:						A-46
Salaries and Expenses.....	\$7,986	\$6,675	\$8,726	\$8,698	-\$28	
Abatement, Control and Compliance.....	14,920	30,800	28,666	20,218	-8,448	
Mobile Source Standards and Guidelines:						A-54
Salaries and Expenses.....	6,173	8,880	6,924	6,820	-104	
Abatement, Control and Compliance.....	8,678	2,280	4,480	4,578	+98	
State Programs Resource Assistance:						A-61
Salaries and Expenses.....	315	350	399	419	+20	
Abatement, Control and Compliance.....	105,110	86,311	83,948	88,334	+4,386	
Air Quality Strategies Implementation:						A-67
Salaries and Expenses.....	8,564	8,710	9,066	8,655	-411	
Abatement, Control and Compliance.....	333	...	253	221	-32	
Mobile Source Preproduction Compliance Verification:						A-70
Salaries and Expenses.....	4,110	2,430	2,950	3,662	+712	
Abatement, Control and Compliance.....	2,183	1,300	922	922	...	
Trends Monitoring and Progress Assessment:						A-74
Salaries and Expenses.....	3,858	3,589	4,122	3,883	-239	
Abatement, Control and Compliance.....	769	641	382	610	+228	
Total, Abatement and Control Program:						
Salaries and Expenses.....	31,006	30,634	32,187	32,137	-50	
Abatement, Control and Compliance.....	131,993	121,332	118,651	114,883	-3,768	
Total.....	162,999	151,966	150,838	147,020	-3,818	

	Actual 1979	Estimate 1980	Estimate 1980	Estimate 1981	Decrease - 1981 vs. 1980	Page
(dollars in thousands)						
Stationary Source						
Enforcement:						A-79
Salaries and						
Expenses.....	\$11,982	\$12,595	\$13,776	\$13,736	-\$40	
Abatement, Control						
and Compliance.....	10,535	12,435	12,181	10,697	-1,484	
Mobile Source						
Enforcement:						A-84
Salaries and						
Expenses.....	3,510	3,496	3,931	3,883	-48	
Abatement, Control						
and Compliance.....	2,332	3,355	2,943	2,967	+24	
Total, Enforcement						
Program:						
Salaries and						
Expenses.....	15,492	16,091	17,707	17,619	-88	
Abatement, Control						
and Compliance.....	12,867	15,790	15,124	13,664	-1,460	
Total.....	28,359	31,881	32,831	31,283	-1,548	
Permanent Positions						
Health and Ecological						
Effects.....	220	262	252	235	-17	A-15
Industrial Processes...	22	18	18	18	...	A-31
Monitoring and Technical						
Support.....	149	160	161	155	-6	A-36
Total, Research and						
Development						
Program.....	391	440	431	408	-23	
Air Quality and Sta-						
tionary Source Planning						
and Standards.....	243	252	255	244	-11	A-46
Mobile Source Standards						
and Guidelines.....	166	162	166	152	-14	A-54
State Programs Resource						
Assistance.....	5	6	6	6	...	A-61
Air Quality Strategies						
Implementation.....	314	324	317	288	-29	A-67
Mobile Source Pre-						
production Compliance						
Verification.....	57	71	72	84	+12	A-70
Trends Monitoring and						
Progress Assessment...	115	128	122	116	-6	A-74
Total, Abatement and						
Control Program.....	900	943	938	890	-48	

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Decreases - Increases + 1981 vs. 1980	Page
	(dollars in thousands)					
Stationary Source Enforcement.....	406	502	479	471	-8	A-79
Mobile Source Enforcement.....	117	138	126	118	-8	A-84
Total, Enforcement Program.....	523	640	605	589	-16	
<u>Full-time Equivalency</u>						
Health and Ecological Effects.....	280	319	322	300	-22	A-15
Industrial Processes...	40	31	31	31	...	A-31
Monitoring and Technical Support.....	171	186	186	179	-7	A-36
Total, Research and Development Program...	491	536	539	510	-29	
Air Quality and Sta- tionary Source Planning and Standards.....	277	280	279	266	-13	A-54
Mobile Source Standards and Guidelines.....	190	201	213	190	-23	A-54
State Programs Resource Assistance.....	43	72	73	73	...	A-61
Air Quality Management Implementation.....	340	357	344	313	-31	A-67
Mobile Source Pre- production Compliance Verification.....	94	87	102	107	+5	A-70
Trends Monitoring and Progress Assessment...	137	139	132	128	-4	A-74
Total, Abatement and Control Program.....	1,081	1,136	1,143	1,077	-66	
Stationary Source Enforcement.....	439	517	522	507	-15	A-79
Mobile Source Enforcement.....	143	158	157	152	-5	A-84
Total, Enforcement Program.....	582	675	679	659	-20	

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 at its source rests with State and local government, with a strong mandate that the Environmental Protection Agency (EPA) take action where States do not fulfill their responsibilities. EPA's role is to conduct research and development programs, ensure that adequate standards and regulations are established to meet environmental goals set by the Act, support State and local control activities, and ensure that the standards and regulations are effectively enforced.

The environmental goals are generally those prescribed by National Ambient Air Quality Standards (NAAQS). 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.). The health and other effects of pollutants are delineated in criteria documents which are the basis for the standards. National Ambient Air Quality Standards (NAAQS) have been set for total suspended particulate, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, hydrocarbons, and lead.

Controlling emissions to meet NAAQS is handled through two major types of activities: (1) State Implementation Plans (SIP) which control pollution within each State primarily by prescribing specific emission limitations or control actions for types of polluters, and (2) national emission standards prescribed for new motor vehicles and selected new stationary sources.

In addition to the NAAQS discussed above, nationally applicable emission levels are prescribed for other pollutants deemed especially hazardous, and apply to both new and existing pollutant sources. National Emission Standards for Hazardous Air Pollutants (NESHAPS) have been established for asbestos, beryllium, mercury and vinyl chloride from a variety of sources. Benzene and radionuclides have been listed as hazardous air pollutants and emission control regulations are under development. Activities and resources for radionuclides are covered under the radiation portion of the Agency's budget.

Air program activities have been directed primarily at the attainment of the primary NAAQS. Although the combined Federal-State-local effort at controlling air pollution has achieved a notable degree of success in improving ambient air quality across the Nation, the standards have not been attained in many areas. The Clean Air Act, as amended in 1977, recognizes this problem and sets forth a comprehensive program for achieving the standards for such areas.

In general, the Act requires that the standards be attained by the end of calendar year 1982. However, in recognition of the unusual problems some areas will have in attaining the standards for ozone and carbon monoxide, attainment of these standards is to be as expeditious as possible, but in no case later than 1987. Such areas are to submit additional plans in 1982. Under the terms of the Act, failure to submit adequate SIP's to attain the NAAQS by 1982 or 1987 can result in the prohibitions on construction of new or modified major sources and the withholding of certain Federal funds.

The 1977 Amendments require New Source Performance Standards (NSPS) for all major stationary sources to be set on a specified schedule, more stringent emission standards to be set for new motor vehicles and engines, and assessments to be carried out related to other standard setting. In addition, a statutory basis is established for prevention of significant deterioration (PSD) which is, in effect, a mechanism for managing the air quality impacts associated with economic development.

the attainment of NAAQS, a number of the SIP's could only be approved provisionally during 1979. In FY 1980 follow-up actions to remedy deficiencies in the 1979 SIP submission are being completed and acted on by EPA. In some States these actions will continue into 1981. Also, in most States the 1979 SIP contained schedules for developing mandatory inspection and maintenance (I/M) programs, (to assure the continued effectiveness of controls on motor vehicles), conducting transportation control planning processes, enacting additional volatile organic compound (VOC) regulations and making special analyses of control problems associated with fugitive dust. EPA is tracking the progress of States in meeting these schedules and providing necessary guidance, particularly with respect to I/M and transportation planning.

In 1980 and 1981, considerable effort will be devoted to developing the data base required for the 1982 SIP submissions for areas having justifiable reasons for extending the attainment dates for carbon monoxide and ozone to the 1983-1987 time period. The data base required for these submissions includes detailed emission, air quality and meteorology information beyond that normally needed for demonstrating attainment of air quality standards.

EPA promulgated regulations in May 1979, establishing requirements for ambient air monitoring stations, networks, and quality assurance procedures. These regulations will be implemented in both 1980 and 1981 and involve new instrumentation, station siting, and establishment of quality assurance programs by the States. These actions are necessary to improve the degree of confidence of the public, industry, and regulatory agencies in air quality data.

The review of all NAAQS required by the Clean Air Act is continuing in 1980 and may result in new or altered standards being proposed in 1980 or 1981 for oxides of nitrogen, carbon monoxide, sulfur dioxide, and suspended particulates. The promulgation of revised standards will require additional State efforts to revise SIP's in 1981. The development of such revisions will require obtaining additional air quality and emission data in 1980 and 1981.

By the end of 1980, the Agency expects that all required States will have EPA-approved State Implementation Plans for prevention of significant deterioration (PSD), and will assume new source review (NSR) for proposed facilities subject to these requirements. In 1981, EPA will limit its review of PSD permit applications and assume overview responsibilities by providing specific expertise and interpretation of Agency policy and guidance in technical areas. In addition, the overview function will give particular attention to assuring consistency between adjoining States and mediating issues relative to interstate impact of growth.

During both 1980 and 1981, the promulgation of NSPS will be greatly increased, consistent with the Clean Air Act requirements. These new emission limits, in addition to limiting emissions from new sources to levels achieved by best available adequately demonstrated technology, will provide a basis for determining required case-by-case level of control for sources subject to PSD.

The Agency is in the process of adopting an Air Carcinogen Policy. Health assessments will be made of many additional chemicals and appropriate regulatory actions taken under the guidance of this policy. Additional NESHAPS are to be promulgated in 1980 and 1981.

the proposal and promulgation of regulations for diesel and gasoline powered heavy and light duty trucks as made mandatory by the 1977 amendments to the Act. Continuing attention will be given in 1981 to the assessment of potential health hazards and to the development of requisite standards for currently unregulated pollutants from mobile sources.

The Agency is also concerned about motor vehicles that are currently on the road. EPA expects 29 States to have legislation for inspection and maintenance (I/M) programs in 1980. In 1980 and 1981, the mobile source program will be providing technical information to support the development of adequate and effective programs under such legislation. The Agency's fuel economy activities will expand in 1981 in support of DOT's regulations and the provision of public information on vehicle fuel economy. Studies will continue in 1980 and 1981 on methods to close the gap between test data and actual in-use experience.

A major Federal role in meeting ambient air quality standards is expected to continue. Failures by the States in some cases to develop the requisite regulatory framework for air pollution control will continue to necessitate Federal action to fill the gaps in otherwise adequate State control programs. Likewise, the extension of air pollution control to a large number of sources not presently covered, or covered inadequately, will intensify the need for enforcement action. EPA will supplement State/local resources to facilitate State assumption of enforcement responsibilities but, where necessary, it will continue to undertake Federal enforcement action.

Where Federal enforcement is required, it is the purpose of the stationary source enforcement program to ensure that stationary air sources are in compliance with emission limitations under SIPs; that new stationary air sources are constructed in accordance with NSR, NSPS, and PSD provisions; that stationary air sources subject to NESHAPS meet hazardous air pollutant standards; and that all applicable provisions of the Power Plant and Industrial Fuel Use Act of 1978 are implemented.

The stationary source enforcement program is continuing its part of the major source enforcement effort (MSEE) by developing and concluding cases, through settlement or litigation against large recalcitrant violators and ensuring compliance by closely tracking their compliance schedules or consent decrees. The noncompliance penalty regulation under Section 120 of the Clean Air Act, a new and powerful program for obtaining expeditious compliance, will be promulgated in early 1980. Further, there will be a continuing commitment to a strong compliance monitoring program. Particular attention will be given to examining the field surveillance and compliance monitoring programs being implemented by the States to ensure that violations are being fully documented.

The mobile source enforcement program will emphasize programs designed to reduce tampering and fuel switching violations in order to reduce in-use emissions from mobile sources. This program will focus primarily on areas of the country with such significant mobile source air pollution problems that inspection/maintenance programs will be necessary to meet air quality standards. A special effort will be directed at preventing a widespread increase in fuel switching caused by a shortfall in unleaded gasoline and will be accompanied by monitoring of the petroleum industry to detect the locations and severity of such shortages. The selective enforcement auditing assembly line testing program, recall and surveillance activity in support of recall, and warranty enforcement will continue.

Many of the objectives of the 1980 air research program will carry over into 1981. The overall program will continue to define the adverse health and environmental effects of airborne pollutants, describe the way in which these pollutants are transported and transformed in the atmosphere, and develop and evaluate pollution control technologies.

The 1981 air research program is the first such program to be developed in conjunction with EPA's new Research Committee planning system, which has resulted in much better coordination between the research and regulatory program than previously listed. The air research program is divided into four components, each of which is reviewed by a Research Committee. The four areas are mobile source pollutants, oxidants, hazardous air pollutants, and gaseous and inhalable particulate pollutants.

Field studies in urban areas to identify hazardous pollutants present in ambient air will be initiated. This information will be used to help develop hazardous pollutant regulatory strategies under Section 112 of the Clean Air Act and to determine compounds to be screened for carcinogenicity and other harmful effects.

The health effects research program, will continue to focus on research to more accurately determine actual human exposures to air pollutants and to better define the effects of these pollutants on real world populations. For example, epidemiological studies in areas identified in 1980 as good candidates for assessing the effects of exposure to particulate pollutants will be initiated. These studies will provide the Agency with essential information for setting and revising ambient air quality standards for particulate matter.

In the mobile sources area, examination of health effects of pollutants emitted by diesel engines will continue to receive primary emphasis. As more diesel emission health effects data become available from projects started in 1979 and 1980, the research will be refined and focused on developing tests that can identify specific components of diesel exhaust that require emissions control. This type of testing will also be used to assess innovations in engine design and particulate control technologies.

Field and laboratory studies will be conducted to determine the role of nitrogen oxides and hydrocarbons in producing oxidant pollution. The research will focus on the long-range (multi-state) transport and transformation processes of oxidants and their precursors and will determine the contributions of natural sources of pollutants to both urban and rural ozone problems.

Other major activities will include expansion of the network of inhalable particle samplers to improve our knowledge of the ambient concentrations of these particles and maintenance of the National Crop Loss Assessment Network to estimate current losses due to ambient pollutant concentrations and losses due to incremental changes in concentration of specific pollutants. Finally, development of major models for field studies will be undertaken to improve our understanding of the dispersion patterns of pollutants through complex terrain, transport of oxidants in the northeast, and the extent and causes of visibility degradation in both urban and non-urban areas.

Purpose of Research and Development Program

The air research and development program is designed to furnish EPA with the knowledge to establish prudent environmental controls standards and regulations based upon known or potentially adverse health and ecological effects; to define, develop, and demonstrate systems for controlling stationary source pollution; and to evaluate strategies for minimizing the emission of pollutants. To achieve these ends, the program

is structured to identify and, to the extent possible, quantify the adverse human health effects of exposure to air pollutants; to quantify the effects and fate of air pollutants on biological systems and processes within the environment; to develop predictive models for pollutant emission, transport, transformation, and removal, and verify these models by actual measurements; and to develop new and improved technology for preventing and controlling air pollution and demonstrate the cost effectiveness of such technologies. The air research and development program also provides analytical measurement methods for monitoring air pollutants; procedures and materials to assure the quality of monitoring data; technical expertise, and specialized facilities and equipment to the regulatory and enforcement programs.

Purpose of Abatement and Control Program

The Salaries and Expenses and Abatement, Control and Compliance appropriations encompass the development and implementation of air pollution control strategies and programs. Specific activities include regulations development, technical and policy guidance, financial support to State and local programs and direct Federal action when States fail to fulfill their Clean Air responsibilities. The intent of the Act is that States assume responsibility for most aspects of air pollution control, and that EPA provide guidance and assistance. Our total environmental effort is conceived as a working partnership with State and local governments to achieve national environmental goals.

The primary goal of the air program is the implementation of National Ambient Air Quality Standards (NAAQS) attainment and maintenance strategies. The first priority for States and EPA in 1980 and 1981 is the completion of strategy development actions and the adoption by the States of revisions to the State Implementation Plans (SIPs) for areas not presently attaining ambient air quality standards. This includes expeditious follow-up on conditionally approved SIPs and timely action on schedules for inspection and maintenance (I/M), and transportation control measures (TCM); adoption of new regulations covering volatile organic chemicals (VOC); control of non-traditional sources of suspended particulate matter; and development of improved data bases to facilitate the submission, where required, of new SIPs in 1982. In addition, EPA, in carrying out the mandates of the Clean Air Act, must complete the promulgation of New Source Performance Standards for all major stationary sources of air pollution; effectively review all existing ambient air quality standards; regulate mobile sources of air pollution; develop a workable program of prevention of significant deterioration and implement the new visibility protection goals of the Clean Air Act.

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

Air Quality and Stationary Source Planning and Standards - This subactivity includes: (1) the development, reassessment and revision of national control strategies for all air pollutants and development of appropriate regulations. Control strategies developed in this subactivity are translated into guidance for State action, through the State Implementation Plans, or directly into Federal control requirements, such as New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAPS). Extensive activities are also carried out to provide the engineering and other technical support requisite for the development of regulations promulgated by EPA when States do not act.

Mobile Source Standards and Guidelines - This subactivity involves the setting of emissions standards for mobile sources (including the associated testing, 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, EPA responsibilities in determining fuel economy values for vehicles subject to the Environmental Protection and Energy Conservation Act (EPECA) are also carried out.

State Programs Resource Assistance - This subactivity involves the provision of resources to support State and local government implementation of air pollution control programs. The primary responsibility for controlling air pollution rests with the States and localities. Supplemental resources are required if these governments are to effectively implement air pollution control programs, thereby eliminating or reducing the need for direct Federal intervention. Support is also provided for training of control agency personnel. Supplementing State and local resources complements the purpose of the activities carried out under the other subactivities of the Abatement, Control and Compliance appropriation.

Air Quality Strategies Implementation - This subactivity includes implementation of regulatory requirements for which the Federal government has primary responsibility, such as: (1) overview of air pollution control activities carried out by Federal facilities; (2) review of environmental impact statements prepared by other Federal agencies for air pollution impact; and (3) implementation of air quality standards and control strategies in specific areas of the Nation. These activities result in the implementation of specific control strategies through State and local control programs. Examples of these activities are the development of State Implementation Plans (SIP) and EPA promulgation of regulations, all technical aspects of the development of the control strategies incorporated into the SIP, and the management of the procedural requirements, such as public hearings on plans.

Mobile Source Preproduction Compliance Verification - This subactivity involves the engineering review of prototype motor vehicles and engines in order to determine whether or not they conform with motor vehicle emissions standards developed under the mobile source standards and guidelines subactivity. It also includes confirmatory testing and other laboratory subactivity. It also includes confirmatory testing and other laboratory or data analysis related to the certification process and fuel economy determinations.

Trends Monitoring and Progress Assessment - This subactivity includes the determination of ambient air quality and emission levels and relationships, and assessment of progress made towards the attainment of environmental goals. These data and assessments are used for reassessing or developing control strategies, and for judging the progress made in achieving legislative or regulatory program goals. The determination of emission levels is an activity fundamental to the administration of programs at the State, local, and Federal levels for developing regulations, reviewing new sources, and making determinations as to their siting.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1980 Air Program.....	\$250,490
Salaries and Expenses.....	-1,370
This decrease reflects the permanent workyear decrease of 114.	
Research and Development.....	+4,580
This increase in extramural support resulted from increases in research in the health effects of air pollutants from transportation sources (+\$.4 million), funding of oxidant research in preparation for the 1983 oxidant criteria document (+\$1.2 million), additional funding of the health effects of non-criteria air pollutants (+\$2.6 million), and funding for research directed towards determining the background levels and the roles of natural sources on air pollution levels (+\$.4 million).	
Abatement, Control and Compliance.....	-5,230
This net reduction in extramural support resulted from a phased decrease in resources for New Source Performance Standards (NSPS) development (-\$8.9 million) as those standards near completion, in addition to a decrease in contractual support to the enforcement of stationary source requirements (-\$1.5 million). These decreases were partially offset by an increase in grants to State and local air pollution control agencies (+\$4.9 million) and contracts for regional ambient air monitoring (+\$.2 million).	

1981 Air Program.....	248,470
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SUMMARY OF BUDGET ESTIMATE1. Summary of Budget Request

An appropriation of \$248,469,600 is requested for 1981. This request by appropriation account, is as follows:

Salaries and Expenses.....	\$75,816,300
Research and Development.....	44,108,500
Abatement, Control and Compliance...	128,544,800

local air pollution control agencies, \$2.6 million for research on the health effects of non-criteria pollutants, \$1.2 million for oxidant research in preparation for the 1983 oxidant criteria document, \$.4 million for research into the health effects of pollutants emitted by transportation sources, \$.4 million for research into background levels and the roles of natural sources on air pollution levels. The following decreases are also included: a phased decrease in resources of \$8.9 million for NSPS development as those standards will be nearing completion, \$1.5 million from the enforcement of stationary source requirements of the Clean Air Act, and \$1.4 million of salaries and expenses reflecting cuts in personnel for the media.

2. Changes from Original 1980 Budget Estimate

Changes from the budget are as follows:

	<u>(in thousands of dollars)</u>
Original 1980 estimate.....	\$255,810
Congressional increases/decreases:	
Travel.....	-318
ADP.....	-63
Supplies and expenses.....	-234
Health and ecological effects.....	-4,000
Control agency grants.....	-2,800
Academic training.....	+480
Reprogramming for salary costs.....	-827
Proposed pay raise supplemental.....	+2,451
Miscellaneous reprogramming.....	-9
	<hr/>
Current 1980 estimate.....	250,490

The Congress reduced Agency travel costs by \$2 million, of which \$318,000 is applicable to the air media. ADP costs were reduced by \$1 million, resulting in a \$63,000 decrease. Supplies and expenses were reduced by \$2 million, of which \$234,000 is in the air media. A reduction of \$4 million was made to the health and ecological effects activity; \$2.8 million was reduced from control agency support grants. Finally, academic training was increased by \$1.5 million, of which \$480,000 is applicable to the air media.

An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$827,000 to the air media.

A supplemental appropriation is proposed to partially fund costs of the October 1979 pay raise; \$2,451,000 is for the air media. Miscellaneous reprogrammings to this media resulted in a net decrease of \$9,000.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980 (in thousands	Estimate 1981 of dollars)
Prior year obligations.....	\$243,362	\$290,095
Effect of congressional changes.....	-4,035	...
Effect of pay raise supplemental.....	+2,451	...
Change in amount of carryover funds available.....	+21,681	-39,605
Program decreases.....	-4,808	-2,020
Effect of reprogrammings.....	-836	...
Change in rate of obligations.....	+32,280	...
Total estimated obligations.....	290,095	248,470
(From new obligation authority).....	(248,904)	(246,884)
(From prior year funds).....	(41,191)	(1,586)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The congressional changes discussed in the previous section are expected to result in a decrease of \$4,035,000 to obligations. The proposed pay raise supplemental to partially fund the October 1979 pay raise will increase obligations by \$2,451,000. The reprogrammings to fund authorized workyears will decrease obligations by \$836,000.

The decrease in budget authority in 1980 and 1981 results in a reduction to obligations of \$4,808,000 and \$2,020,000, respectively.

The amount of carryover funds to be obligated in 1980 is \$41,191,000, an increase of \$21,681,000 over the 1979 level; in 1981, it is estimated that \$1,586,000 of carryover funds will be obligated, a decrease of \$39,605,000 from the 1980 level.

A change in the rate of obligation is expected in 1980, which will create an increase of \$32,280,000 over the 1979 level.

PROGRAM LEVELS

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
Number of pollutants covered by hazardous pollutants standards...	4	10	4	4	+10
Number of automobile engine families awarded certificates for con- formity with emission standards.....	240	700	250	250	...
Number of source categories covered by New Source Performance Standards.....	29	40	36	53	+17
Number of emission tests carried out for motor vehicle certification purposes.....	899	1,000	950	950	...
Number of fuel economy tests carried out.....	925	800	1,800	1,800	...
Identified Class A source in U.S.....	24,040	29,000	25,000	29,000	+4,000
Assembly line testing test orders.....	37	42	35	33	-2
Combined fuels/vapor recovery inspections....	16,000	25,000	23,000	25,000	+2,000
Recall investigations.....	24	40	27	19	-8
Number of civil/criminal actions initiated by EPA	148	350	215	210	-5
Number of administrative orders initiated by EPA	213	160	155	220	+65
Number of compliance monitoring inspections conducted by EPA.....	2,769	2,800	3,350	3,300	-50

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Health Effects/			
Transportation Sources:			
Salaries and Expenses.....	\$3,179	\$3,168	-\$11
Research and Development.....	3,438	3,438	...
Health Effects/Criteria Pollutants:			
Salaries and Expenses.....	2,366	2,359	-7
Research and Development.....	4,499	4,499	...
Health Effect/Non-Criteria Pollutants:			
Salaries and Expenses.....	6,500	6,475	-25
Research and Development.....	9,860	9,860	...
Ecological Effects:			
Salaries and Expenses.....	975	972	-3
Research and Development.....	1,320	1,320	...
Transport and Fate of Pollutants:			
Salaries and Expenses.....	2,470	2,459	-11
Research and Development.....	10,636	10,636	...
Total:			
Salaries and Expenses.....	15,490	15,433	-57
Research and Development.....	29,753	29,753	...
Grand Total.....	45,243	45,186	-57



AIR

Health and Ecological Effects

	<u>Actual</u> <u>1979</u>	<u>Budget</u> <u>Estimate</u> <u>1980</u>	<u>Current</u> <u>Estimate</u> <u>1980</u>	<u>Estimate</u> <u>1981</u>	<u>Increase +</u> <u>Decrease -</u> <u>1981 vs. 1980</u>
		(dollars in thousands)			
<u>Appropriation</u>					
<u>Health Effects/</u>					
Transportation Sources:					
Salaries and Expenses.	\$2,508	\$2,434	\$3,272	\$3,179	-\$93
Research and Develop- ment.....	3,148	4,809	3,080	3,438	+358
<u>Health Effects/Criteria</u>					
Pollutants:					
Salaries and Expenses.	1,049	2,110	2,439	2,366	-73
Research and Develop- ment.....	687	4,690	3,267	4,499	+1,232
<u>Health Effects/Non-</u>					
Criteria Pollutants:					
Salaries and Expenses.	3,416	6,825	7,780	6,500	-1,280
Research and Develop- ment.....	6,645	10,480	7,298	9,860	+2,562
<u>Ecological Effects:</u>					
Salaries and Expenses.	872	563	898	975	+77
Research and Develop- ment.....	681	1,703	1,491	1,320	-171
<u>Transport and Fate of</u>					
Pollutants:					
Salaries and Expenses.	2,081	2,589	2,366	2,470	+104
Research and Develop- ment.....	8,576	10,421	10,252	10,636	+384
<u>Total:</u>					
Salaries and Expenses.	9,926	14,521	16,755	15,490	-1,265
Research and Develop- ment.....	19,737	32,103	25,388	29,753	+4,365
Grand Total.....	29,663	46,624	42,143	45,243	+3,100

Health Effects/Criteria Pollutants.....	21	31	28	28	...
Health Effects/Non-Criteria Pollutants....	90	136	127	115	-12
Ecological Effects.....	21	5	11	11	...
Transport and Fate of Pollutants.....	37	44	42	42	...
Total.....	220	262	252	235	-17
<u>Full-Time Equivalency</u>					
Health Effects/Transportation Sources.	71	52	64	58	-6
Health Effects/Criteria Pollutants.....	26	40	34	34	...
Health Effects/Non-Criteria Pollutants....	112	158	147	131	-16
Ecological Effects.....	30	10	29	29	...
Transport and Fate.....	42	59	48	48	...
Total.....	281	319	322	300	-22

Budget Request

The Agency requests \$45,243,300 and 235 permanent workyears for this program, of which \$15,489,900 is for the Salaries and Expenses appropriation and \$29,753,400 is for extramural activities under the Research and Development appropriation. There is a decrease of \$1,265,700 and a increase of \$4,365,900, respectively. In total, there is a net increase of \$3,100,200 and decrease of 17 permanent workyears. The decrease in workyears is divided between two programs: 5 positions from the transportation sources activity and 12 positions from the non-criteria program. The dollar increases are: \$1,232,200 for inhalation toxicology efforts to investigate adverse effects in animals from exposure to particulate and hazardous air pollutants and then relate these findings to human health effects; \$1,159,200 to strengthen clinical studies dealing with the health effects induced by exposure to oxidants for use in our criteria documents on ozone and other photochemical oxidants; \$265,000 to evaluate the carcinogenic potency of diesel engine exhaust compared to other known carcinogenic substances; and \$393,800 to expedite our research efforts on photochemical oxidant transport and fate processes.

Program Description

Research on the adverse health effects of exposure to air pollutants provides a major portion of the scientific basis upon which ambient air quality standards are established, maintained, or revised as required by the Clean Air Act, as amended in 1977. If regulations set for air pollutants are too lax, the health of the public may be adversely affected; alternatively, if they are too stringent, the economy may be adversely affected by unnecessary costs for pollution control equipment.

The air health effects research program is divided into three program components addressing criteria pollutants, non-criteria pollutants, and transportation sources. The program uses epidemiological studies of specific populations, controlled human exposure (clinical) studies, and animal toxicological studies, focusing on those air pollutants which adversely affect public health or which are suspected to do so.

to combinations of criteria pollutants (in order to better define the health data base for these pollutants, and, therefore, to better determine the adequacy of existing pollutant standards); (2) studies of effects from exposure to sulfates, nitrates, metal oxides, and other inhalable particulate pollutants; and (3) studies of effects from exposure to mobile source fuels and exhaust products in order to determine which of these agents pose a potential threat to public health.

Research on the ecological effects of air pollutants provides the fundamental scientific basis upon which to establish and continually evaluate secondary ambient air quality standards. This program focuses upon the effects of air pollutants on the structure and functions of ecosystems by determining the acute and chronic effects of air pollutants, singly and combined, upon individual flora, fauna and soil system components and on entire ecosystems. Pollutants under study include sulfur dioxide, ozone, nitrogen oxides, hydrocarbons, and selected non-criteria pollutants of importance. The program also attempts to characterize air pollution problems in the environment, to determine the dynamic processes and effects of these pollutants and to provide methods and techniques to measure or monitor these effects. Laboratory, greenhouse, and field verification studies will clarify both the biological perturbations and the fate of these pollutants.

Specifically this program focuses on the collection of dose/response data, bioaccumulation potentials in agriculture crops and in other vegetation, and productivity, growth quality and yield reductions in commercially important crops. Research is directed toward determining the impacts of gaseous mixtures and pollution stress on populations, succession, species survival and the interactions of exposure with environmental variables such as temperature and precipitation.

HEALTH EFFECTS - TRANSPORTATION SOURCES

1979 Accomplishments

In 1979, the Agency utilized a total of \$5,656,000 for this program, of which \$2,508,100 was for salaries and expenses and \$3,147,900 was for extramural research activities. In 1979, the program:

- Completed the first phase of a study of the comparative responses of a group of bioassay test systems to a series of surrogates (i.e., organic pollutants considered as having chemical characteristics similar in nature to those in diesel exhaust) and diesel exhausts from different vehicles.
- Completed a dose ranging study for diesel particulates (bound and unbound) using intratracheal instillation method. The results determined the maximum tolerated dose that could be utilized for the full scale intratracheal instillation study of the risk of cancer induction.
- Completed dose ranging study of neurobehavioral effects associated with inhalation of diesel exhaust. The results ascertained the appropriate exposure levels to be utilized to review the dose-response relationship.
- Demonstrated that the level of mutagenic activity of diesel exhaust, as measured in an isolated bioassay test system, is influenced by the presence of ozone.
- Characterized the emissions of six advanced technology vehicles.

The program continues to emphasize the development of the comparative response of a matrix of bioassay test systems to a series of surrogates and diesel exhausts from different vehicles. The results are considered necessary for the quantitative assessment of the potential risk of cancer from the agents emitted from diesel vehicles. Diesel emissions are the primary target of this research. Biological endpoints such as pulmonary dysfunction, neurobehavioral changes, reproductive effects and immune defense dysfunction are addressed but were not emphasized as much as the evaluation of carcinogenesis using whole animal and short term bioassays. Epidemiological research pertaining to diesel exhaust will also focus on cancer induction.

Emphasis of the public health initiative component of the program is on conducting epidemiological studies of populations exposed to diesel exhausts, developing and applying a variety of in vitro screening tests, and expanding in vivo studies relating to carcinogenicity.

Specific tasks include the following:

- Continuation of the study on induction of respiratory carcinogenesis in male Syrian golden hamsters using intratracheal instillation of pollutant extracts.
- Continuation of the evaluation of diesel emissions and comparative samples for carcinogenesis using dermal exposure of the SENCAR (SENSitive to CARcinoma) mouse.
- Continuation of the evaluation of the rate of induction of pulmonary tumor inherent in strain-A mice by inhalation of diesel exhausts.
- Continuation of the development and application of a short-term in vitro carcinogenesis assay (liver islands assay) which will have higher sensitivity and be less expensive than a lifetime in vitro assay.

1980 Explanation of Change from Budget Estimates

The net decrease of \$890,700 results from several actions. An increase of \$70,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,600. The Congress also reduced the health and ecological effects activities by \$4 million which resulted in a decrease of \$920,000 to this activity. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$39,300 to this activity.

1981 Plan

The Agency requests a total of \$6,617,300 and 39 permanent workyears for this program, of which \$3,179,000 is for Salaries and Expenses and \$3,438,300 is for extramural purposes under the Research and Development appropriation. This request reflects a net increase of \$265,000 and a decrease of 5 permanent workyears. The dollar increase will be for quick response assays of biological activities. These will be used in conjunction with engineering analyses to help determine ways to minimize the carcinogenic potency of diesel engine exhaust. The decrease in workyears reflects reallocations to other priority programs and the stabilization of this effort after rapid early growth.

The whole animal studies which evaluate the carcinogenic response of normal and special strains of rodents will be completed. These studies will evaluate the potency by techniques ranging from counting tumors to measuring changes in enzyme levels which are believed to be precursors to the onset of tumors. Limited whole animal inhalation studies, evaluating the effects of diesel exhaust on neurological and behavioral activity and on pulmonary function and chronic lung disease, will be continued as will the limited whole animal non-inhalation (skin painting and intratracheal instillation) studies. These studies evaluate the biological response under various dose regimes of diesel exhaust particulates or the organics extracted from the particulates. A series of limited, parallel studies on the same species (hamster, SENCAR mouse) with materials of similar composition to diesel exhaust particulate will be initiated. The materials selected will be based on epidemiological data that suggests a relationship between such materials and an increase in cancer risk. The data from these parallel studies will permit the comparison of the carcinogenic potency of the diesel exhaust with that of the "known" material. Use of the in vitro screening tests will continue. Results will help identify the specific components in the diesel exhaust that may require emissions control and facilitate an understanding of the relationship of changes in emissions with changes in engine design, operation, or after introduction of combustion emission control devices. Isolated test systems will continue to be used to provide rapid health assessments of the pollutants that may be emitted from 1978-80 model year motor vehicles. Both catalyst and diesel exhausts will be evaluated to support the Agency's certification program.

Animal toxicological studies will be conducted on those emission products that, based on the results of rapid, in vitro screening tests, require further investigation. These studies will provide a broader data base for addressing the uncertainty regarding the certification of diesel engines. Epidemiological studies of populations exposed to diesel exhaust products will be continued.

Ambient air quality trend data in Los Angeles will continue to be obtained to evaluate the impact of reducing automobile emissions through new emission control devices. This will provide information on more parameters that may affect the composition of diesel exhaust and thus will aid development of better control strategies. Data obtained from field studies in Long Island and Los Angeles will be used to evaluate and improve the existing highway dispersion models capable of estimating commuter exposure to pollutants from vehicles. Available air quality data will be used to relate population exposures to air quality to determine the contribution of pollutants from vehicles to overall air pollutant levels in urban areas. Characterization of emissions from a few 1979-1980 model year light duty vehicles under limited operation conditions will continue.

HEALTH EFFECTS/CRITERIA POLLUTANTS

1979 Accomplishments

In 1979, the Agency utilized a total of \$1,735,700 under this program, of which \$1,049,000 was for salaries and expenses and \$686,700 was for extramural purposes. Major accomplishments include the following:

- Completion of short-term and intermittent animal exposure studies which assess the health effects of repeated exposures to ozone and nitrogen oxides. Effects noted include impairment of host pulmonary defense mechanisms which are important for clearance of harmful agents, such as bacteria, from the lung. Impairment of these mechanisms increases susceptibility to infectious disease. Further study is required to validate and refine the initial findings.

(clinical) studies. These techniques, when fully developed, will allow better comparison of animal and human responses to pollutants.

- Realignment of clinical studies to extend experiments on effects from ozone exposures and to include the initiation of experiments on effects from nitrogen dioxide exposures. This realignment was necessary to include more volunteers and to use familiar studies for standardization while incorporating new computerized systems. Results to date show that exercise, which increases the rate and depth of respiration, is a major determinant of pulmonary physiological response (impairment) to ozone and nitrogen dioxide. This finding implies that persons exercising in the presence of these pollutants are subject to greater harm than those resting. Further studies are required to correlate levels of exposure with degree of impairment in both healthy persons and those at risk.
- Installation of computerized systems in the clinical facilities for data acquisition, storage, and validation including exercise rates, pollutant delivery, and cardiopulmonary responses.
- Development of techniques to quantify the degree of respiratory bronchoconstriction in a number of volunteers following administration of bronchoconstriction drugs, both before and after exposure to inhaled pollutants in clinical studies. These techniques were developed in conjunction with the non-criteria program. A mist generator for repeated delivery of standardized amounts of the bronchoconstriction drug in aerosol form was also developed and it will simplify these techniques. Both of these major developments will allow the simulation, in healthy volunteers, of pollutant effects on populations of sensitive individuals such as asthmatics. This capability will also be used in studies on non-criteria pollutants.
- Completion of data collection in an epidemiological study in Los Angeles which is attempting to link pollution from photochemical smog with incidence of acute respiratory disease. The results are being analyzed and are expected to be published in 1980.
- Completion of data collection in Utah which relates levels of several air pollutants to chronic and lower respiratory disease. Results are not yet available, but reports on this study are due to be published during early 1980.
- Improved management of the analytical complexity of environmental epidemiological studies. An ongoing collaborative study, between universities and mathematical society institutes, to develop improved statistical methodologies for data analysis in epidemiological studies has produced a number of technical reports. In many cases, the report will significantly reduce the cost of future studies.

In 1980, the Agency has allocated a total of \$5,000,000 to this program, of which \$2,439,000 is for Salaries and Expenses and \$3,267,000 is for extramural purposes under the Research and Development appropriations. In 1980, this program will continue to provide current scientific data as a basis for maintenance or revision of ambient air standards. This program is designed to respond to EPA's need for information on the health effects of ozone, nitrogen oxides, and other photochemical oxidants, as well as carbon monoxide. The research plan for this program is guided by the oxidants research committee.

Animal studies on effects from exposure to ozone and nitrogen dioxide are continuing; however, emphasis is shifting from short-term exposures to examination of effects from long-term exposures. Pulmonary and systemic effects are being studied, focusing on alterations in physiological, biochemical and metabolic functions; development of acute and chronic diseases; and susceptibility to infections. Impaired animal models are being developed as part of the public health initiative and will be used to mimic responses of humans who may be susceptible to pollutant effects.

Clinical (human) studies continue on effects from exposure to ozone and nitrogen dioxide alone, and in combination with one another. Studies on ozone will examine effects at levels close to the air quality standard to define the lowest level at which persons are affected adversely by ozone exposure. Heat and humidity stresses will be added to ozone exposure studies to evaluate potential ozone effects by other environmental stresses. Studies of effects from exposure to nitrogen dioxide will be performed using pharmacological techniques to study reactivity of respiratory passages. Cardiopulmonary physiological, biochemical, and immunological functions will be examined in these studies. The results of these studies are necessary to provide basic data for reasonable regulatory decisions.

Epidemiological studies in 1980 include a pilot study on acute bronchitis in California; a study of asthmatic children in Boston; and a study of respiratory symptoms in children in New Jersey. In addition, studies are being developed as part of the public health initiative to field test the feasibility of using personal dosimetry monitors in epidemiological studies.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$1,094,000 results from several actions. An increase of \$41,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$1,800 and \$800, respectively. The Congress also reduced all health and ecological effects activities by \$4 million, which resulted in a decrease of \$939,000 to this activity. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$118,800 to this activity.

A reprogramming of \$75,000 was made within the air media to health effects/non-criteria pollutants since an evaluation of the proposed tasks for the criteria and non-criteria components of the public health initiative indicated that the non-criteria component required additional resources in order to assure that the specified tasks were both properly managed and accomplished.

program, of which \$2,000,000 is for extramural purposes under the Research and Development appropriation. This reflects an increase of \$1,159,200 which will be used to strengthen the extramural program for clinical studies on effects from exposure to oxidants in support of the 1983 (projected) criteria document for ozone and other photochemical oxidants.

Animal studies of effects from long-term exposure to ozone, nitrogen oxides, and other photochemical oxidants, alone and in combination, will continue with the examination of cardiopulmonary physiological, biochemical, histological, and immunological changes. These are long-term studies, using both normal and impaired animal models, which will simulate long-term exposures of humans and will require several years for useful results to be produced. The above mentioned studies are a continuation of the public health initiative begun in 1980. In addition, studies of the influence of exposure to oxidants on aging will be initiated.

Clinical studies in 1981 will continue to examine the effects of short-term exposures to ozone, nitrogen oxides and other components of the photochemical oxidant mixture which may be added, such as peroxyacetyl nitrates (PAN), both alone and in other combinations simulating actual pollutant mixtures. Studies will be performed on healthy subjects to examine cardiopulmonary physiological responses to pollutant exposure using pharmacological techniques to study reactivity to respiratory passages. Subjects will be stressed with exercise, heat, and humidity, while biochemical, hematologic, and immune function parameters are examined. Increased extramural funding will allow similar studies in clinical settings on volunteers who have respiratory diseases. Other extramural studies will enhance in-house work and will further develop immunological investigative capabilities for clinical research.

After completion of a problem definition study, population studies will be initiated in areas with pollution levels in excess of ambient air quality standards. The definitive study will identify types of studies, approaches needed and appropriate locations. Development and use of improved statistical methods for epidemiological analyses and field trial studies on personal exposure monitors will continue as part of the public health initiative begun in 1980.

HEALTH EFFECTS/NON-CRITERIA POLLUTANTS

1979 Accomplishments

In 1979, the Agency utilized a total of \$10,061,300 under this program, of which \$3,416,300 was for salaries and expenses and \$6,645,000 was for extramural purposes for research activities. Major accomplishments include the following:

- Short-term and intermittent studies were completed on normal animals and on animals with simulated upper and lower respiratory disease to determine the effects from exposure to particulate pollutants (including sulfates) in the inhalable size range. Results have shown few effects upon pulmonary function or upon biochemical, hematological, or immunological parameters. This data has been provided for use in the development of criteria documents. Further studies are appropriate and will follow.

models represent conditions such as emphysema, hypertension, congestive heart failure, asthma, and pulmonary fibrosis and reflect the increased sensitivity to pollutant exposure seen in some humans. They will be used in studies on both criteria and non-criteria pollutants.

- A clinical study was completed to assess acute effects from inhalation exposure to low levels of sulfuric acid mist at various concentrations. This study was undertaken as a follow-up to a 1978 pilot study. Results indicated no significant decrements of pulmonary function.
- A human exposure chamber was modified to permit the evaluation of biochemical and immunological factors during the performance of clinical studies.
- A study of asthmatics in Denver, Colorado, demonstrated little association between elevated particle levels and asthma symptoms.
- An evaluation of pulmonary function among children in Montana in relation to elevated particulate levels demonstrated no significant differences in effects in the various exposure categories.
- Data collection for an epidemiological study on changes in pulmonary function in school children as a function of varied sulfur dioxide, nitrogen dioxide, and particle levels was completed in Akron, Ohio. Data analysis is currently underway.
- Data on morbidity and mortality rates in several Illinois cities were studied in relation to particulate pollution levels. In some cases positive associations were found between particulate pollution levels and health effects, but in other cases those associations were not found. Further studies are needed to clarify the relationships observed.

1980 Program

In 1980, the Agency has allocated a total of \$15,077,600 to this program, of which \$7,779,400 is for Salaries and Expenses and \$7,298,200 is for extramural purposes under the Research and Development appropriation.

This program, which is an integral part of the public health initiative, continues to provide scientific data needed for maintenance or revision of ambient air standards or for creation of emission standards for hazardous pollutants. More specifically, it is designed to provide the health segment of an integrated data base on effects of sulfur oxides, airborne particles, lead, and hazardous airborne pollutants such as heavy metals and organic compounds. The research includes:

- Animal studies on health effects from particulate pollutants, in the inhalable size range, in which emphasis is shifting to long-term exposure conditions, using both normal and impaired animals. Development and refinement of these models, which emulate human disease conditions continues with cardiopulmonary physiological, biochemical, histologic, and immunologic changes being studied. Research on the harmful effects of trace metals is also continuing.

the exposure of human volunteers to gases and particulates (in the inhalable size range) was begun in 1979 and will be completed in 1980. Being performed in conjunction with research under the criteria program, Phase I is designed to produce standardized techniques for bronchoconstrictor dosage administration by inhalation. These techniques will allow studies to compare pollutant effects on normal subjects with those in persons simulating respiratory dysfunction. Results to date indicate a high degree of variation in sensitivity to inhalation of bronchoconstrictors, even among those volunteers previously considered "normal."

- Phase II of the above studies will begin in 1980 following the completion of Phase I and involves exposures to various particle species such as sulfates, alone and in combination with ozone, nitrogen oxides, and sulfur oxides. Using techniques developed in Phase I, healthy volunteers will be exposed to pollutants in combination with exercise, heat, and humidity. Cardiopulmonary physiological, biochemical, hematologic, and immunologic parameters will be examined. No hazardous pollutants will be used in clinical studies; however, as part of the public health initiative, other studies will be developed in 1980 to identify biological indicators of exposure to hazardous air pollutants, and results from this research will be applied to epidemiological studies performed during the development of personal physiological monitors.
- A major epidemiological effort will focus on populations exposed to particulate air pollutants in combination with pollutant gases. The precise design of these studies will be determined from results of a problem definition study currently underway. Studies on particles and sulfur dioxide are continuing in Steubenville, Ohio; St. Louis, Missouri; El Paso, Texas, and Tempe, Arizona. These studies of populations exposed to hazardous pollutants involve the application of biochemical indicators and refined statistical techniques. They will also determine whether a high incidence of genetic effects is associated with exposure to air pollutants.

1980 Explanation of Changes from Budget Estimates

The net decrease of \$2,227,400 results from several actions. An increase of \$172,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$6,600 and \$100, respectively. The Congress also reduced all health and ecological effects activities by \$4 million, which resulted in a decrease of \$2,141,000 to this activity. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$327,000 to this activity.

A reprogramming of \$75,000 was made from health effects/non-criteria pollutants since an evaluation of the proposed tasks for the criteria and non-criteria components of the public health initiative indicated that the non-criteria component required additional resources in order to assure that the specified tasks were both properly managed and accomplished.

The Agency requests a total of \$16,359,800 and 115 permanent workyears for this program, of which \$6,499,800 is for Salaries and Expenses and \$9,860,000 is for extramural purposes under the Research and Development appropriation. This reflects an increase of \$1,282,200 and a decrease of 12 permanent workyears from the current level. The dollar increase expands the extramural program to include (1) development of animal models for pulmonary disposition and clearance of particulate pollutants, (2) new techniques to assess impairment of host defense systems, and (3) animal models to assess carcinogenicity of air pollutants. The position decrease reflects a change in priorities, away from in-house epidemiological studies on effects from indoor air pollution and from exposure to rural fugitive dusts toward the extramural studies mentioned above.

The program will continue long-term studies on animals exposed to particles in the inhalable size range. These studies simulate long-term exposures and resultant effects upon humans and will require several years to produce useful results. Studies will also be undertaken on larger particles and gas-particle interactions. Studies of toxic effects from heavy trace metals will continue and animal studies will be initiated on effects from exposure to additional hazardous particularly organic air pollutants.

Phase II, the clinical studies on particle species initiated in 1980, will be continued. Based on results of the Phase II studies, follow-up studies will begin on those pollutants for which significant effects are found. Physiological, biochemical, immunologic, and hematologic responses will be studied further following exposure to pollutants in combination with exercise, heat and humidity stress. Studies to develop biological indicators for hazardous pollutants will also be continued in 1981 as part of the public health initiative.

The extramural epidemiology program for 1981 will reflect little change from the 1980 program because of its long-term nature.

ECOLOGICAL EFFECTS

1979 Accomplishments

In 1979 resources obligated were \$1,553,200, of which \$872,300 was for in-house expenses and \$680,900 was for extramural purposes. Major findings and accomplishments are listed below:

- Plans were completed for establishing a national crop loss assessment network. This network will supply a data base for predicting the economic effects of ambient simulations of sulfur dioxide and ozone on agriculture crops.
- Studies have shown that Hyslop winter wheat exposed to .06 parts per million sulfur dioxide, which is considerably lower than the present standard, reduced yields by 22 percent; yields were reduced even more at higher concentrations.
- Studies determined that woody foliar and root growth of conifers can be significantly suppressed by exposures during winter conditions to sulfur dioxide concentrations as low as .06 parts per million.
- Studies determined that fluctuating concentrations of sulfur dioxide decrease forage yield and nitrogen fixation of alfalfa when the median concentrations exceeded .08 parts per million, with no effect on forage quality.

be depressed by short term exposures to sulfur dioxide concentrations of .04 - .06 parts per million.

- The growth of plants exposed to nitrogen dioxide pollution in the dark is not decreased at concentrations less than 1.5 parts per million under a 5 hr./day exposure regime throughout the plant life cycle.
- The concentration threshold at which ozone causes injury to plants is increased by mild water stress factors and/or limited water availability.
- Plants exposed to sulfur dioxide emit hydrogen sulfide gas to the atmosphere. The quantity of emitted gas is proportional to the concentration of sulfur dioxide to which the plants are exposed.
- Research on the effects of photochemical oxidants on a mixed coniferous forest ecosystem in the San Bernardino National Forest demonstrated many harmful effects ranging in ecological scale from altered physiological processes to a lack of reproduction which will cause the larger tree species, and thus the forest itself, to disappear over an extended period of time.
- Hydrocarbon effects studies have shown that pines emit significant quantities of monoterpenes, oxidant pollutant precursors, into the environment and the rate of emission increases exponentially with temperature.
- Research has shown that isoprene, a potent oxidant precursor, is emitted in significant quantities into the atmosphere by a wide range of plant species including major agriculture crops and forest species.

1980 Program

In 1980, the Agency has allocated a total of \$2,389,100 to this program, of which \$898,400 is for Salaries and Expenses and \$1,490,700 is for extramural purposes under the Research and Development appropriation.

In 1980, research emphasis is being placed on clarifying the effects of criteria pollutants in order to evaluate the adequacy of secondary air quality standards and to provide the ecological basis for refining and updating existing criteria and standards. Research will also support decisions relating to regionalization of standards and prevention of significant deterioration.

Investigations are aimed at detecting, understanding and predicting the impact of airborne pollutants on terrestrial ecosystems (natural systems and agricultural crops). This includes assessments of biotic and abiotic components, the related pollutant interactions on processes and the potential impact on human health or welfare. Research findings are relating air pollutant concentrations to damage potentials in the environment by assessing pollutant perturbations and effects and bioaccumulation in terrestrial ecosystems and in food chains. Studies encompass pollutant sources, emissions, air quality deterioration potential, and other discharges which alter environmental conditions and subsequently affect terrestrial systems.

Extramural research is being expanded to laboratory and field assessments of the acute and chronic, low level effects of photochemical oxidants (ozone, PAN), sulfur dioxide and nitrogen oxides. Studies are being conducted on pollutant interactions as related to agricultural crops and natural ecosystems to determine their impact on productivity, food quality, and its economic implications. Oxidant stress studies on

pollutants, are defining minimum allowable exposures. A regional crop loss assessment network is being established to determine the economic impact of photochemical oxidants and sulfur dioxide on commercially important crops. Other studies include the effects and assessments of hydrocarbons (biogenic emissions) as they contribute to air-mass loadings.

In addition, synergistic reactions of pollutants coupled with biological processes, environmental factors and interactions within the soil ecosystems are also being evaluated.

1980 Explanation of Changes from Budget Estimates

The net increase of \$123,100 results from several actions. An increase of \$19,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$1 million to ADP costs resulted in a decrease of \$3,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$41,300 to this activity.

A reprogramming of \$4,000 was made within the air media to transport and fate to support the effort to integrate the MAPPs 3 program within one activity. A transfer of \$36,000 was made to the management and support media to lab support for lab maintenance costs due in part to increasing costs of energy. A transfer of \$187,700 was made from water quality freshwater ecological effects as a result of the reorganization of the programmatic functions of the Corvallis and Las Vegas labs after a 1979 RIF.

1981 Plan

The Agency requests a total of \$2,295,300 and 11 permanent workyears for this program, of which \$975,000 is for the Salaries and Expenses appropriation and \$1,320,200 for extramural activities under the Research and Development appropriation. This request reflects a net decrease of \$93,800. This decrease represents a change in Agency priorities, delaying the establishment of satellite sites for the national crop loss assessment network as well as some nitrogen dioxide research. The 1981 program includes:

- Studies to characterize pollutant impacts, acute and chronic effects of single pollutants, pollutant mixes and interactions, and where applicable, the economic losses associated with pollutant exposures.
- Studies to determine the dose/response of selected agricultural crop and tree species to photochemical oxidants (ozone, PAN, and nitrogen oxides). A major portion of this research will be extramural and operation of five crop loss assessment research sites will evaluate ozone and sulfur dioxide effects and the economic losses of crops on a regional basis. Additional sites will be developed as appropriate to attain a national assessment.
- Methods and techniques will be developed to assess bioaccumulation, synergistic reactions and the effects of gaseous pollutant mixtures on agriculture crop yields, plant life in older development stages and physiological processes of plant species.
- Photochemical oxidant stress studies on coniferous and deciduous forest ecosystems will continue, resulting in the development of mathematical models to predict pollutant impact.

- Studies to assess the long-term stability of plant communities subjected to low level pollution stresses from sulfur dioxide will be conducted. Population survival, reproduction and mortality are of major interest in these studies.

TRANSPORT AND FATE

1979 Accomplishments

In 1979, this program utilized \$10,656,500. This includes \$2,081,300 for in-house expenses and \$8,575,200 for extramural expenses.

A first generation photochemical air quality simulation model, designed to predict pollution concentrations on the regional scale, was completed and delivered to EPA. This model will be used in assessing the impact of the long-range transport and transformation of ozone and its precursors for the Northeast. This work represents an integral part of the total photochemical oxidant transport and fate program to assist the evaluation/revision of the 1982 state implementation plan (SIP) for oxidants.

A preliminary report was prepared to assess current information on the role of hydrocarbons emitted from vegetation, e.g., terpenes, in producing photochemical oxidants in urban and rural areas. Over the past few years there has been a great controversy on the specific degree to which the natural hydrocarbon emissions contribute to photochemical oxidant pollution problems. This report evaluated the current scientific data available on the issue and identifies those areas where additional research is needed. These areas are: (a) deterioration of natural hydrocarbon emissions factors, (b) quantification of natural hydrocarbons gases and aerosols in urban and rural atmosphere, and (c) identification of products resulting from smog chamber photochemical studies of natural hydrocarbons.

Scientific results obtained from the summer of 1978 field study in the Houston area were presented in a special conference. Technical information was presented on the chemical and physical characterization of photochemical oxidants and aerosols found in the Houston atmosphere. This information described the contributions from both man-made and natural sources, historical air quality trend analysis and air quality modeling studies.

A report was prepared that described meteorological conditions that are associated with high ambient ozone and sulfate concentrations. The study was based on a summer air pollution episode that occurred in the eastern portion of the U.S. This study contributed to the overall understanding of the atmospheric conditions that lead to extremely high levels of pollution.

A report was prepared that described the application of wind tunnel experimentation when assessing the air quality impact from a power plant located in complex terrain. The data collected from a field study, which was conducted on a coal fired power plant located in the Clinch River area, was compared with wind tunnel results. This comparative study will be used to develop more accurate air quality simulation models to assess the impact of stationary source pollutants emitted in complex terrain.

In 1980, the Agency has allocated a total of \$12,618,100 to this program, of which \$2,366,500 is for Salaries and Expenses and \$10,251,600 is for extramural purposes under the Research and Development appropriation. In 1980 the program emphasized the following:

The STATE (Sulfur Transport and Transformation in the Environment) program will conduct a major regional field experiment called PEPE (Persistent Elevated Pollution Episodes). Unlike the previous STATE studies which focused primarily on individual power plant plumes, PEPE will expand the field program activities to a larger region where both urban and power plant plumes become well mixed. Pollution episodes on the order of 300 kilometers in diameter will be tracked physically and chemically over several summer days as they move thousands of kilometers. EPA and NASA are planning a joint program to study this phenomenon by developing improved techniques for utilizing satellite imagery to study the structure and movement of the polluted air mass. The results from the STATE program will provide information on the long-range transport and fate of fine and inhalable particles with emphasis on atmospheric sulfates.

Another major field program, NEROS, (Northeast Regional Oxidant Study) will investigate the impact of long-range transport of photochemical oxidants and their precursors in the northeastern portions of the U.S. The results from NEROS will be used in the development of air quality models for predicting and assessing regional scale air pollution problems.

The Houston air quality field study will be in its third year. The results of the field program are intended to provide useful information on the pollutants and meteorological conditions that lead to elevated oxidant and particulate levels.

An important series of validation studies for urban scale oxidant pollution problems are being conducted to provide reliable and accurate air quality simulation models. With an extensive air quality data base collected during the St. Louis Regional Air Pollution Study, a special group of photochemical air quality simulation models (AQSM) will be validated for eventual use in preparing and evaluating oxidant control strategies for large urban areas in the U.S.

One of the important air quality modeling areas that will be accelerated in 1980 is the development of models that can be used to predict pollutant concentrations in complex or rough terrain. Since many of the current and projected locations of power plants are found in hilly and mountainous areas, there is a need to develop types of air quality models that can provide reliable and accurate pollutant concentration predictions for assessing pollutant abatement strategies.

Special laboratory studies will be conducted to ascertain information on the formation, rate of growth, and removal of important regulated and non-regulated pollutants with major emphasis on oxidants, sulfate, nitrate hydrocarbons and particulate matter (including fine and inhalable particulates). A smog chamber will be used to simulate atmospheric chemical and physical processes for certain studies.

1980 Explanation of Change from Budget Estimate

The net decrease of \$391,900 results from several actions. An increase of \$64,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$3,000 and \$2,000, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$180,200 to this activity.

... (\$15,000) and \$8,000 from the energy media from energy transport and fate to support the effort to integrate the MAPPs 3 program within one activity.

A transfer of \$207,000 was made to the management and support media for lab support for lab maintenance costs due in part to increasing costs of energy. A transfer of \$45,700 was made within the air media to characterization and measurement methods development and \$45,700 to the toxic substances media to reflect a transfer of personnel.

1981 Plan

The Agency requests a total of \$13,105,700 and 42 permanent workyears for this program, of which \$2,470,300 is for the Salaries and Expenses appropriation and \$10,635,400 for the Research and Development appropriation. The increase of \$487,600 will be utilized to accelerate the research program on photochemical oxidant transport and fate processes.

The 1981 program will continue to support research on determining the transport, transformation and removal process of regulated and important non-regulated pollutants with major emphasis on oxidants, sulfates, nitrates, hydrocarbons and particulate matter (including fine and inhalable particulates). The major research areas include the following:

The STATE program will devote most of its effort to the analysis and evaluation of data collected during the PEPE experiment conducted in the summer of 1980. The data collected by using PEPE will be used to develop and evaluate air quality models predicting spatial and temporal concentrations of fine and inhalable particulates on the regional scale.

The NEROS program will focus on completing the development and evaluation of a second generation regional air quality model for photochemical oxidants. The modeling effort will be based on the air quality data collected during the summer experiment of 1979 and 1980.

The Houston air quality study will complete its work on characterizing the atmospheric aerosol/fine particulates in the atmosphere. In order to complete the work on the photochemical oxidant problem in the Houston area, emission data will be collected and used in applying an urban photochemical air quality simulation model adapted for Houston.

Research will continue in other air quality modeling areas. For the urban scale pollution problem, photochemical oxidant air quality models, validated in the 1980 program, will be subsequently modified and adapted in a manner to minimize the necessary data and computational requirements that the general user community will require to run the models.

Smog chamber studies will be conducted to simulate atmospheric pollutant processes. This research will attempt to determine the role hydrocarbons (especially aromatics and low molecular weight paraffins) and nitrogen oxides play in producing elevated levels of photochemical oxidants. Also research will be conducted to assess the impact of natural hydrocarbons emissions on rural and urban oxidant pollutant problems. The laboratory research will focus on the mechanisms of formation and removal of fine and inhalable particulate matter with emphasis on the conversion of precursor gases such as sulfur dioxide to sulfates.

Industrial Processes

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$1,069	\$1,064	-\$5
Research and Development.....	3,030	3,030	...
Grand Total.....	4,099	4,094	-5



Industrial Processes

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1980 vs. 1981
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and Expenses...	\$1,128	\$1,150	\$1,133	\$1,069	-\$64
Research and Development	2,861	2,900	2,934	3,030	+96
Grand Total.....	3,989	4,050	4,067	4,099	+32
<u>Permanent Positions.....</u>	22	18	18	18	...
<u>Full-time Equivalency...</u>	40	31	31	31	...

Budget Request

The Agency requests a total of \$4,098,800 for 1981, an increase of \$31,600 from 1980. Included in this total is \$1,069,000 for the Salaries and Expenses appropriation and \$3,029,800 for extramural purposes under the Research and Development appropriation, a decrease of \$64,100 and an increase of \$95,700, respectively. The net \$31,600 increase will be for identifying the sources of, and control technology for, oxidants.

Program Description

The industrial air processes program is primarily an extramural effort that responds to legislative mandates of the Clean Air Act. The overall objective is to assess industrial air pollution emissions and to develop and demonstrate pollution control technologies capable of reducing or eliminating potentially hazardous and toxic pollutants emission from industrial point sources. Outputs provide technical and the cost data bases which support regulatory standards development and provide industry with environmental control options. Emissions under study are those primarily found in the following industries: chemical processing, agrichemicals (fertilizers and pesticides), textiles, pulp and paper, metal fabrication and finishing, metal and mineral production, petroleum refining, and storage segments, as well as those emissions resulting from hazardous material incidents.

1979 Accomplishments

The 1979 resources obligated for this activity was \$3,988,600, of which \$1,128,100 was for in-house costs and \$2,860,500 was for extramural activities. In 1979, the program

- Assessed and monitored the manufacturing operations for four pesticides, four petro-chemicals, and four organic chemicals.
- Investigated lime/limestone scrubbing for smelting sulfur-bearing nonferrous ores.
- Characterized volatile emissions (arsenic, lead and cadmium) and identified available control technologies for copper, lead, and zinc smelters.
- Demonstrated carbon absorption for control of petroleum solvent emissions and solvent recovery for an industrial dry cleaning facility. This work undertaken

types; and initiated a program to demonstrate control technology for reduction of organic solvent emissions.

- Evaluated and improved solventless coating technologies for the furniture manufacturing industry to determine inertness and product acceptability. These methods of painting, which do not utilize solvents, will assist the Office of Air Quality Planning and Standards to set lower emission limitations for volatile organics.
- Measured volatile chemical emissions from wastewater treatment basins. This program, developed for the kraft pulping industry, will provide a data base and sampling methodology for other industry segments.
- Investigated one coating process alternative to reduce organic discharges from automobile manufacturing operations.
- Completed an assessment on sources of toxic air emissions from the textile industry and implemented bench scale activity for hydrocarbon removal.
- Demonstrated technology for control of hazardous particulates from glass industry furnaces.
- Developed an approach for evaluating the cost and capabilities of alternatives for controlling hydrocarbon emissions from operations which use solvent such as dry cleaning.
- Conducted an environmental assessment of coal preheaters to identify types and quantities of hazardous pollutants emitted.
- Characterized technologies for control of fugitive lead emissions from secondary lead facilities through an interagency agreement with the National Institute of Occupational Safety and Health (NIOSH).
- Optimized methods for control of asbestos emissions.
- Evaluated, at pilot scale, four flue gas cleaning techniques to remove SO_x and trace metals from metallurgical offgases.

1980 Program

In 1980, the Agency has allocated a total of \$4,067,200 to this program, of which \$1,133,100 is for the Salaries and Expenses appropriation and \$2,934,100 is for extramural purposed under the Research and Development appropriation.

A major problems in the attainment and maintenance of ambient air quality standards at the present time is the problem of oxidants. The program emphasis in 1980, therefore, is the characterization and control of hydrocarbon emissions which are precursors to oxidant formation.

the development of evaluation of these new SIP's, critical information gaps in the current emissions inventories must be filled. To satisfy this requirement, an industrial air emissions volatile organic chemicals (VOC) program will be initiated. Specifically the program will:

- Characterize point source emissions from approximately eight VOC storage and handling sites to determine their contribution to total VOC emissions rate. Specific chemical compound identification will be included. Test sites will be selected to enable a nationwide estimate of all emissions made by these storage and handling sites.
- Develop a cost-benefit-risk model with supporting emissions data that can be used in regulating various sources of potential carcinogenic emissions as well as other chemicals from iron and steel manufacturing operations.
- Demonstrate a capture device for volatile organic emissions from automotive tire curing. This is needed for new source performance standards (NSPS) development.
- Demonstrate applicability of surfactant enhanced scrubbing (SES) to control VOC emissions from paint-bake ovens in automotive and/or other industries.
- Evaluate the drum mix dryer for the asphalt hot mix industry to quantify VOC and particulate emissions as a function of operating parameters.
- Evaluate industrial applications of activated carbon for hydrocarbon control in organic chemical and related industries.
- Develop data to determine the cost effectiveness of various emission reduction and collection technologies for VOC control in metal finishing operations.
- Develop data to determine the cost-effectiveness of various maintenance options as an approach to controlling fugitive VOC emissions from refining, petrochemical and organic chemical facilities.
- Undertake further quantification of VOC emission rates to identify the effect of adding oxidant-producing chemicals at industrial wastewater treatment plants.
- Design and test sophisticated instrumentation systems to maximize exhaust of solvent concentrations from curing ovens, paint application booths, and other solvent use industries to reduce the danger of explosion.

The Office of Air Quality Planning and Standards (OAQPS) estimates that of the 100 new source performance standards planned for promulgation during the next four years, at least 25 will have best available control technology (BACT) that is inadequate in terms of degree of available control. High priority control technology development and testing programs will therefore be undertaken as follows:

- Control technology development programs will be initiated for several critical industrial source categories which will be identified by OAQPS as having inadequate BACT.
- Performance evaluations of retrofit pilot-scale collection technologies such as carbon absorption and catalytic incineration will be conducted at coil, web, and sheet coating facilities, textile finishing facilities, paint-bake ovens, and selected petrochemical sites.

- Studies of new and retrofit technology for dust suppression and fugitive emission controls at secondary lead smelters will be conducted.

1980 Explanation of Changes from Budget Estimate

The net increase of \$17,200 results from several actions. An increase of \$38,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$3,200. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$18,500 to this activity.

1981 Plan

The Agency requests a total of 18 permanent workyears and \$4,098,800 for this program, of which \$1,069,000 is for the Salaries and Expenses appropriation and \$3,029,800 is for extramural purposes under the Research and Development appropriation. The increase of \$31,600 will be used to identify sources of and control technology for oxidants.

States will be revising their implementation plans to meet the National Ambient Air Quality Standards (NAAQS) for oxidants. Industrial air emissions characterization will be continued to support this work. A continuation of control technology development and testing will be supported to improve the performance of best available control technology (BACT) related to several New Source Performance Standards.

A new quick response, short term feasibility testing program will be established to support the Agency's industrial air pollution enforcement program. This activity will perform source inspections and engineering evaluations to determine appropriate control approaches. It will also make small feasibility tests of promising candidate control systems for oxidants, hazardous air pollutants, gaseous and inhalable particulates.

Guidelines will be developed, tested and published for use by the Office of Enforcement in their monitoring program for control of fugitive VOC emissions. This effort will acquire substantive information on the major industrial fugitive sources of oxidant precursors needed to develop effective control strategies for the attainment of the oxidant NAAQS.

Major research results to be achieved in 1981 include:

- Verification of the effectiveness of maintenance as an approach to control fugitive VOC emissions from pumps, valves, etc. in petrochemical and refinery operations.
- Determination of efficiency of flares as a control technique to destroy VOC emissions from the petrochemical and refinery industries.
- Development of emission factors data to quantify fugitive VOC emissions from refinery operations and waste treatment systems.
- Conduct a pilot scale field study in order to produce a design manual of control processes for hydrocarbon emissions for textile printing operations.
- Development of a carbon-regeneration system which would reduce the cost of carbon sorption systems as a control device on small fabric coating emission streams or gasoline control systems.

cold steel rolling mills.

- Determination of emissions from cement kiln burning industrial organic waste.
- Determination of emissions from industrial hazardous waste incinerators.
- Submission of inhalable particulate matter (IPM) samplings and analyses data on primary aluminum, lead, zinc and copper smelters, secondary lead smelters and cement manufacturing facilities to OAQPS.
- Demonstration of surfactant enhanced scrubbing from controlling VOC emissions from metal finishing operations.
- Demonstration of a control device for fugitive arsenic and sulfur dioxide emissions from copper smelter converters.

Monitoring and Technical Support

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Characterization and Measurement Methods Development:					
Salaries and Expenses...	\$2,396	\$3,669	\$3,090	\$3,102	+\$12
Research and Development	4,547	4,864	4,781	4,942	+161
Monitoring Methods and Systems:					
Salaries and Expenses....	1,560	1,384	2,257	2,223	-34
Research and Development.	2,692	3,266	2,828	2,948	+120
Quality Assurance:					
Salaries and Expenses....	1,737	2,851	2,040	2,225	+185
Research and Development.	2,187	2,050	2,420	2,430	+10
Technical Support:					
Salaries and Expenses....	1,750	2,118	2,016	1,950	-66
Research and Development.	1,484	1,087	1,178	1,005	-173
Total:					
Salaries and Expenses....	7,443	10,022	9,403	9,500	+97
Research and Development.	10,910	11,267	11,207	11,325	+118
Grand Total.....	18,353	21,289	20,610	20,825	+215
<u>Permanent Positions</u>					
Characterization and Measurement Methods Development.....	48	63	64	61	-3
Monitoring Methods and Systems.....	22	21	21	21	...
Quality Assurance.....	42	44	42	42	...
Technical Support.....	38	32	34	31	-3
Total.....	150	160	161	155	-6
<u>Full-time Equivalency</u>					
Characterization and Measurement Methods Development.....	54	69	67	64	-3
Monitoring Methods and Systems.....	27	25	32	32	...
Quality Assurance.....	46	45	46	46	...
Technical Support.....	44	47	41	37	-4

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Characterization and Measurement			
Methods Development :			
Salaries and Expenses.....	3,102	3,089	-\$13
Research and Development.....	4,942	4,942	...
Monitoring Methods and Systems:			
Salaries and Expenses.....	2,223	2,218	-5
Research and Development.....	2,948	2,948	...
Quality Assurance:			
Salaries and Expenses.....	2,225	2,215	-10
Research and Development.....	2,430	2,430	...
Technical Support:			
Salaries and Expenses.....	1,950	1,942	-8
Research and Development.....	1,005	1,005	...
Total:			
Salaries and Expenses.....	9,500	9,464	-36
Research and Development.....	11,325	11,325	...
Grand Total.....	20,825	20,789	-36



The Agency requests a total of \$20,825,300 and 155 permanent workyears for 1981, an increase of \$215,500 and a decrease of 6 permanent workyears from 1980. Included in this total is \$9,500,000 for Salaries and Expenses and \$11,325,000 for extramural purposes under the Research and Development appropriation, with an increase of \$97,400 and \$118,100, respectively. The net increase of \$215,500 has the following components: an increase of \$173,500 will provide for prototype studies on the characterization of pollutants in the ambient air at urban locations; an increase of \$86,100 will accelerate implementation of the inhalable particulate network; an increase of \$195,200 will provide for additional quality assurance in monitoring emissions from stationary sources; and a decrease of \$239,300 reflects reduced support for the Office of Air Quality Planning and Standards monitoring program.

Program Description

The air monitoring and technical support program consists of four major components: (1) characterization and measurement methods development for measuring pollutants from sources and in ambient air, (2) monitoring methods and systems development to support operational monitoring requirements, (3) the development and provision of quality assurance procedures and materials to assure monitoring data validity, and (4) the provision of technical support to EPA regulatory and regional offices. Each of these components is discussed below.

The major emphasis of the characterization and measurement methods development program 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 associated with 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 on 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 particulates emissions and the effects of emission control systems on the quality, size distribution, and composition of those particulate emissions.

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

The air monitoring methods and systems program supports the testing, evaluation, and demonstration of measurement systems for monitoring specific pollutants in ambient air and emissions from stationary sources. The program assures the availability of monitoring methods for the measurement of all regulated pollutants at or below the concentration levels of interest, and for measurement of unregulated pollutants at levels of interest specified by the EPA's regulatory offices.

The quality assurance program serves the EPA's air monitoring effort through the validation and standardization of monitoring methods, development and provision of

offices in implementing the mandates of the Clean Air Act. Efforts are in the area of special measurements of regulated pollutants for regulation revision and planning as well as measurements of unregulated pollutants such as asbestos, organic chemicals and pesticides and their transformation products for future regulatory activities. The program plans and provides support to operational monitoring in those areas where regional or program office personnel cannot respond because of the need for specialized expertise or facilities available only in the Office of Research and Development.

CHARACTERIZATION AND MEASUREMENT METHODS DEVELOPMENT

1979 Accomplishments

During 1979, obligations were \$6,942,700 of which \$2,395,800 was for in-house purposes and \$4,546,900 was for extramural purposes.

In 1979, there were several noteworthy accomplishments, particularly in the mobile source and stationary source areas. A manual of measurement methods was published for 12 unregulated pollutants emitted by passenger cars. These methods will support the implementation of Section 202(a) (4) requirements on these pollutants.

Two reports to Congress were completed. The first, required under Section 214, reported on the particulate matter emissions from motor vehicles. The second, under Section 403(g) reported on sulfur bearing compounds emitted from motor vehicles and aircraft engines.

In the area of stationary sources, a special sampling device was developed to allow the measurement of free sulfuric acid emitted in the flue gas from coal and oil fired boilers. The device separates the sulfuric acid from other primary sulfates and was used to show that free sulfuric acid may be as high as forty percent of the primary sulfate emissions.

1980 Program

In 1980, the Agency has allocated a total of \$7,870,900 to this program, of which \$3,090,300 is for Salaries and Expenses and \$4,780,600 is for extramural purposes under the Research and Development appropriation.

Ambient air quality research is focusing on the optimization of measurement methods for inhalable particulate matter and the fine particulates associated with visibility deterioration. Studies are being conducted to characterize the particulates in some locations and to develop procedures for identifying their sources and apportioning the inhalable particulates according to type of source. Work continues on the development of instruments sufficiently sensitive to measure background levels of pollutants, particularly sulfates, nitrates, hydrocarbons and potentially hazardous organic substances.

In the stationary source research area, measurement methods for inhalable and fine particulates are being perfected. The methods being worked on include a reference method to be used in connection with new source performance standards which may be proposed in the near future, a particle size monitor for in-stack use and a sampling device to collect vapors which become aerosols at ambient conditions. Work is continuing on the characterization of particulates from combustion sources and smelters, on a sampling strategy for pressurized bag-houses and on methods to locate and measure fugitive particulate emissions.

conducted. The chemical compounds in mutagenic fractions will be identified, as will the diesel fuel precursors which give rise to these compounds in the emissions. Work is continuing on the characterization of emissions from advanced automotive power systems scheduled for use in the 1980's including turbo-charged, naturally aspirated diesels and gas turbine engines.

In the carbon fiber program, instrumentation for monitoring emissions from production, fabrication and disposal facilities is being evaluated. Simulations of projected processing and disposal operations are being undertaken and a procedure to generate carbon fiber aerosols is being developed for use in other studies.

1980 Explanation of Change from Budget Estimate

The net decrease of \$661,800 results from several actions. An increase of \$81,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$138,400 to this activity.

A reprogramming of \$15,000 was made within the air media to transport and fate to support the effort to integrate the MAPPs 3 program within one activity. A transfer of \$136,000 was made to the management and support media to lab support for lab maintenance costs due in part to increasing costs of energy. A reprogramming of \$45,700 was made within the air media from transport and fate to reflect a transfer of personnel. A reprogramming of \$500,000 was made within the air media to monitoring methods and systems in order to comply with an OMB directive to place all funds for the National Bureau of Standards in one activity in each applicable media for ease of program review.

1981 Plan

The Agency requests a total of \$8,044,400 and 61 permanent workyears for this program, of which \$3,102,300 is for the Salaries and Expenses appropriation and \$4,942,100 is for extramural purposes under the Research and Development appropriation. An increase of \$173,500 and a decrease of 3 permanent workyears will be used to establish a prototype study to characterize the ambient air in different locations, to identify potentially hazardous substances and to determine the sources of the hazardous pollutants.

All components of this program will continue to emphasize inhalable and fine particulate matter and organics including specific compounds identified as hazardous. The work on carbon fibers will be completed and the potential environmental problems arising from the use of this material identified.

Carefully designed studies will be undertaken to characterize the ambient air with respect to hazardous pollutants at an urban industrial and non-industrial site. The pollutants will be identified and the biological activity determined for those pollutants occurring at significant levels. The levels of a limited number of chemicals already identified as potentially hazardous, will be determined for use in establishing exposures and assessing risk. Work on inhalable and fine particulates will continue.

also be conducted to determine emission factors for hydrocarbons from selected stationary sources, to develop low cost instruments for the routine enforcement and surveillance activities of measuring gaseous pollutant concentrations and plume velocity and opacity from positions off the source property. Research will continue on procedures for measuring pollutants emitted from extended sources and other unusual sources such as the flares used in petroleum refineries.

Research on mobile sources will continue on unregulated and potentially hazardous pollutants emitted from light and heavy duty vehicles powered by a variety of engines. Turbo-charged and naturally aspirated diesel engines will be emphasized. Both in-use and prototype vehicles will be studied. The impact of fuel composition and driving conditions on the chemical and physical properties of the emissions will be determined.

MONITORING METHODS AND SYSTEMS

1979 Accomplishments

During 1979, resources obligated totaled \$4,251,600. Included in this total is \$1,559,800 for salaries and expenses and \$2,691,800 for extramural purposes. In 1979, the program:

- Registered fuels and fuel additives and prepared required reports.
- Completed pilot studies aimed at selecting the best instrumentation mix for the inhalable particulate network monitoring stations and provided data for decisions on instrument selection.
- Operated and expanded the inhalable particulate network to a total of 100 monitoring sites and issued semi-annual reports.
- Collected diesel emissions at the New York Port Authority Terminal; analyzed emissions and made the results available for a study of health effects.
- Prepared instrument calibration and standards on 100 compounds for use in organic screening analyses.
- Completed testing on design features of a differential absorption laser measurement technique and found the system adequate to measure oxidant transport.

1980 Program

In 1980, the Agency has allocated a total of \$5,085,400 to this program, of which \$2,257,100 is in the Salaries and Expenses appropriation and \$2,828,300 is for extramural purposes in the Research and Development appropriation. The highlights of the program include:

- Continuation of the fuel and fuel additive registration program and updating the program through computerized techniques.
- Comparison of promising sampling techniques, procurement of appropriate equipment for approximately 160 sampling sites, performance of all needed physical and and chemical measurements and operation of data system for the inhalable particulate sampling network.
- Characterization and field testing of a large particle classifier and elucidation of particle size effects of measured total suspended particulates and inhalable particulates on the fraction dust mask.

- Development of short-term monitoring response capability to provide timely response to Agency problems.
- Proposal of an inhalable particulate reference method and submission for promulgation in the Federal Register.

1980 Explanation of Change from Budget Estimate

The net increase of \$435,400 results from several actions. An increase of \$26,300 resulted from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$3,100 and \$13,800, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$74,000 to this activity.

A reprogramming of \$500,000 was made within the air media from air characterization and measurement methods development in order to comply with the OMB directive to place all funds for the National Bureau of Standards in one activity in each applicable media for ease of program review

1981 Plan

The Agency requests a total of \$5,171,500 and 21 permanent workyears for this program, of which \$2,223,500 are for the Salaries and Expenses appropriation and \$2,948,000 are for extramural purposes in the Research and Development appropriation. This is an increase of \$86,100 to accelerate implementation of the inhalable particulate network. During 1981 the program will:

- Conduct fuel and fuel additive registration and regulation program as required by the Clean Air Act Amendments.
- Operate and expand the inhalable particulate network to 300 stations based on program office needs.
- Report on feasibility of using multi-spectral scanner data for mapping and interpreting polluted air mass transport.
- Evaluate large particle size classifier to support a possible new ambient air particle standard.
- Develop capability to analyze for non-volatile organic chemicals associated with particulate matter.
- Evaluate and modify ten methods for hazardous volatile organic compounds as identified and prioritized by the Office of Air Quality Planning and Standards.
- Provide a system for evaluating the health effects of diesel emission in ambient air.

QUALITY ASSURANCE

1979 Accomplishments

During 1979, obligations totaled \$3,924,200. Included in this total was \$1,736,800

- Prepared sections for the Quality Assurance Handbook as new and improved methods and procedures became available.
- Completed blind performance audits among 100 to 150 laboratories semi-annually and issued audit reports on CY-1978 activities.
- Conducted workshops in all ten regions to assist States' implementation of quality assurance requirements of the Air Monitoring Regulations.
- Validated and promulgated ten equivalent monitoring methods.
- Maintained repository of quality control reference samples and materials to conduct national and special performance audits of ambient air and stationary source measurements.

1980 Program

In 1980, the Agency has allocated a total of \$4,459,500 of which \$2,039,500 is for the Salaries and Expenses appropriation and \$2,420,000 is for extramural purposes under the Research and Development appropriation. Planned outputs include:

- Maintenance of repository of quality control reference samples and materials to conduct national and special performance audits of ambient air and stationary source measurements.
- Performance and systems audits of state and local air monitoring stations and national air monitoring stations including the inhalable particulate network.
- Portable auditing devices for sulfur dioxide, nitrogen disulfide and ozone that can be used at a field monitoring station to determine the accuracy of a continuous source monitor.
- Performance specifications and quality assurance practices for continuous source monitors (carbon monoxide and hydrogen sulfide).
- Standards methods for measuring national emissions standards for hazardous air pollutants in ambient air, e.g., mercury, beryllium, vinylchloride, benzene.
- Improvements in existing reference methods for total suspended particulates, sulfur dioxide and carbon monoxide.
- Audit material verification centers for regional and national use for systems and performance evaluations.
- Process applications for verification of equivalent methods.
- Assistance to regional quality assurance workshops for States.

1980 Explanation of Change from Budget Estimate

The net decrease of \$441,500 results from several actions. An increase of \$58,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$2,100. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyear resulted in a decrease of \$67,900 to this activity.

A transfer of \$250,000 was made to the drinking water media to quality assurance to correct an incorrect transfer of interdisciplinary funds to the air media in the budget request; the funds are now reprogrammed to the drinking water media to more accurately portray the intended purpose of the quality assurance program.

A transfer of \$90,000 was made to the water quality media to monitoring methods and systems reflecting a shift of emphasis from quality assurance to monitoring methods and systems. The two programs are closely aligned; the monitoring methods program corrects deficiencies in candidate operational monitoring methods and systems programs, then the Quality Assurance program takes these corrected methods and validates their utility for operational monitoring of pollutants; this reprogramming represents a change in priority to emphasize correction of technical deficiencies in additional methods to respond to NPDES monitoring requirements.

1981 Plan

The Agency requests a total of \$4,654,700 and 42 permanent workyears of which \$2,224,700 is for the Salaries and Expenses appropriation and \$2,430,000 is for extramural purposes under the Research and Development appropriation. This is an increase of \$195,200 for additional quality assurance effort in monitoring emissions from stationary sources. During 1981 the program will:

- Validate six measurement methods.
- Perform systems audits for gaseous and inhalable particulate monitoring networks, national air monitoring stations, and State and local air monitoring stations.
- Perform on site evaluations of five stationary sources to assure that the measurements made are of known accuracy.
- Develop three new audit materials for stationary source measurements.
- Produce and distribute approximately 200 standard reference materials containing contaminants incorporated into biological tissue.
- Verify auditing devices used by State and local agencies.
- Maintain and upgrade repository of quality control reference samples and materials to conduct national and special performance audits of ambient air and stationary source measurements.
- Continue operation of standards laboratory.

TECHNICAL SUPPORT

1979 Accomplishments

During 1979, obligations totaled \$3,234,200. Included in this total was \$1,750,100 for salaries and expenses and \$1,484,100 for extramural purposes. During 1979, the program:

- Provided analytical services to special monitoring networks such as the non-criteria pollutant monitoring network, National Fuels Surveillance Network in support of implementation plans and control strategy developments, e.g., data for nitrogen dioxide levels of large urban areas, ozone levels in national forests and organic levels at suspected major sources of emissions.

- Provided monitoring data on oxidants in the Lake Tahoe Basin to Region IX and the States of Nevada and California for the purpose of developing control strategy models and modified state implementation plans. Vertical profiles were developed for ozone, nitrogen oxides, hydrocarbons and particulates at different sites in the Tahoe Basin.
- Operated the International Precipitation Laboratory as a joint effort for the World Meteorological Organization and the Collaborating Center for Environmental Pollution Control, a global international cooperative effort with the World Health Organization. Provided consultation and reports on air quality, including acid rain measurements, throughout the world.

1980 Program

In 1980, the Agency has allocated a total of \$3,194,000 to this program of which \$2,015,700 is for Salaries and Expenses and \$1,178,300 is for extramural purposes under the Research and Development appropriation. The 1980 program will:

- Provide analytical services to special monitoring networks such as the Non-Criteria Pollution Monitoring Network, National Fuels Surveillance Network and the National Air Surveillance Network for use in support of state implementation plan monitoring.
- Operate the Air Pollution Background Network and expand operations to conform with national air monitoring sites.
- Collect data in four major Northeastern U.S. urban areas (Boston, New York, Baltimore, and Washington, D.C.) for the Office of Air Quality Planning and Standards to extend the data base on long range oxidant transport and to evaluate the impact of state implementation plans on regional air quality.
- Analyze gasoline samples for lead, phosphorous, sulfur and manganese for enforcement purposes (Support Section 211 of the Clean Air Act.)
- Analyze metals, asbestos and carcinogens in air in support of regions.
- Evaluate impact of alternative new source performance standards.

1980 Explanation of Change from Budget Estimate

The net decrease of \$10,800 results from several actions. An increase of \$53,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$6,300. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$57,700 to this activity.

program, of which \$1,949,500 is for the Salaries and Expenses appropriation and \$1,005,200 is for extramural purposes under the Research and Development appropriation, a decrease of \$239,300 and 3 permanent workyears. This decrease represents a lower level of technical support required by the Office of Air Quality Planning and Standards monitoring program. The 1981 program will provide:

- Specialized services to the Office of Air Quality Planning and Standards for trends assessment including analysis of data from the national air monitoring sites for trace elements and non metal organics, and collection of oxidants concentration data in a major urban area to assess regional pollution patterns.
- Support for trend data collection from the Air Pollution Background Network. Procure, install and operate two additional sites for the network.
- Source sampling, overhead monitoring and analytical support to Office of Air Quality Planning and Standards and the regions.
- A field study for the Office of Air Quality Planning and Standards to determine atmospheric loading of one hazardous pollutant for regulatory assessment.
- Collection and analysis of ambient and source air samples for asbestos.
- Support liaison with regional offices.
- Collection of data to assist Office of Air Quality Planning and Standards in review of state implementation plans.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
(dollars in thousands)					
<u>Appropriation</u>					
Emissions Standards and Technology Assessment:					
Salaries and Expenses \$3,598		\$3,175	\$3,681	\$3,504	-\$177
Abatement, Control and Compliance..... 11,600		26,800	25,845	16,948	-8,897
Energy and Pollutant Strategies Development:					
Salaries and Expenses 1,550		1,950	2,046	1,956	-90
Abatement, Control and Compliance..... 1,033		1,200	1,415	1,559	+144
State Program Guidelines and Regulations Development:					
Salaries and Expenses 2,838		1,550	2,998	3,238	+240
Abatement, Control and Compliance..... 2,287		2,800	1,406	1,711	+305
Total:					
Salaries and Expenses 7,986		6,675	8,725	8,698	-27
Abatement, Control and Compliance..... 14,920		30,800	28,666	20,218	-8,448
Grand Total..... 22,906		37,475	37,391	28,916	-8,475
<u>Permanent Positions</u>					
Emissions Standards and Technology Assessment	112	121	121	107	-14
Energy and Pollutant Strategies Development	44	41	44	44	...
State Program Guidelines and Regulations Development..... 87		90	90	93	+3
Total..... 243		252	255	244	-11
<u>Full-time Equivalency</u>					
Emissions Standards and Technology Assessment	126	131	126	115	-11
Energy Pollutant Strategies Development	50	49	53	50	-3
State Programs Guidelines and Regulations Development..... 101		100	100	101	+1

AIR QUALITY AND STATIONARY SOURCE PLANNING AND STANDARDS

	Original Estimate <u>1981</u>	Revised Estimate <u>1981</u>	President's Reduction <u></u>
	(dollars in thousands)		
<u>Appropriation</u>			
Emissions Standards and Technology			
Assessment:			
Salaries and Expenses.....	\$3,504	\$3,483	-\$21
Abatement, Control and Compliance...	16,948	16,948	...
Energy and Pollutant Strategies			
Development:			
Salaries and Expenses.....	1,956	1,944	-12
Abatement, Control and Compliance...	1,559	1,559	...
State Program Guidelines and Regulations			
Development:			
Salaries and Expenses.....	3,238	3,219	-19
Abatement, Control and Compliance...	1,711	1,711	...
<u>Total:</u>			
Salaries and Expenses.....	8,698	8,646	-52
Abatement, Control and Compliance...	20,218	20,218	...
Grand Total.....	28,916	28,864	-52

a decrease of \$8,475,400 and 11 permanent workyears from 1980. Included in this total is \$8,698,500 for Salaries and Expenses and \$20,217,600 for Abatement, Control and Compliance, with decreases of \$27,200 and \$8,448,200, respectively. These decreases primarily reflect reductions in extramural support for the setting of New Source Performance Standards.

Program Description

This subactivity includes the setting of emission standards for stationary sources and industry assessments and pollution control cost and other analyses which support the standard setting function. Also included are the establishment, review, and revision, if necessary, of ambient air quality standards; the assessment of potential pollutants; the development of pollutant control strategies, analytical tools and guidelines; the translation of control strategies into regulatory actions; and the assessment of the impact of regulatory actions on energy supplies.

Emissions Standards and Technology Assessments -- National emission standards for stationary sources are set under Sections 111 and 112 of the Clean Air Act. Section 111 mandates the Environmental Protection Agency to establish New Source Performance Standards. Section 112 authorizes National Emission Standards for Hazardous Air Pollutants.

New Source Performance Standards (NSPS) reflect the performance of the best demonstrated systems of emission reduction, considering cost and energy impact for specific processes or facilities in a source category. The analysis supporting the NSPS considers technical feasibility; cost; and economic, energy and environmental impacts. NSPS and other technology assessment activities are tied to the implementation of control strategies for air quality control regions which have not attained the National Ambient Air Quality Standards (NAAQS) and for the prevention of significant deterioration (PSD). The NSPS setting process results in providing useful data to State agencies in defining best available control technology, lowest achievable emission rates, and reasonably available control technology. Presently, a total of 29 source categories are regulated by NSPS, with 69 additional projects underway.

National Emission Standards for Hazardous Air Pollutants (NESHAPS) have been set for asbestos, beryllium, mercury, and vinyl chloride. A fifth air pollutant, benzene, has been listed as a hazardous air pollutant, and the program to establish a NESHAPS is currently underway.

Energy and Pollutant Strategies Development -- The primary activities of this program element are: the development and revision, if necessary, of National Ambient Air Quality Standards (NAAQS); the general assessment of effectiveness of ongoing control programs; the development of appropriate recommendations as to the need for control of specific pollutants; and the analysis of energy impacts of control and of energy-related development on air quality.

State Programs Guidelines and Regulations Development -- The Clean Air Act Amendments of 1977 addressed the problem of widespread nonattainment of National Ambient Air Quality Standards, and provided extended time frames for attainment. These extended time frames were coupled with stringent requirements that must be met by the States in new implementation plans and by sources of air pollution in areas exceeding the standards. Since air pollution problems related to atmospheric transformation and long range transport affect large geographic areas, regional approaches are also required.

and development of activities supportive of states in control program development are described under the air quality strategies implementation subactivity.

EMISSION STANDARDS AND TECHNOLOGY ASSESSMENT

1979 Accomplishments

1979 resources included approximately \$11,599,600 in contract support. These funds were used for engineering studies and other analyses needed to set New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs) and the issuance of information on reasonably available control technology for review of State Implementation Plans (SIP). Also included was the continued detailed study of the synthetic organic chemical manufacturing industry (SOCMI). New Source Performance Standards for aluminum plants, 111(d), glass plants, internal combustion engines, automobile surface coating and phosphate rock were proposed. The revised steam generator, gas turbine, and Kraft pulp mill 111(d) standards were promulgated. Thirty-six additional NSPS were underway in 1979. A priority list of source categories for which standards of performance will be developed under Section 111 of the Clean Air Act was published in the Federal Register. Five reviews of existing standards were completed. A screening to identify the fate of previously uninventoried organic solvents was completed. Control techniques documents were completed for petroleum storage, petroleum tank trucks and vapor recovery systems, perchloroethylene dry cleaning, synthesized pharmaceuticals, rubber tires and graphic arts. Work continued on twelve NESHAPs projects. Twenty-nine product reports, covering 63 percent of the synthetic organic chemical manufacturing industry process emissions, were completed in draft form.

1980 Program

In 1980, the Agency has allocated a total of \$29,525,800 and 121 permanent workyears to this program, of which \$3,681,000 is for Salaries and Expenses and \$25,844,800 is for extramural purposes under the Abatement, Control and Compliance appropriation. These contract resources are being used to continue work related to setting standards for the synthetic organic chemical manufacturing industry and studies required for setting NSPS and NESHAPs. A total of \$1.9 million is being transferred to EPA's Office of Research and Development for support in standards setting. Work is continuing on setting performance standards for all listed source categories. NSPS will be promulgated for automobile surface coating, hydrocarbon storage tank revision, stationary internal combustion engines, glass manufacturing and phosphate rock. Fifteen NSPS proposals are expected for metal furniture; organic solvent degreasing; graphic arts; paper coating; can coating; organic chemical fugitive emissions; coil coating; large appliance coating; non-metallic minerals; ammonium sulfate; sodium carbonate; steel foundry-electric arc furnaces; asphalt roofing; perchloroethylene dry cleaning; and lead battery manufacturing. Four reviews of existing standards will be completed, and eight reviews are underway with three notice of findings anticipated. A nine-volume technical report on the SOCMI will be drafted in 1980, including 39 product reports covering 80 percent of SOCMI process emissions. Control techniques documents for sulfur oxides, particulate matter, best available retrofit technology (BART), and primary aluminum 111(d) will be completed in 1980.

NESHAPs will be proposed for four benzene categories; including maleic anhydride, ethylbenzene/styrene, handling and storage, and refinery fugitive, and revision of Part 61 General Provisions. Work will continue on 14 NESHAP categories, and will be initiated on six.

\$137,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$8,300. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$310,300. A reprogramming of \$170,000 was made within the air media to air energy and pollutant strategies development to provide for projected costs based on prior year experience. Finally, a reprogramming of \$98,000 was made within the air media to air mobile sources standards and guidelines (\$95,100) and to air mobile source preproduction compliance verification (\$2,900) to support the fuel economy program.

1981 Plan

The Agency requests a total of \$20,452,000 and 107 permanent workyears for this program, of which \$3,504,000 is for the Salaries and Expenses appropriation and \$16,948,000 is for the Abatement, Control and Compliance appropriation. Efforts will be made to complete the New Source Performance Standards (NSPS) schedule mandated by the Clean Air Act. Thirty-three projects will result in proposals and 17 in promulgations. Development of NSPS for synthetic fuel areas, such as direct and indirect coal liquefaction, high and low Btu coal gasification and shale oil, will be initiated. Seventeen NESHAPS projects will be continued from 1980, with 6 proposals and 9 promulgations expected. Seven existing standards will be reviewed. Technical support for SIP, best available control technology (BACT), and lowest achievable emissions rate (LAER) determinations, and for the review of construction permit applications for synthetic fuels will be provided.

ENERGY AND POLLUTANT STRATEGIES DEVELOPMENT

1979 Accomplishments

1979 resources included approximately \$1,033,200 for contract support for pollutant screenings and control strategy evaluations, and economic analyses of control strategies and plans. The major focus in 1979 was in the areas of National Ambient Air Quality Standards (NAAQS) and hazardous air pollutants. The NAAQS for lead and the revised ozone standard were promulgated. Work continued on the carbon monoxide and nitrogen oxides standards. Assessment of the need to revise the NAAQS for particulates and SO₂ also continued. In the area of hazardous pollutants, the main accomplishment was the proposal of the Airborne Carcinogen Policy. Work continued on analytic-health risk assessments of arsenic, coke ovens, polycyclic organic matter, cadmium, acrylonitrile, ethylene/dichloride, perchloroethylene and vinylidene chloride as potential hazardous air pollutants under Section 112. Work was initiated to assess the exposure and resulting cancer risk of approximately 43 chemicals suspected of being present in the ambient air. Work continued on the report to Congress on visibility.

In the energy area, major updates were performed on the energy and environmental data base and a methodologies manual was prepared. The data collection and computer processing of data on power plant expansion was completed. This will support future analyses of prevention of significant deterioration (PSD) increment consumption, ability to meet NSPS and impact of EPA policies on utility growth. Work continued on the impact analysis for the utility boiler NSPS.

In 1980, the Agency has allocated a total of \$3,461,300 and 44 permanent workyears to this program, of which \$2,046,500 is for the Salaries and Expenses appropriation and \$1,414,800 is for extramural purposes under the Abatement, Control and Compliance appropriation. The contracts will support the evaluation of the need to revise national ambient air quality standards, the analysis of the environmental, economic and regulatory impacts of the possible standards revisions, and the development of an improved risk assessment methodology.

The 1980 program plan calls for completion of review and appropriate revision to four ambient air quality standards. Reviews include carbon monoxide, nitrogen oxide, sulfur oxide and particulate matter. The report on visibility was submitted to Congress. Work will be initiated to determine the relationship between fine particulates/visibility and sulfates/acid rain. In the hazardous pollutants area, promulgation of the Airborne Carcinogen Policy is expected. Analytic-health risk assessments for polycyclic organic matter, cadmium, perchloroethylene, ethylene dichloride, acrylonitrile, vinylidene chloride, and arsenic, will be completed and listing, if necessary, will occur. Risk assessments will be completed for methyl-chloroform, Freon 113, methylene chloride and trichloroethylene.

In the energy area, the impact analysis for industrial boilers will be completed. The energy and environmental related data base for fossil fuel fired power plants will be maintained.

1980 Explanation of Changes from Budget Estimate

The net increase of \$311,300 results from several actions. An increase of \$71,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$2,800. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$6,200.

A reprogramming of \$26,200 was made within the air media to air mobile source preproduction compliance verification to support the fuel economy program. A reprogramming of \$170,000 was made within the air media from air emissions standards and technology assessment to provide for projected costs based on prior year experience. Finally, a reprogramming of \$105,000 was made within the air media from air quality and emissions data analysis and program assessment to reflect a change in the accounting for resources which provide analyses in support of revisions to the ambient air quality standards.

1981 Plan

The Agency requests a total of \$3,514,800 and 44 permanent workyears for this program, of which \$1,956,200 is for the Salaries and Expenses appropriation and \$1,558,600 is for the Abatement, Control and Compliance appropriation. This is a decrease of \$90,300 and an increase of \$143,800, respectively. The program will continue to emphasize review and revision of National Ambient Air Quality Standards (NAAQS) and the assessment of hazardous pollutants in 1981. Review and promulgation, if necessary, of revised NAAQS for particulate matter, sulfur oxide and nitrogen oxide will occur. Technical, health, energy and economic issues raised through litigation and public inquiry will be addressed regarding changes made to all revised NAAQS. The relationships between fine particulates/visibility and sulfates/acid rain will be identified, so that appropriate legislative or regulatory action can be recommended.

in the hazardous pollutants area, the Airborne Carcinogen Policy will be implemented. Health risk assessment/decision analysis methodology development will continue. Health risk assessments for two chemicals will be completed and a listing decision will be made. Risk and exposure assessments will be completed for three additional chemicals. Population exposure estimates will be completed for 15 chemicals. A study to determine the effectiveness of strategies and problems associated with implementation of strategies to control airborne asbestos will be initiated.

STATE PROGRAMS GUIDELINES AND REGULATIONS DEVELOPMENT

1979 Accomplishments

1979 resources included approximately \$2,286,500 in contract support for the main areas of program emphasis: nonattainment and ozone SIPs; and New Source Review/Prevention of Significant Deterioration. The program emphasized review and approval of 1979 nonattainment SIPs, resolution of technical problems of attaining the ozone standard, and provision of direction and national consistency to New Source Review (NSR). Forty-nine States/territories required to submit nonattainment SIPs made official submittals in 1979. Extensive review and consultation with States and regional offices both preceded and followed these submittals. Follow-up actions on conditional approvals, the development of I/M and transportation control programs, review of regulations for sources of volatile organic chemical emissions, and analysis of particulates control constituted the major emphases of the SIP process.

The complexity of HC/NO_x/O₃ relationships creates major problems in designing control strategies for the attainment of the ozone standard, and severely impacts the States' ability to develop ozone State Implementation Plans (SIP). Particular emphasis was given in 1979 to removing the technical barriers in attaining the ozone standard. Planning was completed for the Northeast Corridor Study to be conducted in 1980 around five major urban areas: Philadelphia, Boston, New York, Baltimore, and Washington, D.C. Technical guidance on air quality models, emission factors and design of the field studies was developed as part of a multiyear program which is leading to the 1982 ozone SIP revisions.

The New Source Review (NSR) program, which directly affects private sector growth, was emphasized through the continuation of a program to ensure consistency of Best Available Control Technology/Lowest Achievable Emission Rate determinations. Progress in securing State assumption of the program for the prevention of significant deterioration has been delayed pending resolution of issues raised in the "Alabama Power Company et al vs. Costle" court ruling.

Stack height regulations and regional consistency regulations were proposed, and Part 51 regulations to account for the revised ozone NAAQS promulgated. Work continued on defining supplementary controls for smelters and the continuous monitoring regulations. Work was initiated on visibility regulations.

1980 Program

In 1980, the Agency has allocated a total of \$4,404,400 and 90 permanent workyears, of which \$2,998,200 is for Salaries and Expenses and \$1,406,200 for Abatement, Control and Compliance. Contracts support the three main areas of program emphasis: 1979 nonattainment SIPs; 1982 ozone SIPs; and New Source Review/Prevention of Significant Deterioration.

Follow-up action on the conditional approvals, schedules and commitments of the 1979 nonattainment SIPs remain a major activity in 1980. Two additional

SIP submittals have been received. Development and implementation of TCM, development of transportation control measures (TCM), review of a second round of VOC regulations and analysis of urban fugitive particulates control are continuing.

Emphasis on removing the technical barriers in attaining the ozone standard continues in 1980 with the expected completion of additional guidance documents, such as volatile organic compounds (VOC) emissions, hydrocarbon (HC) species data required in support of ozone modeling, measuring transported ozone and precursors in urban areas, compilation of emission inventories for use with ozone models, and use of diffusion grid models. The Northeast Corridor Study is being managed and activities for regional scale ozone modeling have been initiated.

In the NSR/PSD area, the regulatory analysis and revised prevention of significant deterioration (PSD) regulations pursuant to "Alabama Power Company et al vs. Costle" are being completed. The clearinghouse of BACT/LAER determinations to ensure national consistency in New Source Review (NSR) is being maintained and managed. The national program to encourage State assumption of PSD is a major emphasis in 1980.

Regulations will be promulgated for stack heights and regional consistency. Proposals include visibility regulations for western power plants, supplementary controls for smelters, continuous emission monitoring, Part 51 regulations for revised NAAQS, and New Source Review.

1980 Explanation of Changes from Budget Estimate

The net increase of \$54,400 results from several actions. An increase of \$111,000 results from the costs of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to agency travel costs resulted in a decrease of \$6,200. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$9,600. A reprogramming of \$40,800 was made to the air mobile source preproduction compliance verification to support the fuel economy program.

1981 Plan

The Agency requests a total of \$4,949,300 and 93 permanent workyears for this program, of which \$3,238,300 is for the Salaries and Expenses appropriation and \$1,711,000 is for the Abatement, Control and Compliance appropriation. This is an increase of \$240,100 and \$304,800, respectively. In 1981, the emphasis of the program will continue to be on the 1979 nonattainment SIPs, the 1982 ozone SIPs, and New Source Review/Prevention of Significant Deterioration. Follow-up on conditional approvals of 1979 nonattainment SIPs, and implementation of SIP schedules and commitments, will continue in 1981. Submittals of schedules for the implementation of transportation control measures are expected. Ongoing programs and studies of unconventional particulate sources will be continued. Studies of fugitive dust sources and control policy and "best management practices" of surface mining operations will be undertaken. The 18-month extensions for submittal of the revised total suspended particulates (TSP) SIPs will be due in early 1981 and these will require review and approval. Review and approval of lead SIP submittals will be completed.

and regional offices in preparation of the 1982 ozone SIPs will continue. A study of modeling effort for the Northeast Corridor will be managed and given technical direction and contract support. Emission factors for the ozone SIPs will be developed. A program to manage and ensure national consistency in New Source Review of current SIPs will be conducted.

National regulations to remedy visibility impairments from existing western power plants will be promulgated, and guidance provided on "plume blight" models. National regulations requiring plans for visibility around Class I areas will be proposed. These regulations, required by Section 169A, will address regional-scale visibility impairment in all mandatory Class I areas. In the eastern United States, this includes sulfate and other secondary aerosols. To support the regulations, an extensive regulatory analysis and regional-scale model will be developed.

Policy and technical guidance and regulatory support for any revised NAAQS SIP requirements will be provided. Congressionally required reports on air pollution control, emission factors for SIPs and toxic pollutants, and AP-42 updates will be provided.

Mobile Source Standards and Guidelines

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980 (dollars in thousands)	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Mobile Source Standards and Guidelines:					
Salaries and Expenses	\$3,608	\$4,015	\$4,325	\$4,325	...
Abatement, Control and Compliance.....	6,658	1,800	1,727	2,059	+\$332
Mobile Source In-Use					
Emission Assessment:					
Salaries and Expenses	237	3,020	211	176	-35
Abatement, Control and Compliance.....	1,930	...	2,584	2,369	-215
Emissions Testing, Analysis and Data Support for Standards and Guidelines:					
Salaries and Expenses	2,328	1,845	2,388	2,319	-69
Abatement, Control and Compliance.....	90	480	169	150	-19
Total:					
Salaries and Expenses	6,173	8,880	6,924	6,820	-104
Abatement, Control and Compliance.....	8,678	2,280	4,480	4,578	+98
Grand Total.....	14,851	11,160	11,404	11,398	-6
<u>Permanent Positions</u>					
Mobile Source Standards and Guidelines.....	101	110	114	108	-6
Mobile Source In-Use					
Emission Assessment..	7	6	7	6	-1
Emissions Testing, Analysis and Data Support for Standards and Guidelines.....	58	46	45	38	-7
Total.....	166	162	166	152	-14

Mobile Source Standards and Guidelines

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Mobile Source Standards and Guidelines:			
Salaries and Expenses.....	\$4,325	\$4,300	-\$25
Abatement, Control and Compliance....	2,059	2,059	...
Mobile Source In-Use Emission Assessment:			
Salaries and Expenses.....	176	175	-1
Abatement, Control and Compliance....	2,369	2,369	....
Emissions Testing, Analysis and Data Support for Standards and Guidelines:			
Salaries and Expenses.....	2,319	2,312	-7
Abatement, Control and Compliance....	150	150	...
Total:			
Salaries and Expenses.....	6,820	6,787	-33
Abatement, Control and Compliance....	4,578	4,578	...
Grand Total.....	11,398	11,365	-33

100

100

100

100



100

100

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Full-time Equivalency</u>					
Mobile Source Standards and Guidelines.....	116	137	148	135	-13
Mobile Source In-Use Emission Assessment..	7	19	10	8	-2
Emission Testing, Analysis and Data Support for Standards and Guidelines.....	67	45	55	47	-8
Total.....	190	201	213	190	-23

Budget Request

The Agency requests a total of \$11,398,100 and 152 permanent workyears for 1981, a decrease of \$5,800 and 14 permanent workyears from 1980. Included in this total is \$6,820,600 for Salaries and Expenses and \$4,577,500 for Abatement, Control and Compliance, with a decrease of \$103,900 and an increase of \$98,100 respectively. Although this decrease reflects completion of most Clean Air Act mandated actions, the increase in contracts reflects work on non-Federal Test Procedures (FTP) regulations.

Program Description

This subactivity involves the development of emission standards for mobile sources of air pollution -- passenger motor vehicles, heavy duty and light duty trucks, motorcycles, and aircraft -- and associated technical activities, such as testing, technology assessments, and emissions characterization. It also involves the development of technical procedures and guidelines applicable to the control of emissions for new and in-use vehicles. The Clean Air Act Amendments of 1977 set forth an extensive control program for mobile sources.

The development of standards for mobile sources requires a characterization and analysis process. An essential part of this process is the continuous assessment of new or improved technologies for potential changes in the nature of air pollutant emissions and other related performance factors, such as fuel economy. It also requires tests, monitoring mechanisms, or other strategies to ensure compliance with the standards. This subactivity includes the technical work underlying EPA efforts to assure the compliance of both new vehicles (e.g., certification) and in-use vehicles (e.g., inspection and maintenance).

Included in this effort are activities aimed at determining mobile source in-use emissions performance. The findings are used to calculate the average emissions that are to be expected from the in-use vehicle population, and to assess the effectiveness of mobile source emission control programs. The data obtained is used to calculate the emission reductions required for attainment and maintenance of National Ambient Air Quality Standards (NAAQS). Since testing began in 1973, the results have consistently indicated that between one-half and three-quarters of tested in-use vehicles fail to meet standards. Much of this failure appears to be attributable to basic maladjustments or disablements of vehicle engines or emission control systems.

As emission standards are imposed on additional classes of motor vehicles and the stringency of these standards increases, reassessments of the control technology used by the manufacturers, in terms of energy and nonregulated pollutants, are required. For example, emissions of currently unregulated pollutants for diesel-powered and catalyst-controlled vehicles are being assessed to determine if additional regulatory action is necessary to prevent the emission of potentially carcinogenic and toxic substances.

In addition, this program must take steps to implement certain provisions of the recently enacted National Energy Conservation Policy Act. These requirements include possible revisions of fuel economy testing procedures and the need for information about additional classes of vehicles. Also required is a report (in collaboration with the Departments of Transportation and Energy) to determine how realistic are current fuel economy estimates.

MOBILE SOURCE STANDARDS AND GUIDELINES

1979 Accomplishments

The 1979 resources included nearly \$6.7 million for contracts. These contracts supported standard setting activities, emission characterization and assessments, inspection and maintenance (I/M) evaluations, and test procedure improvements.

Major regulatory activities included: promulgation of engine parameter adjustments and light duty truck emission standards and the proposal of standards for heavy duty vehicle hydrocarbon (HC) and carbon monoxide (CO) and light duty diesel particulates. Significant progress was made on rulemakings for the high altitude performance adjustments and emissions standards, short test for emission warranties, final aircraft regulation revisions, and heavy duty evaporative test procedures and standards.

Major nonregulatory accomplishments included: guidance on inspection and maintenance (I/M) program development, which consisted of regional seminars and numerous individualized follow-up meetings to assist States in obtaining the necessary legislation; preparation of legislative information packages on I/M; assessment and follow-up on the I/M portion of State Implementation Plans; public awareness activities; evaluation of I/M benefits, options and problems; and technical guidance development. Of the 29 states required to establish I/M, 22 states have passed legislation and efforts to obtain legislation are continuing in the seven remaining states.

A number of studies and technical analyses (some of them in conjunction with EPA's Office of Research and Development) were completed in 1979 in order to determine the need for future control actions. Potentially harmful levels of unregulated pollutants emitted from diesel-powered engines and catalyst-controlled vehicles are being quantified. Assessments were made of the impact on emissions control of special fuels or fuels additives (e.g., gasohol) to determine the advisability of using such additives. Reports to Congress on control technology for light duty vehicles and on the technological capability of manufacturers for meeting a 0.4 gram per mile standard for nitrogen oxide were also prepared.

1980 Program

In 1980, the Agency allocated a total of \$6,051,700 and 114 permanent workyears to this program, of which \$4,325,300 is for Salaries and Expenses and \$1,726,400 is for extramural purposes under the Abatement, Control and Compliance appropriation.

Five categories of activity are receiving emphasis in 1980. Emission standards for heavy duty vehicles is one critical focus. The standards development work initiated in 1977 to meet the 90 percent reduction requirements for hydrocarbons and carbon monoxide is expected to be completed in 1980, and the standard for the 75 percent reduction for nitrogen oxide is expected to be proposed in 1980, as is the rulemaking for an evaporative emission standard. A particulate standard for diesel engines will be promulgated in early 1981.

Work in the area of emission standards for light duty vehicles is related to gaseous exhaust emission standards for light duty trucks, high altitude emission standards, diesel particulates for model year 1981, short test for emission warranties, and definition of allowable maintenance. Resources are required for technical studies related to standard setting as well as regulatory process management.

In 1980, aircraft emissions standards will be finalized. Emphasis is being placed on the completion of ongoing rulemaking and on the development of a standard for NO_x emissions.

Hazardous pollutant control is another target of major attention in 1980. During 1978 and 1979, guidelines and regulations were developed to ensure manufacturer compliance with the Section 202(a)(4) of the Clean Air Act requirement that no emission control device can be used if it will cause or contribute to an unreasonable risk to public health. In 1980, additional regulatory development work is necessary, given the significant health effects questions that are likely to remain unresolved (e.g., carcinogenicity of the organics emitted). Follow-up work is also needed on determinations of emissions under NON-FTP conditions. In the area of diesel emissions, available health and characterization data is being assessed and preliminary determinations made of the health implications of widespread use of diesel engines in passenger cars.

In the area of hazardous pollutants control, efforts will concentrate on implementing Section 202(a) of the Clean Air Act and on control of light duty diesels. Unregulated emissions from new prototype catalyst cars and alternate light duty engines will be characterized.

New fuel economy studies aimed at closing the gap between reported fuel economy and actual in-use experience will be initiated, and work will continue on improving test procedures. The annual trends analysis and report to Congress will also be prepared.

MOBILE SOURCE IN-USE EMISSION ASSESSMENT

1979 Accomplishments

1979 resources included \$1.9 million for contracts for testing of in-use vehicle populations in order to provide updated emission factors. The development, improvement, dissemination, and use of emission factors for all classes of motor vehicles is essential to the implementation of the Clean Air Act mandated air quality planning process, especially as it relates to the 1982 SIPs for oxidants and carbon monoxide.

Work was initiated in 1979 to determine actual emissions from in-use light duty trucks, and emission factors testing for motorcycles was completed during 1979. Analytic projects related to development of emission factors for AP 42 and supportive analytic tools were provided.

1980 Program

In 1980, the Agency has allocated a total of \$2,794,900 and 7 permanent workyears to this program, of which \$210,900 is for Salaries and Expenses and \$2,584,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

These resources are being used to continue work initiated in 1979 in testing in-use vehicles, determining their emissions under various conditions, and providing appropriate analyses for use in assessing program effectiveness and the need for both the State-based control programs and the national program. Work is continuing to determine emissions from light duty and heavy duty trucks. In-use emissions testing will continue through 1980 and beyond as an aid to heavy duty standard setting and as a mechanism for reevaluating already established standards.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$225,100 results from several actions. An increase of \$9,000 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$300. A reprogramming of \$3,800 was made within the air media to mobile source monitoring in-use emission assessment, for support of the fuel economy program. Finally, a reprogramming of \$230,000 was made within the air media to emissions testing, analysis and data support due to a reassessment of the actual need for additional work by EPA on field laboratories on determining actual vehicle emissions and the validity of contractor work in this area.

During 1980, the States requiring an inspection and maintenance program must follow the implementation schedule included in the State Implementation Plan. This requires an EPA update of technical documentation developed in 1979, and the provision of area specific technical information. The remaining seven States needing authorizing legislation, as well as States reassessing existing legislation are being assisted. Assistance to States in program implementation includes inspection standards and calibration, quality assurance procedures, and technical review of facilities and testing support equipment. Analytical evaluations of program effectiveness and new technologies are being conducted. Short tests for NO_x control and improvements in current test procedures are being evaluated. The Portland study has been extended for a year to allow for the accumulation of data on the emissions impact over a longer time period. In addition, I/M programs for heavy duty vehicles will be initiated because of the large potential for emission reductions from these sources.

1980 Explanation of Changes from Budget Estimate

The net increase of \$236,700 results from several actions. An increase of \$148,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs resulted in a decrease of \$6,600. A reprogramming of \$95,100 was made within the air media from emissions standards and technology assessments for support of the fuel economy program.

1981 Plan

The Agency requests a total of \$6,383,500 and 108 permanent workyears for this program, of which \$4,325,000 is for the Salaries and Expenses appropriation and \$2,058,500 for the Abatement, Control and Compliance appropriations. This is a slight decrease of \$300 and an increase of \$332,100, respectively.

Standard setting for light duty vehicles and trucks, heavy duty vehicles, and aircraft is scheduled for completion in 1981. Emission standards for heavy duty vehicles include the 75 percent reduction for nitrogen oxide (NO_x) and diesel particulates.

Promulgation of the light duty high altitude standard and allowable maintenance for light duty vehicles is expected in 1981. In addition, follow-up will be provided to the light duty truck, NO_x research, and aircraft rulemakings. Regulatory review of Subpart A is also expected to culminate in 1981. New regulatory action will be initiated in the area of non-FTP regulations, light duty vehicle durability, and certification of tamper resistant systems.

Support will continue to regional, state, and local efforts to implement I/M, as provided for in the SIP schedules. Development and improvement of the technical basis for I/M for current and prototype motor vehicles will be provided. Specific I/M problems which will be addressed are emission test technology improvements; determination of the validity of I/M benefits for light duty trucks; and initiation of evaluation of I/M at high altitudes, under cold weather conditions, and for heavy duty gasoline powered vehicles.

In the area of hazardous pollutants control, efforts will concentrate on implementing Section 202(a) of the Clean Air Act and on control of light duty diesels. Unregulated emissions from new prototype catalyst cars and alternate light duty engines will be characterized.

New fuel economy studies aimed at closing the gap between reported fuel economy and actual in-use experience will be initiated, and work will continue on improving test procedures. The annual trends analysis and report to Congress will also be prepared.

MOBILE SOURCE IN-USE EMISSION ASSESSMENT

1979 Accomplishments

1979 resources included \$1.9 million for contracts for testing of in-use vehicle populations in order to provide updated emission factors. The development, improvement, dissemination, and use of emission factors for all classes of motor vehicles is essential to the implementation of the Clean Air Act mandated air quality planning process, especially as it relates to the 1982 SIPs for oxidants and carbon monoxide.

Work was initiated in 1979 to determine actual emissions from in-use light duty trucks, and emission factors testing for motorcycles was completed during 1979. Analytic projects related to development of emission factors for AP 42 and supportive analytic tools were provided.

1980 Program

In 1980, the Agency has allocated a total of \$2,794,900 and 7 permanent workyears to this program, of which \$210,900 is for Salaries and Expenses and \$2,584,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

These resources are being used to continue work initiated in 1979 in testing in-use vehicles, determining their emissions under various conditions, and providing appropriate analyses for use in assessing program effectiveness and the need for both the State-based control programs and the national program. Work is continuing to determine emissions from light duty and heavy duty trucks. In-use emissions testing will continue through 1980 and beyond as an aid to heavy duty standard setting and as a mechanism for reevaluating already established standards.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$225,100 results from several actions. An increase of \$9,000 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$300. A reprogramming of \$3,800 was made within the air media to mobile source monitoring in-use emission assessment, for support of the fuel economy program. Finally, a reprogramming of \$230,000 was made within the air media to emissions testing, analysis and data support due to a reassessment of the actual need for additional work by EPA on field laboratories on determining actual vehicle emissions and the validity of contractor work in this area.

1981 Plan

The Agency requests a total of \$2,544,900 and 6 permanent workyears for this program, of which \$175,900 is for the Salaries and Expenses appropriation and \$2,369,000 for the Abatement, Control and Compliance appropriation. This represents a decrease of \$35,000 and \$215,000, respectively.

These resources will be used to determine in-use vehicle emission rates to support heavy duty standard setting and control technology development. Emission factors field testing for both light duty cars and trucks, and for heavy duty trucks will be continued. Data will be collected for the AP 42 update as well.

EMISSIONS TESTING ANALYSIS AND DATA SUPPORT FOR STANDARDS AND GUIDELINES

1979 Accomplishments

1979 resources included \$90,400 in contracts for data processing and testing support. Activities involved baseline testing in connection with standard setting for heavy duty engines; support for the characterization of emissions from diesel vehicles; test procedure improvements in the areas of durability evaluation and road load determination; and analysis of data gathered in I/M assessment and emission factors programs.

1980 Program

In 1980, the Agency has allocated a total of \$2,557,300 and 45 permanent workyears to this program, of which \$2,388,300 is for Salaries and Expenses and \$169,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

Current activities include baseline testing for a NO_x standard for heavy duty engines; support for test procedure improvements aimed at assuring the validity of the FTP; and efforts to characterize emissions of new technology vehicles. Statistical and analytic support to I/M evaluation and for the AP 42 update is being provided.

1980 Explanation of Changes from Budget Estimate

The net increase of \$232,300 results from several actions. An increase of \$51,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to Agency ADP costs resulted in a decrease of \$1,000 and \$25,000, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$23,600. A reprogramming of \$230,000 was made within the air media from air mobile sources monitoring in-use emissions assessment due to a reassessment of the actual need for additional work by EPA on field locations on determining actual vehicle emissions and the validity of contractor work in this area.

1981 Plan

The Agency requests a total of \$2,469,700 and 38 permanent workyears for this program, of which \$2,319,700 is for the Salaries and Expenses appropriation and \$150,000 for the Abatement, Control and Compliance appropriation. This represents a decrease of \$68,600 and \$19,000, respectively.

These resources will be used to prepare the annual light duty vehicle technology report to Congress and to study emission control device costs. Technology assessment will concentrate on control of non-FTP emissions; administration of NO_x research regulations; analysis of reasons for the failure of light duty vehicle evaporative



AIR

State Programs Resource Assistance

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Control Agency Resource Supplementation:			
Abatement, Control and Compliance.....	\$87,673	\$87,673	...
Training:			
Salaries and Expenses.....	419	417	-\$2
Abatement, Control and Compliance.....	661	661	...
Grants for Planning Control of Carbon Monoxide and Photo-chemical Oxidants in Nonattainment Areas:			
Abatement, Control and Compliance.....	...	...	...
Total:			
Salaries and Expenses.....	419	417	-2
Abatement, Control and Compliance.....	88,334	88,334	...
Grand Total.....	88,753	88,751	-2

State Programs Resource Assistance

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Control Agency Resource					
Supplementation:					
Abatement, Control and Compliance.....	\$94,294	\$85,600	\$82,800	\$87,673	+\$4,873
Training:					
Salaries and Expenses.....	315	350	399	419	+20
Abatement, Control and Compliance.....	1,116	711	1,148	661	-487
Grants for Planning					
Control of Carbon Monoxide and Photo- chemical Oxidants in Nonattainment Areas:					
Abatement, Control and Compliance....	9,700 ^{a/}	...	...	...	...
Total:					
Salaries and Expenses.....	315	350	399	419	+20
Abatement, Control and Compliance.....	105,110	86,311	83,948	88,334	+4,386
Grand Total.....	105,425	86,661	84,347	88,753	+4,406
<u>Permanent Positions</u>					
Control Agency Resource					
Supplementation.....	...	...	...	...	...
Training.....	5	6	6	6	...
Total.....	5	6	6	6	...
<u>Full-time Equivalency</u>					
Control Agency Resource					
Supplementation.....	36	65	65	65	...
Training.....	8	7	8	8	...
Total.....	44	72	73	73	...

^{a/} Funds transferred to Department of Transportation for obligation.

The Agency requests a total of \$88,752,800 and 6 permanent workyears for 1981, an increase of \$4,405,500 from 1980. Included in this total is \$418,800 for the Salaries and Expenses appropriation and \$88,334,000 for the Abatement, Control and Compliance appropriation, with an increase of \$19,600 and \$4,385,900, respectively. The increase requested for Abatement, Control and Compliance will provide assistance to State/local air pollution control agencies to carry out State Implementation Plan (SIP) development and implementation activities and initiate enforcement programs directed at tampering with automotive emission controls. There is no change in the 1981 workyear request from 1980.

Program Description

This subactivity encompasses the grant resources and assistance provided to support State and local governments and Indian tribes in implementing air pollution control programs, accomplishing national priorities and meeting requirements of the Clean Air Act. Support is provided in the form of grants to control agencies for the conduct of air pollution control planning, monitoring, and enforcement activities. Support is also provided in the form of contractor services to States, assignment of EPA personnel to State agencies, and training provided for the personnel of State and local agencies. State Implementation Plans submitted in 1979 for nonattainment areas as required by the Clean Air Act included regulations establishing emission limits for various air pollution sources and specific schedules for the adoption of other measures, including I/M programs and control of transportation sources where extensions of ambient air quality standard attainment dates beyond 1982 had been granted. In 1980, action to implement these schedules will be taken and assure reasonable further progress toward the attainment of ambient air quality standards. Emphasis is also being given to improving State/local air quality monitoring, and adoption by States of new source review programs, particularly for the prevention of significant deterioration, increased source inspections, expeditious enforcement actions, and the assessment of noncompliance penalties.

Grants to control agencies having a major role in developing and carrying out these SIP and other requirements, constitute the major form of EPA resource assistance. Grants assistance is supplemented by the assignment of personnel, training of State/local air pollution personnel, and 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 include development of emission inventories, application of dispersion modeling techniques, special air quality monitoring, control strategy/regulation development and development of procedures necessary for implementation of mandatory I/M programs. These activities are covered in the following program elements.

Control Agency Resource Supplementation--Under the Clean Air Act, the States, in partnership with local agencies, are responsible for developing and implementing plans to attain and maintain ambient air quality standards. EPA partially funds the operating costs of these State and local agencies, under Section 105 of the Act.

Training--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 under contract. New courses are developed as needed, instruction manuals and materials are revised and updated, and laboratory courses at Research Triangle Park are conducted and manuals and instructional materials are provided to 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 self-sufficiency in training by offering field courses closer to the agencies.

Grants for Planning Control of Carbon Monoxide and Photochemical Oxidants in Nonattainment Areas

The general objective of the planning assistance program is to assist urban areas where national ambient air quality standards have not been attained in developing comprehensive planning and growth management processes which permit both attainment of standards and economic growth. The grant will provide funding for planning agencies to participate in the development and implementation of State Implementation Plans for urban areas that have not attained the health protective primary standards for photochemical oxidants and/or carbon monoxide with particular emphasis on transportation control measures.

The air quality planning and analyses that will have to be carried out to implement the Clean Air Act supplement DOT funded programs which are generally related to integrating the various aspects of transportation systems into a cohesive whole that serves an area's transportation needs. The activities eligible for funding under the Section 175 grants emphasize concerns with the air quality implication of proposed transportation system changes and are intended to encourage the undertaking of transportation measures which have a beneficial impact on air quality. These include:

- Development and evaluation of long range alternative growth and transportation system strategies.
- Development and evaluation of short range transportation improvement packages-including contingency packages to best insure timely attainment of standards.
- A tightly managed transportation planning and programming process geared toward a regulatory product that best insures implementation of key measures.
- New planning and evaluation activities that stress not only detailed air quality assessment, but also extensive consultation activities (with other agencies, interest groups, elected officials) needed for coordination, support and timely implementation of strategies.

Control Agency Resource Supplementation

1979 Accomplishments

The 1979 resources included \$94,293,700 in extramural funds. The major effort of State/local control agencies was directed toward submission of revised implementation plans for nonattainment areas as required by the Clean Air Act (CAA) Amendments of 1977. Fifty-one States/territories were required to submit implementation plans. In monitoring, States took major actions to acquire appropriate monitoring equipment and establish quality control procedures as required by EPA regulations and to upgrade monitoring sites and data quality. Development of adequate data bases for submission of 1982 SIPs, was begun. Twenty-five major cities implemented a system for reporting a daily index of air quality, as required by the CAA. Forty-one States adopted regulations for the control of volatile organic compounds (VOC) from stationary sources. Twelve States enacted legislation to implement an I/M program or committed to implement an I/M program based on existing legal authority. Enforcement efforts by the States were accelerated with particular emphasis on major source compliance.

1980 Program

In 1980, the Agency was allocated \$82,800,000 in the Abatement, Control and Compliance appropriation. State implementation plans from all States, as required by the CAA, will have been submitted by early 1980 and EPA review/approval actions initiated. In most cases these plans will require extensive further development follow-up action by the States, particularly with respect to Inspection/Maintenance (I/M), transportation control measures (TCM), control of volatile organic compounds (VOC) and analyses/measures relating to control of non-traditional sources of particulate emissions.

In 1980-1981, 30 States are expected to submit schedules for TCM. Forty-one States are expected to be developing lead SIPs. Thirty-five States have conditional approvals of various kinds requiring specific follow up actions. Twenty-nine States will begin I/M implementation actions. Enforcement related actions will focus on new source review, noncompliance penalty implementation, compliance inspections and enforcement actions directed at major sources, and the enforcement of permits issued under prevention of significant deterioration (PSD) provisions of the CAA. The States will continue to implement the provisions of the monitoring regulations promulgated in 1979 with particular emphasis on the establishment of a national air monitoring station (NAMS) network with appropriate quality assurance procedures.

1980 Explanation of Change from Budget Estimate

The net decrease of \$2,800,000 results from congressional action.

1981 Plan

The Agency requests a total of \$87,673,000 for this program. In addition to activities to carry out approved State Implementation plans, work will be done in preparation for submittal in 1982 of ozone and carbon monoxide SIPs in the 26 States granted attainment date extensions. Full implementation of I/M programs will be initiated and schedules for TCM will continue to be developed, with 30 state submittals expected. All NAMS sites are expected to be operational and an intensification of effort to upgrade additional State/local monitoring stations (SLAMS) will be underway. Formal submittal of lead SIPs by 41 States is expected. In enforcement, continued emphasis will be placed on achieving major source compliance and in selected states an antitampering program will be initiated. States will have assumed almost complete responsibility for PSD New Source Review.

Training

1979 Accomplishments

The 1979 resources included \$1,116,200 in extramural funds. Eighty-seven courses were conducted in 21 different subjects at Research Triangle Park and 41 locations in the field for 2,290 trainees (representing 10,006 trainee days). One course was completely revised, revision was begun on 15 other courses, and development work was begun on two new courses. Two new video-instructional courses were completed, and work was begun on development of two self-instructional courses. Five self-instructional courses were administered to 236 trainees, and technical assistance was provided to State and local agencies and universities (122 requests). In the area of academic training, graduate level traineeships were provided for 17 control agency employees, and for 21 other persons at eight schools. Eighty-one control agency employees and 15 other persons were supported with fellowships for full and part-time study, and 60 students were supported doing graduate study at the Environmental Management Institute at the University of Southern California. In the area of training related to motor vehicle inspection/maintenance, under EPA Grants to Colorado State University, two new

teachers and 31 workshops conducted for 341 people including legislators, environmental agency staff, and others involved in I/M program development.

1980 Program

In 1980, the Agency has allocated a total of \$1,547,300 and 6 permanent workyears. Eighty short-term training courses will be offered in 19 subjects at Research Triangle Park and 41 field locations, for 2,100 trainees (representing 9,100 trainee days). Revision will be completed on 16 courses, 3 new courses will be developed, and development begun on 2 others. Five self-instructional courses will be administered to 240 trainees and eight area training centers will be supported. Graduate level traineeships will be provided for 23 control agency employees and 20 other persons at eight schools. Twenty-six control agency employees will be supported doing graduate study at the Environmental Management Institute at the University of Southern California. In the area of training relating to motor vehicle inspection/maintenance, under EPA grants to Colorado State University, two new training courses for investigators will be developed and five training courses will be conducted for vocational teachers.

1980 Explanation of Change from Budget Estimate

The net increase of \$486,300 results from several actions. An increase of \$12,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$700. A congressional increase of \$1.5 million to academic training resulted in an increase of \$480,000 to this activity. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$5,500 to this activity.

1981 Plan

The Agency requests a total of \$1,079,800 and 6 permanent workyears for this program, of which \$418,800 is for Salaries and Expenses and \$661,000 is for Abatement, Control and Compliance. This is an increase of \$19,600 and a decrease of \$487,100, respectively. Grants for academic training have been eliminated. Seventy-two training courses will be conducted in 20 subjects for 1,900 trainees (representing 8,200 trainee days). Three hundred trainees will complete self-instructional courses, three new courses will be developed, and five courses will be revised. Eight workshops will be conducted with 250 workshop attendees. Sixteen control agency employees and nine other students will be supported by graduate level traineeships.

Grants for Planning for Control of Carbon Monoxide and Photochemical Oxidants in Nonattainment Areas

1979 Accomplishments

In 1979, \$48,500,000 was transferred from this subactivity, to the Department of Transportation for the purpose of awarding grants to organizations of local elected officials in areas where local transportation related sources contribute materially to air quality standard violations for carbon monoxide and oxidants. Obligations against this transfer amounted to \$9,699,900. In 1979, EPA funded approximately 70 cities in their effort to develop work plans for new and effective transportation systems. These funds supplement transportation planning funds provided by the Department of Transportation to the same agencies. The urbanized areas designated nonattainment for oxidants and/or carbon monoxide must follow a continuous, phased implementation of transportation control measures. Air quality-related transportation measures must be included in the Transportation Improvement Program (TIP) and the Annual Element required by the Department of Transportation.

Specifically, the Metropolitan Planning Organizations (MPO's) must develop appropriate data bases on ambient air quality and emissions, as well as assess the impacts on air quality of changes in transportation systems. As a result of these assessments, control measures must be adopted as formal regulatory provisions of SIP's.

1980 Program

In 1980, the funds remaining from the \$46,500,000 transferred to DOT in 1979 for this purpose will be utilized by DOT for grants to Metropolitan Planning Agencies. Funds appropriated under this program element in 1979 will also be used to assist urban areas in developing 1982 ozone SIPs.

1981 Plan

No additional funding is requested.

Air Quality Strategies Implementation

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Air Quality Management Implementation:			
Salaries and Expenses.....	\$8,655	\$8,599	-\$56
Abatement, Control and Compliance.....	221	221	...
Grand Total.....	8,876	8,820	-56

Air Quality Strategies Implementation

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980 (dollars in thousands)	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Air Quality Management Implementation:					
Salaries and Expenses..	\$8,564	\$8,710	\$9,066	\$8,655	-\$411
Abatement, Control and Compliance.....	333	...	253	221	-32
Grand Total.....	8,897	8,710	9,319	8,876	-443

Permanent Positions

Air Quality Management Implementation.....	314	324	317	288	-29
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Full-time Equivalency

Air Quality Management Implementation.....	340	357	344	313	-31
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Budget Request

The Agency requests a total of \$8,875,700 and 288 permanent workyears, a decrease of \$443,500 and 29 permanent workyears from 1980. Included in this total is \$8,654,900 for Salaries and Expenses and \$220,800 for the Abatement, Control and Compliance appropriation, a decrease of \$411,300 and \$32,200, respectively. These reductions reflect anticipated State assumption of the PSD permit issuance program.

Program Description

This subactivity includes the provision by the regional offices of policy direction and guidance to States in the development of strategies for the attainment and maintenance of National Ambient Air Quality Standards and the prevention of significant deterioration. This involves the review of State developed strategies for consistency with the requirements of the Clean Air Act and EPA regulations, and the tracking of State progress in meeting the schedules set forth in these strategies, including making assessments of whether States are making reasonable further progress toward attaining standards by the statutory deadlines.

It also includes the development by EPA of strategies for specific geographical areas where States do not prepare adequate plans for attaining and maintaining standards; the incorporation of these control strategies into appropriate Federal regulatory action; and the interaction with State and local governments in implementing these strategies. Other major activities include the audit of State and local control agencies for adherence to Federal requirements and guidelines; consultation with State and local control agencies on specific air pollution control problems; review of the impact of new sources of air pollution; and the management of State and local agency grant resources and their allocation.

substantially increase the number of plans required. Therefore, major efforts are required for the review and approval of the SIPs and for the promulgation of plans where State plans are inadequate.

Major efforts are also necessary to provide guidance to States in meeting the commitments made in SIP submissions which are essential to the attainment of standards, including establishment of mandatory automotive inspection/maintenance programs, regulation of transportation sources, control of urban fugitive dust and additional stationary source controls.

Major EPA regional office activity is also required to guide States in developing the necessary data base and strategy demonstrations which are required for the 1982 SIP submission for ozone and carbon monoxide, where an extension of time for attainment under the Act has been granted. This includes extensive involvement with local elected officials, metropolitan planning organizations, State transportation departments, and the State air pollution control agencies, and will require major EPA regional office coordination and participation efforts. EPA regions must participate actively in the local planning processes to assure that air quality considerations are taken into account in a meaningful way and that the local plans, particularly the transportation elements, are integrated into the SIP as enforceable measures in a time frame consistent with the requirements of the Act. These activities are expected to extend through 1982. Similar activities will have to be carried out to develop and review SIPs for lead and for other anticipated revisions to standards as required by the Act.

The 1977 Amendments also impose major new requirements on the process for reviewing new sources of pollution to assure that they will not cause deterioration of air quality in areas attaining the National Ambient Air Quality Standards (NAAQS), or that will not delay attainment or aggravate current problems in areas not yet attaining the NAAQS. The determination of best available emission control technology, analysis of air quality impact, selective source siting, and emission trade-offs analyses are all integral to this review process and will require EPA regional office resources. State program assistance increases over the past three years are supporting State assumption of these activities.

AIR QUALITY MANAGEMENT IMPLEMENTATION

1979 Accomplishments

1979 resources included \$332,500 in contract funds to support purchase of computer time to do modeling to evaluate impact of new sources on the PSD increment and attainment strategies in the SIPs. Public hearings for PSD reviews and EPA promulgation of 1979 SIP actions were also covered. The 1979 program was directed toward review and approval of the nonattainment SIPs submitted by States. The 41 notices of proposed rulemakings were published establishing a schedule of follow-up actions that the States must take to achieve retain an approved status.

The regions provided guidance to State in the development and review of TSP SIPs for some 397 nonattainment areas. Special analyses of urban fugitive particulate matter sources and control were initiated. A further major activity was the engineering and air quality review of some 1,500 new sources under the PSD regulations.

1980 Program

In 1980, the Agency has allocated a total of \$9,319,200 and 317 permanent workyears to this program, of which \$9,066,200 is for the Salaries and Expenses appropriation and \$253,000 is for extramural purposes under the Abatement, Control and Compliance appropriation. The major efforts being undertaken with these resources include the tracking, overview, and guidance of State efforts to complete development and begin to implement the various schedules contained in the 1979 SIP. This includes

developing measures for control of urban fugitive dust. Also included is the annual review of State progress in meeting the reasonable further progress (RFP) requirement of the 1977 Amendments to the Clean Air Act. The meeting of these requirements is essential to assure attainment of air quality standards.

In 1980, the EPA regional offices are also providing guidance and are reviewing state lead SIP submissions, and the development of the required 1982 SIPs in nonattainment areas for ozone and carbon monoxide, where EPA has approved a time extension for attainment of standards. This effort focuses upon the development of new emission inventories and other data bases and provides a more sophisticated demonstration of air quality standard attainment.

Other activities include the overview of all existing State new source review programs, including the audit of selected State reviews to insure consistency with the requirements of the Clean Air Act and EPA regulations. EPA regions are actively assisting States in developing programs for the prevention of significant deterioration where such programs were not established in 1979.

1980 Explanation of Changes from Budget Estimate

The net increase of \$609,100 results from several actions. An increase of \$397,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$51,400 and \$35,900, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$318,000 to this activity.

Regional reprogrammings were made in order to support costs based on 1979 expenditures from ambient water quality monitoring, \$25,000; to water quality state programs regulations and guidelines, \$80,100; from noise program implementation, \$56,400; from drinking water underground injection control program, \$65,800; to ambient air quality monitoring, \$77,000; and to water quality municipal waste treatment construction, \$9,000.

1981 Plan

The Agency requests a total of \$8,875,700 and 288 permanent workyears for this program, of which \$8,654,900 is for the Salaries and Expenses appropriation and \$220,800 is for the Abatement, Control and Compliance appropriation. EPA regional offices will maintain the 1980 emphasis on follow-up and implementation of the 1979 nonattainment SIPs, development of the 1982 ozone SIPs, and State assumption of responsibility for New Source Review/Prevention of Significant Deterioration. Regional offices will follow up on SIP commitments and schedules for I/M/, TCM, and fugitive dust programs. States requiring additional controls on emitters of volatile organics (VOC) will be assisted in developing consistent regulations. States will be assisted in reviewing applications for use of the "bubble" concept. A method of assessing emission limitations that covers the emissions from the entire facility.

Regions will continue to assist States in completing the 1982 ozone and CO SIPs. In 1981, many I/M programs will be completing the pilot or demonstration phases, and decisions will be made on full-scale implementation. Transportation control measures will be selected and programs for implementation will be presented to the public and appropriate agencies for support and implementation. EPA involvement and leadership is critical in these areas.

The management of NSR is especially important in 1981, as many States will just have assumed responsibility for the program. State/local actions which may adversely impact on ambient air quality standards under Sections 109(j) of the Federal Highway

Mobile Source Preproduction Compliance Verification

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Preproduction Compliance Verification:					
Salaries and Expenses....	\$1,878	\$1,530	\$1,680	\$2,128	+\$448
Abatement, Control Compliance.....	721	900	704	754	+50
Emissions Testing, Analysis and Data Support for Preproduction Compliance Verification:					
Salaries and Expenses....	2,232	900	1,270	1,534	+264
Abatement, Control and Compliance.....	1,462	400	218	168	-50
Total:					
Salaries and Expenses....	4,110	2,430	2,950	3,662	+712
Abatement, Control and Compliance.....	2,183	1,300	922	922	...
Grand Total.....	6,293	3,730	3,872	4,584	+712
<u>Permanent Positions</u>					
Preproduction Compliance Verification.....	51	50	52	55	+3
Emissions Testing, Analysis and Data Support for Preproduction Compliance Verification.....	6	21	20	29	+9
Total.....	57	71	72	84	+12
<u>Full-time Equivalency</u>					
Preproduction Compliance Verification.....	70	59	61	65	+4
Emission Testing, Analysis and Data Support for Preproduction Compliance Verification.....	24	28	41	42	+1
Total.....	94	87	102	107	+5

Mobile Source Preproduction Compliance Verification

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Preproduction Compliance Verification:			
Salaries and Expenses.....	\$2,128	\$2,116	-\$12
Abatement, Control and Compliance.....	754	754	...
Emissions Testing, Analysis and Data Support for Preproduction Compliance Verification:			
Salaries and Expenses.....	1,534	1,527	-7
Abatement, Control and Compliance.....	168	168	...
Total:			
Salaries and Expenses.....	3,662	3,643	-19
Abatement, Control and Compliance.....	922	922	...
Grand Total.....	4,584	4,565	-19

The Agency requests a total of \$4,584,600 and 84 permanent workyears for 1981, an increase of \$712,200 and 12 permanent workyears from 1980. Included in this total is \$3,662,600 for Salaries and Expenses and \$922,000 for Abatement, Control and Compliance, an increase of \$712,200 and no change, respectively. Increases in this subactivity provide for a greater level of fuel economy confirmatory testing.

Program Description

This subactivity includes: (1) engineering review and confirmatory testing of prototype motor vehicles and engines in order to certify their compliance with emission standards; (2) semiannual publication of fuel economy guides and calculation of corporate average fuel economy values; and (3) related technical and data processing support.

EPA is currently developing improvements in its certification program. In previous years, motor vehicle manufacturers' complete lines of vehicles and engines have undergone the full certification process. However, the potential air quality impact of improperly certifying a vehicle is not equal for all manufacturers or engine families. Rather, the air quality risk is related to the degree of failure and the number of vehicles sold. Consequently, EPA has undertaken reforms to this program which will reduce the paper-work, reporting, and testing burdens on the automobile, truck, and motorcycle industries, while at the same time improving the control of emissions from motor vehicles.

The certification process involves the submission of applications to EPA by the manufacturers; the development of emissions performance information by manufacturers or EPA on the basis of prototype vehicle testing; and the review of this data by EPA for the purpose of determining compliance with standards. Certification testing also results in the generation of vehicle fuel economy data. These data are the foundation of EPA's fuel economy public information activities (carried out jointly with the Department of Energy), and are used to support the Department of Transportation's program of compliance with fuel economy standards as required by the Energy Policy and Conservation Act.

MOBILE SOURCE PREPRODUCTION COMPLIANCE VERIFICATION

1979 Accomplishments

1979 resources included \$721,200 in contract funds for data processing and analytical support. Major contract efforts were focused on: development of a computer assisted engineering and emissions data review program (which allows the major motor vehicle manufacturers to submit information on computer compatible media); services aimed at reducing the time it takes to process applications for certification; and a package of nontechnical support.

The 1979 certification process took into account new stricter standards for hydrocarbons (HC) and carbon monoxide (CO) for model year 1980 light duty vehicles. Technological changes in the automobile industry were addressed through the development of criteria for engineering review of vehicles using electronic control systems. This was carried out while the certification process itself was gradually revised to improve its effectiveness and reduce its burden.

The heavy duty engine program consisted of engineering review of the manufacturers' design information on new engines to identify engine configurations for durability testing and potentially high polluting engine configurations for emission data testing. An abbreviated review program was conducted for the motorcycle manufacturers.

EPA continued to support the Department of Transportation's fuel economy regulatory program in 1979. Highway fuel economy tests were run on vehicles tested for emissions compliance to assure the validity of manufacturers' data. City fuel economy tests were also run on vehicles, and review of manufacturer submitted data for engine classes not reviewed for emissions control purposes was performed.

1980 Program

In 1980, the Agency has allocated a total of \$2,384,500 and 52 permanent workyears to this program, of which \$1,680,500 is for Salaries and Expenses and \$704,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

Light duty vehicles with lower air quality impact are subject to an abbreviated review, while the complete engineering review and testing process is being performed on those engine families with the highest sales and greatest potential air quality impact. Criteria for the review of vehicles using electronic control systems, which underwent further refinement in 1979, is being implemented in 1980, as are parameter adjustment regulations (aimed at reducing the adjustability of idle mixture and initial choke settings). Control of hazardous emissions by manufacturers is being encouraged through a program of engineering review and testing. 1980 also marks the onset of new light duty vehicle standards for carbon monoxide, oxides of nitrogen, and evaporate hydrocarbons, as well as a control program for vehicles to which high altitude standards apply.

For heavy duty engines, the 1980 program continues the abbreviated review process implemented in 1979. Manufacturer's design information on new engines is being reviewed to identify engine configurations for emissions data testing. Abbreviated reviews are also being conducted for the motorcycle manufacturers.

Support to the Department of Transportation's fuel economy program is continuing at a greater level of effort. A high priority has been placed on improvements aimed at assuring more reliable fuel economy values and a significantly increased level of testing in support of compliance.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$45,500 results from several actions. An increase of \$63,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,100. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$200,000 to this activity. Finally, a reprogramming of \$73,700 was made within the air media -- from air emission standards and technology assessment (\$2,900); from air energy and pollutant strategy development (\$26,200); from air state program guidelines and regulations development (\$40,800); and from air mobile source monitoring in-use emission assessment (\$3,800)-- and a reprogramming of \$18,500 was made from the Office of Air, Noise and Radiation program management activity, for support of the fuel economy program.

1981 Plan

The Agency requests a total of \$2,882,300 and 55 permanent workyears for this program, of which \$2,128,300 is for the Salaries and Expenses appropriation and \$754,000 for the Abatement, Control and Compliance appropriation. This is an increase of \$447,800 and \$50,000, respectively.

improvement, while the abbreviated review process will continue for heavy duty trucks and motorcycles.

Selective audits of manufacturers and in-house confirmatory testing will be increased from 1980, as will work related to the Federal Government's fuel economy standards compliance, fuel economy label, and gas mileage guide programs. The increased level of confirmatory testing for fuel economy purposes is part of EPA's effort to improve the validity of manufacturers' fuel economy values.

Regulatory development activities will include improved implementation of current certification regulations; development of new regulations and procedures to implement modifications mandated by the Clean Air Act; and revisions of the certification program which improve technical accuracy.

EMISSION TESTING ANALYSIS AND DATA SUPPORT FOR PREPRODUCTION COMPLIANCE VERIFICATION

1979 Accomplishments

1979 resources included nearly \$1.5 million in contract funds for support of emission testing and data processing activities. These resources supported laboratory and data processing activities associated with emission certification and fuel economy compliance.

1980 Program

In 1980, the Agency has allocated a total of \$1,487,900 and 20 permanent workyears to this program of which \$1,269,900 is for Salaries and Expenses and \$218,000 is for extramural purposes under the Abatement, Control and Compliance appropriation. These resources support operations of the emissions testing laboratory and data processing activities. Fuel economy review and analysis is being facilitated at an intensified level by progress made in 1979 on computerizing the process.

1980 Explanation of Changes from Budget Estimate

The net increase of \$187,900 results from several actions. An increase of \$32,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$11,500. Finally, a reprogramming of \$166,500 from other media -- from radiation environmental standards (\$37,000), from radiation monitoring and analysis (\$18,500), from radiation technology assessment (\$18,500), from noise strategies implementation (\$74,000), and from the Office of Air, Noise and Radiation program management activity (\$18,500) will be used to support the fuel economy program.

1981 Plan

The Agency requests a total of \$1,702,300 and 29 permanent workyears for this program, of which \$1,534,300 is for the Salaries and Expenses appropriation and \$168,000 for the Abatement, Control and Compliance appropriation. This represents an increase of \$254,400 and a decrease of \$50,000, respectively.

These resources provide laboratory correlation support for certification, systems/program analysis, computer programming, and related administrative support to the emissions testing laboratory.

Fuel economy review and analysis will result in calculation of preliminary corporate average fuel economy and corporate average fuel economy (PCAFE/CAFE) values and other fuel economy information.

Trends Monitoring and Progress Assessment

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Ambient Air Quality Monitoring:					
Salaries and Expenses.....	\$2,499	\$2,188	\$2,489	\$2,387	-\$102
Abatement, Control and Compliance.....	109	21	92	320	+228
Air Quality and Emissions Data Analysis and Progress Assessment:					
Salaries and Expenses.....	1,359	1,401	1,633	1,496	-137
Abatement, Control and Compliance.....	660	620	290	290	...
Total:					
Salaries and Expenses.....	3,858	3,589	4,122	3,883	-239
Abatement, Control and Compliance.....	769	641	382	610	+228
Grand Total.....	4,627	4,230	4,504	4,493	-11
<u>Permanent Positions</u>					
Ambient Air Quality Monitoring.	77	85	84	82	-2
Air Quality and Emissions Data Analysis and Progress Assessment.....	38	43	38	34	-4
Total.....	115	128	122	116	-6
<u>Full-time Equivalency</u>					
Ambient Air Quality Monitoring.	90	89	89	89	...
Air Quality and Emissions Data Analysis and Progress Assessment.....	47	50	43	39	-4
Total.....	137	139	132	128	-4
Budget Request					

The Agency requests a total of \$4,492,800 and 116 permanent workyears, a decrease of \$11,000 and 6 permanent workyears from 1980. Included in this total is \$3,882,900 for the Salaries and Expenses appropriation, and \$609,900 for the Abatement, Control and Compliance appropriation. The decrease in Salaries and Expenses of \$239,000 reflects a shift in headquarters and regional office workload. The increase of \$228,000 in Abatement, Control and Compliance is due to increase emphasis on completing Regional Environmental

Trends Monitoring and Progress Assessment

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Ambient Air Quality Monitoring: .			
Salaries and Expenses.....	\$2,387	\$2,372	-\$15
Abatement, Control and Compliance.....	320	320	...
Air Quality and Emissions Data Analysis and Progress Assessment:			
Salaries and Expenses.....	1,496	1,489	-7
Abatement, Control and Compliance.....	290	290	...
Total:			
Salaries and Expenses.....	3,883	3,861	-22
Abatement, Control and Compliance.....	610	610	...
Grand Total.....	4,493	4,471	-22

Program Description

This subactivity covers work related to monitoring 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, associated laboratory support, and special field monitoring studies. Most ambient air quality and source monitoring is carried out by State and local agencies. The regional offices oversee State monitoring efforts, help develop and implement State quality control programs, and evaluate data submitted to EPA by the States. Determination of attainment or nonattainment of ambient air quality standards is made on the basis of these data. Monitoring activities and data analyses are expected to increase due to the need to evaluate progress in nonattainment areas toward attainment of ambient air quality standards. In addition to the monitoring for criteria pollutants required by the State Implementation Plans (SIP), 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 these pollutants, and are used for making long and short term trends analyses to support decisions for control.

This program also includes efforts directed at improving State and local monitoring programs. The regions are actively involved in overseeing State/local implementation of the comprehensive regulations for air quality surveillance and reporting promulgated in 1979. Adherence to these criteria should promote uniformity of siting, and produce ambient data of higher quality.

Air Quality Emissions Data Analysis and Progress Assessments - Major activities include the preparation of the annual and special reports on air quality and emission trends, special analyses on the status of attainment of the National Ambient Air Quality Standards (NAAQS), development and dissemination of new or improved techniques for data analysis, and collection and analysis of emission data. Also included are the development, update, and maintenance of systems for storage and retrieval of air quality and emissions data. The data systems are composed mainly of an inventory of point sources and their emissions, and software and procedures for data storage and dissemination. Support is provided to the 30 State and local agencies using the Comprehensive Data Handling System to guarantee efficient and timely submission of data to EPA.

AMBIENT AIR QUALITY MONITORING

1979 Accomplishments

1979 resources included \$109,400 in contract funds for quality assurance audits and equipment maintenance. The major thrust of the 1979 program was to evaluate a substantial portion of the monitoring networks and individual stations operated or planned by State/local agencies. Regional staff played a key role in designating the State/local stations to be included in the National Air Monitoring Stations (NAMS) and State and Local Air Monitoring Stations (SLAMS) networks. Schedules were developed to ensure that these networks be fully operational and in compliance with all EPA criteria. The submission and validation of data from the States continued. The quality assurance program received increased attention, with special emphasis on the auditing of individual sites and State laboratories. Regional staffs provided technical overview of the development of plans for expanded State/local quality assurance programs to be implemented in 1980 and 1981.

In the area of daily reporting of air quality, regional offices surveyed the use of the PSI, and found that the index is used in at least 71 urban areas. Of the 46 urban areas with populations above 500,000, 37 are now or soon will be using the index. EPA staff also continued its involvement in special monitoring studies for noncriteria pollutants both in quality assurance and sample collection.

1980 Program

The development of air quality data and field monitoring operations is allocated \$2,581,000 and 84 permanent workyears, of which \$2,489,000 is for Salaries and Expenses and \$92,000 is for extramural costs in the Abatement, Control and Compliance appropriation. Contracts support quality assurance audits and equipment maintenance. Fifteen-hundred (1,500) site evaluations of National Air Monitoring Stations (NAMS) and State and Local Air Monitoring Stations (SLAMS) will be performed, with emphasis on sites in major urban areas not attaining standards. All State networks will be reviewed for adequacy in terms of the number of sites and their geographical distribution. Regions are performing detailed reviews of State quality assurance programs, including on-site audits of all State laboratories. All regional laboratories are participating in EPA's Office of Research and Development's national performance surveys. Involvement in special monitoring studies is continuing, with emphasis on management of data collection for the 1982 ozone SIPs. Coordination of daily reporting of air quality in urban areas with populations greater than 500,000 is continuing.

1980 Explanation of Change from Budget Estimate

The net increase of \$372,600 results from several actions. An increase of \$88,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$14,200 and \$96,700, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyear resulted in an increase of \$87,200 to this activity.

Regional reprogrammings resulted in transfers between media with an increase to this activity of \$308,100; the media contributing to this increase are drinking water (\$176,600), water quality (\$29,300), solid waste (\$17,900), pesticides (\$7,300), and air quality management implementation (\$77,000).

1981 Plan

The 1981 level of resources for air quality data and field monitoring operations is \$2,707,400 and 82 permanent workyears, of which \$2,387,400 is for the Salaries and Expenses appropriation and \$320,000 is for the Abatement, Compliance and Control appropriation. This is a decrease of \$101,600 and an increase of \$228,000, respectively. Contracts support the development of data analyses and graphic displays of air quality conditions as part of the Regional Environmental Profiles. The regions will continue the overview and management of State monitoring programs. This effort includes the evaluation and review of State monitoring networks for conformance to EPA regulations, and for adequacy in meeting data needs for trends assessment, compliance evaluation, SIP development and evaluation. This evaluation and review is done on a network basis and on-site at individual monitoring stations NAMS being first priority.

The quality assurance program includes three basic functions: quality assurance audits of State monitoring systems, coordination of State data quality assessments, and validation of all NAMS data for adequacy and timeliness. SLAMS data from all States will also be validated. Special data collection efforts will be provided for the complex photochemical dispersion modeling used in 1982 ozone SIP development. Regions will also actively participate in data collection efforts in all cities where trajectory models are required for the 1982 submittals and in data base development in large urban areas for particulate control strategies.

EPA will provide the necessary management and coordination with States to ensure that complete State emission inventories are submitted and stored in the national data bank (NEDS). This is necessary to ensure that complete national emission data can be developed and special analyses for individual nonattainment strategy problems

1979 Accomplishments

1979 resources included \$659,700 in contract funds to support assessment of environmental trends, software support for the NAMS, and support to the Comprehensive Data Handling System. The National Air Quality and Emissions Trends Report, 1977 was published. Major emphasis was given to national management of the 5-year plan for implementing the recommendations of Standing Air Monitoring Work Group (SAMWG) and carrying out Section 319 of the Clean Air Act Amendments of 1977. These requirements are reflected in new regulations for monitoring and reporting promulgated in 1979. A major goal of these regulations is to establish a national air monitoring network which generates high quality data and is operated by State and local agencies using national uniform methods. Effective implementation involves national oversight, the provision of technical guidance to the regional offices, and the development of new software to facilitate reduced State reporting. Key activities included assuring that the NAMS were being established in a nationally uniform manner, and preparing periodic assessments of the plans and first year progress in implementing SAMWG's recommendations and the regulations.

Programs to assess and report the Nation's progress in achieving National Ambient Air Quality Standards (NAAQS) and to operate EPA's national air data systems continued. Efforts continued toward making the States more self-sufficient in data handling and analysis by increasing the capabilities of the EPA developed systems used in 30 State and local agencies, and providing use of these systems to additional agencies via an EPA compute

1980 Program

The assessment of environmental trends and progress of control programs has been allocated \$1,922,800 and 38 permanent workyears, of which \$1,632,900 is for Salaries and Expenses and \$289,900 is for extramural purposes under the Abatement, Compliance and Control appropriations. Contracts support assessment of environmental trends and modification of NAMS Information System to permit direct user access to data. Major program emphasis includes: data storage, processing and retrieval; development and maintenance of systems used for data processing; determination of trends in air quality and emissions; development of standard operating procedures and regulations for ambient monitoring stations operated by State and local agencies and management of the National Air Monitoring Stations (NAMS).

Specifically, a comprehensive audit of 100 NAMS is being performed. Findings from these audits serve as a primary source of data for assessment of NAMS and provide clear documentation for the corrective actions needed to comply with EPA criteria. Data from NAMS are being coded to indicate reliability of trends based on data collected as part of the EPA/State quality assurance program. New software and related procedures which can display data graphically are being developed and made available to States. Population exposure methods for CO are being developed and tested. A strategy is being prepared for the optimum use of ambient and source monitoring and models. Regulations on ambient monitoring for lead are being promulgated. Monitoring regulations to reflect the TSP and SO₂ NAAQS reviews are being proposed.

1980 Explanation of Change from Budget Estimate

The net decrease of \$98,100 results from several actions. An increase of \$47,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. Congressional reductions of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$1,800 and \$17,300, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$21,700 to this activity. A reprogramming of \$105,000 was made within the air media, to air-energy and pollutant strategies. development to reflect a change in the accounting for resources which provide analyses in support of revisions to the ambient air quality standards.

1981 Plan

The Agency requests a total of \$1,785,400 and 34 permanent workyears for this program, of which \$1,495,500 is for the Salaries and Expenses appropriation and \$289,900 is for the Abatement, Control and Compliance appropriation. This is a decrease of \$137,400 and no change, respectively. Emphasis will continue on operation and updating of existing air data systems, on providing training and guidance to system users, and responding to requests from the public. For the EPA-developed systems installed in 33 State/local agencies, assistance and training services will be continued and systems will be upgraded. The Comprehensive Data Handling System will be modified and a software package will be upgraded and distributed to users.

Majors efforts will be continued to oversee the implementation of EPA's revised air quality surveillance regulations. Comprehensive on-site audits of approximately 125 NAMS will be conducted to assess compliance with the regulations. Procedures will be developed linking precision and accuracy values to NAMS data, and incorporating these into national trends analyses and other reports which will rely on NAMS as the primary source of data. In 1981, 1,300 NAMS are expected to meet site criteria and use EPA reference methods. The program to identify and resolve anomalies in historical NAMS data will be continued.

Revised monitoring regulations will be promulgated to support revised NAAQS. Guidance will be issued on the siting of monitors for nonattainment analyses.

Stationary Source Enforcement

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Stationary Source Enforcement:			
Salaries and Expenses.....	\$13,736	\$13,652	-\$84
Abatement, Control and Compliance....	10,697	10,697	...
Total.....	24,433	24,349	-84

AIR

Stationary Source Enforcement

	Actual <u>1979</u>	Budget Estimate <u>1980</u>	Current Estimate <u>1980</u>	Estimate <u>1981</u>	Increase + Decrease - <u>1981 vs. 1980</u>
		(dollars in thousands)			
<u>Appropriation</u>					
Stationary Source					
Enforcement:					
Salaries and Expenses...	\$11,982	\$12,595	\$13,776	\$13,736	-\$40
Abatement, Control and Compliance.....	<u>10,535</u>	<u>12,435</u>	<u>12,181</u>	<u>10,697</u>	<u>-1,484</u>
Total.....	22,517	25,030	25,957	24,433	-1,524
<u>Permanent Positions.....</u>	406	502	479	471	-8
<u>Full-time Equivalency.....</u>	439	517	522	507	-15

Budget Request

The Agency requested a total of \$24,432,600 for 1981, a decrease of \$1,542,200 from 1980. Included in this total is \$13,736,100 for Salaries and Expenses and \$10,696,500 for Abatement, Control and Compliance, with decreases of \$39,400 and \$1,484,800, respectively.

Program Description

The stationary source air enforcement program is designed to effectively utilize the enforcement authorities provided by the Clean Air Act, as amended in 1977, to ensure that all major sources comply with requirements of State Implementation Plans (SIPs); that new stationary air sources are constructed in accordance with applicable New Source Review (NSR), New Source Performance Standards (NSPS), and Prevention of Significant Deterioration (PSD) provisions; that new and existing stationary air sources subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAPS) meet hazardous air pollutant standards; and that relevant provisions of the Power Plant and Industrial Fuel Use Act of 1978 are implemented.

EPA's highest priority in the stationary source air enforcement program (other than responding to emergency conditions) has been and continues to be the major source enforcement effort (MSEE) initiated in 1978. EPA commenced this accelerated enforcement against major stationary source violators which had never come into initial compliance with applicable requirements of the Clean Air Act and the Clean Water Act. The stationary source enforcement program is continuing its part of the MSEE by developing, and concluding, through settlement or litigation, cases against large air stationary source violators and ensuring compliance by closely tracking their compliance schedules or consent decrees.

It is this program's responsibility to implement certain new regulations under the Clean Air Act. The noncompliance penalty regulations under Section 120 will be promulgated in early 1980 and will create a positive incentive for compliance for many major sources in violation. Regulations will also be promulgated in early 1980 for the implementation of Section 119 of the Act, relating to issuance of administrative orders to primary nonferrous smelters for the control of sulfur oxides emissions. The smelter order program should accelerate the movement toward compliance for the smelter industry.

Further, there will be a continuing commitment to a strong compliance monitoring program with particular attention being given to examining the field surveillance and compliance monitoring programs being implemented by the States as part of a cooperative effort to improve, where necessary, such programs.

EPA bolsters State air enforcement efforts by supporting State control agencies through control agency grants, by providing specialized skill and expertise and special contractual assistance. EPA will take the primary enforcement role with respect to selected sources when the States cannot or will not enforce.

1979 Accomplishments

As of December 1979, EPA had initiated civil action against 288 of the 319 air stationary source facilities initially listed for EPA civil actions under the MSEE. EPA has concluded 77 of these cases. A significant air pollution control settlement was negotiated with the U.S. Steel Corporation for six of the company's western Pennsylvania facilities, an agreement which will result in a reduction of approximately 22,000 tons per year of particulate emissions. Also, in conjunction with its modernization plan for the Mahoning Valley, Republic Steel signed a consent decree that allows modernization of its facilities in its Howland, Main Street, Pine Street, and Youngstown plants while bringing those facilities into compliance with all applicable air and water pollution control requirements. A very significant consent decree was negotiated with TVA which covers ten of TVA's electric power plants in the Southeast. Under this agreement, reached with the full participation of the States of Alabama and Kentucky and 10 citizen, health, and environmental organizations, all TVA facilities are required to meet air emission standards on or before the end of 1982. This will result in a reduction of more than 970,000 tons of sulfur dioxide and 85,000 tons of particulate emissions per year.

During 1979, EPA proposed regulations which would establish the procedures by which EPA and the States will assess and collect noncompliance penalties under Section 120 of the Clean Air Act. The regulations also set forth the means by which the States may assume delegation of the noncompliance penalty program. Further, regulations were proposed which would establish the substantive requirements of initial primary nonferrous smelter orders (NSOs) issued under Section 119 of the Clean Air Act and the procedures to be used in issuing those NSOs.

A significant example of EPA working with the Department of Energy (DOE) to ensure that conversions to coal take place without compromising EPA's obligation to protect public health is the delayed compliance order for the New England Power Company's Brayton Point Station. The order was issued in conjunction with a prohibition order issued by DOE and will allow the New England Power Company to immediately convert two generating units at Brayton Point from oil to coal. The Brayton Point conversion will save approximately 13,000 barrels of oil per day or an average yearly saving of over 4.7 million barrels.

For 1979, planned contract expenditures were \$10,535,100, including \$4,821,100 for enforcement case support; \$3,954,000 for compliance monitoring and field surveillance; \$495,000 for regional data system support; \$750,000 for regional industrial studies support; and \$515,000 to support development of national compliance

1980 Program

In 1980, the Agency has allocated a total of \$25,956,800 and 479 permanent workyears for this program, of which \$13,775,500 is for Salaries and Expenses and \$12,181,300 is for extramural purposes under the Abatement, Control and Compliance appropriation.

During 1979, significant progress was made in developong the cases associated with the original MSEE list. Many cases, however, have not been concluded. During 1980, concluding the remaining cases on the MSEE list as rapidly as possible will be a very important objective. Once a case is concluded, the compliance schedule or consent decree must be tracked closely by EPA. In addition, preliminary results from a recent survey indicate that a potentially large number of sources were not covered by the original MSEE effort. This large number of additional sources will result in a significant workload which could approach a level comparable to that associated with the original MSEE.

Also, EPA will begin immediately to prepare for the implementation of Section 120 by assuring that evidence of violation for major source violators is current and complete and that technical and legal staff are prepared to handle the issuance of notices and the conduct of adjudicatory hearings. Other important activities during 1980 will be the issuance of new source permits under the prevention of significant deterioration (PSD) program, especially expeditious issuance of energy-related permits, issuance of Section 119 primary nonferrous smelter orders, responses to Section 110(f) energy emergencies, and issuance of Section 113(d)(5) delayed compliance orders due to coal conversion. Another substantial effort will be a Federal overview and support program that determines whether the States are performing satisfactory compliance monitoring inspections and, where necessary, improves their capability to do so.

Planned contract funds for 1980 total \$12,181,300. Activities planned for these funds include \$5,379,300 for enforcement case development, \$4,635,000 for compliance monitoring and field surveillance, \$1,157,000 for regional industrial, technical, and economic studies, \$515,000 for national profiles and enforcement strategy studies, and \$495,000 for data support.

1980 Explanation of Change from Budget Estimate

The net increase of \$927,000 results from several actions. An increase of \$524,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$170,900 and \$101,500, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$558,100 to this activity.

A reprogramming of \$75,000 was made to the Office of Enforcement program management for litigation management support and establishment of a special investigations unit. A reprogramming of \$104,700 was made from interdisciplinary Federal activities/EIS review to reflect the transfer of the Federal facilities monitoring and compliance function which is more appropriately identified with enforcement activities.

Reprogrammings in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfers to water quality NEPA compliance/EIS preparation (\$29,600); to uncontrolled hazardous waste sites (\$1,500); to regional management (\$12,600); to interdisciplinary EIS reviews (\$17,300); from water quality State programs regulations and guidelines (\$51,100); from water quality permit issuance (\$72,600); from the Office of Regional Counsel (\$3,200); from drinking water enforcement (\$1,900); from hazardous wastes enforcement (\$3,000); and from pesticides enforcement

The Agency requests a total of \$24,432,600 for this program, of which \$13,736,100 is for the Salaries and Expenses appropriation and \$10,696,500 is for the Abatement, Control and Compliance appropriation, a decrease of \$39,400 and \$1,484,800, respectively. The majority of these resources will be used to bring major violators of SIPs, NSPS, and NESHAPS regulations into compliance and through the use of Section 113 and Section 120 provisions. Other significant activities include the overview of State enforcement programs, especially compliance monitoring and new source programs, issuance of PSD permits, issuance and tracking of NSOs and energy-related programs.

The original major source enforcement effort (MSEE) began in 1978 to bring into compliance those violators which had never been in compliance. Most of these cases should be concluded by settlement or litigation in 1980. Thus, the workload associated with the original MSEE during 1981 will primarily be that of closely monitoring the compliance schedules and consent decrees of the subject facilities, although undoubtedly some additional litigation will carry over into 1981. A major element of the program, beginning in 1980 and extending into 1981, will focus on the large number of sources added to the program in 1980. A substantial amount of time and effort will be required to develop and conclude these additional MSEE cases.

By 1981, the noncompliance penalty program will be underway. Noncompliance penalties must be assessed against all sources not meeting SIP requirements or in violation of NSPS or NESHAPS regulations. The noncompliance penalty program will be an effective method for obtaining compliance; however, this program is anticipated to result in a large number of adjudicatory hearings and this will be a major resource demand in 1981.

The concept of preventing regression from achieved levels of compliances applies to all stationary source enforcement programs. Failure to support an effective program for ensuring the continued compliance of sources with emission limitations would, to a substantial extent, negate the efforts originally expended to bring sources into compliance. The budget request reflects a continuing commitment to a strong field surveillance program with the use of contractors for much of this element of the program. It should also be noted that EPA intends to expand substantially its program for continuous monitoring in the future, which should ultimately lead to more effective compliance monitoring with less resources devoted to that effort.

EPA will implement the primary nonferrous smelter order (NSO) program, under Section 119 of the Clean Air Act in 1980. Any smelter receiving an NSO is permitted to defer compliance with the sulfur dioxide emission limitation to which it is subject under an applicable SIP. Initial NSOs may extend through January 1, 1983. A smelter that receives a Section 119 order will be placed on a rigorous compliance program which includes interim controls, and a research and development program to investigate and demonstrate control methods that are economically and technologically feasible. A major effort during 1981 will be monitoring the compliance programs and the research and development programs of these smelters.

An area of increasing focus is the relationship and balance between environmental and energy concerns. The Power Plant and Industrial Fuel Use Act of 1973 prohibits, with exemptions, new power plants and new major fuel burning installations from using, as a primary energy source, natural gas or petroleum. Also prohibited is the construction of comparable new sources without the capability to use coal or an alternate non-petroleum-based fuel as a primary energy source. Exemptions will be granted by the Department of Energy (DOE) where environmental requirements could not be met if coal is burned as the primary energy source. EPA must work with DOE to ensure that these new sources are constructed in accordance with NSR, NSPS, and PSD requirements. In addition, certain existing power plants having the technical capability to use coal may be required to convert under the Power Plant and Industrial Fuel Use Act. Unon

In accordance with EPA's increasing attention to toxic substances, increased emphasis is being placed upon hazardous air pollutants subject to regulation under Section 112. EPA, in 1980 and 1981, plans to implement new NESHAP programs; thus increased enforcement efforts will be required to ensure compliance with these requirements.

Contract funds requested in 1981, totalling \$10,696,500, include \$5,300,000 for enforcement case development, \$4,091,500 for compliance monitoring and field surveillance, \$740,000 for regional industrial technical and economic studies, and \$565,000 for data support.

Mobile Source Enforcement

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Mobile Source Enforcement:					
Salaries and Expenses....	\$3,510	\$3,496	\$3,931	\$3,883	-\$48
Abatement, Control and Compliance.....	2,332	3,355	2,943	2,967	+24
Total.....	5,842	6,851	6,874	6,850	-24
<u>Permanent Positions.....</u>	117	138	126	118	-8
<u>Full-time Equivalency....</u>	143	158	157	152	-5

Budget Request

The Agency requests a total of \$6,849,500 for 1981, a decrease of \$25,100 from 1981. Included in this total is \$3,883,000 for Salaries and Expenses and \$2,966,500 for Abatement, Control and Compliance, with a decrease of \$48,300 and an increase of \$23,200, respectively.

Program Description

The mobile source enforcement program is directed primarily toward achieving compliance with motor vehicle emission standards and fuels regulations. The major objectives of the program are to (1) assure that new vehicles meet emission standards; (2) assure that vehicles meet emission standards in-use; (3) assure that emission control systems are not removed or rendered inoperative (gross tampering occurring on 19-29 percent of in-use cars); (4) assure compliance with emissions inspection/maintenance (I/M) requirements and vehicle miles traveled (VMT) measures; (5) assure control of hydrocarbon emissions during gasoline transfer operations; (6) assure that harmful additives are removed from gasoline; (7) administer California waivers; and (8) administer the emission warranties.

1979 Accomplishments

In 1979, the mobile source enforcement program continued to carry out its responsibilities under Title I and Title II of the Clean Air Act by emphasizing programs aimed at reducing the failure of vehicles to meet emission standards. In 1979, the mobile source enforcement program issued 37 selective enforcement test orders to manufacturers to test vehicles on the assembly line. Twenty-four (24) recall investigations were completed resulting in the recall of 1,940,000 vehicles. Manufacturers' certification and production compliance procedures were enforced by conducting three inspections and 10 investigations. The tampering and fuel switching provisions were enforced by performing 221 new car dealership inspections and 221 fleet tampering/fuel switching inspections. Fourteen hundred (1400) service station inspections were conducted to assure compliance with the Stage I vapor recovery provision and 14,500 unleaded gasoline inspections were conducted. A survey of 39,500 refuelings was conducted to determine the rate at which vehicles requiring unleaded gasoline are being fueled with leaded gasoline and indicated that a rate of 8-10 percent fuel switching is occurring.

Mobile Source Enforcement

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Mobile Source Enforcement:			
Salaries and Expenses.....	\$3,883	\$3,861	-\$22
Abatement, Control and Compliance.....	2,967	2,967	...
Total.....	6,850	6,828	-22

computer support, catalyst testing, fuel switching observations, and assistance to States for the unleaded gasoline and vapor recovery programs.

1980 Program

The Agency has allocated in 1980 a total of \$6,874,600 to this program, of which \$3,931,300 is for Salaries and Expenses and \$2,943,300 is for extramural purposes under the Abatement, Control and Compliance appropriation. The extramural funds will be used for recall emission testing, fuels inspections, public awareness, catalyst testing, model enforcement, fuel switching observations, surveys, and computer support.

In 1980, the mobile source program initiated comprehensive enforcement of the antitampering and antifuel switching provisions aimed at reducing emissions from the in-use fleet thereby supporting the adoption of inspection/maintenance programs. Inspection and investigatory efforts are coordinated nationally to focus on major private and municipal fleets, new car dealerships, commercial auto repair facilities, and service stations to maximize publicity and deterrent effect when violations are detected.

Other major activities in 1980 will be to continue the assembly line testing program for light duty vehicles and the recall program; implement warranty regulations; implement the aftermarket part certification program; administer the emission and California waivers; and administer the fuel/fuel additive waiver requests.

The enforcement activities will be to issue 35 selective enforcement audit vehicle test orders; conduct 27 recall investigations; 780 confirmatory/surveillance tests; 1400 fleet tampering/fuel switching inspections; 1200 new car dealership inspections; 25,000 fuel inspections and 5,000 fuel switching observations; 15 warranty investigations; two inspection/maintenance and transportation control measure audits; and test 10 aftermarket parts.

1980 Explanation of Change from Budget Estimate

The net increase of \$23,300 results from several actions. An increase of \$129,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$23,600. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$36,300 to this activity.

A reprogramming of \$3,800 was made from water quality enforcement to support increased travel costs. A reprogramming of \$50,000 was made to the Office of Enforcement program management for litigation management support and establishment of a special investigations unit.

1981 Plan

The Agency requests a total of \$6,849,500 for the program, of which \$3,883,000 is for the Salaries and Expenses appropriation and \$2,966,500 is for the Abatement, Control and Compliance appropriation. Extramural funds will be used for recall emission testing, fuel switching enforcement observations, fuels inspections, an antitampering and anti-fuel switching publicity campaign, aftermarket part testing and computer support.

This program will include a special effort directed toward preventing a widespread increase in fuel switching caused by a shortfall in unleaded gasoline accompanied by monitoring of the petroleum industry to detect the locations and severity of such shortages. The antitampering and anti-fuel switching effort is intended to complement and facilitate the implementation of inspection/maintenance programs by preventing further deterioration of the vehicle fleet before I/M programs are implemented.

The selective enforcement audit (SEA) program will be continued in order to deter the production of nonconforming light duty vehicles. The SEA program assures the new vehicles on the production line are in compliance with emission standards before being introduced in commerce.

The recall program will continue to assure compliance of in-use vehicles with emission standards. SEA activity, recall testing, and increased public contact due to federally enforceable warranty provisions will serve to identify a greater number of vehicle classes suspected of exceeding emission standards in use.

In 1981, activities of the fuels program will include conducting 25,000 combined unleaded, vapor recovery and octane inspections at service stations and fleet dispensing facilities. These inspections will be performed with State and/or private testing firms. The program will continue to monitor lead usage reports and the status of refiner efforts to achieve compliance with the lead phasedown program, administer the provision which prohibits the use of fuel and fuel additives and administer the emission waivers as required.

During 1981, the major activities for the mobile source enforcement program will be to:

- Conduct 1200 new car dealership tampering inspections.
- Conduct 1400 fleet tampering/fuel switching inspections.
- Conduct 550 confirmatory/surveillance tests.
- Conduct 5000 fuels observations.
- Issue 33 vehicle SEA test orders.
- Conduct 19 recall investigations.
- Enforce unleaded gasoline, Stage I vapor recovery and octane disclosure requirements through 25,000 combined fuels inspection tests.
- Conduct 10 inspection/maintenance audits.
- Conduct 10 transportation control measure audits.
- Administer emission waivers.
- Administer fuel/fuel additive waiver requests.
- Conduct 15 warranty investigations.
- Conduct 5300 enforcement observations of retail gasoline outlets.

Water Quality

APPROPRIATION

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
Salaries and Expenses.....	\$112,195	\$111,552	-643
Research and Development.....	35,961	35,961	...
Abatement, Control and Compliance.....	186,932	186,932	...
Total.....	335,088	334,445	-643

PROGRAM HIGHLIGHTS

Health and Ecological

Effects:

Salaries and Expenses.....	10,831	10,773	-58
Research and Development.....	11,053	11,053	...

Industrial Processes:

Salaries and Expenses.....	2,074	2,063	-11
Research and Development.....	9,163	9,163	...

Public Sector Activities:

Salaries and Expenses.....	4,838	4,814	-24
Research and Development.....	9,962	9,962	...

Monitoring and Technical

Support:

Salaries and Expenses.....	6,319	6,287	-32
Research and Development.....	5,782	5,782	...

Total:

Salaries and Expenses.....	24,061	23,936	-125
Research and Development.....	35,961	35,961	...

Total, Research and

Development Program.....	60,022	59,897	-125
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	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
Water Quality Planning and Standards:			
Salaries and Expenses.....	12,151	12,078	-73
Abatement, Control and Compliance.....	25,136	25,136	...
Effluent Standards and Guidelines:			
Salaries and Expenses.....	6,367	6,338	-29
Abatement, Control and Compliance.....	23,678	23,678	...
Grants Assistance Program:			
Salaries and Expenses.....	...	...	...
Abatement, Control and Compliance.....	82,730	82,730	...
Water Quality Strategies Implementation:			
Salaries and Expenses.....	9,422	9,365	-57
Abatement, Control and Compliance.....	6,387	6,387	...
Water Quality Monitoring and Analysis:			
Salaries and Expenses.....	8,209	8,165	-44
Abatement, Control and Compliance.....	2,436	2,436	...
Municipal Source Control:			
Salaries and Expenses.....	27,759	27,588	-171
Abatement, Control and Compliance.....	36,729	36,729	...
Total:			
Salaries and Expenses.....	63,908	63,534	-374
Abatement, Control and Compliance.....	177,096	177,096	...
Total, Abatement and Control Program.....	241,004	240,630	-374



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
Water Quality Permits			
Issuance:			
Salaries and Expenses.....	7,949	7,899	-50
Abatement, Control and Compliance.....	5,927	5,927	...
Water Quality Enforcement:			
Salaries and Expenses.....	16,277	16,183	-94
Abatement, Control and Compliance.....	3,909	3,909	...
Total:			
Salaries and Expenses.....	24,226	24,082	-144
Abatement, Control and Compliance.....	9,836	9,836	...
Total, Enforcement Program.....	34,062	33,918	-144



	Actual 1979	Budget Estimate 1980 (dollars	Current Estimate 1980 in thousands)	Estimate 1981	Increase Decrease - 1981 vs. 1981	Page
<u>APPROPRIATION</u>						
Salaries and Expenses...	\$10,950	\$113,266	\$109,861	\$112,195	+\$2,334	
Research and Development	42,575	38,078	39,140	35,961	-3,179	
Abatement, Control and Compliance.....	240,644	180,107	188,435	186,932	-1,503	
Total.....	387,169	331,451	337,436	335,088	-2,348	
Permanent Workyears.....	3,101	3,173	3,088	3,032	-56	
Full-time Equivalency...	3,592	3,791	3,747	3,676	-71	
Outlays.....	283,462	284,800	282,400	285,300	+2,900	
Authorization Levels....	745,229	703,728	696,233	*		

* Authorization pending.

	Actual 1979	Budget Estimate 1980 (dollars	Current Estimate 1980 in thousands)	Estimate 1981	Increase Decrease - 1981 vs. 1981	Page
<u>PROGRAM HIGHLIGHTS</u>						
Health and Ecological Effects:						WQ-18
Salaries and Expenses...	\$10,168	\$10,464	\$11,388	\$10,830	-588	
Research and Development	12,994	11,760	12,215	11,054	-1,161	
Industrial Processes:						WQ-37
Salaries and Expenses...	2,488	3,776	2,823	2,074	-749	
Research and Development	7,896	11,051	11,554	9,163	-2,391	
Public Sector Activities:						WQ-45
Salaries and Expenses...	4,614	4,742	5,332	4,838	-494	
Research and Development	16,764	9,616	9,596	9,962	+366	
Monitoring and Technical Support:						WQ-59
Salaries and Expenses...	5,878	6,599	6,473	6,319	-154	
Research and Development	4,921	5,651	5,775	5,782	+7	
Total:						
Salaries and Expenses...	23,148	25,581	26,016	24,061	-1,955	
Research and Development	42,575	38,078	39,140	35,961	-3,179	
Total, Research and Development Program.....	65,723	63,659	65,156	60,022	-5,134	

	Actual 1979	Estimate 1980	Estimate 1980	Estimate 1981	Decrease - 1981 vs. 1981	Page
			(dollars	in thousands)		
Water Quality Planning and Standards:						WQ-71
Salaries and Expenses...	11,492	12,089	11,731	12,151	-420	
Abatement, Control and Compliance.....	19,908	27,100	26,978	25,136	-1,842	
Effluent Standards and Guidelines:						WQ-87
Salaries and Expenses...	5,585	4,178	5,821	6,367	+546	
Abatement, Control and Compliance.....	20,345	24,933	22,662	23,678	+1,016	
Grants Assistance Program:						WQ-95
Salaries and Expenses...	...	...	...	...	...
Abatement, Control and Compliance.....	151,232	88,730	86,810	82,730	-4,080	
Water Quality Strategies Implementation:						WQ-100
Salaries and Expenses...	7,925	11,072	8,351	9,422	+1,071	
Abatement, Control and Compliance.....	6,347	500	6,647	6,387	-261	
Water Quality Monitoring and Analysis:						WQ-113
Salaries and Expenses...	7,677	6,042	7,540	8,209	+669	
Abatement, Control and Compliance.....	3,532	2,520	2,471	2,436	-35	
Municipal Source Control:						WQ-118
Salaries and Expenses...	26,399	32,981	27,614	27,759	+145	
Abatement, Control and Compliance.....	33,773	29,400	36,778	36,729	-49	
Total:						
Salaries and Expenses...	59,079	66,362	61,057	63,908	+2,851	
Abatement, Control and Compliance.....	235,137	173,183	182,346	177,096	-5,251	
Total, Abatement and Control Program.....	294,216	239,545	243,403	241,004	-2,400	

	Actual 1979	Budget Estimate 1980 (dollars	Current Estimate 1980 in thousands)	Estimate 1981	Increase Decrease - 1981 vs. 1981	Page
Water Quality Permits						WQ-129
Issuance:						
Salaries and Expenses...	6,247	6,653	6,850	7,949	+1,099	
Abatement, Control and Compliance.....	1,349	2,750	3,036	5,927	+2,891	
Water Quality Enforcement:						WQ-134
Salaries and Expenses...	15,477	14,670	15,937	16,277	+340	
Abatement, Control and Compliance.....	4,156	4,174	3,053	3,909	+856	
Total:						
Salaries and Expenses...	21,724	21,323	22,787	24,226	+1,439	
Abatement, Control and Compliance.....	5,506	6,924	6,089	9,836	+3,747	
Total, Enforcement Program	27,230	28,247	28,876	34,062	+5,186	
Permanent Positions						
Health and Ecological						
Effects.....	201	204	210	196	-14	WQ-18
Industrial Processes.....	43	57	57	43	-14	WQ-37
Public Sector Activities..	99	117	121	112	-9	WQ-45
Monitoring and Technical Support.....	135	125	127	120	-7	WQ-59
Total, Research and Development Program.....	478	503	515	471	-44	
Water Quality Planning and Standards.....	303	359	333	327	-6	WQ-71
Effluent Standards and Guidelines.....	114	113	116	112	-4	WQ-87
Grants Assistance Programs	...	...	...	...	...	WQ-95
Water Quality Strategies Implementation.....	224	196	248	263	+15	WQ-100
Water Quality Monitoring and Analysis.....	192	175	188	191	+3	WQ-113
Municipal Source Control...	939	931	925	915	-10	WQ-118
Total, Abatement and Control Program	1,772	1,774	1,810	1,808	-2	
Permit Issuance	204	237	243	243	...	WQ-129
Water Quality Enforcement..	568	541	520	511	-9	WQ-134
Total, Enforcement Program.	772	778	763	754	-9	

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase Decrease - 1981 vs. 1981	Page
Full-time Equivalency						
Health and Ecological						
Effects.....	294	287	340	331	-9	
Industrial Processes.....	69	86	75	52	-23	
Public Sector Activities...	138	157	154	130	-24	
Monitoring and Technical Support.....	174	178	169	159	-10	
Total, Research and Development Program.....	675	708	738	672	-66	
Water Quality Planning and Standards.....	387	447	398	393	-5	
Effluent Standards and Guidelines.....	135	152	151	147	-4	
Grants Assistance Programs.	7	7	7	7	...	
Water Quality Strategies Implementation.....	246	232	280	288	+8	
Water Quality Monitoring and Analysis.....	257	244	243	241	-2	
Municipal Source Control...	1,038	1,084	1,072	1,058	-14	
Total, Abatement and Control Program.....	2,070	2,166	2,151	2,134	-17	
Permit Issuance.....	237	273	270	295	+25	
Water Quality Enforcement..	610	644	588	575	-13	
Total Enforcement, Program..	847	917	858	870	+12	

Overview and Strategy

In 1981, the water quality program will continue the major thrusts initiated in 1980 as a result of changes made by the Clean Water Act of 1977. This program will:

- continue to increase overall emphasis on toxic pollutant controls;
- continue a basic strategy for the construction grants program which both minimizes risks to program integrity and continues a high level of obligations;
- proceed with delegation of management functions to the States and the development of water quality management programs at the State level;
- protect sensitive wetland systems through effective implementation of Section 404 of the Clean Water Act;
- proceed with implementation of the hazardous substances regulations under Section 311 of the Clean Water Act;
- continue aggressive enforcement of the law; and
- develop scientific information necessary to support sound management decisions.

must receive increased attention in 1981 to assure that goals set by legislation are achieved. In general, particular emphasis in 1981 will be given to program implementation rather than standard setting. Specific program activities which require increased resources/attention are as follows:

- implementation of the pretreatment program as a means to significantly reduce the introduction of toxic discharges into our waterways;
- inclusion under the auspices of Section 311 of a program to respond to environmental emergencies from abandoned hazardous waste sites and hazardous substances spills;
- expanded implementation of Section 404 to protect sensitive wetlands areas by assuring that adequate environmental review is given to the most controversial permit applications and that enforcement support is available to deal with illegal dredge and fill actions;
- continuation of the Agency effort to ensure that applications for Section 301(h) waivers receive adequate and timely review both to protect the rights of municipalities and to protect the ocean environment; and
- implementation of regulations that consolidate permitting procedures for five separate programs to simplify the permitting process and better utilize Agency resources.

Emphasis on Toxic Pollutant Control

In 1981, the emphasis on controlling toxic pollutants will again encompass nearly every water program. Specific programs and/or activities which support toxics control are discussed below.

During 1981, EPA will largely accomplish the task of standard setting in the area of toxic pollutant control. The promulgation of Best Available Technology (BAT) regulations required by the "Settlement Agreement" will be completed, although a substantial workload resulting from litigation of those regulations is anticipated in that year and beyond. Increased attention will be given to determining whether there are additional toxic compounds which should be addressed in effluent guidelines, and special "hot spot" studies will determine whether controls in addition to and beyond BAT are necessary. Completion of BAT regulations will allow a shift in emphasis to investigations of "innovative" technologies to minimize the overall discharge of all toxics (whether identified or not) into the environment.

EPA's monitoring strategy for 1980 and 1981 has two main components: first, it will provide information to management to support policy setting by developing an understanding of how water pollution control programs affect environmental quality; second, monitoring activities will support operational programs by providing technical information to identify where specific regulatory actions are required. Specifically, the monitoring program will provide pollutant-by-pollutant control strategies based on assessments of environment distribution, exposure/risk analyses and fate studies for the 65 classes of toxic pollutants stipulated in the Settlement Agreement and the Clean Water Act; area-by-area regulatory strategies and guidance to the States for geographic areas where Best Available Technology may not be adequate to control pollution; and environmental impact assessments for the 21 primary industrial categories.

One of the key constraints to carrying out toxics control is the inadequacy of State laboratories to perform toxics monitoring and the absence of strong quality assurance programs. To help address this problem, the 106 grant program will encourage states to use these funds to develop strong quality assurance programs, and data collection will be standardized to foster comparability across the country.

the promulgation of the General Pretreatment Regulation (40 CFR Part 403) in June 1978, marked a significant step in the Agency's efforts to control toxic pollutants. Contributions of toxic pollutants from indirect dischargers have virtually escaped regulations until the initiation of this program. The result was a striking disparity between the economic burden shouldered by direct dischargers required to install treatment technology and indirect dischargers who were often identical in all respects to their direct discharger counterparts but were not required to treat their wastes.

Failure to regulate indirect dischargers also resulted in striking gaps in environmental controls. One study reveals that the toxic loading from POTWs discharging the untreated waste from their indirect industrial users exceeded the total amount of process waste contributed by direct dischargers in the area studied. The pretreatment program has operated over the last year and will continue in 1980 to operate with a very limited number of positions supplemented by some contract funds. As a result, the Agency has fallen behind in its implementation schedule.

Given the approach of the 1983 legislative deadline and the very significant impact of these discharges on water quality, the Agency is requesting additional enforcement and permit resources for implementation of this program. These resources, along with resources included in Step 1 of the construction grants program, will support local program assistance activities, review and approval of local programs, consideration of requests for modification of pretreatment standards, modification of municipal permits to incorporate pretreatment requirements, and sampling and inspections to determine whether pretreatment requirements are actually being met.

The permit program in 1981 will also continue its emphasis on control of toxics through the issuance of BAT permits to industrial dischargers in the 21 industrial categories in the Settlement Agreement. These permits will have as their basis the effluent limitations for toxics developed as a part of the Settlement Agreement. Priority will also be given to resolving adjudicatory hearings to make major permits finally effective and enforceable.

Control of toxic pollutants by EPA must also address discharges into the environment caused by spills, leaks, and similar non-routine occurrences. The promulgation in late 1979 of revised regulations designating hazardous substances and reportable quantities under Section 311 will allow EPA to expand its spill prevention and emergency response program into the hazardous substances area for the first time. The Environmental Emergency Response Team and the Technical Assistance Team (TAT) contract will expand marginally in 1981 to provide increased on-scene support for both hazardous substances spills and emergencies arising from abandoned waste site discharges. The primary program emphasis in 1981 will be to integrate these new regulations into the prevention and response programs already developed and to continue implementation of a response program for abandoned hazardous waste site emergencies.

Construction Grants Delegation

The abatement of water pollution problems resulting from conventional pollutants, such as excess suspended solids, bacteria, and oxygen demanding loads that degrade our waterways remains a major mission of the Agency. The problem of conventional pollutants is massive and will continue to require a large commitment of personnel and dollar resources into the future.

The construction grants program continues to be the main Agency mechanism to address these municipal point source needs. The remaining Federal share required for construction of municipal treatment facilities to meet the legislative standards under the Clean Water Act (i.e., BPWTT) is more than \$50 billion. A long-term strategy to meet the highest priority of these needs in a reasonable amount of time is now under development and will address issues related to inflation, eligibilities and priorities and funding distribution. The Agency is requesting \$3.7 billion in new obligational authority for 1981, as part of this evolving long-term strategy.

management; few (if any) new policy and legislative thrusts are anticipated. The transition in program orientation resulting from the Clean Water Act of 1977 and the re-emphasis on program quality will be largely completed. The highest management priority effort in the near term will be to shift the program toward decentralized management, with State delegation and use of the Corps of Engineers resources receiving maximum emphases. The Agency recognizes that both maintaining obligation rates at reasonable levels and ensuring full technical, environmental, and fiscal integrity of our projects are co-equal objectives and must be balanced against each other.

Section 301(h) of the 1977 Amendments to the Clean Water Act authorizes the Administrator to grant a waiver of secondary treatment requirements to publicly owned treatment works (POTWs) which discharge into marine waters, if certain conditions are met. These conditions include the provision that the discharge will not interfere with public water supplies, with recreational activities, or with a balanced, indigenous population of shellfish, fish and wildlife.

Currently, 225 preliminary applications for Section 301(h) waivers have been filed with the Agency. Although only about 100 of these are estimated to be "facilities eligible for review", the review process itself is extremely resource intensive and requires high technical skill levels. Additionally, the Agency estimates that two-thirds of the determinations will require hearings non-adversary procedures for initial licensing (N.A.I.L.) which may require as much as one workyear per hearing. The 1981 budget includes an initiative to complete technical evaluation and permit issuance activities for these waiver requests. Resources provided by this budget should allow processing of most initial Section 301(h) applications and conclusion of non-adversary initial licensing hearing procedures.

Water Quality

The long-range goal of the water quality management program is to assist in the achievement of fishable/swimmable water quality through the development of a State and local decision-making process to control point and nonpoint sources of pollution. To accomplish this goal, the Agency has encouraged the adoption of State/EPA Agreements which define program priorities and establish long-term strategies to achieve environmental objectives. By the end of 1980, all States will have completed at least an initial agreement. EPA has made and will continue to make grants under Sections 106 and 208 of the Clean Water Act to State, Interstate, and areawide agencies. Section 106 funds have been used by States for operation and maintenance of their water quality management programs, while Section 208 funds provided matching grants to designated State and areawide agencies for solving water quality problems through the preparation of water quality management plans.

EPA has developed a multi-year program and funding strategy which establishes priorities and funding needs, promotes consolidation of programs, and emphasizes State management and plan implementation. This strategy, which reflects a transition from a planning mode to an implementation mode, changes the emphasis on planning from one which requires a comprehensive analysis of every potential or identifiable water quality problem which a State or area might face to a very specific problem output orientation. Utilizing the problem analyses developed in the initial Section 208 plans, the Agency is working to ensure that the water quality management program focuses only on a few of the substantial problems for which solutions can be implemented in a timely fashion. Only those agencies which are implementing significant portions of their initial plan are being funded.

non-point source controls, especially in the areas of urban runoff, agriculture, construction and ground water. This more focused approach has allowed funding of prototype projects which are used to train regional, State, and local staffs. The findings of these projects, once evaluated and documented, can then be used by other localities.

1981 will see the continued implementation of this strategy with increased emphasis on improved regional management and a more aggressive management stance in identifying national priorities. An evaluation will be made of the current method for allocating 106 funds, and if warranted, the Section 106 funding policies could be amended if warranted. A preliminary report to Congress on urban storm problems, effects, and controls will be prepared as will a summary report on results of Model Implementation Projects for agricultural pollution control.

Protection of Wetlands

The importance of wetlands to maintenance of an ecological balance is well recognized. Not only do these areas serve as spawning and maturation areas for fish and shellfish species, but they also provide flood protection to downstream areas, protection of beach and other coastal land through wave energy absorption, and water quality benefits through the absorption of nutrients and some toxic pollutants. Despite the recognized importance of these areas, they continue to be destroyed at an alarming rate. The problem seems to be on the increase as agricultural concerns in the South and other areas are finding that inexpensive "swamplands" can be drained and become valuable cropland.

Given the irreversible nature of the destruction of these areas, the Agency must take very seriously the responsibilities placed on it by the 1977 Amendments to the Clean Water Act. As a result of those amendments, EPA must not only issue regulations establishing State program approval criteria and review and act upon applications from States, but must also provide continuing oversight for both States and the Corps permit program.

Additional regional resources provided in this submission will give EPA the capacity to review about 75 percent of all the permits (major permits total approximately 2,500) at a minimal level. Additionally, technical and enforcement support for review of pre-permitting activities and illegal activities will be provided. The reprogramming of resources within the headquarters and regional enforcement decision units will allow for an enforcement response to unauthorized activities in the regions in double the number of cases as in the past. This enforcement thrust is essential if EPA is to have a comprehensive and effective approach to protection of wetlands.

Effective Enforcement of the Law

Effective enforcement of the law requires that the Agency determine and articulate the requirements that permittees must meet, as well as follow up to determine that those requirements are being met. EPA expects to improve its permitting process in 1981 through coordination and consolidation of permitting procedures for five separate EPA permit programs. To the extent feasible, the consolidated permit regulations will make regulatory standards and application forms consistent for permits issued under the Clean Water Act, and the Resource Conservation and Recovery Act. The Agency expects permit consolidation to produce better permits, reduce delays, simplify permitting procedures, and make more efficient use of Agency resources.

Enforcement will be increasingly involved during 1981 with the Permits and Construction Grants Divisions in carrying out the municipal policy and strategy. This strategy was designed to effectively and efficiently move municipalities toward compliance with requirements of the Clean Water Act. Enforcement's role during 1981 will include initiation of enforcement actions where it has been determined that facilities are not using all available tools to achieve compliance.

Scheduled for expansion in 1981 are pretreatment and toxics compliance monitoring and enforcement programs. A greater number of biomonitoring inspections and compliance sampling inspections for toxics will be conducted during 1981 to monitor for compliance with pretreatment regulations and toxic limitations incorporated into "second round" permits. Where violations are detected, the appropriate enforcement action will be initiated.

The discharge monitoring report quality assurance program, a pilot program in 1980, will be expanded to a national level in 1981, to ensure that EPA and State laboratories are properly analyzing permittee samples.

Scientific Bases for Decisions

EPA's research and development program is designed to provide the scientific information necessary to support sound policy, management and enforcement decisions. In accordance with the Agency's guidance, the program emphasizes the behavior of toxic pollutants and their effects on our health and the environment. Activities planned for 1981 may be divided into four categories: health research, environmental processes and effects, measurement and monitoring, and industrial and municipal research.

Health research will address the health implications of existing and new technology for the treatment, disposal and reuse of wastewater and sludge. It will also determine the health effects of priority toxic pollutants in complex effluents. Finally, it will develop recreational freshwater quality criteria and criteria for the safe reuse of wastewater for potable, industrial and aquacultural purposes.

Environmental processes and effects activities will concentrate on (1) understanding the structure and function of natural and modified freshwater and marine ecosystems, including wetlands, as a basis for predicting the consequences of human activities on these ecosystems; (2) measuring the effects of pollutants, singly and in complex mixtures, on these ecosystems and their components, including individuals, populations, and communities and determining rates of recovery; (3) developing necessary and effective methods for measuring ecological effects of these pollutants; (4) determining movement, transformation, and fate of toxic pollutants in aquatic ecosystems, including the role of sediments in the food chain; and (5) determining the effects of and criteria for control of specific pollution sources such as dredging and associated activities and discharges from nonpoint sources.

Measurement and monitoring will emphasize research to provide the systems, models, and tools required to take representative environmental samples and make reliable measurements. Outputs will include guidelines for sample collection and preparation and analytic methodology for the cost effective identification and quantification of all relevant chemical and biological factors in water, leachates, sludges, sediments, and soil. It will provide broad screening methods which are critically required for measuring organic pollutants and toxics in wastewaters and sludges. It will develop and evaluate monitoring systems and provide technical support to Agency spill and emergency response activities through aerial and remote sensing and data interpretation. Quality assurance research and services will continue to support the establishment and maintenance of quality data which result from Agency monitoring and measurement systems.

The water quality control technology research addresses both industrial and municipal waste water effluent pollution problems. This research will include the assessment of the pollution characteristics and the development and evaluation of technology to control the pollution. The research will provide for the development of information for the preparation of industrial effluent guidelines and "best management practices" for industrial pollution not readily controlled by effluent limitation. The research will also provide for the assessment of suggested "innovative and alternative technologies" for the treatment of municipal waste waters in direct support of the construction grants program. Research into the potential for recycling and reuse of waste waters and control of hazardous and toxic pollutants in waste water effluents will be supported, as will a program for the development of cleanup technology for hazardous materials spills. The research will also develop and evaluate cost-effective methods for selecting agricultural best management practices. The water quality control technology research will also provide engineering expertise and support to the Agency's regulatory enforcement and permitting activities.

PURPOSE - Research and Development Program

Research and development in EPA's water quality program provides the scientific information needed to support its standard setting and enforcement activities. The multifaceted research program includes the development of efficient and cost effective waste water treatment technology for both municipalities and industries; the determination of the health implications of existing technology for treatment and disposal of waste water and sludge; the determination of useful and defensible monitoring methods; documentation of the validity of monitoring data; definition of criteria for water use in various aquatic environments; the establishment of strategies for control of pollution from spills of hazardous materials; and the prevention or control of pollution from agricultural and forestry sources. The overall goal is to provide the scientific basis for economical and socially viable environmental management.

PURPOSE - Abatement and Control Program

The objectives of the water quality abatement and control programs are to abate water pollution from industrial and municipal sources and to assist State, areawide, and local agencies in controlling water pollution from point and nonpoint sources by providing management, technical, and resource assistance.

Industrial point source control is accomplished by the development of technology-based effluent limitations. The current emphasis is on development of effluent limitations for toxic pollutants which reflect best available technology economically achievable for existing sources and which represent new source performance standards for new sources. In particular, the emphasis on toxic pollutants has required the concurrent development and use of new analytical methods, substantial increases in resources devoted to sampling and analysis activities, development of new and cost-effective analytical methods for routine monitoring of individual toxic pollutants, examination of waste water treatment technologies for effectiveness in removing toxic pollutants, and more intensive and thorough engineering investigations of specific industrial categories. These effluent limitations will be aimed at controlling the discharges of 65 compounds and classes of compounds for 34 industry categories. Industrial effluent limitations are implemented through National Pollutant Discharge Elimination System (NPDES) permits. Pretreatment standards for existing and new industrial users of municipal treatment works will be developed for 34 primary industry categories along with effluent limitations for direct dischargers. Pretreatment standards will regulate toxic pollutants which are incompatible with municipal works.

intermunicipal, State and interstate agencies which assist in financing the planning, design and construction of municipal waste water treatment facilities. The construction grants program helps municipalities to achieve the effluent limitations required by the Act. As is the case with industries, effluent limitations are implemented through NPDES permits; and construction grants are made to assist municipalities in meeting their permit conditions. Construction grant funds are allocated to each State on the basis of formulas set forth in the Clean Water Act. Within these allotments, grants are awarded on a priority basis for individual projects. Generally each project is eligible for 75 percent Federal assistance, although grants may provide up to 85 percent for projects using innovative or alternative technology in treatment facilities design.

As part of the municipal construction grants program, the Section 205(g) State management assistance grant program authorizes the use of two percent or \$400,000, whichever is greater, of each State's allotment to cover the cost of delegation of the construction grants program to the States. To the extent that funds suffice, they can also be used for NPDES permit, dredge and fill, and Section 208 management programs. The goal of this program is to allow the States, rather than EPA, to assume management of the day-to-day responsibility of construction grants activities.

Because a primary responsibility for the control of pollution lies with the States, EPA's abatement and control efforts are oriented toward support of State and local efforts to develop and maintain their technical, institutional and financial mechanisms in water quality management. The primary mechanism for accomplishing this and related objectives will be comprehensive, integrated State/EPA Agreements covering all water quality and directly related resource assistance programs. State/EPA Agreements are the primary vehicle for accomplishing national water quality management priorities in a cost-effective way, as well as State and local priorities based on particular localized problems.

The cornerstone of the State/EPA Agreement is the management, technical and resource assistance and guidance provided to State, areawide, and local water quality planning and management agencies under the Clean Water Act. These agencies develop water quality problem assessments, water quality standards, and detailed water quality management plans with Agency assistance and national priority guidance.

Implementation programs meeting national, State, and local priority needs are supported under Section 106 State program grants, Section 314 Clean Lakes grants, and under the municipal waste treatment construction program. In addition, delegated State management of municipal waste treatment, National Pollutant Discharge Elimination System (NPDES) and dredge and fill programs can be encouraged and supported with Construction Management Assistance grants under Section 205(g).

Combined and integrated with other abatement and control, enforcement, and research programs in EPA and other Federal agencies under the State/EPA Agreements, the water quality management program functions to assure sound management of surface and ground water resources, including drinking water; promotes the development and implementation of techniques, management practices and regulatory programs to control nonpoint sources of pollution; promotes the consideration of cost-effective alternatives to advanced waste treatment construction; promotes water conservation; and assures that effective pretreatment and industrial source control programs are implemented.

The abatement and control program also includes: the development and publication of water quality criteria to reflect the latest scientific knowledge on the kind and extent of all identifiable effects on health and welfare relating to Section 304(a) and in support of Section 307(a) for adding substances to the list of toxic pollutants; the provision of assistance and review of State water quality standards to ensure that acceptable standards are established in each State; the development of guidelines, standards and regulations to correct water pollution problems resulting from such sources as in-place toxicants and discharges from vessels and aquaculture projects; the regulation, implementation and national management of a grants assistance program for the classification and restoration of the Nation's eutrophic lakes; and the national management, coordination and program development regulating the discharge of dredged or fill material, including the review and recommendation of requests from States from Section 404 permit authority.

The emergency response program continues its priority efforts to fully implement the new hazardous substances spill response program, spill prevention program, and the emergency assistance and containment activities related to hazardous waste site incidents. The response and prevention activities associated with oil spill emergencies will continue according to the responsibilities outlined in the National Contingency Plan (40 CFR 1510).

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: implementation of a water monitoring strategy to provide data and analyses needed by top management to establish policy and measure results of clean-up programs; establishment of a clearinghouse for water monitoring data to help improve coordination and integration of data collection efforts; and analysis of monitoring data to assist in development and implementation of standards and regulations. Increasing emphasis is being placed on improving State capability to monitor toxic pollutants, nonpoint sources, and biological impacts.

The Marine Protection, Research and Sanctuaries Act of 1972, as amended, authorizes EPA to regulate the disposition of materials into the oceans, excepting dredge material. Under this authority, a permit program for ocean disposal of waste has been underway since 1973. In addition, EPA has reoriented its oceans program to include a coordinated approach to the problems in the ocean environment. This reorientation includes close interaction with other Federal agencies having ocean-related activities.

Primary objectives for 1981 include:

- Propose regulations for best available technology economically achievable (BATEA) effluent guidelines, new source performance standards (NSPS), pretreatment standards for existing sources (PSES) and pretreatment standards for new sources (PSNS) for the remaining of the 34 primary industries, and promulgate regulations for 21 to 25 industry categories.
- Improve management as specified in the construction grants program management strategy; implement a coordinated approach to grant making, permitting and enforcement as specified in the municipal strategy and policy; meet the treatment needs of the largest 106 metropolitan areas, including pretreatment requirements and combined sewer overflow problems; pursue maximum State participation in construction grants program administration through delegation of Federal activities under Section 205(g) of the Clean Water Act, where capability exists; encourage cost-effective high quality municipal facilities which employ innovative/alternative technologies wherever feasible.

- Complete 20 Clean Lakes projects.
- Expand the assessment of sources of toxic pollutants to publicly owned treatment works (POTWs) and assess the effectiveness of pretreatment.
- Primary emphasis within the dredge and fill program will be the continued and expanded review of major and significant permits, along with the development and approval of State programs to control discharges of dredged and fill material.

Purpose - Enforcement Program

The Water Quality program is responsible for implementing a number of components of the Clean Water Act. The program has two divisions: permits issuance and water quality enforcement.

The permit issuance program has responsibility for both determining procedures and issuing permits under the National Pollutant Discharge Elimination System (NPDES) permit program. The permit is the mechanism for imposing limitations, standards and conditions on point source discharges into navigable waters of the United States. At the national level, the program includes regulation writing and revision, national program and policy guidance, and State permit program approval. Regional activities include issuing permits, conducting adjudicatory hearings, and overseeing State permit programs.

The recent program emphasis has been to control indirect pollutant discharges by implementing the pretreatment program which establishes national standards to control the discharge of toxic pollutants into municipal wastewater treatment systems.

The goal of the water quality enforcement program is to assure compliance with Clean Water Act requirements. At headquarters this involves overview, establishing policy direction and guidance, and support for specific regional compliance monitoring and legal actions. Regional activities include emergency enforcement responses, review and evaluation of self monitoring reports inspections, use of administrative sanctions to require compliance, referral and prosecution of lawsuits, and enforcement of non-NPDES requirements.

(in thousands of dollars)

SUMMARY OF INCREASES AND DECREASE

1980 Water Quality Program.....	\$337,436
Salaries and Expenses.....	+2,334

The net increase resulted from additional funding for planning and standards (\$.4 million); effluent standards and guidelines (\$.6 million); strategies implementation (\$1.1 million); monitoring and analysis (\$.7 million); municipal source control (\$.1 million); and enforcement activities (\$1.4 million). These increases are partially offset by reductions to health and ecological effects (\$.6 million); industrial processes (\$.8 million); public sector activities (\$.5 million); and monitoring and technical support (\$.1 million).

Research and Development.....	-3,179
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the net reduction in extramural support resulted primarily from the decrease of the Great Lakes Program (-\$1.9 million); a decrease in the renewable resources (-\$1.8 million); and a partially offsetting increase to the Chesapeake Bay Program (+\$.5 million).

Abatement, Control and Compliance..... -1,503

The net decrease results primarily from a reduction to the Section 208 areawide waste treatment management grants (-\$3.5 million); clean lakes program (-\$1.5 million); training grants (-\$.5 million). These decreases are partially offset by additional funds for permit issuance (+\$2.9 million); enforcement (+\$.9 million); and a net minimal increase from all other activities (+\$.2 million).

1981 Water Quality Program..... 335,088

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of \$335,087,700 is requested for 1981. This request, by appropriation account, is as follows:

Salaries and Expenses.....	\$112,194,400
Research and Development.....	35,961,300
Abatement, Control and Compliance..	186,932,000

This represents a decrease of \$2,347,500 from the 1980 level. The net decrease is comprised of many changes.

A net decrease of \$1,719,000 to health and ecological effects results primarily from a reduction of \$1,989,300 to the Great Lakes program which will result in less work on the transport and fate of present persistent toxic organic chemicals, and an increase of \$613,500 for fresh water ecological effects which will be used to fund activities associated with man's impacts on aquatic systems and to determine recovery rates in ecosystems.

A net decrease of \$3,139,600 to industrial processes which reflects the intent of EPA to work with other agencies to utilize other existing funds to undertake any necessary future BMP development; this change reflects the fact that there are already a large number of BMPs available for implementation.

The effluent standards and guidelines activities will be increased by \$1.6 million to increase work in industrial hazardous waste controls (e.g. management practices for sludges), energy saving technologies in water pollution and developing regulations for major segments of the "synfuel" industry. A reduction of \$3.5 million is made to the Section 208 areawide waste treatment management grant program; a reduction of \$580,000 is made to training grants reflecting a nonrecurring congressional add-on in 1980.

An increase of \$812,000 for strategies implementation will allow almost a full review of major/controversial dredge and fill permits. The clean lakes program is reduced by \$1.5 million. The enforcement activities are being increased by \$5.2 million.

Changes from the budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$331,451
Congressional increases/decrease:	
Travel.....	-854
ADP.....	-52
Supplies and Expenses.....	-1,276
Great Lakes.....	+2,000
Section 208.....	-2,500
Academic Training.....	+580
Ocean Outfall.....	+1,000
Flathead River Study.....	+354
Hazardous Substances Accident Assessment..	+1,250
Proposed Supplemental for pay raise.....	+3,863
Reprogramming for authorization workyears.	+387
Miscellaneous reprogramming.....	+1,233
1980 Current Estimate.....	337,436

The Congress reduced Agency travel costs and supplies and expenses by \$2 million each which resulted in decreases to the water quality media of \$854,000 and \$1,276,000, respectively. The congressional reduction of \$1 million to ADP costs resulted in a decrease of \$52,000 to this media. A congressional reduction of \$2.5 million was also made to Section 208 areawide waste treatment management grants. The Congress also increased programs included within the water quality media: Great Lakes \$2 million; ocean outfall, \$1 million; Flathead River study \$354,000; and hazardous substances accident assessment, \$1.25 million. Finally, the Congress provided an increase of \$1.5 million for academic training of which \$580,000 is applicable to this media.

The proposed supplemental to partially fund the October 1979 pay raise includes \$3,863,000 for the water quality media. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$387,000 to this media.

Miscellaneous reprogrammings resulted in the following changes: a decrease to the air media, \$133,500; an increase of \$2,677,500 from the drinking water media; a transfer of \$96,700 to the solid waste media; a transfer of \$100,400 to pesticides; a transfer of \$77,600 to radiation; a transfer of \$5,300 from the noise media, a transfer of \$20,700 from the interdisciplinary media; a transfer of \$329,400 to toxic substances; a transfer of \$68,000 from the energy media; and a transfer of \$808,500 to the management and support media.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980	Estimate 1981
	(in thousands of dollars)	
Prior year obligations.....	\$387,169	\$325,850
Effects of congressional changes.....	-2,900	...
Effects of pay raise supplemental.....	+3,863	...
Change in amount of carryover funds available.....	-63,477	+11,586
Program change.....	+6,300	-2,348
Effect of reprogramming.....	+1,620	...
Change in rate of obligations.....	-6,725	-7,004

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The congressional changes discussed in the previous section are estimated to decrease obligations by \$2.9 million. The pay raise supplemental will increase obligations by \$3,863,000. Reprogrammings will increase obligations by \$1.6 million.

The amount of carryover funds estimated to be obligated in 1980 is \$3,414,000, a decrease of \$63,477,000 from the 1979 level. In 1981, obligations from carryover funds are estimated to be \$15 million, an increase of \$11.5 million over the 1980 level.

The obligations related to the program increase were originally estimated as \$6.3 million in 1980. In 1981, the program decrease is expected to reduce obligations by \$7 million.

A change in the rate of obligation is expected to occur in both 1980 and 1981, creating a decrease to the amount of funds obligated by \$6.7 million and \$7 million, respectively.

WATER QUALITY

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>PROGRAM LEVELS</u>					
State and Areawide water quality management (Section 208) plans approved.....	210	40	100	150	+50
State and areawide water quality management (Section 208) Continu- ation Grants Awarded...	200	198	198	175	-13
Clean Lakes Projects Awards.....	45	60	50	60	+10
Clean Lakes Projects Completed.....	10	20	20	20	...
Ocean Dumping Permits...	60	47	53	47	-6
Construction Grants Awards.....	2,599	3,400	3,511	2,550	-961
Step I Awards.....	(982)	(800)	(807)	400	-407
Step II Awards.....	(818)	(1,300)	(1,548)	1,200	-348
Step III Awards.....	(799)	(1,300)	(1,156)	950	-206
Active Construction Grants Projects.....	11,881	10,700	11,725	11,000	-725
State Program Approvals (National Pollutants Discharge Elimination System).....	33	37	36	39	+3
Adjudicatory Hearings Settled (Major Sources)	20	60	20	40	+20
Permits issued by EPA:					
Municipal --					
Major.....	197	207	77	...	-77
Minor.....	307	...	...	...	...
Nonmunicipal --					
Major.....	304	441	497	500	+3
Minor.....	1,992	...	...	...	...
Enforcement Actions (Administrative Orders, Notices of Violation, and Referrals to U.S. Attorneys)	736	1,624	733	1,004	+271

WATER QUALITY

Health and Ecological Effects

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980 (dollars in thousands)	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
<u>Health Effects:</u>					
Salaries and Expenses.	\$955	\$1,224	\$2,102	\$2,125	+\$23
Research and Development.....	5,311	5,849	4,915	5,033	+118
<u>Transport and Fate:</u>					
Salaries and Expenses.	336	281	572	573	+1
Research and Development.....	788	970	837	694	-143
<u>Chesapeake Bay:</u>					
Salaries and Expenses.	918	500	905	410	-495
Research and Development.....	968	2,400	2,010	2,503	+493
<u>Great Lakes:</u>					
Salaries and Expenses.	361	409	1,019	945	-74
Research and Development.....	2,715	1,166	2,570	654	-1,915
<u>Marine Ecological Effects:</u>					
Salaries and Expenses.	2,387	2,168	2,678	2,861	+183
Research and Development.....	694	1,225	968	445	-523
<u>Freshwater Ecological Effects:</u>					
Salaries and Expenses.	4,711	5,882	4,112	3,917	-195
Research and Development.....	2,518	150	915	1,724	+809
<u>Total:</u>					
Salaries and Expenses.	10,168	10,464	11,388	10,831	-557
Research and Development.....	12,994	11,760	12,215	11,053	-1,162
Grand Total.....	23,162	22,224	23,603	21,884	-1,719
<u>Permanent Positions</u>					
Health Effects.....	23	23	32	32	...
<u>Transport and Fate of</u>					
Pollutants.....	3	5	9	9	...
Chesapeake Bay.....	6	5	6	6	...
Great Lakes.....	9	7	7	7	...
<u>Marine Ecological</u>					
Effects.....	57	45	58	54	-4
<u>Freshwater Ecological</u>					
Effects.....	103	119	98	88	-10
Total.....	201	204	210	196	-14

Health and Ecological Effects

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Health Effects:			
Salaries and Expenses.....	\$2,125	\$2,116	-\$9
Research and Development.....	5,033	5,033	...
Transport and Fate:			
Salaries and Expenses.....	573	570	- 3
Research and Development.....	694	694	...
Chesapeake Bay:			
Salaries and Expenses.....	410	409	- 1
Research and Development.....	2,503	2,503	...
Great Lakes:			
Salaries and Expenses.....	945	942	- 3
Research and Development.....	654	654	...
Marine Ecological Effects:			
Salaries and Expenses.....	2,861	2,843	-18
Research and Development.....	445	445	...
Freshwater Ecological Effects:			
Salaries and Expenses.....	3,917	3,893	-24
Research and Development.....	1,724	1,724	...
Total:			
Salaries and Expenses.....	10,831	10,773	-58
Research and Development.....	11,053	11,053	...
Grand Total.....	21,884	21,826	-58



	Actual 1979	Estimate 1980	Estimate 1980	Estimate 1981	Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Full-time Equivalency</u>					
Health Effects.....	32	28	51	50	-1
Transport and Fate of Pollutants.....	7	17	16	15	-1
Chesapeake Bay.....	5	5	11	11	...
Great Lakes.....	14	9	13	13	...
Marine Ecological Effects.....	89	72	109	117	+8
Freshwater Ecological Effects.....	147	156	140	125	-15
Total.....	294	287	340	331	-9

Budget Request

The Agency requests a total of \$21,884,000 and 196 permanent workyears for this program, of which \$10,829,800 is for the Salaries and Expenses appropriation and \$11,054,200 is for extramural purposes under the Research and Development appropriation, increases of \$558,300 and \$1,160,700 respectively. The net decrease of \$1,719,000, and a 14 permanent workyear decrease includes: an increase of \$140,900 for the evaluation of the health effects associated with alternate sludge disposal practices; a decrease of \$141,800 which will extend the validation of recently completed models by one to two years and assistance in the application of models for waste load allocations be reduced by approximately 25 percent; a decrease in Chesapeake Bay Study of \$1,900; a decrease in Great Lakes research of \$1,989,300 which will result in less work on the transport and fate of present persistent toxic organic chemicals; a decrease of \$340,400 which will result in the elimination of research on the effects of complex industrial effluents and a reduction of work on sublethal responses of marine organisms to pollutant exposure; and a \$613,500 increase in freshwater ecological effects which will be used to fund activities associated with man's impacts on aquatic systems and to determine recovery rates in ecosystems. The decrease of 14 permanent workyears in the freshwater and marine ecological programs will shift some activities to the extramural program and are consistent with the program changes described above.

PROGRAM DESCRIPTION

The health effects research program supports three national goals and policies set out in the Federal Water Pollution Control Act: to eliminate the discharge of pollutants; to attain water quality which provides for recreation; and to prohibit discharge of toxic pollutants in harmful amounts. The research efforts will be directed toward:

- Determination of the health implication of existing and innovative technology for the treatment and disposal of wastewater and sludge.
- Development of rapid screening tests suitable for extrapolation to man for the characterization of toxic pollutants in complex effluents.
- Determination of the feasibility of establishing criteria for the safe reuse of wastewater for potable, industrial and aquacultural purposes (in conjunction with the public sector water quality program).
- Determination of the health effects of priority organic consent decree chemicals.

technology program will be assessed so that the Agency can make recommendations for safe and effective changes in treatment methods. It includes studies on the health effects of aerosols from land application to help establish safe siting practices. Toxic organic contaminants are an important area of water quality health effects research. Health effects data bases for the regulation of identified priority pollutants will be established and methods for identifying currently unrecognized organic contaminants through bioassays will be developed. In addition, the program provides technical assistance to EPA regional and program offices through short-term studies, consultation and expert testimony in legal proceedings.

The primary objective of the transport and fate program is to provide a comprehensive set of practical, tested state-of-the-art tools for water quality management directed primarily at wasteload allocations for nutrients and toxics, advanced waste treatment justifications and the areawide wastewater management planning (Section 208) process. Verified and demonstrated models for water quality impact assessment will be developed and/or evaluated, and the technology transferred to the user. The emphasis will be on nutrient and toxics transport and fate, together with related loading models for rural, suburban and urban areas. Limited technical assistance will be provided in the use of these tools, and in the evaluation of results obtained therefrom.

The Chesapeake Bay program was developed in response to a Congressional mandate that required EPA to conduct a study of the Bay, define the factors adversely impacting the environment, develop research to address adverse factors, and define management strategies to ameliorate degradation in the Bay due to pollution. The program has been developed through a cooperative effort between citizen groups, state environmental agencies (Virginia and Maryland), and the EPA.

The results of integrated studies in three priority areas i.e., toxic substances, eutrophication and submerged aquatic vegetation will provide a predictive capacity to assess the consequences of pollutant loadings on the Chesapeake Bay in terms of effects on the ecosystem, on organisms, on human health, and on the economic impact of the use made of the system. Capacity to predict these impacts will aid management decisions at all government levels.

The basic objective of the Great Lakes research program is to provide the scientific and technical base needed to effectively manage water quality in the Great Lakes. This includes providing methods for assessing the sources, fate, effects, and relative importance of physical, chemical, and biological pollutants in the Great Lakes and for translating human exposure and water quality goals into pollution source control requirements. An integral part of the program is the development, improvement, and adaptation of mathematical predictive models for translating information on existing or projected pollution loadings into ambient water quality impacts and human exposure levels. This research supports the U.S.-Canadian International Agreement (1978) and EPA responsibilities under the Clean Water Act.

The marine ecological effects research program is designed to provide information on which to base legally defensible criteria, standards, and guidelines for effective pollution control programs and treatment strategies. This program includes research in the following areas: (1) determination of the effects of specific pollutants or pollutant combinations on representative or key sensitive organisms in aquatic ecosystems and on critical ecosystem parameters and processes; (2) investigation of the physical, chemical, and biological transformation products of pollutants in marine ecosystems; (3) development of mathematical ecosystem simulation and laboratory models to aid in the prediction of pollutant stress effects on aquatic biota and ecosystems; and

material, bioaccumulation, wetlands, and analytical techniques.

The goal of the freshwater ecology research program is to determine the effects and fate of pollutants in freshwater aquatic systems, including streams, impoundments, and natural lake systems. The program is designed to gain an understanding of the structure and function of natural systems and the effects of pollutants, singly and in complex mixtures, on these systems and on individual species, populations, and communities of aquatic organisms. This includes research on the recovery rates of damaged ecosystems, monitoring methods, and investigations of socio-economic factors.

The characteristics of the physical, chemical and biological transformation products of pollutants in freshwater ecosystems are studied to determine their impact and fate. Laboratory models and mathematical simulations are developed to aid in predicting pollutant stress effects on aquatic biota and ecosystems.

Some of the major areas of research include: (1) development and evaluation of test methods and protocols for aquatic toxicants and/or detection of mutagenic/carcinogenic alterations; (2) evaluation of the effects of complex effluents; (3) development of rapid screening methods to predict the bioaccumulation potential of organic chemicals and trace metals in biota; (4) field validation studies and definition of new problem areas; (5) determination of best alternative waste treatment processes; (6) characterization and determination of the effects of non-point source (NPS) pollutants on water quality in rural and urban areas; (7) determination of the productivity and function of freshwater wetlands and pollutant impact within these systems; (8) evaluation of the ecological effects of land application of treated municipal wastes; and (9) research on pollutant perturbations in cold climate ecosystems.

HEALTH EFFECTS

1979 Accomplishments

During 1979, obligations totaled \$6,266,200 of which \$954,700 is for salaries and expenses and \$5,311,500 for extramural research activities. Specific accomplishments include the following:

- In a study to determine the frequency of gastrointestinal diseases, incidences were found to be marginally higher in populations exposed to aerosols from wastewater sprinkler irrigation as compared to populations exposed to aerosols from non-wastewater sprinkler irrigation systems. Adults were found to be as susceptible as children in this study. This study, and other related studies, have implications the safe siting and design of wastewater irrigation systems.
- A symposium on disease risks of exposure to wastewater and wastewater aerosols from activated sludge plants held in September 1979 reported the results of several studies of the health hazards presented by aerosols from conventional secondary wastewater treatment facilities. The material presented at the symposium will be helpful in developing policy on the siting of conventional wastewater treatment systems. While some increases in antibodies to infectious diseases were noted among those exposed to wastewater aerosols, a pattern of increased incidence of serious adverse health effects was found.

quality characteristics have been completed. Results from these studies are being used to develop recreational water quality criteria for marine waters. Pilot studies for freshwater beaches were conducted at four places across the country in support of freshwater criteria which must also be developed.

- Although the development of a simple blood test for the measurement of human exposure to individual organic chemicals is still in the early stages, initial results have documented that the metabolites of carbon tetrachloride, chloroform, and benzopyrene do bind hemoglobin. Demonstration of such binding was the first critical test for determining whether development of such a human dose monitor was feasible.

1980 Program

The Agency resources for water quality health effects research in 1980 are \$7,016,400. Included in this total is \$2,101,800 for Salaries and Expenses, and \$4,914,600 for Research and Development. Highlights of the 1980 research program include:

- Further study of the health implications of land application for the treatment and disposal of wastewater and sludge.
- Research which supports development of criteria for the safe reuse of wastewater for potable, aquacultural, and industrial purposes.
- Completion of the marine recreational water quality criteria.
- Completion of the freshwater bathing beach studies which are critical for developing freshwater recreational water quality criteria in 1981.
- Continuation of comparative toxicology studies which compare aquatic bioassays for the detection of toxics in water with results obtained in traditional mammalian studies.
- Initiation of a program which will fill deficiencies in the health data base for the consent decree pollutants. Research on the first ten pollutants will begin in 1980. Ten more will be selected and studied each year until the total number (65) is complete.

1980 Explanation of Change from Budget Estimate

The net decrease of \$56,600 results from several actions. An increase of \$49,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million ADP reduction resulted in a decrease of \$2,200 and \$1,300, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$102,500 to this activity.

1981 Plan

The requested resources for water quality health effects research in 1981 are \$7,157,300 and 32 permanent workyears, an increase of \$140,900 over 1980. Of this amount \$2,124,500 will be expended for salaries and expenses and \$5,032,800 for extramural research

alternate sludge disposal practices such as incineration, co-incineration, pyrolysis. This research is important because very little is known on the subject and, with the phasing out of ocean dumping of municipal sludges, more cities are turning to these technologies for sludge disposal.

The major program thrust will be to determine the health impact of land disposal of wastewater and sludge. The health impact of likely new technologies developed in the Agency control technology program will be assessed so that the Agency can make recommendations for safe and effective changes in treatment methods. Since many areas of the country have a shortage of water, and because the cost of sludge disposal is currently around one billion dollars a year, it is important to develop safe and economical technologies for the beneficial utilization of wastewater and sludge. This research program looks at the human health impact of viruses, parasites, and certain heavy metals including cadmium, which are found in wastewater and sludge and which may be passed on to humans through the food chain or through contamination of ground water resulting from land applications.

Another area requiring major effort relates to the 65 consent decree pollutants. Section 304(a) of the Clean Water Act requires that EPA publish and update water quality criteria. In a 1976 consent decree with the Natural Resources Defense Council, 65 toxic pollutants were identified for which EPA was required to produce water quality criteria. These criteria were published for public comment in 1979. In developing water quality criteria for these pollutants, scientists were hampered by the lack of data on many of the pollutants. Studies to repair data gaps for 10 of the 65 pollutants were begun in 1980. This effort will be completed in 1981 and studies will begin on another group of 10 pollutants. This research will support the revision or validation of the standards in areas where data was previously marginal.

Fresh water recreational water quality criteria will be completed in 1981. This research links epidemiology with micro-biological and chemical analyses of recreational waters. Understanding the relationship of various water quality parameters to disease in swimmers and participants in other water sports will make it possible for EPA to determine the most reasonable regulations necessary to protect the public health.

We will continue to investigate the health effects resulting from the reuse of wastes for potable, industrial, and aquacultural purposes. Data from this research will support the development of criteria or guideline documents for the safe reuse of wastewater.

The program will continue to seek improved toxicological methods for predicting the impact of water contaminants on human health. Bioassays using short-lived aquatic species will be compared to mammalian test systems which have been traditionally used as predictors of human health impact. Blood tests which relate exposure to dose are being developed as a measure of carcinogen exposure and as a means of improving extrapolation from animal to human studies. This comparative toxicology research, if successful, will decrease the cost of developing a health data base on a pollutant. The blood test which monitors dose response will reduce the uncertainties in extrapolation and help reduce the need for high safety factors sometimes used in developing criteria or standards because of uncertainties in the extrapolation from lab animal to man. Regulating pollutants at levels higher than is actually needed to protect human health is then less likely to occur.

1979 Accomplishments

In 1979, the program obligated \$1,123,600, including \$335,600 for in-house expenses and \$788,000 for extramural expenses. Major accomplishments are listed below.

- Completion of the Hydrologic Simulation Program - FORTRAN (HSP-F), a comprehensive simulation package for assessing the impacts of rural point and nonpoint source pollution on receiving water quality.
- Testing of the basin-scale model set in the Sandusky and Iowa-Cedar river basins, and the Chesapeake Bay.
- Completion of the ARM/EXPLORE model set. This model set provides pesticide and related sediment movement prediction capability for the assessment of point and nonpoint source impacts of pesticides and other specific toxic organic compounds.
- Completion of an initial feasibility study of a methodology for conducting environmental mass balances, i.e., a procedure for comparing quantities of a pollutant released to the environment from all sources and environmental levels to ensure that all of that released is accounted for.
- Publication of a comprehensive summary of the state-of-the-art formulations used in water quality modeling, including accepted values for associated model coefficients.

1980 Program

In 1980, the Agency has allocated a total of \$1,409,400, including \$572,000 for Salaries and Expenses, and \$837,400 for extramural purposes under the Research and Development appropriation. Program highlights include:

- Establishment of a Water Quality Modeling Center to provide computer programs and limited technical assistance to the user community.
- Testing and evaluation of the HSP-F simulation package for assessing impacts of point and nonpoint pollution sources. Workshops in HSP-F use will be conducted and a HSP-F executive summary published.
- Development of a simplified toxics evaluation manual based on the basin-scale methodology already developed.
- Conduction of a feasibility study for the establishment of a centralized water quality modeling data base.
- Initiation of a project to estimate quantitative and qualitative performance of commonly-used water quality models.
- Implementation of in-house studies on pollutant sorption and transformation processes.

1980 Explanation of Change from Budget Estimate

The net increase of \$158,400 results from several actions. An increase of \$16,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$3,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$11,700 to this activity.

A reprogramming of \$20,000 was made to the management and support media to ORD lab support for lab maintenance costs due in part to increasing costs of energy. Also, the number of service contracts have increased as labs undergo RIFs and the services of maintenance personnel must be replaced by contracts.

A reprogramming of \$50,000 was made to water quality characterization and measurement methods development to help fund the tapes analysis work being done for the Effluent Guidelines Division.

A reprogramming of \$179,000 was made from the water quality resources-renewable resources to reflect the activity in which actual work is to be performed, without any change in the program plan.

A reprogramming from the energy health effects (\$33,000); and from measurement system instrumentation development for energy related pollutants (\$15,000), for a contract to plan a research program to integrate the physical chemical transport models with the ecological fate models.

1981 Plan

The Agency requests a total of \$1,267,600 and 9 permanent workyears for this program, of which \$573,200 is for the Salaries and Expenses appropriation and \$694,400 is for extramural purposes under the Research and Development appropriation. The net decrease of \$141,800 comes from the Water Quality Modeling Center established in 1980 on the model testing and evaluation activity. The reduction in model testing and evaluation will extend by 1 to 2 years, the time required to validate recently completed models for translating nonpoint source loadings into receiving water quality impacts. In 1981 the water transport and fate program will:

- Continue operation of the Water Quality Modeling Technical Assistance Center at a moderately reduced level.
- Adapt existing loading and water quality models to handle consent decree toxics.
- Develop and maintain data files for use in developing model coefficient applicable to the range of environmental conditions to be encountered, as necessary, to apply the models without extensive data collection at each site of application.
- Improve capability to model conventional pollutant/sediment interactions.
- Continue evaluation of the capability of models to assist in making wasteload allocations to evaluate advanced waste treatment facilities and best management practices.
- Continue studies of pollutant sorption and transformation processes.

CHESAPEAKE BAY

1979 Accomplishments

In 1979, this program utilized \$1,886,100, of which \$917,900 was for in-house expenses and \$968,200 for extramural purposes.

During 1979, a program plan with the states of Maryland, Virginia, and Pennsylvania for studying the Chesapeake Bay was developed. A citizens program was established which facilitated involvement of citizens in the planning and management of the programs and incorporation of their concerns into the management decision making process. Integrated studies in the highest priority areas (toxics substances, submerged aquatic vegetation, and eutrophication), were further developed. A data management effort to adequately handle the information developed by this program and an environmental management program to gain a better understanding of present Bay management agencies and mechanisms were initiated.

1980 Program

In 1980, the Agency has allocated \$2,914,900, of which \$904,900 is for the Salaries and Expenses appropriation and \$2,010,000 is for extramural purposes under the Research and Development appropriation.

The 1980 program is continuing integrated studies initiated in 1978 to that management decisions at all the government levels can be based on a predictive capability to assess the consequences of pollutant loadings on the Chesapeake Bay. This will be done in terms of effects on the ecosystem, on organisms, on human health, and on the economic impact of the uses made of the system. The three highest priority problem area studies are being continued through ecosystem simulation, data acquisition and synthesis, and through identification and evaluation of control alternatives in conjunction with the abatement and control decision units of this program.

Toxics substances source assessment studies will be an analysis of the introduction of pollutants into the Chesapeake Bay ecosystem from point and non-point sources. This information will be used to predict current and future loadings under a series of alternative development projections and management strategies. The transport and fate models will develop bay-wide projections. These projections are to be used in exposure effect models to evaluate the management strategies proposed to achieve environmental goals, standards, and criteria.

The eutrophication and submerged aquatic vegetation management units will produce bay-wide assessments of projected ecosystem changes. The reports will be integrated into and will guide abatement and control development projects designed to mitigate specific non-acceptable trends.

A study program with other agencies to evaluate the water quality problems induced by dredging and spill disposal and various hydrological modifications is being initiated. Management strategies to mitigate these problems and supplement the Department of the Interior studies on the Potomac Estuary are being developed. These efforts are directed toward hydrologic and basic water quality models that provide information to evaluate the impact of modified waste treatment strategies on this major tributary estuary. Studies of existing management agencies and mechanisms are continuing and will provide the basis for a better understanding of the factors affecting and influencing the Bay decision process.

State participation programs, with the states of Maryland and Virginia, and citizen participation programs are continuing to provide key coordination links between the states, the public and the Chesapeake Bay program.

development of a data management system is continuing. This system will handle the data produced by this program and provide the basis for a centralized data bank for use by all local, state and Federal groups on the Bay.

1980 Explanation of Change from the Budget Estimate

The increase of \$14,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation.

1981 Plan

The Agency requests a total of \$2,913,000 and 6 permanent workyears, of which \$409,700 is for the Salaries and Expenses appropriation and \$2,503,300 for the Research and Development appropriation.

The 1981 Chesapeake Bay program will continue its integrated approach to research in the areas of toxic pollutant effects, submerged aquatic vegetation, and eutrophication. This includes development of a predictive method to assess the effects of pollutant loadings; development of a source assessment for toxic substances and nutrients entering the estuarine system from point and non-point sources; validation of transport and fate models for toxic substances, and evaluation of hazards to the ecosystem and to human health through the use of exposure effects models; and acquisition and synthesis of data to evaluate control options to halt eutrophication and major ecosystem changes such as the disappearance of submerged aquatic vegetation. The environmental management study will continue to evaluate existing management structures that influence decision processes affecting the Bay. Reports for toxics submerged aquatic vegetation, eutrophication, and the environmental management study will be produced.

The data management system will be further developed to handle the data produced in the studies under this program and provide the basis for a centralized data bank for the Chesapeake Bay.

Long-term environmental management structures for the Chesapeake Bay will be recommended. These management structures will be based on the information gathered during this program.

GREAT LAKES

1979 Accomplishments

In 1979, the program utilized \$3,576,100 of which \$861,300 was for in-house expenses and \$2,714,800 was for extramural expenses. In 1979 the program:

- Participated with other members of a bilateral technical work group, under the aegis of the U.S. Department of State and the Canadian Department of External Affairs, in the evaluation and use of five mathematical models to develop phosphorus loading objectives for the Great Lakes. The results will serve as the basis for revised treatment requirements to be placed on dischargers to the Great Lakes. These revised treatment techniques will be developed by the IJC (including Region V).
- Identified and tracked four major types of contaminants in Lake Superior, using remote sensing techniques.

- Completed three years of sampling of polychlorinated biphenyls (PCB's) and metabolites in fish and particle size fractions indicative of zooplankton and phytoplankton in Saginaw Bay and adjoining portions of Lake Huron. This information will be used in development of a mathematical model to assess the movement and fate of PCBs in the Great Lakes and the impacts of various proposed control schemes on human exposure levels.
- Completed a study of PCB's in the water and sediment of Lake Superior. Concentrations at various geographical locations were documented and these and similar studies results described above will be used in the development of a model for predicting the transport and fate of toxic organic contaminants in the Great Lakes.

1980 Program

In 1980, the Agency has allocated \$3,588,800 to this program of which \$1,018,800 is for Salaries and Expenses and \$2,570,000 is for extramural purposes under the Research and Development appropriation. Major activities in 1980 include:

- Determination of the validity of earlier projections of water quality improvements resulting from nutrient reductions to the Great Lakes.
- Determination of pathways and reservoirs of PCBs and selected other persistent toxic organic chemicals in the Great Lakes.
- Determination of rates of basic lake processes influencing toxicant behavior in the Great Lakes.
- Development of a series of mathematical models for simulating the transport, bioaccumulation, and loss of toxicants in the Great Lakes. The revised treatment requirements will be developed by the International Joint Commission (including Region V), not by ORD. ORD's obligation was to assist in selecting and using the models.

1980 Explanation of Change from Budget Estimate

The net increase of \$2,013,800 results from several actions. An increase of \$13,800 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional add-on of \$2,000,000 was made to the Great Lakes program.

1981 Plan

The Agency requests a total of \$1,599,500 and 7 permanent workyears for this program, of which \$945,000 is for the Salaries and Expenses appropriation and \$654,500 for extramural purposes under the Research and Development appropriation. This is a net decrease of \$1,989,300 from 1980 which results from a congressional add-on which was not carried into 1981. The program will continue with the activities underway in 1980, but with decreased emphasis on assessments of the transport and fate of persistent toxic organic chemicals present in the Great Lakes.

The research program will be directed at:

- Development of a management strategy for the control of nearshore nuisance algal growths.
- Continuation of verification of mathematical nutrient-phytoplankton models and associated projections of nutrient reduction requirements.
- Determination of pathways and reservoirs of PCBs and selected other persistent toxic organic chemicals in portions of Lakes Michigan and Huron.
- Development of framework of mathematical models for simulating the transport, bioaccumulation, and loss of persistent toxic organic chemicals in portions of Lakes Michigan and Huron.

MARINE ECOLOGICAL EFFECTS

1979 Accomplishments

In 1979, the program obligated \$3,080,500. This includes \$2,386,600 for in-house expenses and \$693,900 for extramural purposes. Major accomplishments include:

- In support of the EPA water quality consent decree the program: developed defensible guidelines for determining quality criteria; assembled, reviewed and analyzed toxicological data bases; conducted acute, chronic toxicity and bioconcentration potential to fill data gaps in the toxicological data bases; and prepared criteria documents for about half of the pollutants in support of the EPA water quality consent decree program.
- Completed the technical support document for the regulation promulgated pursuant to Section 301(h) of the Clean Water Act of 1977. This document explains the scientific and technical requirements of the regulation. The successful implementation of this program, following the procedures outlined in this document, could result in the saving of over \$2 billion in construction funds, significant savings in energy due to lower treatment requirements, and a wealth of scientific information regarding the effects of municipal waste dischargers on marine systems.
- Completed a report on a benthic bioassay, using marine macrobenthos, for sediment toxicity. This procedure may be used in the dredged material disposal permit program and the ocean dumping permit program.
- Completed the fourth annotated bibliography on biological effects of metals in aquatic environments and began publication. This account lists 886 titles of selected articles from the technical literature on the subject of toxicological and physiological effects.
- Reported advances in marine aquatic analytical techniques. These advances were in the area of Gas Chromatography-Mass Spectrometry analysis of organic pollutants in the marine environment, and in the area of sample preparation techniques in the determination of silver, a priority pollutant commonly associated with municipal and industrial effluents, in marine organisms.

1980 Program

In 1980, the Agency has allocated \$3,646,200 to this program, of which \$2,678,300 is for Salaries and Expenses and \$967,900 is for extramural purposes under the Research and Development appropriation.

Research in the area of water quality criteria development is continuing to emphasize development and validation of techniques (bioassays, biomathematical indices, behavioral indices and physiological indices) to determine the effects of pollutants on both organisms and systems. This research is being coordinated with related research conducted in the areas of pesticides and toxic substances. These techniques, and the information resulting from their use, will be used in the ocean dumping and dredged material disposal permit program to update water quality criteria and effluent standards, and to make decisions concerning the registration of pesticides and toxic substances.

The development and refinement of marine analytical techniques will be continued. Emphasis will be given to those techniques which measure trace elements in sediments and organisms. The aquatic organism culture research program will, in addition to providing experimental stock for other areas of research, conduct research on the nutritional requirements of marine organisms and develop culture methodology for rearing and holding experimental organisms.

Continuing efforts in the area of ocean outfalls will emphasize the municipal discharge research, although some research will be conducted on industrial discharges. This research will determine the response of marine organisms and ecosystem to physical factors influencing pollutant transport and retention: the dispersal and accumulation of wastes discharged from ocean outfalls; the size and configuration of mixing zones; the effects of ocean discharges; the responses of an estuary to the relaxation of sewage stress; and the optimum type of treatment for ocean outfalls for municipal wastes, based on the impact of various levels of sewage treatment.

Ocean disposal research will continue to focus on problems relating to the disposal of dredged materials. This research is being coordinated with the U.S. Army Corps of Engineers through a joint technical committee on criteria for dredged and fill material. Emphasis will be given to the validation of benthic bioassay procedures, studies of pollutant availability from dump sites, and development of biological indices for use in impact assessments. It should be noted that this bioassay research will be used in both the ocean dumping permit program and the dredged material disposal program.

Wetlands research is being shifted away from boundary definition work and more emphasis will be given to studies which will address questions of productivity and function. Information useful in determining which wetlands are the most productive or functionally important will be used in the dredged material disposal permit program and for areawide planning. This research is being closely coordinated with the freshwater wetlands research described in the freshwater ecological effects section.

1980 Explanation of Change from Budget Estimate

The net increase of \$253,200 results from several actions. An increase of \$101,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$6,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$61,700 to this activity.

support for lab maintenance costs due in part to increasing costs of energy. Also, the number of service contracts have increased as labs undergo RIFs and the services of maintenance personnel must be replaced by contracts.

A reprogramming of \$62,600 was made from the water quality media from water quality freshwater ecological effects as a result of the Corvallis and Las Vegas labs after a 1979 RIF.

A reprogramming of \$40,000 was made within the same media to water quality characterization and measurement methods development to help fund the tapes analysis work being done for the Effluent Guidelines Division.

A reprogramming was made from water quality characterization and measurement methods development (\$4,000); from water quality freshwater ecological effects (\$11,000); from water quality renewable resources (\$6,000); and from effects related pollutants (\$20,000), for a contract to plan a research program to integrate the physical, chemical transport models with the ecological fate models.

A reprogramming of \$210,000 was made from water quality freshwater ecological effects within ORD to provide for the personnel reassigned from freshwater ecological effects to marine ecological effects.

1981 Plan

The Agency requests a total of \$3,305,800 and 54 permanent workyears of which \$2,860,700 is for the Salaries and Expenses appropriation and \$445,100 is for the Research and Development appropriation. The decrease of \$340,400 and 4 permanent workyears will result in the elimination of research on the effects of complex industrial effluents and a reduction of the aquatic toxicology effort concerned with sublethal responses of marine organisms upon exposure to pollutants. The reduction was effected in order to shift resources to other priority areas, particularly the toxics and hazardous waste areas.

In 1981, the program will again emphasize aquatic toxicology, ocean disposal, the effect of dredged material, analytical techniques and wetlands.

The aquatic toxicology research will develop, revise, and validate procedures (bioassays, biomathematical indices, behavioral indices and physiological indices) to be used to determine the effects of pollutants on both organisms and ecosystems. These techniques, and the information derived from them, will be used not only in the development of water quality criteria but also in the registration/reregistration of pesticides, in evaluating materials to be disposed in the ocean, in premarked testing of toxic substances and in the development of ocean discharge criteria. This research will be coordinated with similar research in toxic substances and pesticides.

Closely related to this research is the research to develop methodologies for culturing selected marine organisms to assure the availability of a variety of appropriate organisms of a known quality for use in bioassay procedures. Marine analytical techniques research will continue to develop or revise sampling, extracting, and analytical techniques, as well as quality control procedures, for the priority pollutants in water, sediments and tissues of marine origin. This work will result in a methods manual and will strongly support other research relating to these pollutants. Research to determine the kinetics of pollutants bioaccumulation and loss in shell fish exposed to low levels of selected pollutants will be conducted. This research will provide information to be used in the development of water quality criteria and in evaluating biological monitoring data.

determine the response of marine organisms and ecosystems to physical factors influencing pollutant transport and retention; the dispersal and accumulation of wastes discharged from ocean outfalls; the size and configuration of mixing zones; the effects of ocean discharges; and the optimum type of treatment for ocean outfalls for municipal wastes, based on the impact of various levels of sewage treatment. This research will provide information which will assist in evaluating 301(h) permit modifications and monitoring programs, be valuable in developing/revising ocean discharge criteria, and in the formulation of NPDES permits for publicly owned treatment works (POTWs).

Research on dredged material will focus on the development and validation of benthic bioassay procedures for use in the Section 404 and ocean dumping dredged material disposal permit programs. These procedures will be used to evaluate the quality of dredged material to be discharged.

Studies to determine the relationship between sediment contamination and toxicity, pollutant bioaccumulation, pollutant availability and effects of marine organisms will be conducted. This information will be used in making permit decisions relating to dredged materials, assessing in-place toxic problems such as those associated with harbors, and evaluating sediment problems associated with ocean outfall discharges. This research will be coordinated with the U.S. Army Corps of Engineers through a joint technical committee on criteria for dredged and fill material.

Wetlands research on boundary definition will be reduced in 1981. The information from this research will be used to determine which areas are wetlands, and therefore fall under the jurisdiction of Section 404. Emphasis will be given to wetland productivity and function. Information useful in determining which wetlands are the most productive or functionally important will be used in the dredged material permit program and for areawide planning. The effects of stress (pollutant and dredged material) and the role of catastrophic events (such as storms) will be studied to evaluate their importance to wetland productivity and function. This wetlands research will be closely coordinated with the freshwater wetlands research.

FRESHWATER ECOLOGICAL EFFECTS

1979 Accomplishments

In 1979 the program obligated \$7,229,800. This includes \$2,518,400 for extramural activities and \$4,711,400 for inhouse expenses. In 1979 the program:

- In work jointly funded with the drinking water health program, the presence of chrysotile asbestos fibers in human urine samples collected from individuals using drinking water free of chrysotile fibers was demonstrated. These results are important in that food chain sources are now suspected of being the vectors for carrying this material to man. The drinking water health program is now determining the significance of these findings through follow-up studies.
- Described the geographical pattern of mining dust and flyash particle deposition in Northeastern Minnesota by x-ray diffraction and electron microscope analysis of particles in snow samples. This information will be used by EPA to determine the land and lake water surface areas impacted by large coal-fired power plants and by asbestos mining in Minnesota and southern Canada.

- Produced chronic toxicity data with fathead minnows and Daphnia magna on 10 consent decree chemicals for use in water quality criteria development.
- Determined the major metabolites produced by fish and invertebrates exposed to representatives of four important chemical classes; halomethanes, chlorinated ethanes, chlorinated ethylenes, and chlorinated benzenes.
- Determined through studies at a number of pesticide manufacturing plants that secondary waste treatment decreases the acute toxicity of liquid wastes by approximately 96 percent. These results enable the Agency to specify water quality criteria and make management decisions about the level of treatment to effect ambient water quality.
- Found evidence that the lethal effect of two or more heavy metals common in electroplating wastes is usually additive. As a result, water quality criteria for various trace metal mixtures can be established by the Agency.
- Determined the tolerance of species of warmwater fish during reproductive periods to turbidity and sediment; information was based on a review and statistical analysis of existing literature.
- Completed a study using artificial stream channels relating the degree of stream bed sedimentation to fish growth in cold water streams.
- Determined baseline biological conditions in three agricultural watersheds which are included in the joint EPA-USDA Model Implementation Program.
- Developed a procedure for use in monitoring salmon and trout spawning grounds and assessing the impact of sedimentation.
- Evaluated lake restoration methods, including economic impacts in conjunction with the Clean Lakes Program.
- Evaluated the effects of pollutant stress on freshwater wetlands and their relation to wetland role and function, especially productivity and foodweb complexes.
- Developed methods and conducted tests to determine effects of metals and 13 pesticides on ocean survival of salmon smolts, determined the effects of intermittent exposure of salmonids to pollutants, and developed and initiated testing in 10 laboratory stream microcosms.
- Determined effects of water hazardous on acute and chronic toxicity of six metals to Daphnia for consent decree chemical criteria.

1980 Program

In 1980, the Agency has allocated a total of \$5,027,300 to this program, of which \$4,112,300 is for Salaries and Expenses and \$915,000 is for extramural purposes under the Research and Development appropriation.

In 1980 the program will concentrate upon environmental exposure work, which includes effects and human food chain analyses, methods development in environmental toxicology (including bioassays and chemical structure analyses), and characterization of pollutants. The research program also plans to identify and fill in research gaps in the analyses of the 129 Consent Decree chemicals to support preparation of water quality criteria documents.

- Development of methods for predicting effects of reduced nutrient loading to lakes with emphasis on the verification of methods developed and identification of costs associated with various restoration techniques.
- Development of methods to assess impact of nonpoint source pollutants, such as suspended sediments, or stream systems.
- Assessing the effectiveness of best management practices for nonpoint sources in protecting and/or enhancing stream quality.
- Initiation of methods development to evaluate ecological impact of dredging, particularly relating to Section 404 program, on freshwater ecosystems.
- Development and refinement of methods for directly measuring or integrating the combined toxicity to aquatic organisms of complex effluents which vary both in composition and concentration over time.
- Determination of the usefulness of aquatic organisms as biological models for predicting human effects.

The characterization effort focuses upon the identification of hazardous fine particles in organisms of ecological importance. In particular, we are developing procedures for identifying the properties which govern the biological activity of small particles (such as asbestos fibers) frequently found in biological materials, with emphasis on fate of ingested mineral fibers in drinking water and in finfish consumed by man. All research will use naturally exposed populations such as those using Lake Superior water and consuming regular diet amounts of Lake Superior finfish. Major ongoing activities are:

- Development of scientific data, rationale, and better methods for supporting and establishing water quality criteria and regulations; development of screening tests, rapid chronic tests and test protocol for aquatic biological effects as estimates of effects on humans; tests and methods work on about 15 consent decree chemicals for water quality criteria; reports on shorter, cost effective screening tests and test protocols for consent decree list chemicals, report on effects of consent decree chemicals on salmonid species of Pacific NW; water quality criteria documents for consent decree chemicals.
- Determination of effects of sediments, pesticides and nutrients, singly and in combination, for stream ecosystems and freshwater biota; development of assessment methods and criteria for physical aquatic habitat; determination of rural and urban NPS effects and evaluation of BMP effectiveness, and development of the concept of "wet weather" criteria for NPS pollutants.
- Development of definition for boundaries to freshwater wetlands (compatible with previously developed definition for marine wetlands) and development of a bioassay to determine low level stress on wetland plant carbohydrate reserves.

- Evaluation of environmental effects and impact on the ecosystem and water quality of various state of the art methods of restoring lakes and completion of additional chapters of lake restoration manual.
- Determination of the stress and recovery of outdoor man-made open channel aquatic ecosystems receiving upper Mississippi River water at Monticello, Minnesota, from toxic substances and relative changes in pH.
- Performance of structure-activity correlation studies at the molecular level to evaluate the primary effects of water pollutants upon aquatic life and to understand the initial biochemical and physiological effects.
- Development of a valid certain multiple toxicity approach and models to predict the effects of certain chemical combinations based on the knowledge of the behavior of the individual toxic constituents.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$1,004,700 results from several actions. An increase of \$135,600 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$1 million to ADP resulted in a decrease of \$4,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$95,700 to this activity.

A reprogramming of \$96,000 was made to management and support for lab maintenance costs due in part to increasing costs of energy. Also, the number of service contracts have increased as labs undergo RIFs and the services of maintenance personnel must be replaced by contracts.

A reprogramming was made to air ecological processes and effects (\$187,700); to water quality marine ecological effects (\$62,600); to pesticides ecological effects (\$93,800); and to toxic substances ecological effects (\$281,500), as a result of the reorganization of the programmatic functions of the Corvallis and Las Vegas labs after a 1979 RIF.

A reprogramming of \$210,000 was made to water quality marine ecological effects within ORD to provide for the personnel reassigned from freshwater ecological effects to marine ecological effects.

A reprogramming of \$38,000 was made to pesticides ecological effects to reflect the reassignment of one employee as a result of the overall cut in positions at the Duluth lab.

A reprogramming of \$60,000 was made to water quality characterization and measurement methods development to help fund the tapes analysis work being done for the Effluent Guidelines Division.

A reprogramming of \$11,000 was made to water quality marine ecological effects within ORD for a contract to plan a research program to integrate the physical, chemical transport models with ecological fate models.

1981 Plan

The Agency requests a total of \$5,640,800 and 88 permanent workyears for this program, of which \$3,916,700 is for the Salaries and Expenses appropriation and \$1,724,100 for the Research and Development appropriation. The increase of \$613,500 will be used to fund the development of fresh water quality criteria data for consent decree chemicals where knowledge gaps exist, to increase the research effort in support of the lake restoration program, and to determine recovery rates in polluted ecosystems. The 10-position decrease will result in shifting more of the program's activities to extramural execution. In 1981 the program will:

- Develop scientific data, rationale, and better methods for supporting and establishing water quality criteria and regulations; develop screening tests and test protocols for aquatic biological effects as estimates of effects on humans; test effects of pollution on Pacific Northwest species in stream microcosm and intermittent exposure system.
- Determine additional effects of sediments, pesticides and nutrients, singly and in combination as a continuation of the 1980 efforts, for stream ecosystems; develop and refine assessment methods and criteria for physical aquatic habitat initiated in 1980; continue to determine rural and urban NPS effects and evaluate effectiveness of BMP's; conduct and refine applied economic evaluations of costs and benefits of NPS control practices initiated in 1980; develop and refine the concept of "wet weather" criteria for NPS pollutants.
- Develop and refine definitions for boundaries of wetlands that began in 1980 and complete a bioassay to determine low level stress on wetland plant carbohydrate reserves.
- Evaluate environmental effects and impact on the ecosystem and water quality of various state-of-the-art methods of restoring lakes, including potential for liberation of toxic substances to the water column, and multiple societal benefits of lake restoration projects; finalize all chapters of lake restoration guidance manual and provide the material to the Office of Water Planning and Standards (OWPS) by August 1981.
- Develop methods to measure aquatic biological effects of complex mixtures and multiple stresses of pollutants to evaluate best practicable technology (BPT) and best available technology (BAT); refine the microcosm method for measuring pollutant effects in multiple species.
- Develop methodology for classifying watershed/stream systems into common categories based on geological, climatic, and morphological factors; initiate study of effects of specific chemical nonpoint source pollutants on aquatic ecosystems.
- Determine the utilization of overflow wetlands in bottomland hardwood systems by aquatic species and determine the importances of these areas to aquatic food webs; determine the role and function of arctic moist tundra systems.

Industrial Processes

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Industrial Processes:			
Salaries and Expenses.....	\$1,755	\$1,746	-\$9
Research and Development.....	9,163	9,163	...
Renewable Resources:			
Salaries and Expenses.....	319	317	- 2
Research and Development.....	...	...	...
Total:			
Salaries and Expenses.....	2,074	2,063	-11
Research and Development.....	9,163	9,163	...
Grand Total.....	11,237	11,226	-11



WATER QUALITY

Industrial Processes

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>1981 vs. 1980 Increase + Decrease -</u>
(dollars in thousands)					
Industrial Processes					
Salaries and Expenses..	\$ 1,380	\$ 2,485	\$ 1,749	\$ 1,755	+6
Research and Develop- ment.....	5,934	9,215	9,756	9,163	-593
Renewable Resources					
Salaries and Expenses..	1,108	1,291	1,074	319	-755
Research and Develop- ment.....	<u>1,962</u>	<u>1,836</u>	<u>1,798</u>	<u>...</u>	<u>-1,798</u>
Total					
Salaries and Expenses..	2,488	3,776	2,823	2,074	-749
Research and Development.....	<u>7,896</u>	<u>11,051</u>	<u>11,554</u>	<u>9,163</u>	<u>-2,391</u>
Grand Total.....	10,384	14,827	14,377	11,237	-3,140
Permanent Positions					
Industrial Processes.....	25	29	33	33	...
Renewable Resources.....	<u>18</u>	<u>28</u>	<u>24</u>	<u>10</u>	<u>-14</u>
Total.....	43	57	57	43	-14
Full-Time Equivalency					
Industrial Processes.....	36	48	43	42	-1
Renewable Resources.....	<u>33</u>	<u>38</u>	<u>32</u>	<u>10</u>	<u>-22</u>
Total.....	69	86	75	52	-23

Budget Request

The Agency requests a total of \$11,237,000 and 43 permanent workyears for 1981. This represents a net decrease of \$3,139,600 and 14 permanent workyears.

A total of \$2,074,200 is for the Salaries and Expenses appropriation, and \$9,162,800 for Research and Development appropriation, a decrease of \$748,400 and a decrease of \$2,391,200 respectively. The decrease of \$587,800 in the industrial processes program will decrease innovative technology development and further development of treatability data for toxic pollutants. The 14 permanent workyears and \$2,551,800 decrease in renewable resources will result in the termination of the extramural work. The reduction reflects the intent EPA to work with other agencies to utilize other existing funds to undertake any necessary future BMP development. This change reflects the fact that there are already a large number of BMPs available for implementation.

Program Description

The industrial processes water quality research program deals with point and non-point sources of pollution resulting from the industrial, agricultural, and forestry

sectors of the economy. This program develops and demonstrates new or improved cost effective technology.

The industrial processes portion of the research program concentrates on point sources of water pollution resulting from 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 the realization of a national policy established in the 1972 Amendments which called for a major research and demonstration effort to develop the technology necessary to help eliminate the discharge of pollutants into the Nation's waters.

The program thus develops new or improved technology having industry-wide application short term achievability, and long term viability. Research results also 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 Natural Resources Defense Council Consent Decree in June 1976, program emphasis has been shifted toward the development of the data required to regulate the discharge of toxic pollutants. The program direction focuses on developing complete waste stream assessments, including chemical and bioassay data, and on developing and demonstrating treatment technology and alternatives for toxic and non-toxic pollutant materials in industrial waste effluents. High priority is also put on the development and demonstration of reuse and recycle options for industrial wastewater discharges. In addition, this program addresses technology for the prevention and control of spills of hazardous materials, in support of Section 311 of the FWPCA.

The renewable resources research program conducts research related to the control of environmental pollution associated with agricultural and forestry activities, including crop production on both irrigated and nonirrigated lands, forest management practices, and animal production. This research program is integrated with those of the Departments of Agriculture and Interior, and with state universities and land grant colleges. The program encompasses the evaluation and development of total management systems including best management practices (BMPs) 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; and, to a lesser extent, the assessment of probable trends in the production of renewable resources and their resulting environmental and socioeconomic impacts.

The renewable resources research effort also supports the development of guidelines to identify and evaluate 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 (f) of the FWPCA. It also responds to the requirement of Section 208 of the FWPCA 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. In addition, Section 208 (j) provides for the Rural Clean Water Program, and makes available cost-sharing grants to agricultural producers for the installation of BMPs to improve water quality. This section places an added urgency on the need for development of methods to select and evaluate cost-effective management systems in order to ensure the effective expenditure of limited Federal resources. As a result of pressure for increased production of renewable resources, efforts will be continued to transfer information concerning 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 has been necessary to: (1) develop methodologies to estimate or determine

background levels of pollution in agricultural and forestry production regions; (2) provide tools for the planner/decision maker to determine the probable environmental consequences of the major agricultural and forestry pollutants, including appropriate predictive methods; (3) provide tools to select and evaluate both the pollution reduct and cost effectiveness of individual and combined management systems; (4) develop cost effective methods that minimize agricultural and forestry pollution by evaluating and demonstrating different systems at different locations; and (5) develop, evaluate, and demonstrate implementation strategies, including socioeconomic and institutional aspects for candidate BMPs.

INDUSTRIAL PROCESSES

1979 Accomplishments

In 1979, the obligations for this program was a total of \$7,314,400, of which \$1,379,700 was for salaries and expenses and \$5,934,700 was for extramural activities. In 1979 the industrial processes program accomplished the following:

- Demonstrated at full-scale the use of activated carbon for control of hydrocarbon emissions from petroleum solvent industrial drycleaning operations.
- Demonstrated treatment of refinery wastewater by means of filtration and activated carbon.
- Demonstrated biological treatment of high strength petrochemical wastewaters.
- Developed a data base for the preparation of effluent guidelines for the machinery, electrical, and electronic product point sources category.
- Demonstrated organic waste recovery for the paper and pulp industry by means of activated carbon and steam stripping.
- Conducted a laboratory study and evaluation of the control of discharges of toxic chlorinated phenolic compounds from bleach plants, and from wood preserving and pulp mills.
- Demonstrated feasibility of achieving best available technology for blast furnaces by use of a mobile wastewater treatment pilot plant.
- Evaluated the technical feasibility of achieving total recycle in integrated steel plants.
- Demonstrated use of a mobile hydraulic system for the diversion of small stream following a hazardous chemical spill episode.
- Developed a mobile system for regenerating activated carbon used to treat hazardous material spills.
- Determined removability of toxic pollutants from textile mill effluents by means of powdered activated carbon.

1980 Program

In 1980, the Agency has allocated a total of \$11,505,500 to this program, of which 1,749,300 is for the Salaries and Expenses appropriation and \$9,756,200 is for extramural purposes under the Research and Development appropriation.

In 1980, activities will be focused on research, development and demonstration of control and treatment technologies. Currently available treatment methods will be optimized and innovative technologies will be developed to reduce the level of, destroy or beneficially reuse pollutants. Outputs will be used to further validate the revised effluent guidelines promulgated during 1979 and 1980.

A major program will be initiated for the demonstration of reuse and recycle options for industrial wastewater discharges. This effort will incorporate existing treatment methods and new technology in demonstrations of reuse and recycle systems for selected industrial segments, and will result in widely applicable benefits such as: (1) reduction of wastewater volume, (2) reduction of intake water, (3) cost and energy savings, (4) conservation of water and other natural resources, (5) containment of conventional and toxic pollutants, and (6) progress towards the national goal of "Zero discharge of pollutants."

The hazardous incident program will continue the development of technology for the prevention, identification, and control of hazardous and toxic material spills. Criteria will be developed for use by spill response personnel in determining priorities for chemical spill cleanup and the extent to which cleanup must be conducted. Techniques will be assessed for mitigation of biological damage to and the accelerated restoration of spill impacted water and land areas.

Major research results to be achieved in 1980 include:

- Environmental assessment of industrial waste water and residuals from the petroleum refining industry.
- Determination of the interference by, and removability of, heavy metals and refractory organics in municipal waste water treatment systems and elucidation of the processes involved.
- Demonstration of best available technology for coke plants by using the mobile wastewater treatment system developed by EPA.
- Evaluation of air effects of biological aeration basins used by the textile industry for water pollution control.
- Preparation of a guidance manual to be used by those emergency response team personnel who are the first to arrive at the site of a hazardous material spill.
- Development of criteria for determining priorities for cleanup following a hazardous material spill.
- Completion of the feasibility and design studies for a computerized data base for characterization and control of wastewaters from non-fuel extraction industry.
- Establishment of a quick response, inhouse testing and evaluation facility for performing industrial wastewater treatability studies.
- Assessment of the effectiveness of powdered activated carbon for treating leather tanning wastes.
- Initiation of development and demonstration reuse/recycle projects for the iron and steel, textile, organic chemicals, and petrochemicals industries.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$194,500 results from several actions. An increase of \$49,200 results from the cost of the October 1979 pay raise and is included in a proposal supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and resulted in a decrease of \$5,500. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover, authorized workyears resulted in an increase of \$238,200 to this activity.

1981 Plan

The Agency requests a total of 33 permanent workyears and \$10,917,700 for this program, of which \$1,754,900 is for the Salaries and Expenses appropriation and \$9,162,800 is for the Research and Development appropriation. This represents a decrease of \$587,800. This will decrease innovative technology development in areas such as food and wood production industries and the extension of treatability data for toxic pollutant

In 1981, activities will continue to support the development of timely, technically sound regulations by concentrating on the research, development, and demonstration of control and treatment technologies. Areas to be covered include support of effluent guidelines regulation development, advancement of water pollution control technologies and technology transfer activities.

Special emphasis will be placed on developing a treatability research program that defines the extent to which existing and new technology can be applied to treating toxic pollutants. This data is used to assist the Effluent Guidelines Division in the preparation of regulation and to provide a basis for the writing of permits in situations not covered by existing regulations.

The new program, initiated in 1980, for the demonstration of reuse and recycle options for industrial wastewater discharges will be continued at a high level. Background studies in specific industrial areas will be completed and will be followed, where indicated, by pilot plant or demonstration scale projects. Development efforts underway will yield the necessary data for the implementation of full scale industrial wastewater reuse/recycle systems. Reuse/recycle studies will be initiated in industrial areas other than those currently under study.

The hazardous incident program will continue the development of control technology in support of regulatory needs for control, cleanup and removal of toxic and hazardous spills and for restoration of impacted lands and waters.

Major research results to be achieved in 1981 include:

- Demonstration of a process water recycle system at a petrochemical plant.
- Demonstration of reuse/recycle technology for textile mills which currently discharge to municipal treatment systems.
- Preparation of a guidance manual to achieve maximum recycle/reuse for individual steel plants.
- Demonstration of ion exchange technology for reuse/recycle in the organics chemical industry.
- Demonstration of total reuse/recycle at a specialty organics chemical manufacturing plant.

- Development and evaluation of new technologies specifically designed for application to reuse/recycle systems.
- Development of criteria to predict removals of selected priority pollutants in combined treatment systems.
- Development of a data base for previously unidentified toxic pollutants from iron and steel plants.
- Development of a data base to support effluent guidelines for pesticide intermediates manufacturing.
- Report on best management practices, equipment and techniques to prevent, control, cleanup and remove spilled hazardous and toxic substances.
- Development of bench scale innovative technology for the treatment of broad classes of toxic chemicals to expand the existing treatability data base.

RENEWABLE RESOURCES

1979 Accomplishments

In 1979, this program utilized \$3,069,600. This includes \$1,107,800 for Salaries and Expenses and \$1,961,800 for extramural expenses which were allocated among three subprograms: (1) nonirrigated crop production; (2) irrigated crop production; and (3) animal production. Accomplishments for 1979 include the following:

Nonirrigated Crop Production

- Completion of a study examining the social and economic implications of various policies for controlling water pollution from nonpoint agricultural sources. Such policies could be drafted so as to be consistent with existing legislation and would not have severe adverse effects on the agricultural sector in total.
- Development and initial testing of the Watershed Erosion and Sediment Transport (WEST) Model which links hydrologic and erosion processes occurring on land surfaces with water and sediment movement through stream channels.
- Identification and assessment, on a regional basis, of the current and emerging trends in the U.S. crop production subsector that will have the most significant environmental implications.
- Determination of the feasibility of developing an analytical method that can be applied to determining the costs and water quality impacts of reducing agricultural nonpoint source pollution.

Irrigated Crop Production

- Preparation of an environmental planning manual for salinity management in irrigated agriculture, focusing on combinations of technological and institutional solutions, data requirements, methods of analysis, and formulation of an action program.
- Evaluation of a mathematical model for predicting subsurface irrigation return flow salinity.

- Determination of the impact of various irrigation practices on crop yields, with particular emphasis on corn and wheat.
- Application of a mathematical model for irrigation-related water quality was found to adequately simulate observed salinity variation patterns in the Rio Grande Basin.

Animal Production

- Development of a computer model which simulates feedlot runoff generation and disposal. The model helps establish guidelines and design parameters for feedlot runoff control facilities which will meet FWPCA requirements.
- Completion of a study which developed management practices for feedlot runoff retention ponds and determined the cost of open feedlot runoff control systems.
- Identification of biological and thermochemical processes for recovery of byproducts from animal wastes.
- Evaluation of vegetated field areas as control mechanisms for contaminated runoff from small livestock feedlots.

1980 Program

In 1980, the Agency has allocated a total of \$2,871,100 to this program, of which \$1,073,300 is for Salaries and Expenses and \$1,797,800 is for extramural purposes under the Research and Development appropriation. Research will continue in the same three areas as outlined above. Program activities include the following:

Nonirrigated Crop Production

- Continuation of a full-scale field evaluation program to evaluate the cost-effectiveness of agricultural BMPs to improve water quality; various aspects of this study include evaluating the effects of agricultural land use practices on stream water quality, determining the sociological factors involved in the adoption of BMPs, and analyzing the economics of land use practice effects on water quality.
- Completion of calibration and testing of the Agricultural Runoff Management and Nonpoint Source Models.
- Development of protocols for selection of BMPs to meet water quality standards in watersheds.

Irrigated Crop Production

- Development of manuals detailing total system management for control of pollutant (i.e., salinity, sediments, nutrients, and biocides) in irrigation return flow.
- Continuation of evaluation of soil sampling intensity and siting in characterization of field soil properties.
- Continuation of assessment of organics and toxic chemicals in surface and groundwater from irrigated agriculture.

Animal Production

- Continuation of field evaluation of practices used for dairy manure management, storage, and field application as these practices influence stream and lake water quality.

1980 Explanation of Change from Budget Estimate

The net decrease of \$255,900 results from several actions. An increase of \$34,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million for ADP reduction resulted in a decrease of \$3,000 and \$19,800, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$33,000 to this activity. A reprogramming in order to support costs projected on the basis of 1979 actual expenditures resulted in a transfer to water quality transport and fate (\$179,000). A reprogramming of \$50,000 was made to management and support, ORD lab support, for lab maintenance costs due in part to increasing costs of energy. Also, the number of service contracts have increased as labs undergo RIFs and the services of maintenance personnel must be replaced by contracts. A reprogramming of \$6,000 to water quality marine ecological effects within ORD for a contract to plan a research program to integrate the physical, chemical transport models with the ecological fate models.

1981 Plan

The Agency requests a total of \$319,300 and 10 permanent workyears for this program, all of which is for the Salaries and Expenses appropriation. The decrease of \$2,551,800 and 14 permanent workyears will result in the discontinuation of extramural work directed at: (1) quantifying the effectiveness of existing agricultural BMPs in reducing nutrients, pesticide, and other pollutant contributions to receiving waters and (2) evaluating the techniques for selecting agricultural BMPs to improve receiving water quality. The policy decision to eliminate research on the evaluation of Best Management Practices was based on several factors including (a) the current availability of BMPs in 208 plans and the phase-out of that program at the end of 1983; (b) problems with implementing the already existing BMPs; and (c) the considerable level of resources at USDA directed at BMP evaluation. EPA will make every effort to carefully phase out the extramural studies so as to achieve maximum research benefit. In addition, EPA will undertake discussions with other groups that might be interested in assuming responsibility for our reduced activities, particularly the Department of Agriculture which has existing funding in these areas.

Under an interagency agreement with the USDA/Extension Service, technical information will be provided to the Federal and State Extension Services for educational programs relating to implementation of BMPs for abating pollution from agricultural nonpoint sources. Efforts will be focused on EPA Program and Regional Offices, and on State Pollution Control Agencies for providing technical assistance with agriculturally-related pollution problems. Activities will also continue to transfer research-generated data and methodologies to the agricultural user community.

WATER QUALITY

Public Sector Activities

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Wastewater Control Technology:			
Salaries and Expenses.....	\$2,523	\$2,510	-\$13
Research and Development.....	4,275	4,275	...
Urban Toxic and Residuals Management:			
Salaries and Expenses.....	2,315	2,304	-11
Research and Development.....	<u>5,687</u>	<u>5,687</u>	<u>...</u>
Total:			
Salaries and Expenses.....	4,838	4,814	-24
Research and Development.....	<u>9,962</u>	<u>9,962</u>	<u>...</u>
and Total.....	14,800	14,776	-24



Public Sector Activities

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
Wastewater Control					
Technology:					
Salaries and Expenses..	\$2,402	\$2,174	\$2,727	\$2,523	-204
Research and Develop- ment.....	12,126	4,257	4,672	4,275	-397
Urban Toxics and					
Residuals Management:					
Salaries and Expenses..	2,212	2,568	2,605	2,315	-290
Research and Develop- ment.....	4,638	5,359	4,924	5,687	+763
Total:					
Salaries and Expenses	4,614	4,742	5,332	4,838	-494
Research and Development.....	16,764	9,616	9,596	9,962	+366
Grand Total.....	21,378	14,358	14,928	14,800	-128
<u>Permanent Positions</u>					
Wastewater Control					
Technology.....	51	61	63	57	-6
Urban Toxics and					
Residuals Management...	48	56	58	55	-3
Total.....	99	117	121	112	-9
<u>Full-time Equivalency</u>					
Wastewater Control					
Technology.....	77	82	79	72	-7
Urban Toxics and					
Residuals Management...	61	75	75	58	-17
Total.....	138	157	154	130	-24
<u>Budget Request</u>					

The Agency requests a total of \$14,799,600 for 1981, a decrease of \$128,700 from 1980. Included in this total is \$4,837,900 for Salaries and Expenses and \$9,961,700 for extramural purposes under the Research and Development appropriation, with a decrease of \$494,800 and an increase of \$366,100 respectively. The net decrease of \$128,700 is the result of: a decrease of \$601,500 in the waste water systems area eliminating work in aquaculture and disease producing microorganism research, and an increase of \$472,800 in the urban systems toxics program will affect to support the innovative and alternative construction grant program.

Program Description

The public sector subactivity develops cost effective technology in support of the EPA's strategies for achieving the water quality goals of the Clean Water Act Amendments of 1972 (PL 92-500). The program addresses the research needs of the construction grants, Section 209 areawide planning, toxic pollutants control, permits and enforcement, the Great Lakes and Clean Lakes programs and nonpoint source programs. These needs generally require that the Office of Research and Development develop new technologies to meet effluent and receiving water quality requirements, generate a data base to guide Agency regulations, develop guidelines for policy, and provide technical support.

The public sector activities program is divided into two program areas: waste water systems control technology and urban systems, toxics and residuals management. Waste water systems control technology involves: (a) development of new or improved treatment processes, (b) cost reduction methods and practices in treatment, (c) land application processes, (d) small waste water flows, (e) urban wet weather technology, (f) water conservation and reuse, and (g) the test and evaluation facility. The urban systems toxic and residuals management program is responsible for: (a) control of toxic compounds in municipal waste water, (b) sludge processing utilization and disposal technology, (c) improved operations and maintenance methods and (d) technical assistance for the implementation of innovative and alternative technologies.

The objective of the wastewater systems program is to develop, demonstrate, and evaluate the cost, reliability and efficiency of improved treatment systems. A new test and evaluation facility completed in 1979 will be operating, primarily using contractors, to conduct the technical research projects. ORD will use the facility to evaluate performance, operating cost, and other scientific factors associated with newly developed technologies for wastewater treatment processes. Design data will be examined in both the experimental and actual use modes for possible revisions.

Other significant efforts in the waste water systems control technology program are cost and energy consumption reduction and improved efficiency of publicly owned treatment plants (POTWs). Construction and operation practices and POTW design will be studied to determine which factors have potential for the greatest cost reduction and improved performance. Modification to upgrade the plant capability will be emphasized. From the overall management view, the thrust is to develop methodology and guidelines for systems analysis which will allow the user to improve operation efficiency. Modifications to processes which can reduce both capital and operating costs will be investigated. Special efforts will be directed to development of less energy intensive processes.

Soil treatment systems research activities are coordinated with related research activities undertaken by 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 land application methods or processes which can be utilized to achieve "best practicable treatment" or "nonpolluting discharge" for municipal sewage treatment systems. Recent activity has been devoted to research necessary for filling design gaps. This is necessary to update and improve the land treatment design manual. Studies are also being conducted to better understand the important mechanisms involved in successful operation of land treatment systems.

Treatment of small wastewater flows has been given high priority by the Clean Water Act Amendments of 1977. The objective of this activity is to develop practical handbooks or manuals with specific details on the design, operation, applicability,

for the treatment and disposal of wastewater generated from individual homes, rural communities, and recreational sites. These handbooks will be used by regulatory agencies, planning agencies, consulting engineers, and the general public. In addition, the R&D program has begun to investigate and develop improved community-wide institutional arrangements for on-site disposal systems to maximize the utility and reliability of such systems. Work has also continued on collection systems.

Urban runoff research includes problem definition and development of technology and evaluation manuals and aids for planners and engineers; preventive land development management techniques; collection system flow control; storage, treatment, disposal of wet weather flows and sludges; and best management practices and integrated systems. Emphasis is also placed on urban stormwater pollution controls utilizing low or nonstructural methods to discover lower cost control or abatement methods. The products of this research (guidelines, manuals, methods, management tools, and supportive data) will be used by planners, designers, and policy makers in carrying out assessments and formulating solutions to urban sewered and unsewered wet weather pollution. In combined sewer overflow abatement, the emphasis is on the development and testing of dual use concepts, including modification of existing waste treatment processes and systems at existing POTW for wet weather surge flows. In urban waste water, the emphasis is on preventive management of drainage systems with development of the attendant technology.

A major objective of the water conservation and reuse effort is the development and evaluation of the treatment technology to produce potable water from municipal effluents. These field investigations of technology development (performance, cost, reliability and feasibility) for the preparation of safe and acceptable drinking water from renovated municipal waste water are long term project, (5-7 years) and will be the major effort of this program. Limited work will also be done in evaluating the impact of water conservation techniques.

The second major program area addresses urban systems, toxics and residuals management. It is designed to provide the research support required by EPA's regulatory program for the control of toxics in municipal waste water, management of wastewater residuals in urban environments, and to optimize urban treatment system operations.

The sludge management program is designed to broaden the technological base for sludge utilization/disposal so as to protect the public health and the environment. This can be accomplished through an improved understanding of the fate and impacts of toxicants and nutrients on sludge processing and disposal. Sludge management research will continue to focus on techniques which reduce energy consumption.

The control of toxic pollutants in municipal wastewater effluents is a high priority program. Little definitive information is available concerning the extent of toxic organics and heavy metals in effluents. This program will attempt to characterize various municipal effluents and develop control options.

The innovative and alternative (I/A) provisions of the CWA for the construction of improved wastewater treatment facilities will require strong R&D support in implementation of the I/A Construction Grant program. Technical assistance will be directed toward identifying, reviewing and evaluating innovative and alternative technologies. The products will be assessment manuals and participation in instructional seminars for regional and state personnel.

The urban systems programs also has a high priority area improved performance, reliability and efficiency of publicly owned treatment plants through the application of better operation and maintenance (O&M) practices, instrumentation, and control systems.

Emphasis in this area will be on development of improved design guidelines to correct operational deficiencies and on small plants where O&M costs are high per unit production. The instrumentation and process control work will develop and evaluate strategies for process control of conventional plants.

WASTEWATER SYSTEMS CONTROL TECHNOLOGY

1979 Accomplishments

In 1979, obligations totaled \$14,528,000 of which \$2,402,100 was for salaries and expenses and \$12,125,900 was for extramural activities. In 1979, the program:

Bioengineering Technology - Treatment Process Development

- Published technical reports and papers in the specific pollutant control program, two of which are of special significance: the design manuals on "Nitrogen Control and Phosphorus Removal in Sewage Treatment" and the study in "Trends in Phosphorus Removal Technology".
- Conducted and published proceedings of the National Symposium "Performance and Upgrading of Wastewater Stabilization Ponds".
- Successfully demonstrated a prototype ultraviolet disinfection unit process. This is an important alternative to the use of chlorine in disinfecting treated wastewater. The early indications are that the process did well and had low energy usage.
- Published the proceedings of the National Symposium on Wastewater Disinfection Technology. The Symposium was held late in fiscal year 1978 and attracted the Nation's consulting engineers, scientists and municipal design engineers concerned with disinfection.
- Completed the development, installation and evaluation of a full scale ozone disinfection process. This was the first implementation of ozone at an advanced waste treatment plant. After on-site modifications and debugging, the unit design has been made available to the user community through an evaluation report and local/national seminars.

Small Wastewater Flows - Small Community Wastewater Management

- Completed the "Facility Planning Guide for Small Communities". This document was urgently needed by both local authorities and the Federal construction grant program and it has received wide distribution. It contains design and planning guidance on waste water collection/treatment/disposal systems for small or rural communities and incorporate the best of recent relevant research findings.
- Provided considerable technology transfer, technical assistance and training in the areas of small waste water flows i.e., individual and small community systems. This support was to State and local agencies. This assistance promoted the installation of better technology.

Urban Wet Weather Pollution (Storm and Combined Sewer Pollution Control)

- Conducted a user's group meeting for the stormwater management model (SWMM) and published proceedings. At the time of the meeting there were over 100 agencies or authorities applying the SWMM mathematical model as a tool in planning of remedial abatement for wet weather flows.

the results of which have been incorporated into the user's manuals on urban sediment/erosion control. The manuals are also supported by a previously developed audio-visual training program available through the Agency training facilities.

- Published, in cooperation with the technical information program, the methodology for "Benefit Analysis for Combined Sewer Overflow Control". This work was done to assist the applicants to the construction grants program and the construction grant program itself in making decisions on funding wet weather remedial programs. Also published in the storm and combined sewer pollution control program were a total of 20 technical reports ranging from laboratory findings to large scale (60 mgd) projects.

Water Reuse and Conservation

- Initiated a program to investigate and evaluate technology for potable reuse of wastewater utilizing state of the art advanced wastewater treatment technology. This first year project was with Orange County, CA.
- Initiated a potable reuse health effects and treatment system performance analysis with the Denver Water Department. This is the most comprehensive health effects study of potable wastewater use ever undertaken.
- Conducted a National Water Reuse Symposium in cooperation with the Departments of Interior, and Defense, the National Science Foundation, the National Academy of Science, the Water Resources Council and the American Water Works Associations. The Symposium attracted 500 participants and was the first week-long meeting devoted entirely to the renovation and reuse of wastewater from municipal, industrial and agriculture sources.

Land (Soil) Treatment Systems

- Initiated the development of a two dimensional model to predict water and phosphate transport through soils under transient non-isotropic conditions. Hydraulics of the model have been verified with laboratory data.
- Completed final reports on studies of ten existing systems for determining long-term effects of wastewater application to the land. These studies included four rapid infiltration systems and six slow rate systems.
- Initiated a five year cooperative agreement with Lubbock Christian College Institute of Water Research for a large land treatment demonstration project. This project will demonstrate slow rate land treatment in the southwestern United States and will provide the opportunity for significant studies of ground water effects, health effects, agriculture response to wastewater application and cost and economics.

1980 Program

In 1980, the Agency has allocated a total of \$7,399,400 to this program, of which \$2,727,500 is for Salaries and Expenses and \$4,671,900 is for extramural purposes under the Research and Development appropriation. Highlights of the 1980 program are as follows:

Bioengineering Technology - Treatment Process Development

The thrust of the program remains bioengineering technology development, i.e., natural wastewater treatment systems such as a "Reed trench". The subdivisions are pathogenic microorganism control, specific pollutant control and innovative treatment technology development.

The pathogenic microorganism control subprogram will mainly summarize and evaluate several years effort in hardware development which are reaching their conclusion. The results to-date indicate good progress has been made in all aspects of the program, especially in cost reduction for disinfection. Each alternative will be evaluated and quantitative estimates will be made for specified categories to aid design engineers and municipal planners in deciding how best to approach pathogenic organic control in a specific situation.

With respect to the specific pollutants subprogram, the state-of-the-art is now well ahead of application. No new projects are planned for 1980, although the program will not be stopped completely. In hazardous organic control, efforts emphasize the evaluation of various biological processes for removal of specific priority compounds.

In innovative technology development, the aim is to develop and/or evaluate a new generation of biological treatment processes. Areas of concentration are reduced sludge production and improved efficiency and conservation of energy. The efforts in 1980 will be directed to developing vertically aligned biological reactors, hybrid biological systems, control of organism infestations which adversely effect activated sludge operation, and a field evaluation of rotating biological contactors in order to advance design criteria.

Test and Evaluation Facility

Operations at the new test and evaluation (T&E) facility were initiated in December 1979. The purpose of the T&E facility is to provide a flexible facility at which pilot and bench scale research on or evaluation of pollution control technology can be expeditiously conducted. The facility is shared by four ORD Cincinnati laboratories and is ideal for integrated research on both control technology and related health and ecological effects. Initial studies will address sludge dewatering optimization studies; behavior of priority pollutants in conventional wastewater treatment plants; and optimization of ozone contactor design.

Small Wastewater Flows - Small Community Wastewater Management

The small flows program will concentrate on: activities in septage (water from a septic tank) handling at community facilities; analysis of rural community wastewater alternatives; identification, evaluation and comparison of on-site wastewater alternatives; and some continuing efforts on advanced collection systems. Development of design criteria for the most promising alternative on-site systems, as well as investigation of individual home units will continue.

Urban Wet Weather Pollution (Storm and Combined Sewer Pollution Control)

This program addresses the urban wet weather pollution problem in a total system context. The program has five major subdivisions: (a) problem assessment (urban runoff), (b) technology development/cost effectiveness, (c) management and user assistance tools, (d) remedial considerations, and (e) best management practices.

In 1980, urban wet weather pollution assessment activities will continue to be maintained for specific cases only. At selected sites where remedial action is to be taken, baseline receiving water conditions and the after-correction conditions will be established. This program will be conducted in conjunction with best management practice projects. Development of methodologies and guidance on how to conduct impact assessments will be accelerated in 1980.

In technology development/cost effectiveness, both flow control and liquid/solid separation treatment will be investigated. The efforts to produce a manual for selecting urban runoff control techniques will continue along with a statistical data handbook for selecting design criteria and storage design considerations. Remedial considerations will concentrate on: (1) sludge disposal methods since the characteristics of urban runoff sludge and problems associated with it differ from normal wastewaters; and (2) infiltration/inflow control technology to support construction grants needs.

Development and evaluation of best management practices will continue to consume a major portion of the program effort. Several projects such as urban lake recovery, and marsh or wet land utilization will be continued. New projects will be initiated in the area of improved porous pavement, sewer flushing and urban vegetative practices for rate and volume attenuation. Additionally, cooperative efforts with the Office of Water and Waste Management on the national urban runoff program will be expanded.

Water Reuse and Conservation

The emphasis of this program will shift from a small maintenance type of research program to a major effort in examining the feasibility of potable reuse of municipal wastewaters. The two major field projects initiated in 1979--a seven million dollar five-year project with the Denver Water Board to demonstrate the potential for producing potable water from domestic wastewater and a one million dollar effort which will be selected from competitive applications to demonstrate potable reuse technology--will consume much of the program's resources.

The reuse activity will continue to develop feasible strategies to extend valuable water supplies by source substitution. Guidelines will be developed for municipalities to implement source substitution projects and characterize the biological, organic, and inorganic residues in wastewater effluents. This program will be coordinated with the Department of Interior's Office of Water Research and Technology and EPA's Office of Drinking Water.

The conservation portion will receive less emphasis, primarily because of the work completed to date and the entry of other programs and agencies into R&D for water conservation.

Land (Soil) Treatment Systems

A major effort in 1980 will be devoted to providing additional design and operational data on rapid-infiltration and overland flow systems for updating the land treatment process design manual. This is a priority need for the construction grants program. Overland flow activities include: completion of work to determine treatment efficiency as a function of slope length and pretreatment; initiation of studies to evaluate the overland flow process in northern climates; and the sponsoring of an overland flow seminar to present the state-of-the-art of design and operation. Rapid-infiltration efforts will include the publishing of a summary report of the results of studies of four rapid-infiltration systems to determine long-term effects and continuation of lysimeter studies to define operations, management and treatment characteristics. Baseline studies (land composition) at the Lubbock Demonstration project will be

conducted as construction and site preparation begins; initiation of studies to evaluate various field crops to determine nutrient uptake and evaluation of treatment effectiveness based on level of pretreatment; and continued expansion of work to determine transport and transformation of selected priority pollutants in soil systems.

In the area of municipal waste water treatment by aquaculture, several projects will be initiated to provide design and operational data for the construction grants program. These projects include: a screening program to evaluate various aquatic species and systems as potential candidates for use in treatment systems; a study to compare the treatment efficiency of a controlled environment aquatic macrophyte system with other wastewater treatment alternatives; evaluation of nutrient removal from secondarily treated municipal waste water introduced into a natural freshwater marsh; a project to evaluate benefits of utilizing artificial marshes for treatment of municipal wastewater, and a study to determine the potential for conversion of water hyacinth to useful products with a concurrent evaluation of the economies of the process. Although each of these projects is rather modest in scope, each should provide timely information of great value to the construction grants program.

The Land Treatment Task Force will continue to provide technical assistance to Regions VI and VII and the nine state governments in those regions with the objective of obtaining more and better land treatment systems under funding by the construction grant program. Specific activities in 1980 will include: six or more separate brochures on case studies and health effects subjects of interest to farmers and municipal citizens; design workshops in each state in conjunction with the state regulatory agencies to enable the architect/engineer (A/E) community to develop acceptable facility plans; technical assistance on the production of a nationwide education program on land treatment which will include a movie film, slide tape presentation and brochure, and technical assistance and educational material to A/E firms, municipal officials, service-type agencies, and to environmental, business, and consumer organizations.

1980 Explanations of Change from Budget Estimate

The net increase of \$968,400 results from several actions. An increase of \$87,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$3,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$297,500 to this activity.

A reprogramming of \$190,000 was made within the water quality media, for urban systems, toxics and residual management within ORD to fund a new aquaculture research program; an initiative in the use of wetlands for municipal wastewater treatment in order to fully assess its potential for application as an innovative and construction grants program.

A reprogramming of \$991,600 was made within the water quality media from drinking water treatment and groundwater protections to reflect the transfer of the 1979 congressional add on for demonstrating technology for potable reuse of wastewater; the research is being conducted in the water quality program.

1981 Plan

The Agency requests a total of 57 permanent workyears and \$6,797,900 for this program, of which \$2,522,700 is for the Salaries and Expenses appropriation and \$4,275,200 is for extramural purposes under the Research and Development appropriation. This represents a decrease of six permanent workyears and \$601,500. This decrease in

This program will continue to concentrate on technology development for lower cost, more efficient, energy conserving, more reliable and lower maintenance wastewater treatment methods. The work on developing bio-degradation data for specific hazardous pollutants will continue. Research in virus inactivation and non-volatile organics will be reduced.

New research efforts to be initiated are: development of an anerobic screening test geared to fate and effect of priority pollutants; update of the design manuals for phosphorus and nitrogen removal; scale-up the bubble diffuser to establish optimum geometric configuration for full scale application in chlorine disinfection; and continuuion of field investigations on rotating biological contactors to develop design data.

Test and Evaluation Facility

This facility is designed to give quick response to high priority problems that have been requested by regional and operating program offices. We are in the process of identifying new projects that are short-term, however, the facility can also be used for the longer term research projects that are directly related to the ORD program. Some longer term projects will include: evaluation of the sequence of unit processes for removing priority pollutants planned for the Denver Reuse Demonstration Project; analyzing the setting characteristics of sediment in storm and combined sewer system discharges; and the effect of sanitary landfill leachate on the activated sludge process.

Small Wastewater Flows - Small Community Wastewater Management

In 1981 the effort to develop seasonal and community sized subsurface disposal systems will continue. Work will be initiated on the advanced collection systems handbook which will complement the Septage Handbook begun last year. The basic investigations of waste-water handling systems tailored to anticipated future construction practices will continue.

Urban Wet Weather Pollution (Storm and Combined Sewer Pollution Control)

During 1981, the program will emphasize three areas of technology development. These efforts are principally continuations of the furtherance of research in:
(a) dual wet-dry weather flow treatment technology for publicly owned treatment works,
(b) best management practices of urban runoff pollution control and (c) wet weather flow management in combined sewer systems.

Research and development of flexible treatment methods which can be designed into new facilities or retrofitted to existing facilities will be investigated, such as, ultra high rate filtration and expanded bed biological techniques.

In the development of best management practices technology for urban runoff pollution control, close cooperation will continue with the planning responsibilities of the national urban runoff program. Section 208, areawide waste treatment management provisions of the Clean Water Act, provided a 30 million dollar effort over a five year period to implement best management practices. Research in low and non-structural controls such as porous paving, flow attenuation methods, source control and others will be developed and evaluated along with methods of implementation for inclusion in the urban runoff control program.

of polluted urban wet weather flows.

Water Reuse and Conservation

This program will concentrate on the major projects initiated in 1979 in compliance with the specifically appropriated funds for research in the potable reuse of wastewaters. The work in conservation will be phased down to publishing completed projects findings, monitoring work by others for data gathering, and evaluation of conservation practices.

Land (Soil) Treatment

The soil treatment program for 1981 will continue to emphasize design and operation data for overland flow systems and the efficient hydraulic loading for rapid-infiltration systems. Efforts will be continued to develop the soil treatment design model to include phosphorus, nitrogen, metals, organics and water flow. Emphasis will be placed on the practical application of the system to "real world" operational management to increase plant efficiency and reliability. The Lubbock demonstration project should be completed and full-scale operation should be underway. The Land Treatment Task Force under the present agreement will terminate in 1981. This task force encourages and promotes the application of land treatment using municipal wastewater through the review of grant packages.

Urban Systems, Toxics, and Residuals Management

1979 Accomplishments

In 1979, obligations totaled \$6,849,600 of which \$2,211,800 was for salaries and expenses and \$4,637,800 was for extramural activities.

In 1979 the program:

Sludge Management

- Updated the technology transfer manual on "Sludge Treatment and Disposal" and distributed some 5000 copies. This manual is being used by consulting engineers, regional construction grant staff and the Office of Water Programs.
- Published a report concerning our comprehensive evaluation of high efficiency sludge dewatering equipment.
- Completed an evaluation of European within vessel (containerized) composting processes. Future sludge composting, using this method is dependent on market economics and on continued public acceptance.
- Evaluated emissions from sludge incinerators and determined that the low levels of heavy metals observed in emissions should not be cause for concern.
- Demonstrated the usefulness of sludge by revegetating barren land in Pennsylvania.

priority pollutants in difficult samples such as raw wastewater and sludges.

- Completed a major study to determine the sources of heavy metals that flow into municipal treatment plants.

Innovative and Alternative Technology

- Completed revisions on the comprehensive Innovative and Alternative Technology Assessment Manual. This manual is being used as the principal informational and procedural tool in the evaluation of innovative and alternative projects.
- Completed about 12 regional innovative and alternative technology assessment seminars for consulting engineers, and federal/state personnel.
- Completed an innovative/alternative technology public information brochure.
- Completed 23 reviews of innovative/alternative facility plans submitted by EPA regional office staffs.

Urban Systems

- Completed a 3-1/2 year nationwide study on O&M factors causing poor plant performance. These items are identified and a new approach called, "Composite Correction Program (CCP)" was developed to improve plant performance. The CCP was found to be cost effective approach to improving plant performance and increasing levels of POTW compliance. The CCP was successfully implemented on a limited scale. The result of the nationwide study were presented at national meetings and published in trade journals.
- Compiled a comprehensive treatment plant deficiency design matrix and a corresponding correction matrix for improving treatment plant designs. These design matrixes can be used as an aid in determining corrective actions needed for upgrading existing facilities or in the design phases for new treatment plants.
- Developed a computer-aided design procedure for wastewater treatment and sludge disposal systems. This procedure enables a design engineer to synthesize and analyze large numbers of alternative treatment schemes and rank them with respect to cost, energy and environmental criteria.
- Reviewed a draft report on the reliability and stability of various biological processes. This report presents procedures for determining plant designs in order to obtain reliable effluent quality levels.
- Prepared a design handbook that discusses various activated sludge process modifications, aeration methods, equipment and application techniques and presents an economic analysis of manual versus automatic dissolved oxygen control.
- Prepared a model protocol for conducting comprehensive plant evaluations in the form of a user oriented field manual to meet the requirements of the Office of Enforcement and Regional Offices of EPA.

program are as follows.

Sludge Management - This program will continue to hold a high priority due to the Agency's new regulations and policies resulting from implementation of RCRA and the 1977 CWA amendments. The program will concentrate on: development of cost, performance and design data on new thickening and dewatering process; costs and benefits of sludge disinfection; improved design and operation of anaerobic digesters and energy production; development and assessment of processes that will remove toxicants or make them unavailable for plant uptake and/or make them more suitable as fertilizer; the evaluation of starved-air combustion systems as a method for reducing fuel requirements and pollutant emissions; addition of solid waste to sludge combustion/pyrolysis process (coincineration) to upgrade heat value of sludge and recover energy; characterization of emissions from conventional sludge incineration; demonstration of a leading within-vessel composting process, and evaluation of innovative and alternative sludge management technology projects built by the construction grants program.

Land application of sludge is increasing despite some uncertainties concerning the health and ecological effects of some sludge components. The current program is aimed at mitigating these uncertainties. Emphasis in 1980 includes: development of management practices for controlling toxic organic chemicals, heavy metals and pathogens in sludge applied to land; development of a technique which will allow designers to predict the response of plants or crops to a broad range of sludge application rates and practices; identification of design principles of sludge disposal in landfills with or without municipal refuse; and evaluation of alternate nonfood chain uses of sludge. Develop a document on sludge management planning that will aid designers and local officials.

Toxic Pollutant Control - This program produces information on the sources of toxic pollutants, on the treatability by conventional and/or innovative technology and cost analyses to enable selection of the most cost effective solution. In 1980 the program will emphasize: data collection to quantify the source and magnitude of toxic problems in municipal wastewaters; develop new treatment processes which enhance removal of priority pollutants from wastewater; assess treatability and removability of priority pollutants obtainable by biological and physical chemical treatment processes; develop improved analytical procedures for organic priority pollutants suitable for analysis of raw wastewaters and sludges; and produce a systems engineering methodology that assess the different control strategies and tradeoffs of an urban-wide toxics control program between source control by pretreatment and treatment and/or detoxification at the POTW's.

Innovative and Alternative Technology - This program will continue to provide support for the use of innovative and alternative wastewater treatment technology in the construction grants program. The program will emphasize: overall evaluation of the innovative and alternative technology assessment program in meeting legislative goals; development and presentation of regional innovative and alternative technology assessment seminars for consulting engineers, and Federal/state personnel separately; and review of innovative and alternative facility plans submitted by the EPA regional office staffs.

operating cost and efficiency of POTW's; continue the composite correction program (CCP) approach on State, county or regional basis using enhanced operation and maintenance techniques or design changes to improve treatment plant performance.

1980 Explanation of Change from Budget Estimate

The net decrease of \$398,100 results from several actions. An increase of \$80,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$4,200. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$284,200 to this activity.

A reprogramming of \$190,000 was made within water quality media, to wastewater systems control technology point source technology development to fund a new aquaculture research program, an initiative in the use of wetlands for municipal wastewater treatment in order to fully assess its potential for application as an innovative and alternative technology for the construction grants program.

1981 Plan

The Agency requests a total of 55 permanent workyears and \$8,001,700 for this program, of which \$2,315,200 is for the Salaries and Expenses appropriation and \$5,686,500 is for extramural purposes under the Research and Development appropriation. This represents a decrease of 3 permanent workyears and an increase of \$472,800. In-house work will be reduced on the development of analytical protocols for priority pollutants, and extramural efforts supporting the innovative and alternative construction grant program will be increased.

Sludge Management - In 1981 the program will: Assess cost/benefits of disinfective capability of various processes; demonstrate ways to upgrade digestors and gas utilization (i.e. methane gas can be captured on site and converted for use on site or purified and sold); develop heavy metal removal processes; evaluate starved-air combustion and conincineration; characterize exhaust streams from incineration related to process condition and ash disposal problems; prepare planning assistance and technology transfer documents; develop improved techniques to predict useful lifetime of disposal sites and better correlation of annual sludge loading rate (tons per acre); and define the impact of long-term sludge applications on groundwater and land management practices.

Toxic Pollutant Control - In 1981 this program will continue with the emphasis and direction of that in 1980. The program will include: characterization of sources and magnitude; determination and improvement of predictive methods for treatability; evaluation of toxic control and pretreatment strategies from toxics in POTW's and evaluation of promising control strategies.

review I/A applications, development and presentation of a series of I/A training activities, including training seminars. In addition, evaluation efforts on sludge projects that conserve or recover energy, reduce costs, beneficially use sludge and improve efficiency/reliability will be initiated with \$222,800 of the increase.

Urban Systems - The emphasis of this program in 1981 will be to reduce the construction and operational costs, improve performance and reliability, and reduce energy use of POTWs. This program will provide technical input on plant design, influent characteristics, O&M practices and plant performance to the operating programs to impact their program guidance documents. This activity will also include: improved design information in the form of specific design deficiency guidelines; design guidelines and guidance information in high-priority areas; specific condensed guidance and checklists to improve the state and federal review process; specific studies will be undertaken to identify and document process improvements, as well as existing process system designs which incorporate cost effective, reliable technology; and a specific initiative to develop improved operation and design practices for land application systems and other alternative treatment technologies. The operation and maintenance costs for Ely, Minnesota, will be funded with \$250,000 of the increase.

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Characterization and Measurement			
Methods Development:			
Salaries and Expenses.....	\$1,302	\$1,295	-\$7
Research and Development.....	203	203	...
Monitoring Methods and Systems:			
Salaries and Expenses.....	3,010	2,995	-15
Research and Development.....	1,135	1,135	...
Quality Assurance:			
Salaries and Expenses.....	1,234	1,228	- 6
Research and Development.....	4,055	4,055	...
Technical Support:			
Salaries and Expenses.....	773	769	- 4
Research and Development.....	389	389	...
<u>Total:</u>			
Salaries and Expenses.....	6,319	6,287	-32
Research and Development.....	5,782	5,782	...
Grand Total.....	12,101	12,069	-32



Monitoring and Technical Support

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>APPROPRIATION</u>					
Characterization and Measurement Methods Development:					
Salaries and Expenses.	\$882	\$1,853	\$1,261	\$1,302	+\$41
Research and Development.....	160	93	272	203	-69
Monitoring Methods and Systems:					
Salaries and Expenses.	2,685	2,297	3,022	3,010	-12
Research and Development.....	1,040	610	1,458	1,135	-323
Quality Assurance:					
Salaries and Expenses.	1,279	1,664	1,431	1,234	-197
Research and Development.....	3,599	4,488	3,665	4,055	+390
Technical Support:					
Salaries and Expenses.	1,032	785	759	773	+14
Research and Development.....	122	460	380	389	+9
Total:					
Salaries and Expenses.	5,878	6,599	6,473	6,319	-154
Research and Development.....	4,921	5,651	5,775	5,782	+7
Grand Total.....	10,799	12,250	12,248	12,101	-147
<u>Permanent Positions</u>					
Characterization and Measurement Methods Development.....	27	28	28	28	...
Monitoring Methods and Systems.....	64	56	67	60	-7
Quality Assurance.....	24	31	23	23	...
Technical Support.....	20	10	9	9	...
Total.....	135	125	127	120	-7
<u>Full-time Equivalency</u>					
Characterization and Measurement Methods Development.....	28	40	33	32	-1
Monitoring Methods and Systems.....	81	67	87	79	-8
Quality Assurance.....	28	41	29	29	...
Technical Support.....	37	30	20	19	-1
Total.....	174	178	169	159	-10

of \$155,000 in Salaries and Expenses and an increase of \$8,400 for extramural research activities. The net decrease of \$146,600 has the following components: a decrease of \$28,300 cuts efforts to identify recurring chemicals in industrial wastewaters that cannot be identified through matching of spectra in the computerized file; a decrease of \$334,900 and 7 permanent workyears reduces work on radionuclides, and microbiology, an increase of \$193,500 will expand quality assurance support for toxic pollutant measurements; and an increase of \$23,100 for overhead monitoring data acquisition and analysis for the Enviro-pod program.

Program Description

The monitoring and technical support program has four components. They are: (1) characterization and measurement methods development, (2) monitoring methods and systems (3) quality assurance, and (4) technical support.

The objective of the characterization and measurement methods development component of the program is to provide techniques for measuring substances in water, wastewater, sediment, sludge, soil, and leachate and to provide assistance in their use of these techniques.

The monitoring methods and systems component involves the adaptation of currently available or proposed analytical methods and measurement systems to operations application for monitoring of water quality. Analytical methods and measurement systems often are ill-suited to field application for environmental monitoring as they are developed by manufacturers or research institutions. Considerable work is needed to evaluate, modify, and adapt instruments or methods for reliable operations application in the field. The evaluation and modification work under this program provides assurance that monitoring methods will perform reliability. Another major objective is the design of monitoring networks to include guidelines for deployment of sampling stations and improving sampling technology procedures for obtaining, preserving, storing, transport and analyzing biological microbiological analysis.

The quality assurance program includes validation and standardization of monitoring measurement systems, development and provision of quality control materials and procedures for operational use, the conduct of methods and individual performance evaluation studies, development of data handling systems, and participation in regional quality control workshops in support of the National Pollutant Discharge Elimination System (NPDES) and ambient water quality monitoring.

The objective of the technical support program is to provide overhead monitoring, specialized analytical, chemical and biological laboratory field support to the Office of Water and Waste Management, Office of Environmental Review, Office of Enforcement and the Regions in implementing the mandates of the Clean Water Act. Services are personnel dependent activities that focus on specific problems and utilize expertise and equipment that are unique to the Office of Research and Development. The program utilizes a limited number of in-house experts supported by basic service contracts and interagency agreements which offer unique capabilities to the Regions and Program Offices so that they may answer operational problems. The program also include quick response to unforeseeable, but urgent requests for services.

for salaries and expenses and \$159,600 for extramural purposes. These resources were used to identify toxic chemicals in industrial wastewaters and develop analytical measurement methods for the measurement of organic chemicals, toxic elements (e.g., heavy metals), different ionic species of elements, and asbestos fibers applicable to water and wastewater. In 1979, the program:

- Developed computer software required for computerized spectral matching and identification of frequently recurring toxic organic chemicals in wastewaters of 21 industrial categories.
- Developed a catalog of instrument responses to specific toxic elements that can be used to compare with instrument responses to unknown samples to facilitate identification to toxic elements in water, wastewater, and sediments.
- Completed an evaluation of an automatic sampler developed for collecting organic chemicals in water. The sampler effectively accumulates a range of organic chemicals of interest.
- Completed a study of the utility of spark source mass spectrometry as a reference technique (i.e., for use as the basis in evaluating all other techniques) for multi-element analysis. The technique was found to have several limitations that prevent its use for this purpose at this time.
- Conducted the 9th Annual Symposium on the Analytical Chemistry of Pollutants (jointly with the University of Georgia and American Chemical Society).

1980 Program

In 1980, the Agency has allocated a total of \$1,533,200 to this program, of which \$1,261,700 is for the Salaries and Expenses appropriation and \$271,500 is for extramural purposes under the Research and Development appropriation. In 1980, the program will:

- Assist the Effluent Guidelines Division in the identification of potentially toxic organic chemicals common to wastewaters from each of 21 categories of industry, as required by the Natural Resource Defense Council consent decree.
- Complete the first generation master analytical scheme for volatile organic chemicals in water and wastewater.
- Increase emphasis on the development of methods for confirming tentative identifications of volatile organic chemicals.
- Expand analytical methods for volatile organic chemicals to address sediments, which constitute a reservoir for toxic chemicals and a secondary source of toxic chemicals to the aquatic environment.

- Continue work on methods for the simultaneous measurement of chemical elements, with emphasis on expansion and adaptation of the multi-element techniques developed for water and wastewater to make them applicable to sediment and soil.
- Continue research on methods to identify and quantify inorganic chemical species in water, needed for accurate toxicology assessment. Emphasis this year will be on evaluation of ion exchange chromatographic methods for the separation, concentration, and determination of ionic species in water.

1980 Explanation of Change from Budget Estimate

The net decrease of \$412,800 results from several actions. An increase of \$41,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$69,500 to this activity.

A reprogramming of \$500,000 was made within the water quality media to monitoring methods and systems in order to comply with OMB directive of placing all funds for the National Bureau of Standards in one activity in each applicable media for ease of program review.

A reprogramming of \$31,000 was made to management and support lab support for lab maintenance costs due in part to increasing costs of energy. Also, the number of service contracts have increased as labs undergo RIFs and the services of maintenance personnel must be replaced by contracts.

A reprogramming of \$4,000 was made to water quality marine ecological effects for a contract to plan a research program to integrate the physical, chemical transport models with the ecological fate models.

A reprogramming of \$150,000 was made from water quality transport and fate (\$50,000), from water quality freshwater ecological effects (\$60,000), and from water quality marine ecological effects (\$40,000) to help fund the tapes analysis.

1981 Plan

The Agency request a total of \$1,504,900 and 28 permanent workyears for this program, of which \$1,302,100 is for the Salaries and Expenses appropriation and \$202,800 is for extramural purposes under the Research and Development appropriation. The decrease of \$28,300 will reduce efforts to identify recurring chemicals in industrial wastewaters that cannot be tentatively identified through matching of spectra in the computerized file. In 1981, the program will:

- Continue assistance to the Effluent Guidelines Division in identification of toxic organic chemicals common to wastewaters from each of 21 industrial categories.

necessary to substantially increase the amount of time and resources that can be made with a fixed amount of resources.

- Continue work on development of methods for nonvolatile organic chemicals in water, which constitute about 80 percent (by weight) of the organic chemicals present in surface waters, some of which (e.g., nitrosamines) are carcinogenic and are not detected by techniques now in routine use.
- Continue work initiated in 1980 on volatile organic chemical and multi-element methods applicable to sediments and soils, which constitute a temporary reservoir for toxic chemicals and a potentially significant secondary source of these pollutants.
- Develop chemical speciation methods for identification and quantitation of toxic metals in surface waters and wastewaters. Since the toxicity of any given metal varies widely, depending on its chemical state (species), these methods are critical to assessing the hazards posed by the presence of metals in aquatic systems.
- Test a proposed referee method (i.e., a basic method by which all other methods are evaluated) for asbestos in water (using electron microscopy).

MONITORING METHODS AND SYSTEMS

1979 Accomplishments

During 1979, obligations totaled \$3,724,900. Included in this total was \$2,684,600 for salaries and expenses and \$1,040,300 for extramural purposes. In 1979, the program:

- Corrected deficiencies in existing reference methods for enforcement of national primary drinking water standards.
- Improved biomonitoring methods for long-term water quality monitoring and for determining the effects of non-point sources on aquatic organisms in receiving waters (biological integrity).
- Reported on water quality requirements and pollution tolerance of mayflies, stoneflies, and caddisflies (common aquatic insects that are sensitive pollution indicator organisms) for use in biomonitoring data evaluation.
- Revised coded master species list for data management system (BIO-STORET) for biological field and laboratory data.
- Developed, modified, and evaluated new or recently prepared methods for monitoring surface water and wastewater quality for National Pollution Discharge Elimination System, including bacterial pollution indicators and pathogens.

surface water parameters, e.g., chlorophyll in algae and dissolved organics.

1980 Program

In 1980, the Agency has allocated a total of \$4,480,000 of which \$3,022,000 is for the Salaries and Expenses appropriation and \$1,458,000 is for extramural purposes under the Research and Development appropriation. Major activities and outputs include:

- Correction of reference methods required for monitoring municipal and industrial wastewaters in the National Pollution Discharge Elimination System program and other methods as needed.
- Development of specifications for EPA-approved automatic sampling and monitoring instrumentation to enforce existing and planned standards and regulations for effluents and fresh water, for example, Consent Decree pollutants.
- Development, modification, and evaluation of new or recently proposed methods or systems for monitoring wastewater quality for NPDES including methods for bacterial pollution indicators and pathogens, and to meet the Office of Water Planning and Standards requirements for NPDES for pesticides.
- Development of proposed reference methods for toxic and hazardous substances, and Consent Decree pollutants in wastewater, ambient waters, sludges, dredges, and ocean disposed water.
- Development of procedures for concentrating pathogens for high-rate processing of wastewater. Undertake a comparative study on cell lines for detection of waterborne pathogenic material recovered from dredges, sludges, and wastewater.
- Evaluation of methods or systems for monitoring surface water quality and development of guidelines for monitoring network design.
- Development of improved bioassay methods for evaluation of municipal and industrial effluents and marine water disposal sites to determine the effects of pollutants on aquatic organisms.
- Update and republish chemical, biological, and microbiological methods manuals.
- Development of sample preservation and transportation techniques for conventional and toxic pollutants which comply with Department of Transportation regulations, to assure integrity of sample is maintained from source to laboratory.

The net increase of \$1,041,000 results from several sources. An increase of \$99,600 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$5,500. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$62,100 to this activity.

A reprogramming of \$500,000 was made within the water quality media from characterization and measurement methods development water quality, to comply with OMB directive of placing all funds for the National Bureau of Standards in one activity in each applicable media for each of program review.

A reprogramming of \$1,041,000 was made from air quality assurance (\$90,000); from water quality technical support (\$61,500); and from water quality (\$889,500) to reflect a shift of emphasis from quality assurance to monitoring methods and systems. The two programs are closely aligned; the monitoring methods program corrects deficiencies in candidate operational monitoring methods and systems programs, then the QA programs take these corrected methods and validate their utility for operational monitoring of pollutants. This reprogramming represents a change in priority to emphasis correction of technical deficiencies in additional methods to respond to NPDES monitoring requirements.

1981 Plan

The Agency requests a total of \$4,145,100 and 60 permanent workyears for this program, of which \$3,009,900 is for the Salaries and Expenses appropriation and \$1,135,200 is for extramural purposes under the Research and Development appropriation. The decrease of \$334,900 and 7 permanent workyears reflects a decrease in emphasis on radionuclides and microbiology. Major activities and outputs will include:

- Development of reference methods for priority pollutants, toxic and hazardous substances, and chlorinated aromatics.
- Development of techniques for sampling, preserving, storing and transporting water samples for analysis.
- Evaluations of continuous monitoring systems for toxic metals, total phenols, oil, and total organic carbon.
- Development of bioassay techniques for monitoring industrial effluents and marine disposal sites.
- Development of methods for rapid identification of viruses in sewage and sludges.
- Preparation of methods manuals for analysis of chemical and organic pollutants.
- Correction of deficiencies in existing reference methods for measuring municipal and industrial wastewaters.

for monitoring surface waters.

- Development of methods and procedures for monitoring microorganisms and other pathogens in surface water.
- Evaluation of specified monitoring networks for applicability to monitoring trends and episodic events.
- Correction of deficiencies in existing reference methods for enforcement of the Consent Decree.

QUALITY ASSURANCE

1979 Accomplishments

During 1979 obligations totaled \$4,878,300. Included in this total was \$1,279,500 for salaries and expenses and \$3,598,800 for extramural purposes. In 1979, the program:

- Delivered 13 analytical methods systems based upon gas chromatography, high pressure liquid chromatography and gas chromatography coupled to mass-spectrometry for use within the NPDES to measure 114 organic consent decree priority pollutants.
- Evaluated and designated five equivalent methods for nationwide use and 15 methods for case-by-case use in the NPDES.
- Published quality assurance manual for wastewater laboratories.
- Conducted performance evaluations of the NPDES major discharger laboratories to determine analytical proficiency in six analytical series.
- Maintained quality control sample repository and distributed NPDES enforcement and compliance check samples in 12 analytical series.
- Operated computerized interlaboratory testing system for performance evaluation for EPA, State, and major NPDES water pollution and discharger laboratories.

1980 Program

In 1980, the Agency has allocated a total of \$5,095,700 to this program, of which \$1,431,100 is for the Salaries and Expenses appropriation, and \$3,664,600 is for extramural purposes under the Research and Development appropriation. Specific outputs will include:

- Validation and standardization of methodology for analysis of toxic pollutants in the NPDES for seven categories of pollutants.

toxics to be used as a more efficient test for a selected broad class of toxic chemicals in lieu of chemical testing.

- Maintenance of the present quality control reference material repository and development of new reference materials as required.
- Evaluation and approval of 13 equivalent methods for use nationwide and approximately 30 case-by-case procedures for use in the NPDES.
- Evaluation studies of the NPDES laboratories for eight performance series including EPA, State, and Regional laboratories.
- Validation of methods to meet Agency requirements for monitoring trace metals and polychlorinated biphenyls (PCB's) in marine environments and for the NPDES monitoring requirement for pesticides as well as for all priority pollutants.
- Maintenance of the quality control reference material repository and distribution of quality control samples to Regional, State, local and private laboratories including: quality control samples for the measurement of water quality effluents to support effluent limitations regulations, quality control samples for measuring pollutants regulated under Sections 104, 106, 208, 304(h) and 307(a) of P.L. 95-218; quality control samples for measuring pollutants in marine samples in support of the NPDES; and quality control samples for measurement of hazardous wastes from active and/or abandoned sites.
- Publication of quality assurance manuals for industrial and municipal wastewater laboratories.
- Publication of updates on the sampling and sample preservation and microbiological methods manuals for wastewater and water quality.
- Assistance to Regions and States in the evaluation of regulated water/wastewater monitoring activities.
- Development of national guidance to assure uniformity in laboratory evaluation of the NPDES compliance monitoring laboratories.
- Operation of a working computerized interlaboratory test system for performance evaluation for the EPA, State, and other NPDES laboratories.
- Expansion and improvement of mass spectral search program for toxic pollutants by the addition of 10,000 spectra.

1980 Explanation of Change from Budget Estimate

The net decrease of \$1,056,300 results from several actions. An increase of \$33,600 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million ADP reduction resulted in a decrease of \$1,600 and \$4,800, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyear resulted in a decrease of \$104,000 to this activity.

A reprogramming of \$889,500 was made to water quality monitoring methods and systems within ORD reflecting a shift of emphasis from quality assurance to monitoring methods and systems. The two programs are closely aligned; the monitoring methods program corrects deficiencies in candidate operational monitoring methods and systems programs then the quality assurance program takes these corrected methods and validates their utility for operational monitoring of pollutants. This reprogramming represents a change in priority to emphasize correction of technical deficiencies in additional methods to respond to NPDES monitoring requirements.

1981 Plan

The Agency requests a total of \$5,289,200 and 23 permanent workyears for this program, of which \$1,233,700 is for the Salaries and Expenses appropriation, and \$4,055,500 is for extramural purposes under the Research and Development appropriation. This is an increase of \$193,500 to expand quality assurance support for toxic pollutant measurements. In 1981, the program will:

- Provide analytical methods for analysis of 14 classes of toxic chemicals in industrial waste water, municipal waste water, and ambient fresh and marine waters.
- Provide validated analytical methods for 20 trace organic compounds including a gas chromatographic/mass spectrometric method.
- Maintain a repository of standard reference materials and distribution of samples for 10 water pollutant test series and expand repository to include the consent decree pollutants.
- Continue the alternate methods equivalency program for analytical methods as required by 40 CFR 136, Guidelines for Test Procedures for the Analysis of Pollutants.
- Revise the quality assurance manual for wastewater laboratories.
- Evaluate the performance of major discharger laboratories within the NPDES in 11 analytical series.
- Maintain and expand the computerized laboratory performance evaluation system.

TECHNICAL SUPPORT

1979 Accomplishments

During 1979, obligations totaled \$1,154,200. Included in this total was \$1,031,900 for salaries and expenses and \$122,300 for extramural purposes. In 1979, the program:

- Completed 10 spill prevention control and countermeasure reports and responded to 12 emergency spills for the Office of Water and Waste Management. Provided aerial photography and detailed analyses to regions for oil and petrochemical facilities inspections and for analysis of the extent and effects of oil and hazardous material spills.

acquisition and analysis of photographic and multi-spectral scanner imagery.

- Conducted 50 field studies for the regions and program offices. Provided detailed analysis of point and non-point source problems, leachate and thermal plant discharge problems.
- Reviewed 15 environmental impact statements for the Office of Water and Waste Management and the Office of Environmental Review and the Regions. Provided detailed analyses of archival and new photography to determine land use, soil, drainage, geologic and vegetative conditions.
- Provided overhead monitoring data and methods documentation for the Office of Enforcement initiatives in pulp and paper, iron and steel and power generation industries.

1980 Program

In 1980, the Agency has allocated a total of \$1,139,000 for this program, of which \$758,900 is for the Salaries and Expenses appropriation and \$380,100 is for extramural purposes under the Research and Development appropriation. Specific outputs will include:

- Ten spill prevention control and countermeasure studies and 10 to 15 oil and hazardous spill emergency responses.
- Overhead monitoring and data analysis support for all regions and program offices.
- Overhead monitoring and data analysis support for special programs such as the Chesapeake Bay, Beaumont/Lake Charles, Poplar River and Atchafalya River.
- Fifty (50) field studies for the regions and program offices to produce: thermal pollutant discharge surveys, wetland and land use surveys, point and non-point surveys and leachate and septic tank problem surveys.
- Expert witness and overhead monitoring data acquisition for enforcement case preparation for the Office of Enforcement and regions.
- Overhead monitoring acquisition and analysis support for the 301(h) Ocean Discharge Program.

1980 Explanation of Change from Budget Estimate

The net decrease of \$106,000 results from several actions. An increase of \$25,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,600. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$18,400 to this activity.

closely aligned; the monitoring methods program corrects deficiencies in candidate operational monitoring methods and systems programs, then the Quality Assurance program takes these corrected methods and validates their utility for operational monitoring of pollutants. This reprogramming represents a change in priority to emphasize correction of technical deficiencies in additional methods to respond to NPDES monitoring requirements.

A reprogramming of \$50,000 was made to toxic substances technical support within ORD to provide additional support to the technical support program under the toxic substances activity.

1981 Plan

The Agency requests a total of \$1,162,100 and 9 permanent workyears for this program, of which \$773,000 is for the Salaries and Expenses appropriation and \$389,100 is for extramural purposes under the Research and Development appropriation. The increase of \$23,100 will be for overhead monitoring data acquisition and analysis for the Enviro-pod program. In 1981, the program will:

- Produce ten spill prevention control and countermeasure reports for the Office of Water and Waste Management and the regions.
- Respond to 10-15 to emergency oil and hazardous spill responses for the regions.
- Complete 15 field studies initiated in 1980 and undertake 15-20 new requests for field studies in leachate migration, septic tank leak and thermal infrared analysis.
- Provide overhead monitoring data acquisition and analysis and photo laboratory reproduction and analysis for the Enviro-pod program.
- Provide expert witness and case preparation support for the regions and Office of Enforcement.
- Complete 30 priority reports for the 301(h) Ocean Outfall Program.

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
State Program Regulations and Guidelines:			
Salaries and Expenses.....	\$11,099	\$11,032	-\$67
Abatement, Control and Compliance.....	3,957	3,957	...
Great Lakes Program:			
Salaries and Expenses.....	664	660	- 4
Abatement, Control and Compliance.....	5,865	5,865	...
Clean Lakes Program:			
Abatement, Control and Compliance.....	13,500	13,500	...
Chesapeake Bay Program:			
Salaries and Expenses.....	196	195	- 1
Abatement, Control and Compliance.....	1,814	1,814	...
EPA Compliance/EIS Preparation:			
Salaries and Expenses.....	192	191	- 1
Total:			
Salaries and Expenses.....	12,151	12,078	-73
Abatement, Control and Compliance.....	25,136	25,136	...
Grand Total.....	37,287	37,214	-73

Water Quality Planning and Standards

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
			(dollars in thousands)		
<u>Appropriation</u>					
State Programs					
Regulations and					
Guidelines:					
Salaries and					
Expenses.....	\$9,821	\$11,113	\$10,662	\$11,099	+\$437
Abatement, Control					
and Compliance.....	3,564	4,400	4,368	3,957	-411
Great Lakes Program:					
Salaries and					
Expenses.....	1,023	600	730	664	-66
Abatement, Control					
and Compliance.....	4,992	5,900	5,770	5,865	+95
Clean Lakes Program:					
Abatement, Control					
and Compliance.....	9,204	15,000	15,000	13,500	-1,500
Chesapeake Bay Program:					
Salaries and					
Expenses.....	426	200	133	196	+63
Abatement, Control					
and Compliance.....	2,148	1,800	1,840	1,814	-26
NEPA Compliance/EIS					
Preparation:					
Salaries and					
Expenses.....	222	176	206	192	-14
Total:					
Salaries and					
Expenses.....	11,492	12,089	11,731	12,151	+420
Abatement, Control					
and Compliance.....	19,908	27,100	26,978	25,136	-1,842
Grand Total.....	31,400	39,189	38,709	37,287	-1,422
<u>Permanent Positions</u>					
State Programs					
Regulations and					
Guidelines.....					
Great Lakes Program..	267	331	308	300	-8
Clean Lakes Program..	22	15	15	15	...
Chesapeake Bay	2	...	...	...	...
Program.....	7	5	5	5	...
NEPA Compliance/EIS					
Preparation.....	5	8	5	7	+2
Total.....	303	359	333	327	-6

	Actual 1979	Estimate 1980	Estimate 1980	Estimate 1981	Decrease - 1981 vs. 1980
(dollars in thousands)					
<u>Full-time Equivalency</u>					
State Programs					
Regulations and Guidelines.....	343	412	365	360	-5
Great Lakes Program..	26	21	20	20	...
Clean Lakes Program..	1	...	...	...	...
Chesapeake Bay Program.....	10	6	6	6	...
NEPA Compliance/EIS Preparation.....	7	8	7	7	...
Total.....	387	447	398	393	-5

Budget Request

The Agency requests a total of \$37,286,900 and 327 permanent workyears for 1981, a decrease of \$1,422,100 and six permanent workyears from 1980. Included in this total is \$12,150,700 for Salaries and Expenses and \$25,136,200 for Abatement, Control and Compliance, with an increase of \$420,400 and a decrease of \$1,842,500, respectively.

Program Description

The water quality planning and standards subactivity includes five program elements:

State Program Regulations and Guidelines - This element covers a broad range of activities, including provision of technical and information transfer assistance to State and local areawide and other Federal (e.g., USDA) agencies to assist in the planning and operation of cost-effective control programs. The water quality management element under this program instituted a major reorientation in the operation of grant programs under Sections 208, 106, and 314 of the Clean Water Act (CWA). Section 208 grant assistance is scheduled for completion in 1983. From 1979 through 1983, Section 208 management will emphasize funding of problem-specific nonpoint source (NPS) control projects that will provide transferable technical information to States and localities on NPS pollution controls. Specific program outputs include:

- Development of major National Urban Runoff Project (NURP) transferable prototype control programs for this major nonpoint source of pollution.
- EPA/USDA development and implementation of selected agricultural best management practices (BMPs) through Model Implementation Projects (MIP); special Agricultural Conservation Program (ACP) water quality projects; and (beginning in 1980) a major USDA-funded Rural Clean Water Program (RCWP) which provides incentive grants to encourage farmers and ranchers to adopt proven water quality protection methods.

projects.

- Development of State-based control programs for mining, on-lot disposal, and construction-related pollution.

Section 106 State water pollution control agency grants are now being managed to a large extent through the State/EPA Agreement (SEA) process, along with other EPA pollution control grant programs (including drinking water, solid waste, air, noise, radiation and toxic pollution problems). Finally, the management of the Clean Lakes Grant Program under Section 314 of the CWA addresses the assessment and implementation of watershed and in-lake restorative procedures to insure that Federal grant dollars are used in a manner that will provide cost-effective methods for the improvement or maintenance of the quality of publicly owned fresh water lakes. In 1980, management of the Clean Lakes program will be fully incorporated into the State/EPA agreement process.

Great Lakes Program - The second element covered by this subactivity is the Great Lakes program, which includes funding for the Great Lakes initiative program and demonstration grants authorized by Section 108(a) of the Clean Water Act of 1977. The Great Lakes National Program Office was established in 1978 to integrate and consolidate EPA Great Lakes activities and to provide coordinated support to the International Joint Commission's (IJC) Great Lakes Water Quality Board.

Clean Lakes Program - The third element covered by this subactivity is the Clean Lakes grant program. Under this grant mechanism financial assistance is provided to States to classify their publicly owned fresh water lakes according to trophic conditions and to carry out methods and procedures to restore and protect the quality of those lakes. To date the Agency has received 175 applications for lake restoration and has funded 115 projects.

Chesapeake Bay Program - The fourth element covered by this subactivity is the Chesapeake Bay program, which was developed in response to a congressional directive which required EPA to conduct an in-depth study of the Bay, define the factors adversely impacting the environment, develop research to address adverse factors, and define management strategies to ameliorate degradation in the Bay due to pollution. The program has been developed as a cooperative effort between citizen groups, State environmental agencies (Virginia and Maryland), and EPA. A program of integrated scientific and management studies initiated to assess the consequences of pollutant loadings on the Chesapeake Bay in terms of effects on the ecosystem, the products of the Chesapeake Bay program will aid managers in making decisions at all government levels.

The three highest priority problem areas are considered to be toxic substances, nutrient enrichment (eutrophication), and the disappearance of submerged aquatic vegetation. Additionally, management structures relative to these three areas are being reviewed in the context of both existing regulatory mechanisms and available alternative control options.

NEPA Compliance/EIS Preparation - The fifth element covered by this subactivity involves environmental impact statement (EIS) preparation in voluntary compliance with the National Environmental Policy Act (NEPA). These EISs are prepared at the discretion of the Regional Administrators.

1979 Accomplishments

In 1979, the Agency obligated \$13,384,600 for this program activity of which \$9,820,700 was for intramural purposes and \$3,563,900 was for extramural purposes. A major function of this activity was the awarding of \$94.5 million in Section 208 planning grants to State and local areawide agencies emphasizing nonpoint source pollution control projects. Grants totalling \$54.1 million under Section 106 were awarded to support State water pollution control programs and \$9.2 million was awarded for Section 134 Clean Lakes projects. In addition, a total of \$3,563,900 was obligated for contracts in 1979, including \$880,000 for management of best management practice (BMPs) projects; \$690,000 for Financial Management Assistance Projects (FMAPs); \$543,300 for public involvement and technology transfer; and \$1,450,600 for statistical support of regulations development and for development of a water strategy. Major program accomplishments were achieved in several areas including:

Regulatory Requirements

- Water quality management (WQM) regulations covering programs under Sections 208/106/303(e) of the Clean Water Act were promulgated. The revised regulations: set forth necessary requirements for the continuing planning and implementation phase of the WQM program, which follow the initial 3-year planning period for grantees; corrected certain technical problems encountered with parts of the previous regulations; implemented new provisions of the 1977 Clean Water Act; and implemented Presidential initiatives for reducing the burden of Federal planning requirements on State and substate agencies. The regulations also place major emphasis on the coordination of environmental management programs through the State/EPA Agreement (SEA) process.

State/EPA Agreements (SEAs)

- Signed 32 1979 SEAs with States, 15 of which covered programs under the Resource Conservation and Recovery Act (RCRA), Safe Drinking Water Act (SDWA) and Clean Air Act programs as well as the Clean Water Act.
- Guidance for 1980 SEAs was completed, and the development of 1980 SEAs was initiated with 57 States and territories.

Nonpoint Source Control

- More than 200 grant awards to Section 208 agencies were made in 1979 for nonpoint source (NPS) priority projects. Most agencies have been funded to work on one or more of the national NPS problems including urban runoff, agriculture, and construction.
- National prototype projects were funded including 15 urban runoff (NURP), 29 agriculture runoff projects (ACP/MIP), and six ground water protection projects. Ten Financial Management Assistance Projects (FMAPs) were funded, providing assistance and training to overcome financial barriers to plan implementation and to develop self-sustaining State and local continuing planning.
- Half the agencies were funded to work on ground water problems and a quarter for silviculture and mining problem solutions.

- Nearly half the grantees were funded to assist in advanced waste treatment (AWT) planning. (In 1980, new AWT planning projects will be supported through Section 201 facilities planning grants.)
- Followed-up approvals to ensure implementation of Section 208 plans including approval of management agency designations.
- National economic and policy studies on urban storm water and watershed BMP's were initiated in 1979.
- Participated in State Rural Clean Water Coordinating Committees to assure activity and focus on WQM implementation in priority areas: evaluated Rural Clean Water Program (RCWP) applications and reviewed BMPs proposed for cost share assistance under this USDA funded program. Control of pesticides and other hazardous substances on toxic materials in rural runoff was emphasized.

Sections 208/106 Grants Management

- Nearly \$150 million awarded through more than 200 Section 208 grant awards to State and areawide agencies and 57 Section 106 grants to States.
- A 5-year assessment of State program needs for Section 106, 208 and 314 programs was initiated.

Public Information and Technology Transfer

- A national NPS technical information transfer system was developed for use by Section 208 field staff, grantees and public interest groups.
- Provided funding support for public involvement at the State and local level in priority NPS projects.
- Training sources on public participation/management were provided for EPA field staff and State WQM officials.

Clean Lakes Management

- A proposed regulation for administering the Clean Lakes program was published; proceedings from the national lake restoration conference were published.
- Forty-five (45) Clean Lake grant applications were evaluated. In total, 41 grant awards were made.
- A Clean Lakes urban initiative was started, which resulted in the funding of 10 urban lake projects in the beginning of 1980.

1980 Program

In 1980, the Agency has allocated a total of \$15,029,700 to this program, of which \$10,661,500 is for the Salaries and Expenses appropriation and \$4,368,200 for extramural purposes under the Abatement, Control and Compliance appropriation.

million in Section 208 grants, \$48.7 million in Section 106 grants, and \$15 million in Section 314 grants. The total of \$ 4,368,200 for Abatement, Control and Compliance will include \$1,220,800 for development of nonpoint source best management practices (BMPs), \$300,000 for Financial Management Assistance Projects, \$499,000 for technology transfer and public involvement, approximately \$555,000 for WQM support contracts, \$701,000 for an assessment of industrial energy development impacts on critical western river basins, and \$1,092,400 for statistical support of regulations development and for evaluation and integration of the water strategy.

In 1980, all States will be required to have signed SEAs to receive 1980 WQM funding. Together with coordination of Section 106 grant program development, staff under this program will be placing increased priority on funding Section 208 plan implementation from Section 106 funds. The Sections 208/106/314 needs assessment, initiated in 1979, will be completed to assist in setting national, State and local priorities for 1981 funding.

In 1980 Section 208 emphasis is on prototype NPS projects to assure that limited funds are used for highest priority problem solutions and that necessary intensive technical assistance and focused management are provided for all funded projects. Transfer of workable solutions to other States and localities is being emphasized. Water quality management (WQM) field staff are overseeing, coordinating and assisting more than 200 Section 208 agency projects that were initiated in 1978 and 1979. National expert assistance is provided as required. Assuring implementation of approved plans and following up on completion of initial plans will result in an increased workload.

State/EPA Agreements (SEAs)

- Responsible for Agency coordination of 1981 SEA guidance and final SEA regulations.
- Develop requirements for integrating all WQM programs in 1981 SEAs.
- Assess the adequacy of all 57 1980 SEAs.

Nonpoint Source Controls

- Manage 30 national urban runoff projects (NURPs). These projects were selected to develop a variety of prototype control programs that can be transferred to other communities. Hazardous materials scans will be conducted in the development of these projects.
- Fund, manage and provide expert technical assistance to States and areawide agencies on over 300 other urban runoff, agriculture, silviculture, ground water protection, construction runoff, and other problem specific projects.
- Select 20-25 first round Rural Clean Water Program (RCWP) implementation cost sharing projects. Participate in national, State, and local RCWP coordinating committees with USDA to select these 20-25 candidate projects. Continue 23 joint EPA/USDA Model Implementation Program (MIP) and Agricultural Conservation Program (ACP) prototype projects.

educational programs for State foresters and landowners, and implement non-coal mining regulations.

Sections 208/106 Grants Management

- Complete the 5-year Sections 106/208/314 State needs assessment initiated in 1979.
- Allocate grant funds to the extent feasible, on the basis of program needs and national priorities. In addition to past Sections 106/208/314 needs, new program activities include: hazardous and toxic waste monitoring, spill response and prevention and State pretreatment program management.

Public Information and Technology Transfer

- Operate the technology transfer system initiated in 1979, including information on completed plans and new projects funded in 1980.
- Provide \$200,000 to support regional public involvement projects in WQM priority areas.

Clean Lakes Management

- Review 70 Clean Lakes grant applications and recommend appropriate award actions for up to 45 projects. Provide administrative attention to approximately 115 operating Clean Lakes grants.
- Publish final regulation and program guidance to administer Clean Lakes program under Section 314.
- Assist nearly all States with the implementation of State/EPA agreements on Clean Lakes program requirements.
- Initiate an evaluation of lake restoration techniques and develop technical/economic criteria for evaluating and funding Clean Lakes projects.
- Assist efforts in 15 States to classify publicly owned fresh water lakes according to trophic condition.
- Initiate effort to input and review the quality of Clean Lakes grant water quality data into STORET, and the Grant Information Control System (GICS).
- Conduct four EPA regional/State workshops to explain operational procedures of the Clean Lakes program, complete and distribute public awareness information about lake restoration methods and benefits, and publish a users' manual on grant assistance offered under the Clean Lakes program.
- Sponsor an international (North American/European) symposium, on Clean Lakes restoration. The objective of the symposium is to obtain information available on methods and procedures for lake restoration for inclusion in the Administrator's Section 304(j) report to Congress in 1981.

1980 Explanation of Change from Budget Estimate

The net decrease of \$482,900 results from several actions. An increase of \$402,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$69,000 and \$17,400, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$164,500 to this activity.

A reprogramming of \$1,454,800 was made to water quality standards to consolidate standards, criteria, and regulations functions. A reprogramming to the solid waste media, management program implementation (\$22,000), and uncontrolled hazardous waste (\$26,200) was made for improved direction and guidance to the agencies implementing Section 208 plans.

Reprogrammings in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfers from water quality NEPA compliance municipal waste facility construction (\$118,600); from air quality management implementation (\$80,100); to water quality municipal waste treatment facilities (\$12,600); from drinking water public systems supervision program assistance (\$8,700); to air stationary source enforcement (\$51,100); from water quality ambient water quality monitoring (\$38,100); and water municipal waste treatment facility construction (\$4,000).

A congressional add-on of \$354,000 was made for the Poplar River Study.

1981 Plan

In 1981, the Agency requests a total of \$15,056,000 and 300 permanent workyears for this program, of which \$11,098,500 is for the Salaries and Expenses appropriation and \$3,957,500 is for the Abatement, Control and Compliance appropriation. This is an increase of \$26,300 and a decrease of five permanent workyears.

In 1981, the water quality management (WQM) program will be emphasizing improved program management, completion of the Section 208 grants program by 1984, and building a technological basis for the transfer of effective problem solutions. In awarding grants under Sections 208, 106, and 314 of the Clean Water Act (CWA), WQM staff will concentrate on high priority program areas and problem sites, on program integration and coordination, and implementation of supportive funding policies.

In 1981, the WQM program will be emphasizing broader involvement of related programs in EPA and other Federal agencies, to support both continuing Section 208 planning and the implementation of completed plans, particularly those dealing with advanced waste treatment (AWT) needs decisions, urban runoff control, agricultural nonpoint source control, and ground water protection. Implementation of approved plans will continue to be stressed. Successful plan implementation and approved SEAs will become criteria for future Section 208/106/314 funding eligibility. Improvement of State and local capabilities to obtain and manage implementation resources will continue as a high priority. In 1981, the financial management assistance program will disseminate the tools and techniques to help fund, plan, and implement projects that were developed during 1979 and 1980.

Grant awards for State Section 106 programs, continuing Section 208 planning and Section 314 Clean Lakes Programs will be committed and awarded according to priorities and phasing established in work plans and State/EPA agreements. 1981 awards will reflect both national priorities and major localized problems identified in the 5-year State needs assessment. Funding support of public involvement by concerned groups will be continued with emphasis on groups with significant interests in national WQM priorities.

Clean Water Act (CWA) Sections 208 and 106 grant programs managed under this element will provide approximately \$83 million through negotiated work plans and State/EPA Agreements (SEAs) to State, interstate, areawide, and local agencies. Resources under this element will also be required to develop, negotiate and implement integrated SEAs which include the Resource Conservation and Recovery Act (RCRA) and the Safe Drinking Water Act (SDWA) grant programs, and other EPA programs. 1981 new obligational authority requested is \$34 million under Section 208 and \$48.7 million under Section 106. These funds will be available on a 2-year grant basis. (See grants assistance program for further description.)

In 1981, \$3,957,500 is requested for extramural purposes under the Abatement, Control and Compliance appropriation, including \$500,000 for nonpoint source control development, management, and implementation; \$500,000 for Financial Management Assistance Projects (FMAPs); \$1,000,600 for technology transfer and education; approximately \$447,800 for WQM support contracts, \$354,600 for continuing assessment of industrial energy development impacts on critical western river basins, and \$1,154,500 for statistical support of regulations development and for revision of the water quality strategy.

Specific outputs in 1981 will include:

State/EPA Agreements (SEAs)

- Work with other EPA programs to promulgate final SEA regulations.
- Assess the adequacy of WQM coverage in 1981 SEAs in all States.
- Complete development of WQM sections in 1981 integrated SEAs for all 57 States/Territories and begin development of SEAs for 1982.

Nonpoint Source Controls

- Provide expert technical assistance to State and areawide agencies on nonpoint source projects including urban runoff, agriculture, silviculture, and ground water, with emphasis on national prototype projects.
- Analyze and document cause and effect runoff/water quality relationships identified in 41 agriculture, silviculture, and urban runoff prototype projects. Prepare preliminary NURP report to Congress on causes, effects and controls, final report to be completed in 1982.
- Conduct program assessment and evaluation of agricultural NPS strategy, and update strategy as required.
- Provide assistance to other EPA and Federal programs to implement educational programs for State foresters and landowners; and implement non-coal mining regulations.

- Select six additional ground water protection prototype projects with emphasis on hazardous dump sites.
- Fund and manage State and local high priority agriculture, urban, silvicultural, and ground water protection projects.

Sections 208/106 Grants Management

- Develop prioritized work programs on negotiations of Section 106 grant awards, using the needs assessment to help set priorities.
- Allocate Section 208 grant funds to regions on basis of funding plans results of the State needs assessment. (Needs-based procedures for allocating 1981 funds will be issued in 1980.)

Public Information and Technology Transfer

- Operate the technology transfer system including information on 41 completed prototype projects plus new projects funded in 1981.
- Implement technology transfer effort to disseminate results of completed national prototype projects, particularly from NURPs, EPA/USDA MIPs and ACP projects.

Clean Lakes Management

- Provide technical review for over 150 clean lake grant applications and recommend appropriate award actions for up to 75 projects. Provide administrative and project officer attention to approximately 120 operating Clean Lakes projects.
- Assist all 57 States and Territories in developing comprehensive State administrative plans that address lake watershed pollution controls and multiyear priority lists for over 150 Clean Lakes applications.
- Provide four policy and technical assistance workshops/meetings with regional and State officials.
- Continue technical evaluation of lake restoration techniques, as well as the economic evaluation of completed Clean Lakes projects.
- Publish proceedings from the international symposium on lakes restoration, publish the Administrator's Section 304(j) report, and publish public awareness information on the Clean Lakes program.

1979 Accomplishments

In 1979, the Great Lakes National Program underwent an intensive Agency review and analysis which resulted in new initiatives to more substantively involve the Agency's operating divisions and the States in an accelerated Great Lakes clean-up effort. Some program accomplishments include:

- Completion of the second year of the Lake Erie intensive surveillance survey with special emphasis on toxic pollutants. Preliminary results indicate that the lake is no longer rapidly deteriorating, and there is some evidence of improvement.
- A radioactivity surveillance plan was implemented on Lakes Huron, Michigan, and Superior by the United States. The Canadians conducted the same program on Lakes Erie and Ontario.
- Specialized technical expertise was provided for several major Great Lakes enforcement cases, including Waukegan Harbor and Detroit.
- Two Section 108(a) grants totalling \$1.2 million were awarded to Saginaw, Michigan, and Cleveland, Ohio, to demonstrate innovative technology to control storm and combined sewer overflows.
- Regulatory assessments of areas adversely impacted by high levels of toxic pollutants were initiated at Wyandotte, Michigan and Ashtabula, Ohio.

1980 Program

The 1980 allocation for the Great Lakes abatement and control effort is \$6,500,700 of which \$730,300 is for Salaries and Expenses and \$5,770,400 is for the Abatement, Control and Compliance appropriation. 1980 marks the beginning of a redirected Great Lakes surveillance program including:

- \$400,000 for instituting with the States, the U.S. Fish and Wildlife Service and U.S. Food and Drug Administration a coordinated fish tissue analysis program to detect toxic pollutants which threaten public health.
- Establishment of technical assistance teams for Lakes Erie and Huron to accelerate data analysis capability (\$190,000).
- Initiation (in cooperation with the Canadians) of intensive water quality surveillance surveys on Lake Huron as well as special water intake and tributary monitoring programs.
- Implementation of an atmospheric loading network to estimate the amount of pollutants being transferred from the air to the water (including acid rain) (\$200,000).

- In 1980, resources for regulatory problem area assessments will also be increased. Studies will continue at Wyandotte and Ashtabula, and new efforts will begin on the Buffalo River in New York.
- The Section 108(a) grant program will allocate \$1.4 million for approximately five new demonstration projects to control rural nonpoint source and toxic pollutants within the Great Lakes basin.
- Major efforts will be undertaken by the Program to coordinate the numerous hazard assessment programs of the States and the International Joint Commission (IJC) and ORD to ensure that health and environmental contaminant inventories are directed toward the detection and control of known and suspected toxic pollutants.
- The report of the International Phosphorus Management Strategies Task Force will undergo intense review, and policy recommendations on the need for further phosphorus reductions will be formulated.

Finally, the program will take the lead "catalyst" role within the Agency to implement the approved Great Lakes strategy with particular emphasis on increasing State involvement in Great Lakes pollution control efforts through the 1981 State/EPA Agreements.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$700 results from several actions. An increase of \$20,400 results from the cost of the October pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$6,400 and \$13,300, respectively.

1981 Plan

In 1981, \$6,529,300 and 15 permanent workyears are requested for this program of which \$664,300 is for the Salaries and Expenses appropriation and \$5,865,000 is for the Abatement, Control and Compliance appropriation. The majority of the Great Lakes program staff will continue to be engaged in contract and grant management and in providing technical assistance and support to the States and operating divisions.

State water quality standards and management plans will receive special attention to insure that both are supportive of the objectives contained in the international Great Lakes Water Quality Agreement of 1979. Efforts to evaluate and coordinate Great Lakes and toxic and hazardous material control programs as well as airborne pollutants programs will also continue. Increased emphasis will be placed on translating pollutant source data into implementable regulatory programs.

Regulatory assessments and Section 108(a) grants will continue to be initiated and directed toward the control of toxic pollutants in key Great Lakes areas. The surveillance programs will concentrate on Lake Ontario and on increasing quality control and data interpretation for the fish and sediment analyses programs.

CLEAN LAKES PROGRAM

1979 Accomplishments

In 1979, \$9,203,600 was obligated for clean lakes grants. EPA continued to provide assistance for both lake restoration projects and for State classification of their lakes by trophic condition. Fifty-one (51) proposals were received with the following results:

- EPA funded 20 State grants for lake classifications;
- EPA funded nine new lake restoration projects;
- EPA funded 16 amendments for existing lake projects; and
- EPA rejected or had withdrawn six proposals.

Additionally, 10 projects from previous years were completed.

1980 Program

In 1980, the Agency has allocated a total of \$15,000,000 for this program under the Abatement, Control and Compliance appropriation. Under the new program regulations, EPA will continue to provide technical and financial assistance for Phase I (planning and feasibility studies), Phase II (implementation awards), and State classification projects. Following the publication of the regulation, Regions will assume all grants administration and project officer responsibilities for approximately 100 grants/cooperative agreements.

In 1980, EPA anticipates funding:

- approximately 20 State grants for lake classification;
- approximately 20 new lake restoration projects; and
- 10 Phase I grants, as a part of the Urban Initiative.

In addition, 20 projects will be completed during the fiscal year.

1980 Explanation of Changes from Budget Estimate

There is no change in this program activity.

1981 Plan

In 1981, the Agency requests a total of \$13,500,000 under the Abatement, Control and Compliance appropriation with which EPA will attempt to meet the increasing funding demands for projects from States.

In 1981, EPA will:

- Receive approximately 150 clean lakes proposals.
- Fund approximately 30 Phase I (planning and feasibility) projects.
- Fund approximately 20 Phase II (implementation) projects and amendments.
- Complete approximately 20 projects.

1979 Accomplishments

In 1979, the Agency obligated \$2,573,800, including \$2,148,200 for extramural purposes for the Abatement and Control Chesapeake Bay Program.

During 1979, the program plan developed by EPA with the States of Maryland and Virginia and Bay area citizens, and implemented in 1978, was reviewed and expanded or modified to incorporate relevant concerns into the management decision making process. Major emphasis in 1979 was on the development of a toxic point source assessment program and a data management effort to handle the information developed by the Chesapeake Bay Program. Also during 1979, an environmental management study was initiated to assist in better understanding present Bay management and review major water resource management mechanisms.

1980 Program

In 1980, the Agency has allocated a total of \$1,972,700 to this program, of which \$132,600 is for Salaries and Expenses and \$1,840,100 is for extramural purposes under the Abatement, Control and Compliance appropriation.

In 1980, the Chesapeake Bay Program under both the research and the abatement and control activities will continue the efforts initiated in 1978 and 1979. New projects will be initiated to provide information necessary to make informed management decisions. This will include a major baywide survey to develop the most complete set of data ever collected addressing water quality conditions of the Bay. The 1980 program will be geared toward integrating the vast amounts of research and management data being collected. Efforts will include mathematical modeling and simulation, data synthesis, and the identification of control alternatives to abate pollution problems threatening the environmental health of the Bay.

Toxics substance source assessment studies will analyze the introduction of pollutants into the Chesapeake Bay ecosystem from point and nonpoint sources. This information will be used to predict current and future loadings under a series of alternative development projections and management strategies. Transport and fate studies will develop baywide projections which will be used to evaluate the management strategies proposed to achieve environmental goals, standards, and criteria.

The eutrophication and submerged aquatic vegetation projects will produce baywide assessments of projected ecosystem changes. The reports will be integrated into and will guide abatement and control development projects designed to mitigate specific non-acceptable trends.

Studies of existing management agencies and mechanisms will continue and will provide the basis for a better understanding of the factors affecting and influencing the Bay decision process.

State participation programs, with the States of Maryland and Virginia and citizen participation programs, will continue to provide key coordination links between the States, the public, and the Chesapeake Bay Program.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$27,300 results from several actions. An increase of \$4,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to supplies and expenses resulted in a decrease of \$31,600.

1981 Plan

The Agency requests a total of \$2,009,200 and five permanent workyears for this program in 1981, of which \$195,500 is for the Salaries and Expenses appropriation, and \$1,813,700 is for the Abatement, Control and Compliance appropriation.

The 1981 Chesapeake Bay Program, under both research and development and abatement and control, will continue to conduct the final integration of the research in the areas of toxics, submerged aquatic vegetation and eutrophication. This will include development of a predictive capacity to assess the effects of pollutant loadings to the system, development of a source assessment protocol for toxic substances and nutrients entering the estuarine system from point and nonpoint sources, definition of the transport and fate of toxic substances in the system, and synthesis of data to evaluate control options to ameliorate eutrophication and major ecosystem changes such as the disappearance of submerged aquatic vegetation. The environment management study will assess the existing management structure and propose viable control alternatives to achieve effective management of the Bay, its uses and resources. Synthesized reports for toxics, submerged aquatic vegetation, eutrophication, and environmental management will be produced and integrated into information useful to Bay region decision makers.

In 1981, the data management system will be fully operational and will handle the data produced in the studies under this program and provide the basis for a centralized data bank for the Chesapeake Bay.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE/ENVIRONMENTAL IMPACT STATEMENT PREPARATION - WATER QUALITY

1979 Accomplishments

In 1979, the Agency obligated \$222,700 for this activity. In August 1978, EPA revised its policy and no longer requires the regions to prepare EISs for Section 208 WQM plans. However, as part of this policy, 18 detailed EISs being developed on specific WQM plans were completed in 1979. In addition, the regions assured that the environmental assessments required in the WQM planning process were conducted in a manner consistent with the spirit and intent of NEPA, including appropriate citizen and public agency participation.

1980 Program

In 1980, the Agency has allocated \$205,900 under the Salaries and Expenses appropriation for this activity. Under the new EPA policy on NEPA compliance, the regions are responsible for assuring that environmental assessments required in the WQM planning process are conducted in a manner consistent with the spirit and intent of the NEPA. Appropriate citizen and public agency participation will also be assured. More than 200 State and areawide agencies will be conducting continuation planning projects funded under Section 208. In addition, the last 13 final EISs will be completed on initial Section 208 WQM plans.

The net increase of \$29,900 results from several actions. An increase of \$8,300 results from the cost of the October pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$500. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$17,400 to this activity.

A reprogramming of \$5,300 to water quality standards and regulations; and \$19,000 to solid waste uncontrolled hazardous waste sites was made to prepare EISs needed for the construction grant program. A reprogramming of \$9,700 to water quality environmental emergency response and prevention, and \$9,400 to water quality NEPA compliance municipal waste facility construction was made to streamline the accounting process.

Reprogrammings in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfers from drinking water public systems supervision program assistance (\$7,200); from water quality NEPA compliance municipal waste facility construction (\$7,000); from solid waste hazardous waste enforcement (\$1,500); from air stationary source enforcement (\$29,600); and from water quality manpower planning and training (\$2,800).

1981 Plan

In 1981, the Agency requests \$192,400 and seven permanent workyears under the Salaries and Expenses appropriation for this activity. The regions will be responsible for assuring that environmental assessments required in the WQM planning process are conducted in a manner consistent with the spirit and interest of the NEPA, including appropriate citizen and public agency participation. Approximately 200 State and areawide agencies will be conducting continuation planning projects under Section 208.

Effluent Standards and Guidelines

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$6,367	\$6,338	-\$29
Abatement, Control and Compliance...	<u>23,678</u>	<u>23,678</u>	<u>...</u>
Grand Total.....	30,045	30,016	- 29



WATER QUALITY

Effluent Standards and Guidelines

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and Expenses	\$ 5,585	\$ 4,178	\$ 5,821	\$ 6,367	+\$ 546
Abatement, Control and Compliance.....	20,345	24,933	22,662	23,678	1,016
Grand Total.....	25,930	29,111	28,483	30,045	+ 1,562
<u>Permanent Positions.....</u>	114	113	116	112	-4
<u>Full-time Equivalency...</u>	135	152	151	147	-4

Budget Request

An appropriation of \$30,045,500 and 112 permanent workyears is requested for 1981. This is an increase of \$1,562,100 and a decrease of 4 permanent workyears over the 1980 level of \$28,483,400 and 116 permanent workyears. The additional funding will be used to increase work in industrial hazardous waste controls (e.g. management practices for sludges, energy saving technologies in water pollution and developing regulations for major segments of the "synfuel" industry (gasohol), and coal gasification).

Program Description

The program was mandated in 1972 to develop uniform, national effluent limitations and standards for 34 major industrial categories that discharge waste into the Nation's waters. The regulations implementing these effluent limitations guidelines were promulgated under the combined authorities of Sections 301, 304, and 307 of the Clean Water Act. These authorities provided for different levels of treatment technologies for the industrial categories identified by the Agency as substantial contributors to water pollution. The regulations developed were based on the demonstrated use of the best practicable control technology (BPT) then available. Designated industrial categories were to be in compliance by 1977. Limitations based on the best available technology economically achievable (BATEA) were to be promulgated, with industrial compliance required by 1984. Section 306 of the 1972 Act required institution of standards for new industrial sources of waste water. Section 307 mandated development of pretreatment standards for those industries that discharge waste water into municipal wastewater treatment works.

Beginning with the 1976 Settlement Agreement between EPA and Natural Resources Defense Council (NRDC) et al, the Agency has continued to shift its program emphasis toward the control of toxic water pollutant discharges. In 1977 this shift was reemphasized by the Clean Water Act of 1977 which essentially incorporated the requirements of the Settlement Agreement on toxic pollutants. The required redirection of program activities and a reallocation of available resources has been accomplished. In particular, the emphasis on toxic pollutants has required the concurrent development and use of new sampling and analytical methods, substantial increases in resources devoted to analytical sampling and analysis activities, development of new and cost-effective analytical methods of routine monitoring of individual toxic pollutants, examination of wastewater treatment technologies for effective removal of toxic pollutants, and more intensive and thorough engineering investigations of specific industrial categories.

of 1977. These regulations will be aimed at controlling the water discharge of 65 compounds and classes of compounds for 34 primary industrial categories. Every one of these 34 industry categories is under investigation, some of the studies are nearly completed and proposed regulations have been issued in five industrial categories. Each category requires examination of processes in the industry, water usage, waste water characteristics, and treatment technologies either in use or potentially applicable. In addition, the requirement of economic achievability has led the Agency to conduct exhaustive studies of the financial and economic structure of each industry and each subcategory of these industries to assess the economic achievability of various regulatory options.

In activities which have a direct bearing on efforts in hazardous waste controls under the Resource Conservation and Recovery Act (RCRA), the Agency is formulating best management practices (BMP) under section 304(e) for controlling toxic pollutants originating from plant site runoff, spillage or leaks, sludge or other waste disposal, and drainage from raw material storage facilities which are associated with or ancillary to the industrial manufacturing or treatment process.

Section 304 also requires EPA to develop technology-based effluent limitations for so-called "conventional" pollutants. Presently, conventional pollutants include biochemical oxygen demand (BOD), total suspended solids (TSS), pH, oil, grease and fecal coliform. The 1977 Act removes best available technology economically achievable (BATEA) as the appropriate control level for conventional pollutants but adds a new level of technology for establishing such limitations, termed best conventional pollutant control technology (BCT).

The new technology-based limitations for conventional pollutants cannot be less stringent than BPT or more stringent than BATEA standards. On August 29, 1979, the Agency promulgated its review of existing BAT limitations for conventional pollutants for those industries not included in the group of 34 industries covered by the consent agreement. This regulation also detailed the methodology which will be used to evaluate BCT when it is established in the future. The BCT regulations will save the settlement agreement (i.e., "secondary") industries up to \$200 million in water pollution control costs, which represents about 50 percent of previously estimated future clean-up expenditures for these industries. By eliminating some future clean-up requirements, the BCT regulations will help to ensure that industrial water pollution control expenditures are cost-effective in improving the Nation's water quality.

Consistent with Section 307 (b) and (c), pretreatment standards for both existing and new industrial sources are forthcoming, with 5 categories now proposed. These standards will include pretreatment limitations on the discharge of toxic pollutants to publicly owned treatment works (POTW), consistent with the demonstrated operating performance of POTW's in effective treatment of toxics.

In developing new regulations and in reviewing existing ones, there is a major effort to incorporate legislative requirements of the Clean Water Act with those of other statutes. For example, in the development and review of BATEA regulations, new technology for recycle and reuse of industrial wastewater will be developed and incorporated with the related RCRA requirements for the disposal of hazardous wastes. Studies of how best to integrate the regulatory requirements of the BATEA toxics control effort with RCRA are on-going. RCRA hazardous waste management regulations that are scheduled for promulgation. To meet the Clean Water Act and RCRA statutory requirements for the disposal of residues, a joint effort by several EPA programs is underway. The Office of Water Enforcement is developing guidance on BMPs for control of toxic discharges from sludge and waste water disposal for the National Pollutant Discharge Elimination System (NPDES) permit authorities. The Office of Solid Waste is developing, under RCRA authority, specific regulations dealing with any sludges that are hazardous. The Office of Water Planning and Standards will continue to provide data support and formulate specific best management practice regulations for the control of residues in coordination with both the Office of Water Enforcement and the Office of Solid Waste.

In 1981, the Agency will continue its efforts to collect and analyze the technological, economic, health, and general environmental factors as fundamental inputs to the development of specific regulations. To complete the revision of the existing BATEA limitation guidelines for the industries identified in the Clean Water Act, EPA will continue to characterize effluents with respect to the 65 classes of priority pollutants and to evaluate the effectiveness of appropriate treatment technology in removing or reducing toxic pollutant concentrations. Technical, statistical, and economic support will be provided to respond to litigation against promulgated BATEA regulations. In cases of litigation the agency reviews its data base, technical and economic analyses and prepares resource intensive support documentation.

To complete the best conventional pollutant control technology (BCT) regulations, new technical, economic, and statistical data bases will be compiled to allow determination of the necessity of revising existing BATEA regulations to meet the added test of economic reasonableness imposed by the Act for conventional pollutants. This effort will ensure that the most appropriate control mechanism for conventional pollutants has been established, that required level of technology has been defined, and that applicable regulatory approaches will be selected from technically viable alternatives. Thorough economic impact analyses of affected industries will be conducted to assess the economic ramifications of alternative limitations, and, in particular, to assure that the ultimate regulation is economically achievable, and equitable.

1979 Accomplishments

In 1979, the Agency obligated \$25,930,800 for this activity, including \$20,345,500 for extramural purposes. This includes \$20,054,900 for contracts; \$282,000 for automated data processing (ADP) costs; and \$8,600 for an interagency agreement. The contract obligations include \$12,629,400 for technical analytical studies; \$3,656,500 for economic and statistical analysis; \$267,000 for determination of health effects; and \$3,502,000 for analysis of environmental distributions of pollutants and exposure/risk. During 1979 program accomplishments include:

- Technical studies that identified nearly 100 subcategories within 17 industrial categories, for final determinations (pursuant to Paragraph 8, NRDC Settlement Agreement) that national BATEA (Toxics) or pretreatment standards were not appropriate. The principal rationale was that (1) existing standards controlled toxics adequately, (2) only one plant was identified in a subcategory, or (3) plants (processes) already achieved zero-discharge because of dry processes.
- Field work and draft reports for a nationwide study of water quality impacts due to seafood processing (pursuant to Section 74, Clean Water Act) were completed. Technical work on the BCT review of 33 subcategories in Seafood processing and economic studies in 5 subcategories also were completed. Additional economic studies for the remaining 28 subcategories are currently underway.
- Efforts to collect and analyze for toxic pollutants influent and effluent samples of domestic wastewaters in publicly-owned treatment works (POTWs) were initiated as part of the Agency's multimedia POTW toxics control strategy; the toxic removal capability of POTW characterization study was completed, including an evaluation of sludge contamination; an analysis of the content of combined sewer influents to POTW was completed using a projection of the industrial effluent burden upon POTW.
- The basic development and validation of improved analytical methods for detection of toxic pollutants in most complex industrial waste water discharges was completed.
- Technical studies for proposed regulations were completed for eight of the 34 primary industries. Work continued on 26 others.

industries. This study involved extensive data gathering in each region of the Nation to determine the concentration of pollutants in the environment in those regions. This information identified the regions and industries that required special attention because of the severity of their point source pollution problems.

- Economic analyses for proposed regulations covering the potential impacts of each treatment alternative for one (leather tanning and finishing) of 34 primary industries were performed. An economic analysis for the final electroplating pretreatment regulation was also performed.
- Measures were initiated to add substances to the Administrator's list of toxic pollutants, as required in Section 307 (a) of the Clean Water Act, by developing a selection rationale for choosing pollutants and by documentation of the human health and environmental effects of those pollutants.
- Technical information studies for best conventional pollution control technology (BCT) for eight of 34 primary industries were completed. This required examination of data on incremental cost of conventional pollutant removal by appropriately sized plants in each subcategory of each industry and POTW. The cost data were systematically compared and analyzed for each alternative level of conventional pollutant treatment to conventional pollutants in each subcategory.
- Secondary Industry Review was completed which resulted in promulgated BCT guidelines for 93 subcategories. Also, a methodology was developed which will be applied to other BCT limitation development.
- Effluent and sludge from 15 POTWs were sampled and analyzed for the "priority pollutants."

1980 Program

In 1980, the Agency has allocated \$28,483,400 for this activity including \$5,821,400 for Salaries and Expenses and \$22,662,000 for extramural purposes under Abatement, Control and Compliance. This subactivity includes \$300,000 for ADP costs and \$22,362,000 for technical, economic and environmental studies for the proposal and promulgation of best available technology economically achievable (BATEA) effluent guidelines; new source performance standards (NSPS); and pretreatment standards for new sources (PSNS) for the remaining primary industries. These studies will also provide for the continuation of the development of regulations for best management practices (BMP), for Resource Conservation and Recovery Act (RCRA) related hazardous sludges, best conventional pollutant control technology (BCT) regulations for the remaining secondary and primary industries, development of a preliminary Publicly Owned Treatment Work (POTW) toxic pollutant regulatory strategy, and conducting the first phase of the synfuel investigations with priority on gasohol manufacture. In 1980, the program will:

- Complete technical studies for development of proposed regulations in 26 of the 34 primary industries. This work includes detailed laboratory analysis of effluent samples collected from plants in each subcategory of each industry, evaluation of the treatment performance of pollution abatement equipment currently used in each industry, accounting for variations in plant size, expansion space availability, location, age, and production process. The technical studies will also explore the feasibility of process changes to recycle or reuse water and the range of treatment technologies used in other industries that might apply to the industry under study. For each treatment option, process change, and alternative technology, the costs incurred by plants in the industry must be determined.
- Publish final regulations establishing national effluent limitations and standards for 9 primary industries.

- Complete economic studies for development of proposed regulations in 26 of the 34 industries. Because full economic impact information is required before a preferred treatment option is selected, each treatment alternative must be subjected to an economic analysis. These analyses become successively more detailed as the range of option narrows; the final small group of options considered are examined separately for impacts on prices, production, employment, industry size and concentration, foreign trade, regional economics, the economics of related industries and capacity. A precursor to this step is the analysis of economic data on the industry to determine the economic and financial structure of model plants most appropriate for regulatory economic assessment of the industry. When necessary, economic impacts are determined according to several alternative economic organizational assumptions.
- Continue to incorporate needs of other statutes, in particular RCRA, into technical and economic studies to develop industrial effluent guidelines. Information on sludge generation, storage, and disposal and associated costs, and the handling of hazardous materials and other solid wastes will play a major role in the development and proposal of effluent guidelines regulations. Support for this work will include collection of initial data on sludge generated by 33 industrial point source categories and by POTW. These data will provide a major technical input to the Office of Solid Waste on sludges generated by industrial BATEA requirements as well as POTW sludges controlled under Section 405(d) guidelines as part of an expanded complementary activity for RCRA. This effort will reduce corporate and governmental administrative burdens in data collection, permit issuance and compliance.
- Propose and promulgate Agency analytical methods of analyses of toxics in industrial waste water and continue investigations of methods applicable to toxic analysis of sludges and other complex industrial waste streams.
- The Agency expects to propose regulations for best available technology economically achievable (BATEA) effluent guidelines; new source performance standards (NSPS), pretreatment standards for existing sources (PSES), and pretreatment standards for new sources (PSNS) for up to 25 primary industries in 1980.
- Incorporate into new regulations consideration of innovation and alternative treatment technologies (including cost and energy), and enhance recycling and reuse of water waste to reduce industrial costs and enhance environmental benefits.
- Begin development of data to define model plants for synfuels in gasohol, high BTU coal gasification, low BTU gasification, direct coal liquefaction, indirect coal liquefaction and oil shale synfuel technologies. The model plants will be used to establish baseline discharges, baseline capital cost of the facility and baseline O&M costs of synfuel facilities using best available data from existing pilot scale facilities.
- Continue to investigate levels of toxic pollutants discharged to and by POTW through wastewater and sludge. The results will guide the Agency's approaches to implementation of pretreatment programs, to sludge disposal or beneficial use, and to reexamination of standards for wastewater discharges from POTW.
- Conduct environmental studies, including geographical and quantitative industrial profiles for an overall environmental risk assessment of 11 additional BAT industries. This study involves extensive data gathering in each region of the Nation to determine the concentration of pollutants in the environment in those regions. This information will identify the regions and industries that require special attention because of the severity of their point source pollution problems.

cost of conventional pollutant removal to determine a reasonable level for treatment of conventional pollutants in each subcategory.

- Initiate technical support for implementation of the standards in National Pollution Discharge Elimination System (NPDES) integrated permits. The individual plants in each industry will face different limitations, depending on their own process mixes and water use. For NPDES permit writing, methods will be developed to interpret each regulation or set of regulations applicable to each plant in the light of process wastewater and sludge generation, waste treatment and waste stream combination within the plant. Recycle and reuse of wastewaters as well as other innovative technologies will be major factors incorporated into permit writing procedures. Because of this and because of the many possibilities for chemical reaction and waste dilution within the plant, these methods will be based on a process and chemical engineering knowledge of the plant's production and discharge practices, and their relationship to the standards.
- Initiate further measures to add substances to the Administrator's list of toxic pollutants, as required in Section 307(a) of the Clean Water Act, by developing a selection rationale for choosing pollutants; and by documenting the human health and environmental effects of those pollutants.
- Continue ongoing studies of industry best management practices (BMP) for raw material storage and handling, and control of in-plant spills. Incorporate BMP study results into industrial effluent guidelines regulations where appropriate.
- Effluent and sludge from an additional 25 POTWs will be sampled for the "priority pollutants." In addition, two special surveys will be conducted to assess the impact of industrial pretreatment standards on POTW influents.

1980 Explanation of Change from Budget Estimate

The net decrease of \$627,600 results from several actions. An increase of \$162,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and an ADP reduction of \$1 million resulted in a decrease of \$42,700 and \$9,600, respectively. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in decrease of \$482,700 to this activity.

A reprogramming of \$48,800 was made to the management and support media for the 1979 transfer of an employee. A reprogramming of \$200,000 was made to the management and support media, Office of Water and Waste Management to cover a shortfall in salary funds.

1981 Program

For 1981, the Agency requests \$30,045,500 and 112 permanent workyears for this activity, including \$6,367,300 for the Salaries and Expenses appropriation and \$23,678,200 for the Abatement, Control and Compliance appropriation. Extramural funds are requested for technical investigations, economic and statistical support, exposure and risk assessments, analytical and sampling support, and support for court litigation and remands. In 1981, the program will:

- Propose regulations for best available technology economically achievable (BATEA) effluent guidelines, new source performance standards (NSPS), pretreatment standards for existing sources (PSES), pretreatment standards for new sources (PSNS) for the remaining 5 or 6 of the 34 primary industries, and promulgate regulations for 21 to 25 industry categories.

Impact information is required before a preferred treatment option is selected, each treatment alternative must be subjected to an economic analysis. These analyses become successively more detailed as the range of options narrows; the final small group of options considered are examined separately for impacts on prices, production, employment, industry size and concentration, foreign trade, regional economics, the economics of related industries and capacity. A precursor to this step is the analysis of economic data on the industry to determine the economic and financial structure of model plants most appropriate for regulatory economic assessment of the industry. When necessary, economic impacts are determined according to several alternative economic organizational assumptions.

- Promulgate BCT regulations for 21 to 25 primary industries which will serve as back-up to BATEA (toxics) regulations. Supporting industry development documents will be prepared and will include discussions of relevant alternatives and decision criteria as assistance to the National Pollutant Discharge Elimination System (NPDES) permit authorities. Efforts will include final promulgation of amendments or issuance of guidance, for BCT limitations for several food commodity industries (seafoods, meats, fruits, and vegetables) in compliance with the review requirements of Section 301 and 306 of the Clean Water Act.
- Conduct detailed analyses and sampling for expedited regulatory schemes for synfuels including coal gasification, direct and indirect coal liquefaction and oil shale industries. Included will be a technical effort encompassing an investigation of several major aspects of each of the synfuel technologies, an economic analysis which includes a review of all existing information on the potential financial and economic structure of the industry and the development of appropriate economic models.
- Develop and prescribe best management practices (BMP) in support of RCRA controls of hazardous wastes (e.g. treatment sludges) for several major primary industries. The data from the sampling and analysis of "spills" and sludge waste streams will be incorporated into this effort to help define the potential for toxic discharges into surface waters as well as potential mechanisms for treatment or control by traditional or innovative management schemes.
- If possible, documentation of "innovative" technologies to minimize the overall discharge of all toxics will be completed for 10 industry categories, representing over 300 subcategories. Concepts which reduce costs of pollution control or result in improved production system efficiency by recycle and reuse of by-products and wastes will be emphasized in "innovative" technology review.
- Develop statistical and technical data to define quantitative "surrogate" relationships for those pollutant parameters which are common to several industrial categories. These surrogates will represent specific levels of one or more toxic pollutants. These surrogates will serve as a means for substantial reductions in costs and complexity in permit procedures and monitoring by individual point sources.
- Provide technical support to regions and State permit authorities for non-conventional waivers and how best to interpret and apply regulations in situations where pollutants have been excluded from the regulations. This technical assistance will also involve application of the "indicator" concept (i.e. non-quantitative relation in lieu of "surrogate" described above) as well as advice on subcategories or facilities excluded from national standards or problems involving BAT regulation of non-conventional pollutants.
- Continue treatability studies focusing on larger pilot studies, for actual industrial waste streams. Specific emphasis will be placed on those pollutants that cannot be readily removed or treated by traditional methods.

- Provide contract management support to the Office of Solid Waste in managing hazardous waste evaluation programs (see the detailed program description for solid waste, waste management strategies, regulations, guidelines).
- Formulation of recommendations and publication of report for specific POTW regulatory strategy including support for mechanisms for pretreatment credits at the local level, inputs to Office of Water Program Operations and Office of Water Enforcement Program efforts; and for possible guidance to regions and States to POTW toxics problems. The recommendation will incorporate needs regarding definition of best practicable waste treatment technology for POTW, and implications for sludge disposal and associated program aspects for municipal grants.
- Provide for additional analysis to respond to anticipated litigation and remands covering 26 primary industrial categories. Assistance in the preparation of court records for five promulgated BAT (toxics) regulations will also be required.

Grants Assistance Program

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Control Agency Resource			
Supplementation (Section 106):			
Abatement, Control and Compliance.....	\$48,730	\$48,730	...
Areawide Waste Treatment Management			
Resources (Section 208):			
Abatement, Control and Compliance.....	34,000	34,000	...
Training Grants (Section 104):			
Abatement, Control and Compliance.....	...	...	...
Total.....	82,730	82,730	...



WATER QUALITY

Grants Assistance Program

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Control Agency Resource Supplementation (Section 106):					
Abatement, Control and Compliance.....	\$54,121	\$48,730	\$48,730	\$48,730	--
Areawide Waste Treatment Management Resources (Section 208):					
Abatement, Control and Compliance.....	94,509	40,000	37,500	34,000	-\$3,500
Training Grants (Section 104):					
Abatement, Control and Compliance.....	2,602	...	580	...	580
Total.....	151,232	88,730	86,810	82,730	- 4,080
<u>Permanent Positions.....</u>	...	...	...	...	...
<u>Full-Time Equivalency.....</u>	7	7	7	7	...

Budget Request

The Agency requests a total of \$82,730,000 for 1981 under the Abatement, Control and Compliance appropriation. This represents a decrease of \$304,700 from the 1980 level in Section 208 areawide waste treatment management resources and will result in a decreased number of Section 208 grant awards, including elimination of all construction-runoff project funding. The decrease of \$580,000 in Section 104 Training Grants is due to a nonrecurring 1980 congressional add-on for academic training.

Program Description

The water quality grants assistance program includes three grants assistance activities: water pollution control State program grants under Section 106, Section 208 planning grants, and Section 104 training grants.

In 1979, EPA introduced a major reform in the management of programs under Sections 208 and 106 of the Clean Water Act through the State/EPA Agreement process. The reform is aimed at integrating water quality and related grant assisted planning, implementation, and management of environmental programs. State/EPA Agreements are negotiated annually by individual States and EPA regions (with the participation of affected local agencies and the public) and will cover all strategies and work programs that are intended to integrate water quality and other directly-related programs that are funded by EPA grants.

pollution control agencies. In every major Section 106-funded State program, EPA and the States jointly perform activities that require extensive coordination. In 1981, EPA regions will award Section 106 grants according to identified annual priorities for water pollution control activities and conduct periodic reviews of State accomplishments.

The Clean Water Act provides for financial support of State and designated areawide water quality planning agencies under Section 208. This authority, combined with Sections 106 and 303 of the Act, provides the basis for control of nonpoint and point sources under the Act.

Section 208 grants are awarded to State and designated areawide planning agencies for continuing planning programs which address National, State, and local nonpoint source pollution priorities. The Section 208 grants afford State and areawide agencies the unique opportunity to plan and manage water quality programs dealing with urban runoff, agricultural runoff, construction runoff, and other nonpoint sources. Although Section 208 authorizes State and areawide agencies to evaluate both point and nonpoint sources of pollution, Section 208 grants will fund only well-defined nonpoint source (NPS) problem-solving projects. Increased emphasis will be focused on improved grant management in terms of integration, accountability, and attention to priorities when awarding Section 106 grants.

Academic training grants are awarded to institutions of higher education to meet professional manpower needs. Efforts in this area are divided into three primary categories: the professional graduate training program, the State agency fellowship program, and undergraduate training grants.

CONTROL AGENCY RESOURCE SUPPLEMENTATION (Section 106)

1979 Accomplishments

In 1979, \$54,120,800 was obligated for Section 106 grants. In addition to the traditional activities that have been funded under Section 106 (including ambient and effluent water quality monitoring, NPDES program management and enforcement, and treatment plant operation and maintenance training) several emerging activities have been identified as priorities for Section 106 funding. These include: emergency response programs; toxics related activities; nonpoint source regulatory activities; upgrading laboratory equipment; intensive surveys; pretreatment management; and program development. State program activities and outputs for 1979 included:

- Issuance, reissuance or modification of 1,100 major permits for priority municipal and industrial facilities.
- Implemented 140 publicly owned treatment works (POTW) pretreatment programs.
- Assured 3,700 State responses to emergency situations.
- Initiated 736 enforcement actions against pollution sources.
- Conducted 400 intensive water quality surveys.
- Conducted 2,005 NPDES compliance inspections.

1980 Program

In 1980, the Agency has allocated \$48,730,000 for Section 106 grants under the Abatement, Control and Compliance appropriation.

Additional State delegations and funding of municipal construction management responsibilities under Section 205(g) are expected to allow limited Section 106 and State funding to support emerging priority programs, such as emergency response, dredge and fill, and pretreatment activities. Traditional State activities, including monitoring, NPDES permits issuance and compliance assurance, and municipal operation and maintenance training will continue to be funded by Section 106 grants. Construction grant program management for delegated States is now funded entirely under Section 205(g) assistance. Where delegations have not been made, States will continue to receive available Section 106 support as determined by the State/EPA Agreements. A comprehensive Five-Year Needs Assessment is being prepared by the Agency which identifies funding and staff support needs in each major program area. Planned State program activities and accomplishments in 1980 include:

- Issue, reissue or modify 1,455 major permits for priority municipal and industrial facilities.
- Implement 100 publicly owned treatment works (POTW) pretreatment programs.
- Assure 2,150 State responses to emergency situations.
- Initiate 736 enforcement activities against major pollution sources, including final effluent violations.
- Conduct 450 intensive water quality surveys.
- Conduct 2,121 NPDES compliance inspections.
- Implement NPS control programs in 44 States.

1980 Explanation of Change from Budget Estimate

There is no change from the budget estimate.

1981 Plan

In 1981, the Agency requests \$48,730,000 for Section 106 grants under the Abatement, Control and Compliance appropriation. Beginning in 1981, a revised Section 106 funding allocation will be implemented, based on priority State and national needs and State/EPA Agreements. The regions will work with each State to identify its priorities for the use of Section 106 funds and the steps the State will take in 1981 to improve management of their Section 106 funds. Planned State program activities and accomplishments in 1981 include:

- Issue, reissue or modify nearly 1,755 major permits for priority municipal and industrial facilities.
- Implement 90 municipal publicly owned treatment works (POTW) pretreatment programs.
- Assure 2,000 State responses to emergency situations.
- Initiate over 271 enforcement activities against major pollution sources.
- Conduct 2,771 NPDES compliance inspections
- Implement NPS control programs in 38 States
- Operate 1,000 Basic Water Monitoring Program (BWMP) fixed stations at which samples are collected and analyzed for the priority pollutants.

1979 Accomplishments

In 1979, the Agency obligated \$94,508,800 for Section 208 grants. States and EPA completed review and approval of most of the 225 initial plans during 1979. Approximately 200 continuing planning awards were made emphasizing urban runoff, agriculture, nonpoint source, Advanced Waste Treatment evaluations, and other problem-specific nonpoint source planning projects with high priorities established by national policy and 1979 State/EPA Agreements. Improved integration of planning and management requirements under Sections 208, 201, 106, and 303 was strongly emphasized. The 1979 water quality management program outputs are described in detail under the State program regulations and guidelines section.

1980 Program

In 1980, the Agency has allocated \$37,500,000 for Section 208 grants under the Abatement, Control and Compliance appropriation. Beginning in 1980, unless a significant portion of completed planning is being implemented, continuing funding will not be provided. Therefore, it is expected that a limited number of State and areawide agencies will be funded during 1980. Successful agencies will be funded to perform continued planning only in nonpoint source priority areas, including urban runoff, agriculture runoff, groundwater protection, construction runoff, silviculture, and noncoal mining. Selection of the projects that will be funded is governed by selection criteria developed in 1979. Other activities, including Advance Waste Treatment (AWT) planning and pretreatment program management, that were previously funded under Section 208 will be funded under other authorities (i.e., Sections 106, 201, and 205(g)).

Additional 1980 water quality management activities and outputs are described under the State program regulations and guidelines section. Highlights of these outputs include:

- Selection, funding, and management of 30 prototype urban runoff control projects.
- Continuation of 23 Model Implementation Programs (MIP) and Agricultural Conservation Programs (ACP), which are special water quality projects developed and funded in coordination with USDA.
- Assistance to 10 additional prototype agencies in developing self-funding mechanisms for implementation of cost-effective nonpoint source control programs and for maintenance of continuing planning programs.
- Funding of: 63 agriculture NPS projects; 126 urban runoff projects; 99 groundwater protection projects; 107 construction NPS projects; 43 silviculture projects; and 46 non-coal mining projects. Some of these projects will be identified as national prototypes.

1980 Explanation of Change from Budget Estimate

The net decrease of \$2,500,000 results from a congressional reduction to this activity.

1981 Plan

In 1981, \$34,000,000 is requested for Section 208 grants. No Section 208 funds will be used for point source planning activities or for planning not associated with the solution of specific nonpoint source water quality problems. Related 1981 water quality management activities and outputs are described under the State Program Regulations and Guidelines section. Highlights of planned outputs include:

- Continued or completed funding for 30 prototype national urban runoff control projects (NURPs).

- Continued funding of six prototype ground water protection projects.
- Seven Model Implementation Program (MIP) and 16 Agricultural Conservation Program (ACP) projects will be funded in coordination with USDA.
- Completion of 5 prototype financial management assistance projects funded in 1980 to develop self-funding mechanisms for implementation of cost-effective nonpoint source control programs.
- Funding for other projects including: 125 agricultural NPS projects (75 for development of USDA Rural Clean Water Program (RCWP) cost sharing projects, and approximately 50 other area-specific applications of prototype technologies]; 80 urban runoff projects to apply technical and financial solutions from NURP planning in other localities; 80 State and local priority groundwater projects.

TRAINING GRANTS

1979 Accomplishments

In 1979, the Agency obligated \$2,602,000 for these activities, including a congressional add-on to the professional training grant program of \$415,000. This included \$175,000 for training graduate level students in water-related engineering and environmental sciences. In 1979, 43 graduate trainees were supported at 28 institutions. The State agency fellowship program provided \$175,000 for 68 State employees from 32 State and territorial water pollution control agencies. Upon completion of this training, the employees returned to their respective agencies to work at least 2 years for each full year of financial support. The remaining \$65,000 was provided for the undergraduate training program.

Professional training activities for 1979 did not include the continuation of curriculum development. The Bachelor of Engineering Technology programs are being developed at Pennsylvania State University and Rochester Institute of Technology. Undergraduate training grants were provided to four institutions in water-related engineering and environmental disciplines to support approximately 50 students at a cost of \$100,000.

1980 Program

In 1980, the Agency has allocated \$580,000 under the Abatement, Control and Compliance appropriation to support trainees, including graduate training programs at \$105,000, undergraduate training programs at \$55,000, State Agency Fellowships at \$125,000, Curriculum Development at \$100,000, Minority Colleges at \$20,000 and \$175,000 to study the feasibility of establishing interdisciplinary training centers.

The training grants provide funding support primarily for tuition, fees, and stipends for students enrolled in water quality control technology curricula.

1980 Explanation of Change from Budget Estimate

The net increase of \$580,000 results from a congressional increase of \$1.5 million agencywide for the academic training program.

1981 Plan

There will be no program in 1981.

WATER QUALITY

Water Quality Strategies Implementation

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
Environmental Emergency Response and Prevention:					
Salaries and Expenses....	\$4,112	\$8,118	\$4,229	\$4,970	+741
Abatement, Control and Compliance.....	3,694	...	5,536	4,295	-1,241
Standards and Regulations:					
Salaries and Expenses....	2,819	1,723	3,008	3,573	+565
Abatement, Control and Compliance.....	1,671	...	381	1,433	+1,052
Regulatory EIS Prep-Water Quality:					
Salaries and Expenses....	...	...	...	...	...
Abatement, Control and Compliance.....	500	500	500	500	...
Ocean Disposal Permits:					
Salaries and Expenses....	995	1,231	1,113	879	-234
Abatement, Control and Compliance.....	482	...	230	159	-71
Total:					
Salaries and Expenses....	7,926	11,072	8,350	9,422	+1,072
Abatement, Control and Compliance.....	6,347	500	6,647	6,387	-20
Grand Total.....	14,273	11,572	14,997	15,809	+812
<u>Permanent Positions</u>					
Environmental Emergency Response.....	113	122	125	129	+4
Standards and Regulations..	84	49	95	110	+15
Regulatory EIS Prep-WQ.....	...	...	...	...	...
Ocean Disposal Permits.....	27	25	28	24	-4
Total.....	224	196	248	263	+15
<u>Full-time Equivalency</u>					
Environmental Emergency Response.....	120	136	137	138	+1
Standards and Regulations..	94	61	108	121	+13
Regulatory EIS Prep-WQ.....	...	...	...	...	...
Ocean Disposal Permits.....	32	35	35	29	-6
Total.....	246	232	280	288	+8

Water Quality Strategies Implementation

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Environmental Emergency Response and Prevention:			
Salaries and Expenses.....	\$ 4,970	\$ 4,941	-29
Abatement, Control and Compliance.....	4,295	4,295	...
Standards and Regulations:			
Salaries and Expenses.....	3,573	3,550	-23
Abatement, Control and Compliance.....	1,433	1,433	...
Regulatory EIS Prep-Water Quality:			
Salaries and Expenses.....	...	...	...
Abatement, Control and Compliance.....	500	500	...
Ocean Disposal Permits:			
Salaries and Expenses.....	879	874	- 5
Abatement, Control and Compliance.....	159	159	...
Total:			
Salaries and Expenses.....	9,422	9,365	-57
Abatement, Control and Compliance.....	6,387	6,387	...
Grand Total.....	15,809	15,752	-57



Budget Request

The Agency requests a total of \$15,809,000 and 263 permanent workyears for 1981, an increase of \$811,700 from 1980. Included in this total is \$9,422,100 for the Salaries and Expenses appropriation and \$6,386,900 for the Abatement, Control and Compliance appropriation, with an increase of \$1,071,900 and a decrease of \$260,200, respectively. The increases in the standards and regulations program element will allow almost a full review of major/controversial dredge and fill permits.

Program Description

The water quality strategies implementation subactivity covers the Environmental Emergency Response and Prevention Program, the Ocean Disposal Permits Program, and the Standards and Regulation Program.

Environmental Emergency Response and Prevention - The primary objectives of EPA's Environmental Emergency Response and Prevention Program are to protect water quality by preventing and responding to oil and hazardous substances spills, and providing emergency assistance to hazardous waste site incidents. Section 311 of the Clean Water Act of 1977 contains the congressional mandate to provide a nationwide capability to prevent spills of oil and designated hazardous substances into the navigable waters of the United States, to respond to spills with necessary cleanup and removal actions, and to respond to other serious environmental emergencies which cause or threaten danger to public health and welfare or sensitive ecological systems, when not precluded under Section 311. Successful implementation and operation of Section 311 depends on the promulgation of key regulations (including the continuing designation of hazardous materials), revisions to the National Contingency Plan, development of national program guidance, interagency coordination, development of spill training programs, and an aggressive spill prevention program (including development of a hazardous substances prevention program).

EPA shares responsibility for the Environmental Emergency Response and Prevention Program with the U.S. Coast Guard (USCG). Jurisdictional lines between the agencies for spill response actions in navigable waters are drawn geographically with EPA having responsibility for inland water excluding the Great Lakes. The National Oil and Hazardous Substances Contingency Plan (40 CFR Part 1510) specifically charges EPA with assuming On-Scene Coordination (OSC) responsibilities for spills of oil and designated hazardous substances into or upon inland waters, and providing coordination and technical support on both the national and regional level. EPA's OSC and/or their designated representative will assume a monitoring role or a Federal removal role, as dictated by the situation. To assure that responses are efficient and coordinated, national and regional contingency plans are required which delineate procedures, techniques, and responsibilities of the various Federal, State and local authorities.

The major new emphasis will be on the implementation of the hazardous substances spill response program. The key regulation required for implementation of the program, the Reportable Quantities Regulation, went into effect on September 28, 1979. It will be EPA's responsibility to respond on-scene to the severest environmental incidents involving the discharge or spill of designated hazardous substances. As the public becomes aware of the notification requirement in the new regulations, the number of reported hazardous substance spills to which the EPA will need to respond will increase. It will require EPA expertise and resources to address the complex technical and potentially dangerous emergencies expected to be reported under the new regulations. The increasing number of hazardous substance spills on land, as a result of truck and rail accidents, and the introduction of more chemicals into commercial use will also impact the demands on the program.

In order to augment the resources of the program, the Environmental Response Team (ERT) was established early in 1979. It is a team of experienced personnel which provides on-site consultation services to the OSC including spill response and mitigation alternatives, ecological damage assessment during an incident, determination of information needs, as well as on-site deployment of prototype spill control devices. In addition to the ERT providing immediate field assistance, the Regions also receive technical support from the Technical Assistance Team (TAT) contract. The contract was awarded in 1979 and will remain in effect through 1981 to assist the Regions and the ERT in responding to Section 311 spills and environmental emergencies.

Standards and Regulations - The standards and regulations program includes several discrete functions. National management, coordination and program development regulating the discharge of dredged or fill material (Section 404) are carried out under this program, including the review and approval of requests from States for Section 404 permit authority for specific waterways. Under Sections 304(a) and 307(a), water quality criteria are developed and published to reflect the latest scientific knowledge on the kind and extent of all identifiable effects on human health and welfare. Assistance in the development and review of State water quality standards is provided to ensure that acceptable standards are established in each State. Basic hazardous substances regulations are developed based on aquatic organisms, and designations are being expanded under Section 311 to include protection of human health. Guidelines, standards and regulations are developed to correct water pollution problems resulting from such sources as in-place toxicants and discharges from vessels and aquaculture projects.

Ocean Disposal - For budgetary purposes, the ocean disposal program is divided into two program elements: (1) ocean disposal permits program, and (2) regulatory EIS preparation. The ocean disposal program (authorized by the Marine Protection, Research and Sanctuaries Act of 1972 and operational since 1973) provides EPA with a capability to regulate ocean dumping, designate disposal sites, develop ocean related policies, and participate in interagency programs that deal with development of ocean resources.

To carry out the ocean disposal permitting functions under Title I of the Marine Protection, Research, and Sanctuaries Act of 1972, the Administrator of EPA is authorized to regulate the disposition of all materials except dredged material (which is regulated by the Corps of Engineers). The Act further prohibits the transportation and dumping in ocean water of chemical, biological, and radiological warfare agents and high level radioactive materials.

The ocean program activities are designed to insure that EPA authorities will be applied to the significant new and changing activities in the exploration and development of multiple uses of open ocean resources. The program utilizes water quality criteria, effluent guidelines, and the new ocean discharge criteria to establish the framework for EPA assistance and influence over uses of the ocean resources. Major coordination with the ocean related programs of other agencies is necessary.

ENVIRONMENTAL EMERGENCY RESPONSE AND PREVENTION

1979 Accomplishments

In 1979, the Agency obligated a total of \$7,806,400 for the Environmental Emergency Response and Prevention program, of which \$4,111,900 is for salaries and expenses and \$3,694,500 is for extramural purposes.

Over 7,500 notifications of environmental emergencies were received by the regional offices during 1979. The program responded to 224 spills which required a Federal On-scene Coordinator to direct Federal removal actions and monitored 5,300 cleanup actions by the spiller. The spill prevention program was continued by the regions during 1979, with a combined regional effort totalling over 550 spill prevention inspections of facilities and follow-up on oil spills from non-transportation related facilities.

The promulgation of the hazardous substances regulations on reportable quantities

Section 311 of the Clean Water Act. During 1979, guidelines were drafted which define implementation procedures and EPA's responsibility when responding on-scene to discharges or spills of designated hazardous substances.

The 8-person Environmental Response Team (ERT), as defined in the Program Description was established in October-November, 1978. Through August 1979, the team responded to 38 incidents. It provided assistance during the fiscal year at the request of the regional on scene coordinators both within EPA and outside the Agency.

Contract funding of approximately \$3 million was used for additional technical field support for emergency spills. The Technical Assistance Team (TAT) contract provided 32 contractor personnel to help the regions and the ERT respond to oil and hazardous materials spills and environmental emergencies, perform inspections for compliance with oil prevention regulations, prepare enforcement cases and assess spill damages. An additional \$1 million was used to fund the development of hazardous substances regulations, aerial surveillance and emergency mapping for major spills, and operation and maintenance of the spill prevention management information system.

During 1979, the Emergency Response and Prevention program responded to spill incidents at uncontrolled hazardous waste sites through the authority of Section 311(k). The new hazardous substances regulations expanded this authority to include discharges of hazardous substances as well as oil. Although the regulations were not promulgated until the end of the fiscal year, EPA still was able to respond to 12 emergencies at uncontrolled hazardous waste sites.

1980 Plan

In 1980, the Agency has allocated a total of \$9,765,500 and 125 permanent workyears to this program, of which \$4,229,500 is for the Salaries and Expenses appropriation and \$5,536,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

The Environmental Emergency Response and Prevention program expects to respond during 1980 to 230 spills which will require a Federal On-Scene Coordinatory to direct Federal removal actions and to monitor 5,300 cleanup actions by the spiller. The increase from 1979 is due to the expected increase of emergencies reported to EPA as a result of the new hazardous substances regulation notification requirements. The demand for EPA response is also expected to increase because of the complex and potentially dangerous emergencies expected with hazardous substances spills, which will require technical expertise and resources not available from other sources. EPA is projected to receive 8,300 notifications of environmental emergencies during this fiscal year.

The spill prevention program will be on-going in 1980. It is expected that over 500 prevention inspections will be performed following major spills. In addition, drafting of spill prevention regulations for hazardous substances covering "402 permitted" facilities, publicly owned treatment works (POTWs) and non 402 permitted facilities will be completed in 1980. The implementation of the hazardous substances prevention program is a major program initiative that should reap substantial control and counter measure benefits in 1980 and the future.

Contract funding of \$5,536,000 will be used to provide major technical assistance and support to current EPA efforts. The \$3,200,000 technical assistance (TAT) contract will continue to provide the same support as it did in 1979, as well as training to Federal, State and local officials. In addition, a congressional add-on of \$1,250,000 to the 1980 appropriation has been provided for spill prevention and response under Section 104 of the Clean Water Act. The funds will provide support for field assessment studies, follow-up on chemical substances for which little or no technical data is available, and demonstration projects or shakedown procedures for prototype spill response equipment.

The remaining \$1,080,000 will provide for expansion of the OHN and hazardous waste site Technical Assistance Data System (OHN-TADS) to include newly designated hazardous substances, priority pollution and uncontrolled hazardous waste site data fields; aerial surveillance and photo mapping for spill prevention inspections, contingency planning and emergency response; and maintenance of the Spill Prevention Control and Countermeasure (SPCC) management information system during 1980.

Highest priority will continue to be on protecting public health and the environment by emergency response to pollutant spills or discharges. A major EPA emphasis will be on controlling hazardous substance discharges from hazardous waste sites using emergency assistance actions. Because of the limitations of present authorities, the primary mechanism for taking emergency assistance will continue to be the use of available Section 311(k) funds. The number of emergency responses by the program to uncontrolled hazardous waste sites is expected to increase to 35 during 1980. These emergency responses are limited to discharges of hazardous substances from sites to navigable waters, which substantially threaten public health and welfare.

1980 Explanation of Change from Budget Estimate

The net increase of \$1,647,500 results from several actions. An increase of \$157,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation, a congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$19,300 and \$11,000, respectively. A congressional increase of \$1,250,000 was provided for hazardous substances accident assessment. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$32,500 to this activity.

A transfer of \$9,500 to the solid waste media, uncontrolled hazardous waste sites was made to provide staff capability to discover, investigate, provide technical assistance and coordinate containment and cleanup with State and other Federal agencies.

Reprogrammings in order to support projections of costs based on 1979 expenditures resulted in transfers from water quality manpower planning and training (\$204,900); from NEPA compliance-municipal waste facility construction (\$14,400); from radiation program implementation (\$19,600); from toxic substances management (\$7,000); from standards and regulations (\$11,200); from waste treatment operations and maintenance (\$700); from drinking water public systems supervision program assistance (\$40,400); from underground injection control program (\$1,200); from ambient water quality monitoring (\$55,100); to water quality ocean disposal permits (\$30,000); to standards and regulations (\$60,300); to ambient water quality monitoring (\$16,900).

1981 Plan

The Agency requests a total \$9,264,600 and 129 permanent workyears for this program, of which \$4,970,000 is for the Salaries and Expenses appropriation and \$4,294,600 is for the Abatement, Control and Compliance appropriation. With the exception of the one-time congressional add-on in 1980 of \$1.25 million, the 1981 resource levels will increase slightly from the 1980 levels for both personnel and contract dollars. In 1981, the Technical Assistance Team (TAT) contract will increase by \$200,000 to \$3.4 million. The Environmental Emergency Response Team (ERT) will expand to 10 members in 1981, to allow an increase in their on-scene technical support for hazardous waste site emergencies.

maintain a national oil and hazardous substances spill prevention, response, removal and mitigation program, as well as the emergency assistance activities related to a limited number of uncontrolled hazardous waste sites pursuant to Section 311 affecting navigable waters. The program is projected to respond on-scene to approximately 260 spills which will require a Federal On-Scene Coordinator to direct Federal removal actions and to monitor 5,600 cleanup actions by the spiller. The increase in 1981 response actions is attributed to the continuing impact of the new hazardous substances regulations, as well as a slight increase in resources. The number of notifications received and screened is projected to reach 9,700 for the same reason. The number of spill prevention inspections following a major spill is expected to increase to more than 600 during 1981.

Other program objectives will be to provide program and policy guidance to other member agencies of the National Response Team (NRT) on issues and problems encountered in executing their mandate; to implement an effective hazardous substances response program; to deploy a mobile National Environmental Response Team (ERT); to provide liaison with the U.S. Coast Guard, the Federal Emergency Management Agency (FEMA) and other members of the National Response Team; as well as to continue to provide emergency response to pollutant dischargers from uncontrolled hazardous waste sites under Section 311.

STANDARDS AND REGULATIONS

1979 Accomplishments

In 1979, \$4,490,400 was obligated under this program activity with major emphasis on Section 404 permit review, and the development of criteria documents for 65 classes of toxic pollutants. Included in this total, \$1,670,600 was for extramural purposes in the dredge and fill program, including \$500,000 for technology transfer and public participation; \$285,000 for supplemental research and development on the identification of control and treatment alternatives for dredge and fill discharges; \$115,000 for an interagency agreement with the Fish and Wildlife Service; and the balance of \$768,700 for a wide variety of dredge and fill support contracts such as assessment of wetlands and employment of expert consultants. Accomplishments in 1979 included:

Dredge and Fill Regulations

- Reviewed and commented on an estimated 1,450 controversial Section 404 permits.
- Proposed revised Section 404(b)(1) guidelines, to establish environmental criteria for the review of Section 404 permit applications.
- Proposed and promulgated Section 404(c) veto regulations which authorize the Administrator to prohibit the specification of any defined area as a disposal site.
- Developed and implemented strategy for delegating State permit programs; developed policies and procedures to assist Regions and States in the transfer of program operations; and evaluated existing States programs to identify those most suitable for Section 404 transfer.
- Proposed regulations for State (permit) program operation exemptions (Section 208(b)(4)).
- Developed the EPA/Corps of Engineers Memorandum of Agreement required by Section 404(g) for minimizing duplication, paperwork and delays in the issuance of permits.

- Participated in the review and approval of plans for the construction of authorized Federal projects to assure conformance with Section 404(b)(1) guidelines.
- Assisted the Water Resources Council in developing an integrated program for the management of floodplains and the protection of wetlands.

Criteria and Standards

- Published draft water quality criteria documents for 65 classes of toxic pollutants (129 pollutants), pursuant to the Natural Resources Defense Council (NRDC) Settlement Agreement, in support of Agency's toxic strategy.
- Performed over 300 acute and chronic bioassays by contractor for use in developing water quality criteria.
- Published guidance on factors to be considered in deleting substances from the Section 307(a) toxic pollutant list. Denied a petition to remove aromatic haloethers from the Section 307(a) list of toxic pollutants, and proposed denial of two additional petitions covering several other toxic pollutants.
- Added oil and grease to the Section 304(a)(4) list of conventional pollutants.
- Evaluated 38 State water quality standards. Federal standards promulgated for one State and proposed for four other States which had standards disapproved by the regional Administrator. Initiated a program to develop compatible water quality standards for all States along the Ohio River.
- Reviewed 60 Advanced Waste Treatment (AWT) projects to determine applicability to water quality standards.
- Promulgated Part 117 Regulations under the Section 311 hazardous substances program which establish reporting requirements for 299 hazardous substances. Proposed and promulgated regulations deleting two lime compounds from Part 116 designation and Part 117 reporting requirements under the Section 311.
- Developed Agency determination under Section 312(f)(3) on two California petitions to establish no-discharge zones.
- Published a notice of factors to be addressed by the States in their petitions to the Agency in establishing prohibition of vessel discharges into drinking water zones.
- Reviewed and made recommendations for changes to the Michigan Plan for a Feasibility Study of polychlorinated biphenyls (PCBs) and polybrominated biphenyls (PBBs) in the Pine and Saginaw Rivers.

1980 Program

The current 1980 allocation for this effort is \$3,388,600 and 95 permanent workyears, of which \$3,008,000 is for the Salaries and Expenses appropriation. In 1980, \$380,600 is planned for the Abatement, Control and Compliance appropriation, including \$230,400 for dredge and fill activities and the balance of \$150,200 on such standards and criteria work as data support for priority pollutants and for technology transfer activities.

Under the dredge and fill program activity, the Agency will continue to increase direct assistance to a selected number of States in developing their own programs. An increased national focus is evident in the development of a national policy on Section 404 permit applications, establishment of a national data base for permits, and on efforts to coordinate permit reviews with other Federal agencies. Final water quality criteria will be published for 65 classes of toxic pollutants, along with publication of the proposed revision of water quality standards regulations, emphasizing these pollutants. Increased hazardous substance activity will be evident in the development of new criteria on carcinogenicity and other long term health effects and in the publication of liabilities for on-shore and off-shore hazardous substance discharges. In 1980, program plans include:

Dredge and Fill

- Review 1650 controversial Section 404 permit applications and exercise 404(c) veto authority in those cases where environmentally unacceptable discharges are proposed. Develop national policy for review and comment on general and individual permit applications and provide recommendations to higher management on controversial permits.
- Review controversial dredged or fill material discharge activities that occur without an approved permit, and establish a centralized capability to provide analytical field support for enforcement against unpermitted activities and for potential Section 404(c) actions.
- Promulgate Section 404 State program regulations (Part 122-4) and Section 404(b)(1) environmental guidelines, along with issuing of guidance.
- Develop strategies and policies for transfer of Section 404 programs to States and provide assistance to a selected number of State in developing their programs; review State program applications for assuming the Section 404 permit program and the Section 208(b)(4) program and recommend to the Administrator their continued approval or withdrawal.
- Coordinate Section 404 activities with other Federal agencies involved in the Section 404 program or related programs.
- Execute a Memorandum of Agreement with the Corps of Engineers regarding determination of the extent of U.S. waters and procedures for resolving disputes, and develop ancillary guidance.
- Review and provide comment on Environmental Impact Statements (EISs) associated with 18 congressionally authorized construction projects for their conformity with the Section 404(b)(1) guidelines.

Criteria and Standards

- Publish health and aquatic life, water quality criteria for 65 toxic pollutants mandated by the Clean Water Act and the Natural Resources Defense Council Settlement Agreement.
- Publish proposed revision of water quality standards regulation with emphasis on States addressing toxic pollutants. Publish regulatory mechanisms for these standards. Assist States in revision of State-adopted water quality standards.

From: [redacted] Federal water quality standards for six states and proposed Federal standards for an additional four.

- Review an estimated 57 AWT/AST projects for applicability of water quality standards.
- Propose a rulemaking to delete Freon from Section 307(a) list of toxic pollutants. Finalize response to two petitions for removing seven toxic pollutants from the Section 307(a) list and take initial action on additional petitions.
- Develop criteria for designating new hazardous substances under Section 311 on the basis of chronic effects such as carcinogenicity, mutagenicity and bioaccumulation meeting the criteria.
- Under Section 311, develop Part 117 reporting requirements for substances that are toxic to human health on the basis of potential risks.
- Propose regulations establishing limits of liability for dischargers of hazardous substances from onshore and offshore facilities; propose regulations establishing liability limits for small hazardous substances storage facilities.
- Coordinate with the Department of Transportation in amending Materials Transportation Bureau regulations to identify each designated hazardous substance and its reporting level.
- Propose regulations for the removal of oil and hazardous substances spills from the U.S. waters and shorelines.
- Monitor the Section 115 grant to the State of Michigan on the feasibility of removing polychlorinated biphenyls and polybrominated biphenyls from the Pine and Saginaw Rivers.
- Review and make Agency determination on State petitions to establish no-discharge zones under the provisions of Section 312(f)(3), 312(f)(4)(A) and 312(f)(4)(B).
- Initiate National Estuarine Study.

1980 Explanation of Change from Budget Estimate

The net increase of \$1,321,600 results from several actions. An increase of \$48,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$4,500. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$20,100 to this activity.

A transfer of \$1,454,800 was made from water quality state programs regulations and guidelines to establish a new element to consolidate standards, criteria, and regulations functions.

A transfer of \$156,700 was made to water quality dredge and fill to increase regional and state assistance for additional duties and to integrate permit proposals through field investigations.

In 1981, \$5,005,900 and 110 permanent workyears are requested for this activity, which is an increase of \$1,617,300 and 15 workyears. Included in the request are \$3,572,800 for the Salaries and Expenses appropriation and \$1,433,100 for extramural purposes under the Abatement, Control and Compliance appropriation. The increase is entirely for dredge and fill activities. Of the extramural funds, \$1,200,000 will be used for dredge and fill activities and the balance of \$233,100 on trends analysis of parameters in water quality standards.

Continuing emphasis is placed on the dredge and fill program, with additional assistance to State programs, full review of State Section 404 program submissions, and assistance to regions in specifying disposal sites. Increasing attention is given to the technical implications of this program, such as energy development, waterways and agricultural ramifications. Continuing water quality standards assistance will be given to States and Regional offices in developing standards for toxic and non-toxic pollutants. The hazardous substances program will increasingly address substances whose spills contain immediately active agents. In 1981, the program will include:

Dredge and Fill

- Review 1820 major/controversial permits and exercise Section 404(c) authority in cases where unacceptable discharges are proposed. Refer major issues to Headquarters.
- Review major/controversial proposals and authorized projects that have not reached the permit stage, which could account for up to half of the total workload. Review major permits referred to headquarters (under Section 404(q) Memorandum of Agreement with the Corps of Engineers) for top management resolution.
- Provide technical assistance for cases in litigation and assistance to enforcement attorneys in actions against unpermitted discharges under Section 404(n) and cases involving litigation against EPA on Section 404 issues.
- Provide assistance to States in the development of a Section 404 program and provide full review of State Section 404 program submissions for compliance with delegation requirements of 404(g-1).
- Review EISs submitted for major Federal projects for Section 404(b)(1) guidelines compliance.
- Provide assistance in areawide specifications of disposal sites.
- Assess need for improvements in existing systems of Section 404 related environmental monitoring and work with State, Federal and local offices/agencies to improve effectiveness.
- Provide special technical analyses for dredged or fill discharge environmental problems which are region-specific and increase assistance on analyses of technical and policy issues involved in major permit review. Areas of particular concern include: energy development, agriculture, and waterway development.

Criteria and Standards

- Assist States in developing water quality standards for traditional non-toxic pollutants with limited coverage of toxics beyond technology-based guidelines. Develop policy guidance documents as required for both toxic and non-toxic pollutants.

- Promulgate State water quality standards when State standards are disapproved by the Regional Administrator.
- Provide assistance on water quality standards review.
- Manage Agency program for proposed and final additions or deletions to the Section 307(a) list of toxic pollutants and for the development of water quality criteria for toxic pollutants beyond the list of 65.
- Establish inter-program coordination measures with regard to toxic pollutants.
- Evaluate 57 advanced waste treatment proposed projects.
- Designate new hazardous substances under Part 116 on the basis of protection of human health from spills of acute or immediately acting agents (as opposed to chronic or long-term toxic effects).

OCEAN DISPOSAL PERMITS PROGRAM

1979 Accomplishments

The ocean disposal permits program obligated \$1,476,300 in 1979. This funding included contract support for the development of impact statements for ocean disposal site designation. Baseline surveys were continued, under contract, on the three sites initiated in 1978. Environmental impact and site designation activities will carry over into future years. Dredged material site investigations were commenced. Of the 141 interim approved sites which must be surveyed and designated, 127 are for disposal of dredged materials, which comprises more than 90 percent of all materials dumped in the ocean.

The ocean program was also involved in offshore oil and gas lease sale EIS reviews, an interagency project that used the Flower Garden Banks in the Gulf of Mexico as a model for measuring the environmental effects of oil and gas drilling and production on sensitive environmental underwater areas on the outer continental shelf; and an effort with NOAA and DOI to determine the quality of open ocean waters and the state of marine technology against which conditions were established for permitting specific ocean-related industrial operations, such as ocean thermal energy conversion and deep seabed mining.

1980 Program

In 1980, the Agency has allocated a total of \$1,343,200 and 28 permanent workyears to this program of which \$1,112,700 is for the Salaries and Expenses appropriation and \$230,500 is for extramural purposes under the Abatement, Control and Compliance appropriation. These extramural resources are to develop impact statements for ocean disposal site designations. The Agency expects to continue its 1980 ocean program, dealing only with the following highest priority activities:

prepare 23 environmental analyses and dumpsite EIS's using contract support.

- Review and issue approximately 50 interim and special permits for completeness and compliance with ocean dumping criteria and regulations.
- Provide an EPA cursory review and coordination for an estimated 85 Corps of Engineers permit and Federal project proposals.

Because of the statutorily required termination of ocean dumping of harmful sewage sludge as well as the termination of all interim permits by the end of 1981, emphasis on overseeing the implementation of alternative disposal practices will continue and increase. The volume of ocean dumping under special permits will continue at present or slightly higher levels as a result of implementation of the Resource Conservation and Recovery Act, the elimination of marginal and unsatisfactory disposal landfills, and an increase in incineration-at-sea applications which will require site designations and monitoring. Probable changes in the International Ocean Dumping Convention will require changes in U.S. ocean dumping criteria within the next year, particularly in radioactive waste disposal and incineration at sea. The program is responsible for both international negotiation and changing criteria. Ocean disposal site designations utilizing a major 5-year contract will be increased and accelerated to meet statutory and litigation requirements.

The ocean program will concentrate on environmental effects of offshore oil and gas activities with emphasis on special NPDES permit conditions, environmental guidance, and technical assistance. Specifically, the Agency will participate in an interagency project (Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), Department of Interior (DOI), EPA, and State) to measure the environmental effects of oil and gas drilling and production on sensitive environmental underwater areas on the outer continental shelf. EPA will also participate in an interagency effort (DOE, NOAA, and EPA) to establish conditions for permitting specific ocean-related industrial operations such as ocean thermal energy conversion and deep seabed mining.

1980 Explanation of Change from Budget Estimate

The net increase of \$111,700 results from several actions. An increase of \$43,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$900 and \$600, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$24,800 to this activity.

Reprogrammings in order to support projections of costs based on 1979 expenditures resulted in transfers from water quality spill prevention and response (\$30,000); and from water quality manpower planning and training (\$15,100).

The Agency requests a total of \$1,038,500 and 24 permanent workyears for this program, of which \$879,300 is for the Salaries and Expenses appropriation and \$159,200 is for the Abatement, Control and Compliance appropriation. This is a reduction of \$304,700 and four permanent workyears below 1980 levels. The extramural dollars included in this request are to develop impact statements for ocean disposal site designations. The Agency will continue its ocean program at a reduced level, dealing with the following high priority activities:

- Respond to major crises by issuing emergency and research permits and waiver requests or responding to litigation or congressional oversight. Continued efforts to phase out harmful dumping (including issuance of interim permits).
- Compile data and prepare annual reports as required by statute for Congress and the International Ocean Dumping Convention.
- Manage the EIS contract to complete six EISs on ocean dumping sites and the designation of four dump sites. EPA has statutory responsibility for designating all ocean dumping sites, including those for dredged material. A total of 140 ocean disposal sites have been designated on an interim basis until January 1980.
- Review and issue 50 interim and special permit applications for ocean dumping, and screen and coordinate 85 Corps of Engineers permits and Federal project proposals.
- Coordinate open ocean-related programs within EPA and with outside Agencies including Outer Continental Shelf (OCS) oil and gas operations (DOI, DOC), ocean thermal energy conversion (DOE), and deep-sea mining (DOC, DOI).
- Analyze major open ocean related documents of other agencies (DOI, DOC, DOE) under responsibilities of National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.
- EPA will achieve coordinated approaches to permit issuance for OCS activities in some key open ocean areas. Through its analyses of OCS EISs for oil/gas operations, some major environmental problems are anticipated which will effect changes in DOI's lease stipulation and DOC's marine sanctuary regulations.

The ocean disposal program in 1981 will continue to concentrate efforts on meeting the regulatory requirement to phase out all interim permits by the end of 1981 and the statutory requirement to end all dumping of harmful sewage sludge by the end of 1981. The contract-supported effort, being done jointly with the Corps of Engineers, to complete preparation of EISs on ocean dumping sites will continue. The Corps is the primary source of funding for field surveys and data analysis, and EPA is contributing to the development of the data base and funding EIS preparation. Ocean dumping under special permits is expected to attain a slightly higher level in 1981 as a result of implementation of the Resource Conservation and Recovery Act, the elimination of marginal and unsatisfactory disposal of harmful sewage sludge, and an increase in incineration-at-sea applications.

Water Quality Monitoring and Analysis

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Water Quality Monitoring and Analysis:			
Salaries and Expenses.....	\$ 8,209	\$ 8,165	-\$44
Abatement, Control and Compliance.....	2,436	2,436	...
Grand Total.....	10,645	10,601	- 44



WATER QUALITY

Water Quality Monitoring and Analysis

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Water Quality Monitoring and Analysis:					
Salaries and Expenses..	\$7,677	\$6,042	\$7,540	\$8,209	+\$669
Abatement, Control and Compliance.....	3,532	2,520	2,471	2,436	-35
Grand Total.....	11,209	8,562	10,011	10,645	+634
<u>Permanent Positions</u>					
Water Quality Monitoring and Analysis.....	192	175	188	191	+3
<u>Full-time Equivalency</u>					
Water Quality Monitoring and Analysis.....	257	244	243	241	-2

Budget Request

An appropriation of \$10,644,600 and 191 permanent workyears is requested for 1981, including \$8,208,700 for the Salaries and Expenses appropriation and \$2,435,900 for extramural purposes under the Abatement, Control and Compliance appropriation. This represents an increase of \$633,100. Included in the extramural funds is \$1,985,900 for contracts and \$450,000 for interagency agreements. Also included under Salaries and Expenses is \$1,250,000 in laboratory equipment to upgrade regional laboratory toxic analysis capabilities.

Program Description

This program's responsibilities include: toxic pollutant data collection and analysis; toxic pollutant management; publicly-owned treatment work (POTWs) toxic pollutant source analysis; wasteload allocation guidance and review; national monitoring network management; data management; and program analyses to assess environmental trends and improve program management. Specific activities pursued by this program are described below.

In support of the Agency's toxic pollutant strategy, this program coordinates its analytic activities with the Effluent Standards and Guidelines Program. In response to the requirements stipulated under the Clean Water Act of 1977 and the Natural Resources Defense Council (NRDC) Settlement Agreement, this program provides: pollutant control strategies based on assessments of environmental distribution, exposure/risk analysis and fate studies for controlling the 65 classes of toxic pollutants stipulated in the Clean Water Act and Natural Resources Defense Council (NRDC) Settlement Agreement; area-by-area regulatory strategies and guidance to the States for geographic areas where best available technology (BAT) may not be adequate to control pollution, including identification of toxic pollutant "hot spots"; industrial/environmental

strategies; implementation of the State Basic Water Monitoring Program to provide increased intensive surveys, biological monitoring, and toxic pollutant monitoring; and resources devoted to field sampling and analysis to detect and measure the 129 priority pollutants. Additional activities included in this program include: implementation of a water monitoring strategy to collect and analyze data to support EPA management; operation of EPA's water quality data systems for management of toxic pollutant and other data, including standardization of storage protocols and quality assurance; and ongoing evaluations of ambient water quality trends to measure the success of EPA control strategies. It also includes management overhead for the regional Surveillance and Analysis Divisions which are responsible for monitoring in all media (water, air, toxics, enforcement, and pesticides) and for coordinating surveillance and analysis among States and other Federal agencies.

1979 Accomplishments

In 1979, \$11,208,500 was allocated to water quality monitoring and analysis. Included in this total is \$3,531,900 for extramural funds. Of these funds, \$2,289,100 was used to determine toxics contributions from publicly owned treatment works (POTW) and for exposure/risk assessments; \$1,087,900 was for interagency agreements including the U.S. Geological Survey and the Fish and Wildlife Service for provision of sampling and analysis support; and \$154,900 for grants to researchers, State, and interstate agencies to collect and analyze data. Programs included: (1) the management of the nationwide State Basic Water Monitoring Program emphasizing toxic pollutants and intensive surveys, and (2) EPA and contractor collection and analysis of toxic pollutant data and information to meet the requirements of the Clean Water Act and the NRDC Settlement Agreement. Accomplishments included:

- Assessment of environmental exposure/risk and geographic distribution of toxic pollutants to set revised Best Available Technology (BAT) regulations and pretreatment and New Source Performance Standards, water quality criteria, and to add to/delete from the 307(a)(1) list of toxic substances.
- Investigated 15 potential toxic "hot spots" to determine actual levels of toxic pollutant contamination in geographic areas where BAT regulations will not satisfy toxic criteria. Developed control options for 10 "hot spot" areas.
- Technical review of 60 proposals for advanced waste treatment (AWT) projects, of which the Administrator acted on 26.
- Implemented the Basic Water Monitoring Program, including initial designation of a uniform monitoring network of 1,000 State-operated stations, for State collection of ambient, effluent, toxics, and biological data.
- Continued evaluation of quality assurance procedures in selected State and contractor water laboratories for accurate detection and measurement of toxic and other pollutants in ambient water and effluents.
- Operated water quality and toxic pollutant data management systems to provide access and analysis of available information on toxics and other pollutants.
- Analyzed and published reports of water pollution improvement in 6 geographic areas to describe and document programs which are successful and may be adaptable to other areas. Developed Environmental Profiles for water quality in five EPA regions.

analyze water samples for use in assessing problem areas and water quality trends.

- Continued an interagency agreement with the National Fish and Wildlife Service to analyze fish tissue for the presence of toxic substances. This will help assess probable exposure and risk determine geographic distribution of toxic pollutants.

1980 Program

In 1980, the Agency has allocated a total of \$10,011,500 to water quality monitoring and analysis, including \$7,540,200 for Salaries and Expenses and \$2,471,300 for Abatement, Control and Compliance. The program will use approximately \$2,021,300 for contracts and interagency agreements to determine geographic distributions and to assess exposure/risk of toxic pollutant contributions to publicly owned treatment works (POTW); and \$450,000 for interagency agreements to perform biological and chemical monitoring.

Projected accomplishments for 1980 include determination of geographic distributions, mass balances, and exposure/risk analyses for selected toxic substances as well as the implementation of a water monitoring strategy. The planned outputs are:

- A detailed assessment of the sources of toxic pollutants to publicly owned treatment works (POTW), with resultant analysis of regulatory strategies, including controls under TSCA and RCRA.
- Assess environmental exposure/risk and geographic distributions of additional toxic pollutants for setting revised best available technology regulations, pretreatment and new source performance standards, water quality standards, and Section 307(a) actions.
- Identify and document toxics "hot spots" and provide technical evaluation and definition of control options for toxic pollutants including controls of specific pollutants, certain categories of industries, and/or certain geographic areas where advanced waste treatment or wasteload allocations may be necessary to control water pollution. Expect development of additional 15 "hot spot" action recommendations.
- Technical review of an estimated 57 proposals for AWT projects.
- Implement a water monitoring strategy to collect and analyze water quality information for use in policy decisions and measuring effectiveness of programs.
- Initiate a review and possible redesign of water monitoring networks to improve statistical coverage and utility of data for national analyses.
- Manage the State Basic Water Monitoring Program, which includes toxic pollutant and biological monitoring, and intensive surveys.
- Implement a data system for storage and analysis of toxic pollutant data. Continue and improve data systems to provide pollution control agencies, at all levels of government, and widespread access to toxic and other pollutant data.
- Evaluate quality assurance procedures in selected State and contractor laboratories to provide accurate detection and measurement of toxic and other pollutants in ambient waters and effluents.

perform limited biological sampling and use inter-agency cooperation for presence of toxics, to pinpoint needs for chemical monitoring, and to evaluate effects of chemical pollutants.

- Analyze and publish water pollution improvements to describe and document successful programs which may be adaptable to use elsewhere.
- Continue an interagency agreement with the National Fish and Wildlife Service and the U.S. Geological Survey to collect and analyze water samples and fish tissue. This will help determine geographic distributions and exposure/risk of toxic pollutants, and measure trends in overall water quality.
- Publish State water quality assessment reports as required by Section 305(b) of the Act.

1980 Explanation of Change from Budget Estimate

The net increase of \$1,449,200 results from several actions. An increase of \$262,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A Congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$368,100 and \$662,900, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$938,300 to this activity.

Reprogrammings were made to air quality management implementation (\$25,000), to water quality state program regulations and guidelines (\$38,100); and to water quality permit issuance (\$15,100) for actual staff assignments and projections for travel, training, overtime and grade and steps increases. A reprogramming was made of \$14,500 to water quality standards and regulations to support the position identified for the Clean Lakes program. A reprogramming was made of \$55,100 to water quality environmental emergency response and prevention to support positions as well as to reflect adequate funding for actual staff assignments and current projections.

A reprogramming was made of \$7,300 to interdisciplinary water quality - EIS review to support the permanent part-time hiring program.

Reprogrammings in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfers from water quality regulations, guidelines and policies/resource conservation and recovery (\$8,500); from water quality NEPA compliance municipal waste facility construction (\$34,300); from water quality environmental emergency response and prevention (\$27,600); and from drinking water public systems supervision program assistance (\$114,400).

A reprogramming was made of \$1,250,000 from drinking water public systems supervision program assistance for regional lab equipment to be used for monitoring and analysis.

1981 Plan

In 1981, the Agency requests a total of \$10,644,600 and 191 permanent workyears for this program, including \$8,208,700 for the Salaries and Expenses appropriation and \$2,435,900 for the Abatement, Control and Compliance appropriation. This reflects an increase of \$633,100. Included in the total request for extramural funds is approximately \$1,215,000 for contracts and interagency agreements to determine geographic distributions and to assess exposure/risk of toxic pollutants; and \$1,220,900 for contracts to assess toxic pollutant contributions to publicly owned

treatment works (POTW). Major accomplishments planned for 1991 include continued efforts to manage toxic pollutants, and continued implementation of toxic water monitoring strategy. The planned outputs are:

- Expand the assessment of sources of toxic pollutants to publicly owned treatment works (POTWs) to include an additional 2 urban sites and assess the effectiveness of pretreatment.
- Collect and analyze effluent samples and environmental exposure/risk and fate data to identify and recommend which toxic pollutants require further regulatory controls or should be added or deleted from the Section 307(a) list.
- Identify and rank 50 toxic "hot spots", and develop control strategies for 15 geographic areas.
- Provide detailed technical evaluation for use in water quality based decisions, including review of 57 AWT proposals and proposed revisions to water quality standards.
- Collect/analyze 1,500 toxic pollutant samples to determine geographic coverage and ambient concentrations of toxic pollutants in the Nation's waterways. 25 pollutants will be screened which will result in action recommendations for the control of 10 pollutants.
- Continued development and implementation of a national water monitoring strategy to collect and analyze data needed for policy decisions and program evaluation, including limited biological monitoring.
- Provide policy and technical guidance on the use of wasteload allocations in water quality standards review and AWT review studies.
- Operate a clearinghouse of water and other related monitoring programs to maintain an inventory of what data is being collected, and to help screen new monitoring programs to ensure that they are integrated with efforts of other offices in EPA. Provide computer systems support to approximately 700 water quality data users.
- Guide the implementation of quality assurance programs for collection and analysis for Headquarters, Regions and States.
- Completion of Environmental Profiles for all EPA regions, detailing environmental progress and remaining environmental concerns.

Municipal Source Control

<u>APPROPRIATION</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase+ Decrease- 1981 vs 1980</u>
	(dollars in thousands)				
<u>Construction Grants</u>					
<u>Program Management</u>					
Municipal Waste Treatment					
Facility Construction:					
Salaries and Expenses	\$21,030	\$24,486	\$22,575	\$22,692	+\$117
Abatement, Control					
and Compliance	7,910	...	5,658	4,940	-718
NEPA Compliance - Municipal					
Waste Facility Construction:					
Salaries and Expenses	2,741	2,900	2,678	2,682	+4
Abatement, Control					
and Compliance	7,076	6,600	6,246	6,600	+354
Corps of Engineers:					
Salaries and Expenses .....	...	...	...	...	...
Abatement, Control					
and Compliance	15,986	22,800	22,338	21,955	-383
Waste Treatment Operation					
and Maintenance:					
Salaries and Expenses	1,356	1,426	960	1,040	+80
Abatement, Control					
and Compliance	534	...	88	542	+454
Subtotal, Construction Grants					
Program Management:					
Salaries and Expenses	25,127	28,812	26,213	26,414	+201
Abatement, Control					
and Compliance	31,506	29,400	34,330	34,037	-293
<u>Waste Treatment Training</u>					
<u>and Technical Assistance</u>					
Manpower Planning & Training -					
Water Quality:					
Salaries and Expenses	1,272	4,169	1,401	1,345	-56
Abatement, Control					
and Compliance	2,267	...	2,448	2,692	+244
Total:					
Salaries and Expenses	26,399	32,981	27,614	27,759	+145
Abatement, Control					
and Compliance	<u>33,773</u>	<u>29,400</u>	<u>36,778</u>	<u>36,729</u>	<u>-49</u>
Grand Total	60,172	62,381	64,392	64,488	+96

Municipal Source Control

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
<u>Construction Grants Program</u>			
<u>Management</u>			
Municipal Waste Treatment Facility			
Construction:			
Salaries and Expenses.....	\$22,692	\$22,550	-\$142
Abatement, Control and Compliance.....	4,940	4,940	...
NEPA Compliance - Municipal Waste			
Facility Construction:			
Salaries and Expenses.....	2,682	2,666	-16
Abatement, Control and Compliance.....	6,600	6,600	...
Corps of Engineers:			
Salaries and Expenses.....	21,955	21,955	...
Abatement, Control and Compliance.....	21,955	21,955	...
Waste Treatment Operation and Maintenance;			
Salaries and Expenses.....	1,040	1,035	- 5
Abatement, Control and Compliance.....	542	542	...
Subtotal, Construction Grants Program			
Management:			
Salaries and Expenses.....	26,414	26,251	-163
Abatement, Control and Compliance.....	34,037	34,037	...
Waste Treatment Training and			
Technical Assistance			
Manpower Planning & Training -			
Water Quality:			
Salaries and Expenses.....	1,345	1,337	- 8
Abatement, Control and Compliance.....	2,692	2,692	...
Total:			
Salaries and Expenses.....	27,759	27,588	-171
Abatement, Control and Compliance.....	36,729	36,729	...
Grand Total.....	64,488	64,317	-171

	Actual 1979	Estimate 1980	Estimate 1980	Estimate 1981	Decrease- 1981 vs 1980
	(dollars in thousands)				
<u>Permanent Positions</u>					
Municipal Waste Treatment Facility Construction	783	771	774	766	-8
NEPA Compliance-Municipal Waste Treatment Facility Construction	87	98	93	95	+2
Corps of Engineers-Municipal Waste Treatment Facility Construction .....	...	...	...	...	...
Operations & Maintenance	<u>36</u>	<u>44</u>	<u>28</u>	<u>28</u>	<u>...</u>
Subtotal	906	913	895	889	-6
Manpower Planning & Training- Water Quality	<u>33</u>	<u>18</u>	<u>30</u>	<u>26</u>	<u>-4</u>
Total	939	931	925	915	-10
<u>Full-time Equivalency</u>					
Municipal Waste Treatment Facility Construction	853	912	907	894	-13
NEPA Compliance-Municipal Waste Facility Construction	100	95	93	95	+2
Corps of Engineers .....	...	...	...	...	...
Operations & Maintenance	<u>43</u>	<u>47</u>	<u>29</u>	<u>29</u>	<u>...</u>
Subtotal	996	1,054	1,029	1,018	-11
Manpower Planning and Training-Water Quality	<u>42</u>	<u>30</u>	<u>43</u>	<u>40</u>	<u>-3</u>
Total	1,038	1,084	1,072	1,058	-14

Budget Request

The Agency requests a total of \$64,488,000 and 915 permanent workyears for 1981, an increase of \$96,200 from 1980. Included in this total is \$27,759,100 for Salaries and Expenses and \$36,728,900 for Abatement, Control and Compliance, with an increase of \$145,400 and a decrease of \$49,200, respectively.

Program Description

The municipal source control subactivity is composed of two program areas. The first, construction grants program management, derives its legislative authority from Titles II & III of the Clean Water Act (CWA). For budgetary purposes, the program is divided into four principal program elements: (a) municipal waste treatment facility construction, (b) NEPA compliance for construction grants, (c) the Corps of Engineers

principal authority from Title I, Sections 104 and 109 through 112, and portions of Title II and Title IV of the Clean Water Act (CWA). The funding provided under this subactivity covers only the direct operating costs. Omitted are the municipal construction grant funds (including State management assistance grants), which are included in a separate appropriation account (Construction Grants) and the academic training grant funds provided under the Grants Assistance program subactivity.

Most of the construction grants management activities, from facility planning to post-construction oversight, take place in the EPA regional offices. The direct training and operational technology activities of the municipal operations and training program are located at the National Training and Operational Technology Center in Cincinnati, Ohio. The remainder of this subactivity - program policy, administrative and management oversight, and needs estimates - resides in headquarters, primarily in the Office of Water and Waste Management.

The first program area -- the administration of the grants program for construction of municipal waste water treatment facilities -- will involve 889 permanent workyears in 1981 of which 791 are in the regional offices and 98 are in headquarters, along with substantial contractual and interagency assistance. The principal goal underlying the grants program is to eliminate the municipal discharge of untreated or inadequately treated pollutants and thereby help restore or maintain the quality of the Nation's waters and protect the health and well-being of the people. The major operational objectives guiding EPA's program administration are to achieve the most cost-effective, environmentally sound, and timely abatement and municipal waste water pollution control through proper planning, design, and construction of treatment works; to protect the fiscal and technical integrity of the program through sound management and close project oversight; and to encourage maximum State participation in program administration through both technical assistance to improve State program management and delegation of program management responsibilities. Areas of continued attention include more careful review of projects requiring waste treatment more stringent than secondary, improved environmental review, more face-to-face contact with grantees, an improved public participation program, encouragement of alternatives to conventional treatment (including land treatment), closer oversight and review of cost effectiveness methodology, better State project planning, and other activities prompted by new environmental initiatives and recent legislative amendments. EPA will direct its construction grants funds to those municipal projects required to comply with the enforceable environmental goals of the Act. In addition, EPA will continue to implement the Administration's directives on water conservation and the urban and rural initiatives. A specific description of activities included in this first program area are as follows:

- Municipal Waste Treatment Facility Construction. This subactivity includes most of the day-to-day in house management activity associated with the construction grants program both in Headquarters and EPA Regional Offices.
- NEPA Compliance. This involves the review of facility plans and the development of environmental impact statements to assure that municipal facilities are planned and constructed in conformance with the National Environmental Policy Act (NEPA).
- Corps of Engineers. This activity covers a series of Step 3 construction management activities provided to EPA by the Corps of Engineers to assure the technical and fiscal integrity of projects under construction.

water treatment plant operational efficiencies which is reported annually to Congress in accordance with Section 210 of the Clean Water Act. The program supports State, local and private sector efforts to improve plant operations and maintenance through the development of guidance materials, identification of planning, design research and training needs, and a series of public awareness activities.

The second program area - training and technical assistance - involves 26 permanent positions. Activities include: (a) program support (courses, materials, etc.) for training and certification of municipal waste water treatment facility operators and related personnel to improve plant efficiency in existing plants and to assure efficient and reliable operation of new federally-funded plants; and (b) training of EPA, State and private sector agency personnel in the technology of abatement and control of water pollution through short-term training courses, development of audio-visual training aids, and delivery of training resources for the purpose of developing effective State and local water pollution control training programs.

CONSTRUCTION GRANTS PROGRAM MANAGEMENT

1979 Accomplishments

The construction grants program management obligations for 1979 totalled \$56,633,100, of which \$25,127,300 was for salaries and expenses and \$31,505,800 for extramural activities. EPA awarded 2,599 grants totalling \$4,256 million. Approximately 11,881 projects were in the preconstruction or construction stages by year end, including 5,365 facility planning projects, 1,658 design projects, 349 combined design and construction projects, and 4,509 projects under construction. The following table summarizes the program for 1979:

<u>Item</u>	<u>1979</u>	
	<u>Number</u>	<u>b/</u> <u>Amount</u> (dollars in millions)
Total Obligations - Gross <u>a/</u>		\$4,256
Total Outlays		\$3,756
Awards Processed:		
Step 1 Awards	982	
Step 2 Awards	572	
Step 3 Awards	799	
Step 2+3 Awards	246	
Active Projects	11,881	
Step 3 Completions (including Step 2 and 3)	459	
New EISs Initiated	45	

a/ This represents gross obligations during the year. Net obligations, reflecting recoveries from past awards, totalled \$3,879 million.

b/ Numbers in this table are updated from those in the President's Budget Appendix.

The \$4,256 million in gross 1979 obligations represents an increase of \$856 million over the level indicated in EPA's budget request to Congress last year. This increased

States to accelerate projects to avoid the loss of funds to reallocation.

In 1979 EPA continued to implement several new initiatives required by the Clean Water Act Amendments of 1977, following the publication of final regulations in September 1978. Initiatives included (a) the delegation of major management responsibilities to the States, (b) new emphasis for the use of innovative and alternative technology, (c) restructuring State priority list planning requirements, (d) changes in secondary treatment requirements for ocean outfalls, (e) improvements in cost effectiveness procedures and guidelines, and (f) user charge changes.

Significant progress was made in transferring major management responsibilities for the program to the States under Section 205(g) of the Act. By the end of fiscal year 1979, 30 delegation agreements have been signed of which 27 were signed during fiscal 1979 alone. Progress in this area demonstrated that both EPA and the States are committed to transferring major management responsibility to the States as expeditiously as possible.

EPA also completed the transfer of several construction related management activities to the Corps of Engineers in accordance with an agreement signed by EPA and the Corps in 1978. The Corps agreement provides for Corps services in three areas to assure the fiscal and technical integrity of construction projects: (a) on-site presence during construction for all projects greater than \$50 million, (b) performance of construction engineering functions (such as inspections, review of change orders, outlay management, construction close-out, and management oversight) on all projects which are in the construction stage, and (c) review of plans and specifications to assure that plans are biddable and constructable before contract awards are let.

In 1979, EPA also implemented the congressional mandate requiring the Administrator to personally review and approve all projects involving treatment levels greater than secondary where the incremental cost of the advanced component was more than \$1 million. During the year 57 advanced treatment projects were forwarded to EPA headquarters for review, of which 26 were acted upon by the Administrator. In addition, EPA regional offices evaluated all AWT/AST projects involving lesser sums of money to assure that the advanced treatment components were fully justified.

The operations and maintenance (O&M) program concentrated on mobilizing a coordinated, broad base approach to improved performance. The program proposed new program guidance for inspection, technical assistance and O&M/enforcement cooperation. The program developed three technical manuals on plant operations and conducted two national symposia on O&M. A program was developed and implemented for increasing the public awareness and support for improved O&M. On-site demonstration provided technical assistance to States and the private sector.

1980 Program

In 1980, the Agency has allocated a total of \$60,542,500 to this program and 895 permanent workyears, of which \$26,212,800 is for the Salaries and Expenses appropriation and \$34,329,700 is for extramural purposes under the Abatement, Control and Compliance appropriation. EPA expects to award approximately 3,511 grants totalling \$4.8 billion. Approximately 11,725 projects will be in the preconstruction or construction stages by year end, including over 4,445 facility planning projects, 2,055 design projects, 625 combined design/construction projects and 4,600 projects under construction. The following table summarizes the program planned for 1980:

<u>Item</u>	<u>Number</u>	<u>b/</u> <u>Amount</u> (dollars in millions)
Obligations - Gross <u>a/</u>		\$4,800
Total Outlays		\$3,900
Awards Processed		
Step 1 Awards	807	
Step 2 Awards	1,193	
Step 3 Awards	1,156	
Step 2+3 Awards	355	
Step 3 Completions	1,008	
(including Step 2 and 3)		
Active Projects (all steps)	11,725	
New EISs Initiated	51	

a/ This represents gross obligations during the year. Net obligations, reflecting recoveries from past awards, are projected to total \$4.5 billion.

b/ Numbers in this table are updated from the President's Budget Appendix.

Obligation levels are expected to increase by \$544 million in 1980 over 1979 as the increased level of total resources brought to bear on the management of the program by EPA, the States, and the Corps begins to be felt. The levels of obligations, outlays, new awards, and completions are expected to increase as these additional personnel resources move projects through the planning, design, and construction process more expeditiously than possible previously.

The number of States with delegated programs is expected to increase from 30 to 42 with several States assuming complete control of the program by the end of the year. EPA resources will continue to be devoted to the training of State staffs and the phased transition of major management responsibility to the States as they demonstrate the interest and capability to assume delegable activities.

Significant attention will be directed toward implementing the National Municipal Policy and Strategy, which was published in November 1979. This strategy is intended to integrate program activities of the grants, enforcement, and NPDES permit compliance programs, and to better coordinate and reinforce planning and scheduling of municipal projects to meet the goals of the Act. During 1980 attention will be directed toward developing compatible information systems, integrating municipal permit and grant schedules, and increasing enforcement activity related to high priority municipal projects. The long run objective is to improve the degree of compliance of the municipal sector which currently lags behind industry significantly in meeting the goals of the Act.

In a related effort, EPA implemented the construction grants program management strategy early in the fiscal year. This strategy is directed more toward the internal management of the program and attempts to tie together program planning, resource utilization, and program performance activities to enhance program performance and program quality. Regional office plans are analyzed for conformance with annual guidance and, following the approval of plans, are held accountable for meeting approved commitment levels. The program management strategy is expected to enhance the overall management of the program and improve the quality of obligation and outlay estimates. It will provide a basis for tracking delegations to the States, reducing the preconstruction

The Conference Report to the 1980 Appropriations Act increased the dollar level at which the Administrator must personally review projects involving treatment levels more stringent than secondary. Under this most recent provision the Administrator will review grant awards to all projects with incremental costs above secondary of more than \$3 million (previously the cut off was \$1 million). In addition, EPA regional offices will continue to review rigorously all projects requiring treatment above secondary to assure that State-imposed limitations are properly applied and effective. During 1980 EPA expects to review approximately 57 such projects of which approximately 27 will be reviewed directly by the Administrator in addition to the 31 projects carried over from 1979.

EPA is devoting significant attention to the development of a long-term strategy for the construction grants program which will result in recommendations to Congress in the near future. The strategy will result in recommendations related to the allotment formula, eligibilities, the use of incentive funds, etc., and will attempt to reconcile the problem of huge municipal treatment needs and scarce Federal dollars.

In 1980, EPA also plans to initiate 51 EISs on municipal projects, review and approve 240 innovative/alternative projects, and review and process 70 applications for waiver of secondary treatment requirements for communities with ocean outfalls. The operation and maintenance program with reduced resources will put its emphasis on implementation of an overall program management strategy by developing the Municipal Management System on a region-by-region basis.

1980 Explanation of Budget Estimate -

Municipal Waste Treatment Facility Construction - The net increase of \$3,746,700 results from several actions. An increase of \$876,000 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses and \$1 million to ADP resulted in a decrease of \$64,900, \$80,000 and \$2,200, respectively. A Congressional increase was made to the ocean outfall program of \$1,000,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$1,156,500 to this activity. Reprogrammings were made between media to support projected costs based on 1979 actual expenditures from water quality waste treatment operations and maintenance (\$37,000); from water quality manpower planning and training (\$141,600); from drinking water underground injection control program (\$172,000); from drinking water public systems supervision program assistance (\$211,900); from water quality state programs regulations and guidelines (\$12,600); from water quality standards and regulations (\$14,300); from air quality management implementation (\$9,000); from solid waste hazardous waste management regulatory strategy implementation (\$19,500); from solid waste management program implementation (\$18,700); from noise regional program implementation (\$5,300); from pesticide use management (\$88,600); and from water quality municipal waste facility construction (\$18,900). A transfer of (\$4,000) was made to water quality state programs regulations and guidelines to support actual staff assignments and projections for travel. A transfer of (\$115,900) was made from water quality waste treatment operations and maintenance.

NEPA Compliance - Municipal Waste Facility Construction -

The net increase of \$575,700 results from several actions. An increase of \$95,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency

respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$124,200 to this activity. Reprogrammings were made between media to support projected costs based on 1979 actual expenditures to water quality state programs regulations and guidelines (\$118,600); to water quality NEPA compliance/EIS preparation (\$7,000); to ambient water quality monitoring (\$45,000); to water quality standards and regulations (\$36,000); to water quality environmental emergency response and prevention (\$4,700); from NEPA compliance/EIS preparation (\$9,400); to pesticide use management (\$45,000); to radiation program implementation (\$7,200); to air - EIS review (\$20,900); to (WQ) - EIS reviews (\$5,300); solid waste technical assistance delivery (\$4,900); to solid waste hazardous waste management regulatory implementation (\$7,000); and to municipal waste facility construction (\$18,900). A transfer was made to water quality enforcement (\$69,700); to water quality permit issuance (\$13,100); to drinking water public systems supervision program assistance (\$43,800); to air EIS review (\$5,800) to support actual staff assignments and projects for travel training overtime and grade and step increases. A transfer was made to water quality EIS review (\$1,400) to support allocation of additional OPFTE ceiling for permanent part time hiring.

Corps of Engineers -

The net decrease of \$462,300 results from an overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears.

Manpower Planning and Training -

The net decrease of \$378,300 results from several actions. An increase of \$30,000 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$4,900 and \$1,200, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$1,800 to this activity.

Reprogrammings were made between media to support projected costs based on 1979 actual expenditures to ambient air quality monitoring (\$7,900); to ambient water quality monitoring (\$4,000); from drinking water public systems supervision program assistance (\$2,800); from drinking water underground injection control program (\$4,200); transfer to water quality municipal waste treatment facility construction (\$152,900); to water quality environmental emergency response and prevention (\$700); and to manpower planning and training (\$241,900).

1981 Plan

The Agency requests a total of \$60,451,200 for this program and 889 permanent work-years, of which \$26,414,200 is for the Salaries and Expenses appropriation and \$34,037,000 for the Abatement, Control and Compliance appropriation. Approximately 2,550 new awards will be made totaling \$4.5 billion. This represents a decrease of 850 in the number of awards and a \$300 million reduction in the dollar value of obligations. The decrease in obligations results primarily from the lower level of the funds available for obligation in 1981, which reduces obligation levels in several States which are capable of obligating significantly more than their share of the \$3.7 billion appropriation. The following table compares the planned FY 1981 program with 1979 and 1980 program levels:

	1979 Actual	Estimate Planned (dollars in millions)	Estimate Requested
Total Gross Obligations	\$4,256	\$4,800	\$4,500
Total Outlays	\$3,756	\$3,900	\$3,950
Step 1 Awards	982	807	400
Step 2 Awards	572	1,193	925
Step 2+3 Awards	246	355	275
Step 3 Awards	799	1,156	950
Active Projects (all steps)	11,881	11,725	11,000
Construction Completions (including Step 2 and 3)	459	1,008	1,200
New EISs Initiated	45	51	51

Note: Numbers in this table are updated from output numbers in the President's Budget Appendix.

1981 will see a continued shift of the management of the program from EPA to the States. Whereas approximately 25 percent of the direct program workload will be administered by the States at the end of 1980, EPA estimates that approximately 40 percent of the direct program activities will be fully administered by the States at the end of 1981. Further support will be provided by the Corps, which is expected to handle 25 percent of the direct workload in 1980 and 20 percent in 1981. As the program delegation increases, EPA will increasingly move into delegation management and monitoring and out of direct program operations.

The construction grants program management strategy will be further enhanced with greater emphasis being placed on project quality, project completion times, management oversight of State and Corps activities, and full-scale implementation of the coordinated approach to grant making, permitting, and enforcement as related to municipal facilities. By early 1981 a new management agreement will have been negotiated with the Corps of Engineers which will extend the current agreement and provide for a continuation of Corps support for the Step 3 construction program.

Other major activities to be accomplished in 1981 include the completion of the 1980 municipal needs survey, the review of 57 AWT and AST projects by the Administrator, the review/approval of 400 innovative/alternative technology projects, an increase of 67 percent over 1980 levels, and a significantly increased degree of coordination with the industrial pretreatment program to assure a coordinated approach to the treatment of all wastewaters entering municipal waste streams whether generated domestically or by industry.

In 1981, EPA plans to complete processing the majority of remaining applications requesting a waiver of secondary treatment under Section 301(h) of the Act, which permits such waivers for certain communities which dispose of municipal waste in ocean areas. EPA also expects to significantly increase the number of innovative/alternative projects funded to a total of approximately 400 nationally, resulting in more cost-effective, environmentally sound, and energy efficient treatment systems in an increasing number of communities. EPA will also initiate 51 EIS's, complete work on municipal needs for treatment facilities, and send the Needs Survey Report to Congress in February 1981.

to provide on-site technical assistance and training to municipal treatment plants with major O&M problems in order to demonstrate the most cost-effective and efficient methods for resolving these problems. Operationally oriented consultants from the private sector would provide the technical assistance either in a team or on a one-to-one basis depending on the municipalities' particular problems.

WASTE TREATMENT TRAINING & TECHNICAL ASSISTANCE

1979 Accomplishments

The manpower and training program obligations for 1979 were \$3,539,000. Training activities continued to encourage and support the development of water pollution control manpower planning and training capabilities at the State and local levels. Manpower planning and training activities in 1979 concentrated on:

- Development of training programs, curricula, and courses to support construction grants and municipal operations program objectives (i.e., Section 205(g)).
- Support to the National Operator Training Coordinating Committee and State Operator Training Coordination Committees in the implementation of the Association of Boards of Certification "Brown Book" which provides a comprehensive plan for development and coordination of operator training at the State and local level.
- Support of interagency agreement with the Department of Labor (DOL), to provide operator training assistance to the water industry in rural areas.
- Support to the Association of Boards of Certification for the continuing development of State certification examinations.
- Development, demonstration, and distribution of course packages and materials in support of State and local training programs.
- Continued development of the Instructional Resource Center in Cincinnati, Ohio, to provide training course packages, equipment and instructional material to the private and public sectors.
- Initiation of a feasibility study and planning for training centers located in centralized areas to provide training of a specialized technical nature.

1980 Program

In 1980, the Agency has allocated a total of \$3,849,300 and 30 permanent workyears to this program of which \$1,400,900 is for Salaries and Expenses and \$2,448,400 is for extramural purposes under the Abatement, Control and Compliance appropriation.

With the exception of 8 permanent workyears in the regional offices to perform liaison and coordination between State and local training programs, the total training program has been consolidated at the National Training and Operational Technology Center (NTOTC) in Cincinnati, Ohio.

With these resources the training center will be engaged in:

- Developing, demonstrating and delivering training courses supporting State agency delegations under Section 205(g).

consultative assistance) and developing operational technology for wastewater treatment facilities.

- Conducting instructor training and other direct technical training.
- Developing and expanding the operations of the National Instructional Resources Center at NTOTC, Cincinnati, Ohio.
- Continuing area training center study and placement of a pilot and three area training centers.

1980 Explanation of Changes from Budget Estimate -

The net decrease of \$319,400 results from several actions. An increase of \$52,800 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,900. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$15,800 to this activity. Reprogrammings were made between media to support projected costs based on 1979 actual expenditures to water quality municipal waste treatment facility construction (\$141,600); to ambient water quality monitoring (\$8,500); to water quality environmental emergency response and prevention (\$204,900); to water quality NEPA compliance/EIS preparation (\$2,800); to management and support (\$179,400); to water quality ocean disposal permits (\$15,100); to drinking water public systems supervision program assistance (\$44,100); and from water quality waste treatment operations and maintenance (\$241,900).

1981 Plan

The Agency requests a total of \$4,036,800 and 26 permanent workyears for this program, of which \$1,344,900 is for the Salaries and Expenses appropriation and \$2,691,900 is for the Abatement, Control and Compliance appropriation. This represents a decrease of four permanent workyears.

In 1981, a greater emphasis will be placed on training to assist States to assume State construction grants delegated responsibilities under the Clean Water Act and to develop self-sufficiency in operation and maintenance (O&M) training. There will be a continuing support of publicly owned treatment works (POTW) operator training; instructor training to State, local and private sectors; specialized technical training assistance and continued operation of the Instructional Resources Center.

WATER QUALITY

Permits Issuance

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 7,949	\$ 7,899	-\$50
Abatement, Control and Compliance.....	5,927	5,927	...
Total.....	13,876	13,826	-50

Permits Issuance

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and Expenses..	\$6,247	\$6,653	\$6,850	\$7,949	+\$1,099
Abatement, Control and Compliance.....	1,349	2,750	3,036	5,927	+2,891
Total.....	7,596	9,403	9,886	13,876	+3,990
<u>Permanent Positions.....</u>	204	237	243	243	...
<u>Full-time Equivalency....</u>	237	273	270	295	+25

Budget Request

The Agency requests a total of \$13,875,400 for NPDES permits issuance in 1981, an increase of \$3,989,700 from 1980. Included in this total is \$7,948,800 for Salaries and Expenses and \$5,926,600 for Abatement, Control and Compliance, with an increase over 1980 of \$1,098,900 and \$2,890,800 respectively. The 243 permanent workyears requested reflects no increase from 1980 levels.

Program Description

The National Pollutant Discharge Elimination System (NPDES) permit program is part of the comprehensive effort provided by the Clean Water Act (CWA), to reduce or eliminate point source pollution from industrial, municipal, commercial, and agricultural discharges. The Act prohibits discharge of pollutants into all waters of the United States unless a permit is issued by EPA or an EPA approved State Program.

The permit is a 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 effluent limitations and standards, set by Office of Water and Waste Management, establish the maximum amounts of various pollutants which can be legally discharged by a facility. Where effluent limitations or standard regulations have not been promulgated for a particular industrial discharger, the effluent limits will be set by the available and economically feasible abatement technology. Such permits will be issued on a case-by-case basis. Additionally, if at a given facility, established national effluent limits will not reduce pollutants enough to meet the ambient water quality standards set by the State or EPA, the permit will impose more stringent effluent limitations as necessary to meet the water quality standards. Permits are issued to require that pollutant reductions be accomplished according to given time schedules.

of industries which discharge toxics. A recent focus of the permit program is the implementation of the pretreatment program. The pretreatment program places responsibilities on municipalities or States to enforce national pretreatment standards against industries discharging toxic pollutants into municipal treatment facilities. A significant amount of resources will be used to assist municipalities in the development of adequate pretreatment programs.

As part of its effort to improve the regulatory process, EPA is consolidating permit procedures for permits issued under five separate programs, including NPDES. Regulations and application forms for permit consolidation have been proposed, and will be finalized during 1980. Coordinating and consolidating permit regulations should benefit both the public and the Agency by reducing delay and simplifying the permitting process.

Another important function of the program is resolution of adjudicatory hearings held on the terms, conditions, and effluent limitations contained in permits on determinations concerning requests for variances from permit effluent limitations. This clears the way for a finally effective and enforceable permit. Additionally, EPA will conduct non-adversary panel hearings for municipalities which have requested marine discharge modifications under section 301(h) of the Clean Water Act. Non-adversary panel hearings will be used to process any first issuance of an NPDES permit to a discharger that has not previously held an NPDES permit as well as the first decision on any variance applied for by a discharger.

A primary goal of the permit program is to encourage States to assume responsibility for the NPDES program. At present, 33 States have assumed NPDES authority. The permit program devotes a considerable amount of resources to overseeing these state NPDES programs to ensure that these States issued permits conform with national permit program policies and procedures.

For all of its permit issuance activities, EPA is committed to involving the public by publishing and disseminating informational materials, answering questions, and holding public hearings and meetings.

1979 Accomplishment

In 1979, obligations totalled \$7,595,900; EPA issued a total of 501 major, and 2,299 minor permits, 2,039 to industrial dischargers, 504 to municipal sources, and 257 permits to other sources. In 1979, \$1,348,900 was obligated for contract support of permit issuance activities including pretreatment program assistance, adjudicatory hearing support, and information system development.

During 1979, EPA issued "second round" permits designed to assure control of toxic pollutants. The NRDC Consent Decree of June 1976 (modified in March 1979, resolving litigation against the Agency regarding its control of toxic pollutants under the Clean Water Act) requires that EPA regulate up to 129 priority pollutants for 34 industrial categories. The Decree requires that permits issued to dischargers in these 34 industrial categories incorporate the Best Available Technology (BAT) guidelines when they are promulgated. Because Best Available Technology (BAT) toxic effluent limitation guidelines in the 34 industrial categories identified by the National Resources Defense Council (NRDC) Consent Decree were not available in 1979, the issuance of second round permits was difficult. EPA policy, developed to deal with the absence of these guidelines in 1979, would issue short-term Best Practicable Technology (BPT) permits to the dischargers in these 34 industrial categories on the condition that the BAT toxic guidelines would be incorporated into the permits when they are promulgated.

The final regulations, published in June, 1979, clarified and improved the NPDES program. The revision incorporated changes which reflect experience gained by issuing permits, the results of court decisions, and new requirements imposed by the 1977 Amendments to the Clean Water Act. It also completely reorganized the regulations to simplify them and reduce needless duplication.

In June 1979, the Agency proposed consolidated permit regulations and application forms outlining procedures to coordinate five permit programs, including NPDES. The regulations are expected to increase the quality of environmental protection while reducing the regulatory burden on industry and the government.

Also in 1979, development of the pretreatment program began to focus attention on the indirect discharge of industrial toxics through publicly owned treatment works. Resources were used to assist municipalities and States in developing pretreatment programs, negotiate and settle a lawsuit filed against the final pretreatment regulations, and develop joint construction grants/permit guidance on implementing the pretreatment program.

For a variety of technical, financial and administrative reasons, a large number of publicly owned treatment works (POTWs) are not in compliance with the Clean Water Act's treatment requirements. Developing a strategy to deal with these cases has paved the way for effective control of noncomplying POTWs by coordinating EPA's construction grants, permit, and water enforcement programs.

EPA review of State NPDES programs in 1979 ensured issuance of effective and enforceable permits; uniform application of policy, regulations, and effluent limitations; and technical and/or policy support where needed. In addition, the permit program in 1979 continued to strive for the goal of maximizing State participation in the NPDES program, by working with States to develop and assume the NPDES program. In 1979, one additional State, Alabama, assumed the NPDES program to make a total of 33 NPDES States. In 1979, EPA also reviewed and approved State programs to permit discharges from Federal facilities and to implement the pretreatment program.

1980 Program

In 1980, the Agency has allocated a total of \$9,885,700 for permits issuance of which \$6,849,900 is for Salaries and Expenses and \$3,035,800 is for Abatement, Control and Compliance. Contract support will be used for pretreatment program assistance and review, for technical assistance for permit writers, and for general program support.

In 1980, permit program activities focused on reducing discharges, especially toxic discharges, from the most significant sources of pollution and thereby achieving the greatest measure of environmental protection possible. The 1980 program will continue to concentrate on applying effluent requirements reflecting Best Conventional Technology (BCT) and BAT level controls to major dischargers with new and reissued permits and ensuring that these permits are finally effective and enforceable. It is estimated that EPA will issue approximately 500 major permits in 1980. In 1980, the permit program will also resolve approximately 20 adjudicatory hearings to clear the way for effective and enforceable permits.

schedules for municipal and industrial permits allowing the CWA in accordance with the newly issued Municipal Strategy. Approximately 10,000 municipalities have requested Section 301 (i) extensions based on lack of financial assistance and approximately 200 municipalities have asked for Section 301 (h) marine discharge modifications.

A considerable amount of permit program effort in 1980 is being devoted to implementing the general pretreatment regulations (40 CFR 403) promulgated in June of 1978. These regulations are designed to control toxic pollutants introduced by sources discharging into municipal systems. The number of facilities covered by the pretreatment regulations is comparable to that covered by the NPDES regulations for direct dischargers. Efforts in 1980 are focused on developing compliance schedules for municipal permittees requiring them to develop pretreatment programs and reviewing and approving such programs.

Resources will be used in 1980 for reviewing and approving requests by NPDES State for State pretreatment program approval. It is anticipated that the majority of the 33 approved NPDES States will be submitting pretreatment plans for approval.

During 1980, the consolidated permit regulations and applications forms will be finalized. Implementation of the regulations and use of the consolidated forms will also begin in 1980, reducing delay to permit applicants and simplifying the permitting process. The NPDES portion of the consolidated form will also provide the mechanism for collecting information on toxic pollutants to be used in developing appropriate permit limits.

The permit program continues to overview State-run NPDES programs and to encourage State assumption of the NPDES program in 1980. During this fiscal year, two or three States are expected to receive program approval for a total of 35 or 36 NPDES States.

1980 Explanation of Change from Budget Estimate

The net increase of \$483,000 results from several actions. An increase of \$259,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$66,400 and \$114,400, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$535,400 to this activity.

A reprogramming of \$13,100 from water quality NEPA compliance - municipal waste treatment facility construction; and \$15,100 from water quality ambient monitoring was made to provide for actual staff assignments and projections for travel, training, overtime and grade and step increases.

Reprogramming in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfers to ambient air quality monitoring (\$21,400); to interdisciplinary Federal activities/EIS review (\$1,900); to solid waste enforcement (\$9,000); to water quality enforcement (\$120,700); to pesticides enforcement (\$7,100); to air stationary source enforcement (\$31,800); from solid waste enforcement (\$16,000); and from water quality enforcement (\$17,000).

1981 Plan

The Agency requests a total of \$13,875,400 for the NPDES permits issuance program in 1981, including \$7,948,800 for Salaries and Expenses and \$5,926,600 for Abatement, Control and Compliance. None of the 243 permanent workyears requested are an increase from 1980. Of this, approximately \$4,500,000 will go towards toxic control in the pretreatment program including reviews and approval of pretreatment programs; the remainder will be used to provide technical assistance for permit writers, and for general program support.

indirect toxic dischargers. Control of direct toxic dischargers will be achieved by imposing new and more stringent toxic controls on industrial dischargers through the issuance of "second round" permits. EPA will issue permits to approximately 500 industrial toxic dischargers in 1981. In 1981, the program will again be issuing BAT level permits according to promulgated guidelines. Where no BAT guidelines have been promulgated, either for NRDC Consent Decree industries or secondary industries, permits must be issued on a case-by-case basis in order to meet the July 1984 statutory deadline.

The pretreatment program will provide control over indirect discharges of toxic pollutants into municipal treatment systems. EPA has significant pretreatment responsibilities in non-NPDES State including providing technical assistance directly to municipalities, developing pretreatment compliance schedules and including them in permits, and approving local pretreatment programs. Nationally, EPA will be developing general legal and technical pretreatment guidance. Additional resources will also be devoted to approving State pretreatment programs in those States responsible for the NPDES program.

As part of its efforts to improve the regulatory process during 1981, EPA will continue to implement the consolidated permit regulations that will be finalized during 1980. By coordinating permit issuance procedures for five separate permit programs, EPA expects to reduce delay to permit applicants and simplify permitting procedures.

As increasing numbers of State assume the authority to administer the NPDES program, EPA's role in overseeing States take on increasing importance. In 1981, considerable effort will be devoted to overseeing the adequacy of State NPDES programs to assure that major permits are being issued in conformance with national standards and procedures. It is anticipated that two or three additional States will be delegated for NPDES authority in 1981.

Using technical and legal resources, the resolution of adjudicatory hearings for major industrial discharge permits will continue to be a priority activity in 1981. Particular attention will focus on resolving adjudicatory hearings relating to permits with toxic concerns. Approximately 50 adjudicatory hearings will be conducted.

Resources will also be used in 1981 to issue permits with Section 301 (h) modifications to municipalities discharging into marine waters. This modification is intended to reduce the economic impact of complying with Clean Water Act standards when municipalities discharge into marine waters.

For all of its permit issuance activities, EPA is committed to involving the public by publishing and disseminating informational materials, answering questions, and holding public hearings and meetings.

WATER QUALITY
Water Quality Enforcement

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and Expenses..	\$15,477	\$14,670	\$15,937	\$16,277	+\$340
Abatement, Control and Compliance.....	4,157	4,174	3,053	3,909	+856
Total.....	19,634	18,844	18,990	20,186	+1,196
<u>Permanent Positions....</u>	568	541	520	511	-9
<u>Full-time Equivalency..</u>	610	644	588	575	-13

Budget Request

The Agency requests a total of \$20,186,400 for 1981, an increase of \$1,195,700 from 1980. Included in this total is \$16,277,100 for Salaries and Expenses and \$3,909,300 for Abatement, Control and Compliance, with increases of \$339,600 and \$856,100, respectively. The 511 permanent workyears requested for 1981 is a nine permanent workyears decrease from the 1980 level.

Program Description

The water quality enforcement program emphasizes as its highest priority, response to emergencies that involve substantial hazards to public health and safety. The second major goal is to complete enforcement actions against violators of the July 1, 1977, Clean Water Act (CWA) deadline as part of the major source enforcement effort (MSEE) initiated in 1978 and continued in 1979. The third major program goal is to complete the planning of and begin implementing the enforcement aspects of the National Municipal Policy and Strategy. The fourth goal is to control toxic substances through toxic and pretreatment enforcement and compliance monitoring programs.

The water quality enforcement program also emphasizes compliance monitoring and enforcement of NPDES wastewater discharge permits. Other activities include enforcement actions necessary to achieve compliance with regulations on spills of oil and hazardous substances, ocean dumping, dredge and fill, and other related requirements of the CWA, 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; maximum State assumption of these activities is a primary goal.

WATER QUALITY

Water Quality Enforcement

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$16,277	\$16,183	-\$94
Abatement, Control and Compliance.....	3,909	3,909	...
Total.....	20,186	20,092	- 94

EPA's NPDES compliance monitoring program includes compliance review, compliance inspections, and enforcement actions initiated because of instances of noncompliance. Compliance review is the review of all compliance schedule status and self-monitoring reports submitted by permittees to EPA. These reports provide information on planning, construction, operation, and effluent characteristic of treatment facilities. Compliance inspection refers to all field related activities conducted to determine the status of compliance with statutory requirements, including compliance evaluation and performance audit (both nonsampling inspections), sampling inspections, and surveillance and analysis in response to emergencies and toxics enforcement.

The FWPCA provides for various enforcement mechanisms to assure compliance with requirements of the Act. Primarily, these are issuance of Section 309(a)(1) Notices of Violations to dischargers with NPDES permits issued by approved States; issuance of Section 309(a)(3) Administrative Orders to dischargers with EPA issued permits and dischargers with State issued permits who fail to comply with Notices of Violation referrals to U.S. Attorneys for civil or criminal relief to remedy violations of permits and Administrative Orders. 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 legal support to achieve compliance with Section 311 oil and hazardous substance discharge liability provisions and Section 404 dredge and fill material permit provisions (shared responsibility with the Corps of Engineers) of the CWA. In addition, the non-NPDES enforcement program is responsible for enforcement actions initiated under the Refuse Act, and under the ocean dumping provision of the Marine Protection, Research and Sanctuaries Act.

1979 Accomplishments

During 1979, obligations totaled \$19,633,800; the water quality enforcement program continued the major source enforcement effort initiated in 1978, devoting substantial resources to enforcement actions against major industrial permittees not in compliance with the July 1, 1977, deadline for attaining specified effluent limitations and against publicly owned treatment works (POTW) with permit schedule violations. Of the 482 civil case actions initiated by EPA through the end of 1979, 222 of these cases against major facilities have been referred to the Department of Justice (DOJ) as part of the major source enforcement effort; the balance of cases were initiated for other than July 1, 1977, schedule deadline violations.

In States without an approved permit program, EPA reviewed all major industrial and POTW discharger self-monitoring reports. Regional offices conducted 1,090 compliance evaluation inspections and 920 compliance sampling inspections to verify permittee self-monitoring information; reviewed violations identified in permittee self-monitoring reports; and identified and categorized permit violations not indicated in the reports. The regional offices diverted significant NPDES inspection resources for response to specific emergency and toxics enforcement activities such as the Love Canal in New York, the Kimbuck landfill in New Jersey, the carbon tetrachloride spill to the Kanawha River in West Virginia, the City of Louisville POTW shutdown due to toxics, and other similar emergencies throughout the Nation.

As part of the water enforcement and compliance monitoring program, a number of significant activities were initiated in 1979.

municipal permits where Federal construction grant funds are involved. Instruction manuals and guidance were issued detailing correct procedures to be used in conducting NPDES compliance sampling, biomonitoring and performance audit inspections. In keeping with the Agency's emphasis on assuring the quality of permittee monitoring data, the water enforcement program issued performance samples and deficiency notices to NPDES permittees as checks on the quality of self-monitoring data. Chemical and biological compliance monitoring inspections were conducted through the use of substantial contract support.

Where violations were identified and follow-up enforcement activities were necessary, EPA regional offices issued a total of 149 Notices of Violation, 516 Administrative Orders, and forwarded cases to headquarters for referral to DOJ, involving 29 facilities in violation of the July 1, 1977, deadline; regions and headquarters prepared case support for those referrals, including follow-up support after referral to DOJ.

The Agency continued to monitor and bring enforcement actions in accordance with the oil spill and oil spill prevention requirements of Section 311 of the Clean Water Act and the ocean dumping provision of the Marine Protection, Research and Sanctuaries Act. Regional offices referred 963 oil spill civil cases to the Coast Guard, two oil spill criminal cases to the U.S. Attorney, and conducted 471 proceedings for violations of oil spill prevention countermeasure and control plans (the SPCC program).

The \$4,156,800 obligated in 1979 for contract support to water enforcement activities was used to meet ADP information needs, produce regulations, evaluate ongoing programs, conduct feasibility studies, provide technical and legal case support, assist in case preparation for adjudicatory hearings, implement pretreatment program enforcement, and conduct monitoring and inspection training.

1980 Program

The Agency has allocated a total of \$18,990,700 and 520 permanent workyears to this program for 1980, of which \$15,937,500 is for Salaries and Expenses and \$3,053,200 is for extramural purposes under the Abatement, Control, and Compliance appropriation.

During 1980, all activities supporting enforcement actions in emergency situations involving substantial threats to public health and safety will continue to receive the highest program priority.

Following those activities, second priority is placed on concluding the first phase of the major source enforcement effort. This will be accomplished by bringing enforcement actions, most of which were initiated in 1978 and 1979 against major permittees which failed to complete and put in operation required treatment facilities by the July 1, 1977 deadline, to decision by settlement, administrative process, or court trial. In 1979, the first phase of the major source enforcement effort was completed by referring the last of 222 civil actions against major facilities to DOJ. In 1980, EPA expects to bring any of the 222 cases not yet completed to conclusion.

A second major source enforcement effort, equal in scope to that conducted with respect to industrial dischargers will be initiated for municipal dischargers in 1980.

Issuance of The Nation Municipal Policy and Strategy in October of 1979 by the Administrator gave added impetus to this effort. The Policy and Strategy provides comprehensive and detailed guidance for coordination of the three municipal program activities--construction grant, permits and enforcement. The Policy and Strategy also outlines criteria for determining which municipalities will be granted Section 301(i) extensions. These noncomplying municipalities which are not granted 301(i) extensions will be the target of immediate enforcement action, either administrative or judicial.

The Office of Water Enforcement and the Office of Water Program Operations have joined in an effort to demonstrate the effectiveness of a municipal management system (MMS) during 1980. EPA plans to have the system operational in all regions by 1981. In the MMS concept, enforcement will assist in the tracking of municipal permit compliance and initiate enforcement actions where Section 301(i)(1) requests have been denied.

The third major priority for the year is development and implementation of a formal toxics compliance/monitoring and enforcement program. During 1980, this program will be implemented through comprehensive guidance and training activities. With the promulgation of regulations for the control of hazardous substances spills in August 1979, it is anticipated that there may be an increase in actions initiated for spills of reportable quantities of hazardous and toxic substances.

For those industrial and municipal facilities in compliance, the fourth major program priority is to assure that these facilities are maintaining compliance with CWA statutory requirements. Regional offices will conduct 2,121 compliance inspections, and take enforcement actions where necessary in an effort to insure continued major industrial and municipal compliance with the established effluent limitations.

Headquarters will provide legal support to the permit program for NPDES adjudicatory hearings. The permit program will resolve approximately 20 adjudicatory hearings in 1980.

With increased emphasis on approval of State programs, EPA will provide assistance to the 33 States currently operating approved enforcement programs. Two to three additional States are expected to have an approved NPDES program by the end of the year. In support of the National State Overview Policy, the regional office will also conduct State program management audits and joint State compliance inspections to assure that States with approved programs continue to maintain standards which are in compliance with nationally established requirements. In the case of States which have not yet received program approval, EPA will work with those States to improve technical and legal capabilities and promote State cooperation and participation in enforcement program efforts.

Contract funds totalling \$3,053,200 will be used in 1980 in support of the following activities: litigation training for regional personnel and case development support activities; regional program operations, including support for responses to emergency situations; compliance monitoring and sampling; technical support for bioassay screening techniques development; computer programming activities; technical support for adjudicatory hearings; and quality assurance samples for all major NPDES permittees.

1980 Explanation of Changes from Budget Estimates

The net increase of \$146,700 results from several actions. An increase of \$586,200 results from the cost of the October pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses, and \$1 million to ADP costs, resulted in a decrease of \$144,700,

provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$44,300 to this activity.

A reprogramming was made to the air media, mobile source enforcement (\$3,800); and, to the solid waste media, hazardous waste enforcement (\$7,000) for travel costs. A reprogramming was made of \$69,700 from water quality NEPA compliance/municipal waste treatment facility construction for actual staff assignments and projections for travel, training, overtime and grade and step increases.

A reprogramming was made of \$57,000 to the solid waste media to reflect the transfer of 50 percent of the oil spill enforcement capability since these activities are closely related. This reprogramming gives formal recognition to otherwise hidden responsibilities which draw on other abatement and control and enforcement resources; in this case some pesticides and water enforcement capability is being diverted to initiate enforcement actions where hazardous waste disposal presents an imminent danger to public health and welfare. A reprogramming was made of \$50,000 to management and support - program management for litigation management support and establishment of a special investigations unit in the Immediate Office of the Assistant Administrator. A reprogramming was made of \$92,700 from interdisciplinary Federal activities/EIS reviews to reflect the transfer of the Federal facilities monitoring and compliance function which is more appropriately identified with enforcement activities.

Reprogrammings in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfers to interdisciplinary Federal activities/EIS reviews (\$19,100); to interdisciplinary new source permit EIS preparation (\$300); to air stationary source (\$13,500); to management and support administrative management (\$34,100); to water quality permit issuance (\$17,000); to solid waste enforcement (\$5,800); to pesticide enforcement (\$5,100); to management and support regional management (\$39,700); to toxic substances (\$4,900); to water quality EIS reviews (\$10,000); to management and support general counsel (\$5,500); from water quality permit issuance (\$120,700); and from solid waste hazardous waste (\$15,000).

1981 Plan

The Agency requests a total of \$20,186,400 for this program, of which \$16,277,100 is for the Salaries and Expenses appropriation and \$3,909,300 for the Abatement, Control, and Compliance appropriation. There will be a decrease of nine permanent workyears from the program level of 520.

Enforcement actions in emergency situations involving substantial threats to public health and safety will have highest program priority in 1981. While every effort will be made to conclude all MSEE cases by the end of 1980, a small number of cases may continue unresolved in 1981. If this does occur, the enforcement program's second priority will be to resolve all remaining enforcement actions initiated in 1978 and 1979 against major permittees who failed to meet the July 1, 1977, deadline.

Enforcement will continue to provide any legal and technical assistance needed in preparation for emergency actions taken under the authority of the Clean Water Act and any assistance in preparation and expeditious conclusion of major enforcement referrals.

The pretreatment and toxics compliance/monitoring and enforcement programs developed during 1980 in response to new program emphasis on control of toxics will be implemented during 1981. These programs will use bioassay screening techniques and compliance sampling inspections to determine if the permittee is in compliance with existing effluent limitations, identify those permittees who may have potential toxicants in their effluent which were not identified in the permit, and to provide toxicity data for permit issuance.

In those States without approved permit programs, EPA will review all major industrial and POTW discharger self-monitoring reports for compliance with permit conditions; a portion of this activity will be accomplished through contractor support. An automated system to detect discharge monitoring report violations is being implemented in 1980 to provide for automated processing and initial review of all discharge self-monitoring reports. This system will be operational for tracking major permittee effluent data in 1981. Regional offices will conduct approximately 2,700 compliance inspections to verify permittee self-monitoring information. Where necessary, appropriate enforcement actions will be initiated, including issuance of Notices of Violations and Administrative Orders, and referral of cases to the Department of Justice.

During 1981, enforcement activities in conjunction with The Municipal Policy and Strategy effort will include the issuing of administrative orders where extension requests have been denied; prioritizing of possible referrals for judicial action; and processing of municipal referrals, including legal and technical assistance in support of those municipal case referrals. Emphasis will also be placed on establishing a Permit Compliance System (PCS) and Grants Information Control System (GICS) interface. Enforcement will cooperate in developing procedures to integrate data from the two management information systems into one method of information control to insure routine coordination of construction grants, permitting, and enforcement activities.

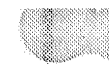
In support of an anticipated 40 adjudicatory hearing requests during 1981, enforcement will provide legal and technical assistance to the permit program for resolution of those hearings.

Two additional States are expected to receive approval for NPDES programs during 1981. Regions will take an active role in State program development and overview.

Non-NPDES enforcement of Section 311 oil spill requirements and the Ocean Dumping Act will be held to 1980 levels.

Enforcement of Section 404 provisions will receive higher priority during 1981 than in previous years. Increased attention will be given to identifying illegal dumping activities, those incidents performed by individuals not possessing a permit, and aggressively taking the appropriate legal action.

In 1981, contract funds totalling \$3,909,300 are requested to provide for the following activities: specific case support (expert testimony), litigation training for regional personnel, performance samples (self-monitoring quality assurance) for major NPDES permittees (or labs used by permittees), technical manuals development, biomonitoring activities, and the contracting out of NPDES compliance sampling inspections.



Drinking Water

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$22,013	\$21,897	-\$116
Research and Development.....	20,229	20,229	...
Abatement, Control and Compliance.....	44,663	44,663	...
Total.....	86,905	86,789	-116
<u>PROGRAM HIGHLIGHTS</u>			
Public Sector Activities:			
Salaries and Expenses.....	6,643	6,611	-32
Research and Development.....	19,796	19,796	...
Monitoring and Technical Support:			
Salaries and Expenses.....	575	571	-4
Research and Development.....	433	433	...
Total:			
Salaries and Expenses.....	7,218	7,182	-36
Research and Development.....	20,229	20,229	...
Total, Research and Development Program..	27,447	27,411	-36
Criteria, Standards, and Guidelines:			
Salaries and Expenses.....	5,458	5,432	-26
Abatement, Control and Compliance.....	3,837	3,837	...
State Program Resource Assistance:			
Salaries and Expenses.....	...	...	...
Abatement, Control and Compliance.....	39,574	39,574	...
Drinking Water Management:			
Salaries and Expenses.....	8,582	8,533	-49
Abatement, Control and Compliance.....	1,243	1,243	...
Total:			
Salaries and Expenses.....	14,040	13,965	-75
Abatement, Control and Compliance.....	44,654	44,654	...
Total, Abatement and Control Program.....	58,694	58,619	-75
Drinking Water Enforcement:			
Salaries and Expenses.....	755	750	-5
Abatement, Control and Compliance.....	9	9	...
Total, Enforcement Program	764	759	-5



	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
	(dollars in thousands)					
<u>Appropriation</u>						
Salaries and Expenses...	\$16,105	\$18,166	\$19,940	\$22,013	+\$2,073	
Research and Development	12,157	17,358	15,621	20,229	+4,608	
Abatement, Control and Compliance.....	39,425	46,795	41,164	44,663	+3,499	
Total.....	67,687	82,319	76,725	86,905	+10,180	
Permanent Workyears.....	440	506	518	537	+19	
Full-time Equivalency...	528	600	610	638	+28	
Outlays.....	59,977	66,450	64,200	74,000	+9,800	
Authorization Levels....	116,150	Pending	66,650	88,000	+21,350	
<u>PROGRAM HIGHLIGHTS</u>						
Public Sector Activities:						DW-11
Salaries and Expenses...	\$4,917	\$5,734	\$6,569	\$6,643	+74	
Research and Development	11,702	17,210	15,188	19,796	+4,608	
Monitoring and Technical Support:						DW-21
Salaries and Expenses...	501	577	555	575	+20	
Research and Development	455	148	433	433	...	
Total:						
Salaries and Expenses...	5,427	6,311	7,124	7,218	+94	
Research and Development	12,157	17,358	15,621	20,229	+4,608	
Total, Research and Development Program.....	17,584	23,669	22,745	27,447	+4,702	
Criteria, Standards, and Guidelines:						DW-24
Salaries and Expenses...	\$4,056	\$3,720	\$5,017	\$5,458	+\$441	
Abatement, Control and Compliance.....	5,241	5,500	5,052	3,837	-1,215	
State Program Resource Assistance:						DW-29
Salaries and Expenses...	...	...	...	...	...
Abatement, Control and Compliance.....	33,938	38,795	34,745	39,574	+4,829	
Drinking Water Management:						DW-33
Salaries and Expenses...	6,153	7,300	6,928	8,582	+1,654	
Abatement, Control and Compliance.....	198	2,500	1,301	1,243	-58	
Total:						
Salaries and Expenses...	10,209	11,020	11,945	14,040	+2,095	
Abatement, Control and						

Drinking Water Enforcement:						
Salaries and Expenses...	469	835	871	755	-116	
Abatement, Control and Compliance.....	48	...	66	9	-57	
Total, Enforcement Program	517	835	937	764	-173	
<u>Permanent Positions</u>						
Public Sector Activities..	120	122	120	130	+10	DW-11
Monitoring and Technical Support.....	11	9	10	10	...	DW-21
Total, Research and Development Program.....	131	131	130	140	+10	
Criteria, Standards, and Guidelines.....	87	103	106	101	-5	DW-24
State Program Resource Assistance.....	...	...	...	...	...	DW-29
Drinking Water Management.	217	264	252	269	+17	DW-33
Total, Abatement and Control Program.....	304	367	358	370	+12	
Drinking Water Enforcement, Total Enforcement Program	15	31	33	28	-5	DW-37
<u>Full-time Equivalency</u>						
Public Sector Activities..	159	163	161	174	+13	DW-1
Monitoring and Technical Support.....	10	9	14	14	...	DW-21
Total, Research and Development Program.....	169	172	175	188	+13	
Criteria, Standards, and Guidelines.....	100	119	124	119	-5	DW-24
State Program Resource Assistance.....	...	...	...	...	...	DW-29
Drinking Water Management.	241	276	276	299	+23	DW-33
Total, Abatement and Control Program.....	341	395	400	418	+18	
Drinking Water Enforcement, Total Enforcement Program	18	34	34	32	-2	DW-37

Assuring the safety of drinking water is primarily the responsibility of the State and local governments. However, Congress provided that the Federal Government share in this responsibility through standard setting and providing assistance and reinforcement for State and local efforts. To assist the States in their efforts to provide safe drinking water, Congress has provided financial assistance for building and strengthening their efforts to meet the mandates of the Safe Drinking Water Act.

Prior to the passage of the Safe Drinking Water Act (SDWA) in December 1974, the Public Health Service Act and the Interstate Quarantine Regulations provided the only statutory authority for the Federal drinking water program. With the enactment of the Safe Drinking Water Act (an amendment to the Public Health Service Act), EPA's authorities and responsibilities were significantly increased. The Act requires that EPA develop and promulgate national drinking water standards. It also established two major programs -- the public water system supervision program (PWS) which is designed to ensure the safety of drinking water provided by public water systems, and the underground injection control program (UIC) which is designed to protect present and future underground sources of drinking water from contamination through injection wells.

Standards Development

EPA is required to establish primary drinking water regulations which specify maximum permissible contaminant levels to protect the public health and secondary drinking water regulations which deal with the aesthetic quality of the drinking water. Interim primary drinking water regulations which cover such contaminants as bacteria, turbidity, and certain inorganic chemicals, pesticides and radionuclides have been in effect since June 1977. These standards have been revised (1979) to regulate chloroform and other trihalomethanes. The program will also develop additional maximum contaminant levels, revise existing standards to incorporate new data, and develop a regulatory approach to control contaminants which may increase the incidence of cardiovascular diseases. Existing implementation regulations will be modified to reflect modifications to the primary drinking water regulations. In addition, underground injection control program regulations will be promulgated. A ground water protection strategy will be developed for the Agency. The 1981 program will focus on the establishment of Revised National Primary Drinking Water Regulations which will include maximum contaminants levels (MCLs) for 10 organic chemicals and MCLs or treatment requirements for 10 inorganic chemicals, virus and protozoa; implementation of Interim Primary Drinking Water Regulations for trihalomethanes and national oversight of the public water systems and underground injection control programs; and oversight of the sole source aquifer program. In addition, guidance documents for the implementation of the ground water strategy will be developed.

Public Water System Supervision

Since the PWS program includes approximately 60,000 community and 240,000 non-community water systems, State participation is essential to the successful implementation of the Act. Forty-five (45) States (including one approved in early 1980) have primary enforcement responsibility for the PWS program with an additional six expected to achieve primacy during the remainder of 1980. In 1981, program activities will concentrate on oversight of primacy States and program implementation in non-primacy States and on Indian lands, improving State and EPA performance and strengthening follow-up action where non-compliance occurs. In primacy States, the regions will conduct evaluations of State primacy programs and will continue to certify laboratories, provide assistance to the States in implementing the organic regulations; provide emergency response; conduct public hearings and training programs and review monitoring reports, violations and data used in granting variances and exemptions. In non-primacy States, regional activities will focus on bringing non-complying systems into compliance. In support of this, laboratory certification, sanitary surveys, review of variances and exemptions requests, review of enforcement

underground injection control programs in order to protect underground sources of drinking water. EPA has designated 41 States as requiring underground injection control programs and will designate the remaining States during 1980. Of the 23 States which were first designated by the Administrator as requiring an underground injection control program, 11 States are expected to assume primacy for the program during 1981. For the remaining 12 States that do not qualify for or do not intend to assume primacy, EPA must develop and implement either partial or full programs. In addition, EPA must develop and implement a program on all Indian lands. EPA will actively work with the 11 primary States to assure the development of a sound program and will provide assistance to the 19 States that are working toward primacy.

Surface Impoundment Assessment

Under the statutory authority of Section 1442 of the SDWA, EPA initiated an inventory and assessment of surface impoundments to determine the nature and extent of contamination potential of various types of surface impoundments. Grants were awarded to 50 States to conduct the assessment. In those States which chose not to apply for a grant, the assessments were conducted by universities or private organizations and the EPA regional office. Data and reports for all 57 States and territories will be analyzed and regional comments will be reviewed. During 1981, the final report will be completed and transmitted to the Congress with recommendations for the control of ground water contamination from surface impoundments.

Sole Source Aquifers

Under Section 1424(e) of the Safe Drinking Water Act, an aquifer or portion thereof may be designated as a sole or principal source of drinking water if it is determined that in fact it is the sole or principal source of drinking water and that contamination of this source would create a significant hazard to public health. The designation process may be initiated by EPA, by a petition from the State, or by petition from interested parties. To date six aquifers have been designated as sole and/or principal sources of drinking water.

All projects assisted with Federal financing within an area designated as a sole or principal source aquifer may be subject to a review. If the Administrator determines during this review process that the project will create a significant hazard to public health, the Federal funds associated with the project may be denied. The project may be redesigned so as not to contaminate the sole or principal source aquifer and Federal financial assistance may be rendered at that time. One federally financed project in San Antonio, Texas, was halted temporarily because of possible contamination of a sole source aquifer. Modifications were required to work plans to ensure that the designated aquifer would not be contaminated; the project resumed after the revisions were adopted.

During 1980, it is estimated that three aquifers will be designated as sole or principal sources of drinking water and five new petitions will be reviewed. During 1981, it is expected that five petitions will be received and three sole source aquifers will be designated.

Research and Development

The long-range goal and overall concept of the research and development program is the provision of a scientific basis for assuring safe supplies of drinking water for the people of this country. This means that the research is designed to yield data to help determine the need to regulate specific substances, and if there is such a need, to help determine the levels at which standards should be set. To achieve its goal, the program is linked with the activities of EPA's Office of Drinking Water. The program addresses a spectrum of organic, inorganic and microbiological contaminants in water supplies, as well as the protection of ground water, a major source of

as shorter-term types of studies, for important organics to provide data for setting maximum contaminant levels. The health program also emphasizes cardiovascular effects from inorganic contaminants and gastrointestinal illnesses related to microbial contaminants. In addition, support is provided to a coordinated research effort on the reuse of waste water for potable purposes.

As in the health area, the control technology or treatment portion of the program emphasizes organics, including those from disinfection. Overall, this part of the program develops detection and measurement methods to quantify contaminants and is concerned with providing treatment methods to avoid forming contaminants or reduce them to acceptable levels. The work on organics will focus on measurement and control. The treatment program includes an emphasis in means of controlling inorganic contaminants, including asbestos, as well. In addition, microbiological occurrence, detection, and control are receiving attention because outbreaks of waterborne disease still occur in the U.S., especially in poorly operated treatment and distribution systems. In 1981, an initiative is planned to focus on finding practical, cost effective processes to meet the needs of small communities which have difficulty in complying with state and national drinking water standards. The ground water portion of the program develops new and improved methods of detecting and assessing contamination and methods for determining the adsorption, movement and transformation of contaminants in the subsurface environment. Again, the emphasis is on organic contaminants and on viruses.

The quality assurance portion of the program is concerned with ensuring precise, accurate, and reliable measurement data for official use. This effort develops quality control procedures and guidelines to document data for official use, measure systems performance. In addition, the program supports the development of criteria and procedures for on-site evaluation and certification of laboratories with drinking water monitoring and analysis. Because it is an integral part of the research and development effort on drinking water, the emphases in this work are closely parallel to those of the other portions of the program. In addition, the quality assurance effort focuses on contaminants for which regulations have been promulgated, to help insure their proper implementation, and focuses on substances being considered for regulation as well.

Enforcement

For 1981, the highest priority of the drinking water enforcement program will continue to be enforcement response in emergency situations presenting substantial endangerment to public health and safety.

Program efforts not expended on emergency actions will be used in the preparation of enforcement actions where violations of primary water standards have occurred (non-primacy States). In addition, EPA will overview the 45 primacy State PWS programs, to see that all State programs are adequately enforcing PWS requirements. Legal assistance will be made available to the Office of Drinking Water and all Regional Drinking Water branches in conjunction with variance and exemption issuance activities and in support of laboratory certification efforts.

Enforcement program activities for 1981 will also include review and approval for the enforcement sections of primacy applications for both Public Water Systems and Underground Injection Control programs, and preparation for implementing UIC compliance monitoring and enforcement programs in non-primacy States.

1980 Drinking Water Program.....	\$70,725
Salaries and Expenses.....	+2,073
<p>The primary increase is for additional regional implementation resources for the UIC and the public water systems supervision programs, and for drinking water treatment and ground water protection and standards and regulations development.</p>	
Research and Development.....	+4,608
<p>The major portion of this increase, \$4.3 million is an initiative to develop cost-effective technology for small water systems (pop. 10,000 and under). The additional \$.3 million will be used to conduct research on health effects of contaminants in drinking water as they relate to human reproduction and early childhood development.</p>	
Abatement, Control and Compliance.....	+3,499
<p>The net increase of \$3.5 million represents \$4.2 million additional grants to the States to support the establishment of State underground injection control programs, \$1.1 million for special studies and demonstrations to provide continued support to rural water associations, and a decrease of \$1.2 million in criteria, standards and guidelines development which funded extra-mural projects relating to the additives program and a decrease of \$.5 million due to the nonrecurring training activity.</p>	
1981 Drinking Water Program.....	86,905

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Estimate

An appropriation of \$86,904,900 is requested for 1981. This request, by appropriation account, is as follows:

Salaries and Expenses.....	\$22,012,300
Research and Development.....	20,228,700
Abatement, Control and Compliance....	44,663,900

This request represents an increase of \$10,180,300 and provides for additional grants to the States to support the establishment of State UIC programs (\$4.2 million), and for continued support to rural water associations (\$1.1 million). An increase of \$4.3 million will support the development of cost-effective technology for small water systems (10,000 population and under). An increase of \$.3 million is to conduct research on health effects of contaminants in drinking water.

Changes from the budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$82,319
Congressional change:	
UIC grants.....	-3,400
Travel.....	-59
Supplies and expenses.....	-21
ADP	-36
Academic training.....	+350
Reprogramming for authorized workyears...	-154
Proposed pay raise supplemental.....	+657
Miscellaneous reprogramming.....	<u>-2,931</u>
Current 1980 estimate.....	76,725

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980 (in thousands of dollars)	Estimate 1981 (in thousands of dollars)
Prior year obligations.....	\$67,687	\$79,054
Effect of congressional changes.....	-3,166	...
Effect of reprogrammings.....	-3,085	...
Proposed pay raise supplemental.....	+657	...
Change in amount of carryover funds available.....	+1,963	-2,329
Program increase.....	+11,000	+9,105
Change in rate of obligation.....	<u>+3,998</u>	<u>...</u>
Total estimated obligations.....	79,054	85,830
(From new obligation authority).....	69,121	(78,226)
(From prior year funds).....	(9,933)	(7,604)

Congressional changes, reprogrammings, and the proposed pay raise supplemental discussed in the previous section are expected to result in a decrease of \$5,594,000.

The amount of carryover funds to be obligated in 1980 is \$9,933,000, an increase of \$1,963,000 over the 1979 level. In 1981, it is estimated that \$7,604,000 of carryover funds will be obligated, a decrease of \$2,329,000 from the 1980 level.

The 1980 increase in budget authority was previously estimated to increase obligations by \$11 million. In 1981, the program increase is expected to result in increased obligations of \$9,105,000. A change in the rate of obligation is expected, thereby increasing obligations by \$3,998,000.

Safe Drinking Water Act of 1974. Research and evaluations are conducted relating to: (1) causes, diagnosis, and prevention of diseases and other impairments in man resulting directly or indirectly from contaminants found in drinking water; (2) the treatment and control of those contaminants; and (3) the provision of dependable, economical, and safe supplies of water, including the protection of underground sources of drinking water. Research is also conducted to develop and implement quality assurance procedures and protocols for water supply laboratories to assure that laboratory analytical data are accurate and valid.

Purpose - Abatement and Control Program

The abatement and control program provides for the protection of public health and underground drinking water sources through the development of regulations and standards and the development of such programs as mandated by the Safe Drinking Water Act, as amended. 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 where necessary.

The main priority for this program is the protection of the public from harmful contaminants found in drinking water. The abatement and control program has used the following approach to implement this priority. Through the development and implementation of drinking water standards and regulations, the health quality of drinking water may be assured. Realizing the increased administrative costs to administer a program which assures the safety of drinking water, the Federal Government has provided financial assistance to those States which satisfy minimum Federal requirements and bear primary enforcement responsibility. In addition, technical assistance and oversight are available to help States implement their programs.

The abatement and control program is divided into the following activities:

Criteria, Standards and Guidelines - This subactivity relates to the development of standards and regulations designed to control the quality of drinking water to protect the public health and welfare; to the development of regulations establishing minimum requirements for public water systems and underground injection control programs; and to the development of guidance documents to assure uniform program implementation. It further includes the development, review and application of information from studies on health effects, control technology, and monitoring of hazardous substances such as toxic chemicals from natural and synthetic sources to establish or revise primary drinking water regulations. Economic analyses are conducted to determine the impact of regulations. In addition, national program oversight and evaluations of public water systems supervision, underground injection control and sole source aquifer programs are conducted; and management information systems are maintained.

State Program Resource Assistance - This subactivity relates to the provision of financial assistance to support State activities in the implementation of the public water systems supervision and underground injection control programs. It also provides for grants to assist State rural water associations in the development and demonstration of technical assistance and training programs to assist small rural water systems in complying with the mandates of the Safe Drinking Water Act. Fellowships and grants to academic institutions are awarded to provide for continuing education to State and local staff working in the drinking water field including ground water protection.

oversight and evaluation of States with primacy, as well as program implementation in States without primary enforcement responsibility and on Indian lands. Other activities included are technical assistance to all States in the implementation of public water systems supervision programs and in the establishment and administration of underground injection control programs, emergency assistance, administration and implementation of the sole source aquifer programs; and coordination with water quality management planning and solid waste programs.

Purpose - Enforcement Program

It is the goal of the drinking water enforcement program to see that all applicable parties comply with standards established under the Safe Drinking Water Act, regulating public water system and underground injection control operations. The program's highest priority is initiation of enforcement actions, if required, in response to emergency situations. Also fundamental to system or facility compliance with PWS and UIC standards is the Agency's establishment and operation of enforcement programs in States which have not yet implemented enforcement programs (non-primacy States). In States which have enforcement programs, EPA provides legal and technical assistance as required and overviews State activities to ensure that primacy States adequately enforce requirements of the Act.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>PROGRAM LEVELS</u>					
Number of States with primary enforcement responsibility for Public Water Systems Supervision programs.....	44	54	51	51	...
Number of States with primary enforcement responsibility for Underground Injection Control programs.....	...	...	...	11	+11
Underground injection control grants.....	19	57	44	57	+13
Variances and exemptions granted by EPA in non-pri- macy States.....	12	180	180	150	-30
Sole source aquifer petitions received.....	2	14	5	5	...
Sole source aquifer designa- tions.....	1	6	3	3	...
Laboratories certified.....	100	126*	100	100	...
Enforcement actions.....	2	20	20**	40**	+20

*Labs in non-primacy States.

**Includes compliance agreements and court cases.

Public Sector Activities

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Health Effects:			
Salaries and Expenses.....	\$ 3,054	\$ 3,041	-\$13
Research and Development.....	9,305	9,305	...
Treatment and Ground			
Water Protection:			
Salaries and Expenses.....	3,589	3,570	-19
Research and Development.....	<u>10,491</u>	<u>10,491</u>	<u>...</u>
Total:			
Salaries and Expenses.....	6,643	6,611	-32
Research and Development.....	<u>19,796</u>	<u>19,796</u>	<u>...</u>
Grand Total.....	26,439	26,407	-32

Public Sector Activities

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
<u>Health Effects:</u>					
Salaries and Expenses.	\$2,141	\$2,769	\$3,462	\$3,054	-\$408
Research and Development.....	4,410	9,472	8,561	9,305	+744
<u>Treatment and Ground</u>					
<u>Water Protection:</u>					
Salaries and Expenses.	2,776	2,965	3,107	3,589	+482
Research and Development.....	7,292	7,738	6,627	10,491	+3,864
<u>Total:</u>					
Salaries and Expenses.	4,917	5,734	6,569	6,643	+74
Research and Development.....	11,702	17,210	15,188	19,796	+4,608
Grand Total.....	16,619	22,944	21,757	26,439	+4,682
<u>Permanent Positions</u>					
Health Effects.....	52	54	52	52	...
Treatment and Ground Water Protection.....	68	68	68	78	+10
Total.....	120	122	120	130	+10
<u>Full-time Equivalency</u>					
Health Effects.....	71	75	73	73	...
Treatment and Ground Water Protection.....	88	88	88	101	+13
Total.....	159	163	161	174	+13
<u>Budget Request</u>					

The Agency requests a total of \$26,438,300 and 130 permanent workyears for 1981, an increase of \$4,681,800 from 1980. Included in this total is \$6,642,600 for Salaries and Expenses and \$19,795,700 for Research and Development, with an increase of \$74,000 and \$4,607,800, respectively. The major portion of this increase, \$4,345,000, is an initiative focused specifically on the needs of small systems (population 10,000 and under), which comprise 80-90 percent of all drinking water systems. The initiative will develop cost-effective technology and will illustrate multi-community cooperative arrangements for services to assist these communities in meeting national and state drinking water standards. The additional funding of \$336,800 will enable EPA to conduct research on health effects of contaminants in drinking water as they relate to human reproduction and early development.

The program is designed to develop the scientific information from which EPA can determine if there is a need to regulate drinking water contaminants. Furthermore, if regulations are deemed appropriate, the research information will help establish levels at which standards should be set.

The major health research activities are to investigate health effects resulting from organic, inorganic, contamination of drinking water, and/to develop alternative disinfectants which do not produce significant levels of trihalomethanes to determine whether they are as effective as chlorine and whether they cause adverse health effects. The health effects portion of the program also investigates microbiological contaminants to provide valuable data for the prevention of waterborne disease outbreaks and evaluates health considerations related to potable reuse of highly treated wastewater.

The major goals of the treatment and ground water protection research program are, in cooperation with the Office of Drinking Water, to: (1) develop detection, measurement and monitoring methods to identify and quantify drinking water contaminants; (2) provide treatment methods to avoid forming contaminants or reduce contaminants to an acceptable level; (3) establish scientific and technical bases for action to protect ground water quality.

The major problem area is the measurement and control of organics, with particular attention to disinfection by-products, so work on organics will be emphasized. Also of high priority are methods to control inorganic substances and asbestos fibers. Microbiological contaminant occurrence, detection, and control remain a relatively high priority because outbreaks of waterborne disease still occur in the United States, especially in poorly operated treatment and distribution systems. Finding practical, cost-effective processes to meet the needs of small communities which have difficulty in complying with drinking water standards will be a major initiative in 1981. Ground water research will develop new and improved methods of detecting and assessing contamination and methods for determining the absorption, movement and transformation of contaminants in the subsurface environment, especially organic chemicals and viruses.

HEALTH EFFECTS

1979 Accomplishments

In 1979, the program expended \$6,551,400. Of this amount, \$2,140,900 was for salaries and expenses and \$4,410,500 for extramural research and development activities. Specific accomplishments include the following:

- Protocols for the recovery of volatile and non-volatile organics in drinking water for use in bioassays were prepared.
- A research program to assess human body burdens of organics in drinking water was developed and conducted. Animal models were used to develop and validate techniques to measure chloroform and other volatile organics in blood and fatty tissue. An epidemiological study was conducted to test the method and evaluate the contribution of chlorinated by-products (Trihalomethanes) in drinking water to levels of chloroform in human body tissue. Preliminary data suggests that humans exposed to chlorinated water may have slightly higher blood levels of chloroform than the control groups. Further epidemiological methods will be used in 1980 on the same population to correlate the results of the body burdens found in human tissue with the incidence of cancer.

positive association between asbestos fibers in the water and white male lung and stomach cancer and female gall bladder, esophageal, and peritoneal cancer. Other studies showed no measurable effect. It is significant that the results of these studies are not consistent - both for male and female groups and for target organs. These first correlation studies are for the purpose of generating a hypothesis (i.e. to identify which organs may be at risk). Additional research is needed to test this hypothesis further.

- Epidemiological studies were conducted on the relationship of drinking water sodium levels to hypertension. Several studies indicated that there were significant differences in blood pressures between high and low sodium groups. Further research is being conducted under controlled conditions to determine if there is a reduction in blood pressure and hypertension when the level of sodium in drinking water is reduced.
- Additional protocols for the isolation and recovery of viruses in drinking water were developed in response to the Safe Drinking Water Act Section 1442(a)(7) which requires that the Administrator of the U.S. EPA "carry out a study of virus contamination." The significance of this work is to determine if pathogenic viruses are present in drinking water. At the present time transmission of viruses through drinking water has not been confirmed. This may be due in part to difficulties encountered with recovery and analytical methods.
- Long-term toxicological studies to determine the health effects of chlorine, chloramine, chlorine dioxide, chlorite, and chlorate were performed to broaden the health data base on alternative disinfectants. Acute toxicity studies in mice and tolerance studies in humans with alternate disinfectants were completed. Results of the animal studies for chlorine and chloroform show an increased incidence of tumors among the experimental groups.

1980 Program

In 1980, a total of \$12,022,300 is allocated to the program, of which \$3,461,800 is for the Salaries and Expenses appropriation and \$8,560,500 is for extramural purposes under the Research and Development appropriation.

highest priority on organic contaminants, with the major emphasis on carcinogenic effects. Organic sample concentrates from representative American city drinking water supplies are being analyzed chemically and screened for mutagenic activity to identify potentially carcinogenic groups of compounds. The analytical and concentration techniques being used to support biological testing are being improved so that the health results may be more directly linked with the appropriate environmental contaminants. Short-term animal assays are being adapted for detecting carcinogenic and mutagenic effects in drinking water. More definitive epidemiological studies (i.e. case-control or cohort) are being conducted to learn about the relative risks of cancer from drinking water contaminants which are suggested by earlier studies which contributed to the hypothesis about the relationship between organic contaminant and cancer risks.

Research on inorganic contaminants emphasizes cardiovascular diseases. Reports on the relationship of inorganic contamination and the potential chemical contributors (i.e. calcium and/or magnesium hardness) to cardiovascular disease will be prepared in 1980. Information on the relationship of sodium in drinking water to hypertension being corroborated by more definitive, controlled studies in 1980. The association between asbestos in drinking water and cancer morbidity and mortality are being studied in five areas of the U.S. during 1980. To date, asbestos epidemiology studies have been preliminary and hypothesis-generating. One of the five recently completed studies investigated leaching of asbestos fibers from asbestos-cement pipes used in distribution systems where the water is highly corrosive. No significant increase in cancer rates were found in this study. In 1980, a different geographic region of the country where the waters are also highly corrosive will be studied to corroborate the results of the first study. The asbestos fiber counts in the drinking water is much higher and the epidemiological study will attempt to determine the relative risks of cancer from ingestion of asbestos fibers. The additional epidemiology studies to be conducted in 1980 and 1981 are part of a long-term research program, to test hypothesis-testing studies based upon the results of the completed studies. This research will supplement the toxicological data base needed to establish maximum contaminant levels allowable in drinking water.

For microbiological contaminants, the health research program include technical assistance for the investigation of waterborne diseases. Waterborne outbreaks of infectious diseases are investigated in cooperation with the Center for Disease Control with the objective of identifying the causative organisms in water, determining the route of entry, and recommending corrective action to prevent recurrence. Subsequent to a symposium in 1978, a two year research program was initiated to evaluate methods of identifying water systems that contain Giardia cysts, some life forms of the parasite Giardia lamblia, which is found in raw and treated waters and may cause an intestinal disease called giardiasis. Raw and treated waters from several sites will also be investigated for the occurrence of other pathogens, (disease causing organisms), such as the bacteria Yersinia. Currently we are unable to culture and identify many viruses associated with waterborne diseases. Work will continue on improving methods for the identification of these viruses. This will permit a more accurate assessment of the significance of viruses in drinking water to health.

The search for a disinfectant which is as effective as chlorine but which does not produce significant levels of toxic substances such as trihalomethane will be almost completed in 1980. The toxicity of reaction products resulting from chlorination and the use of proposed alternative disinfectants will be bioassayed both in whole animal and bioassay screening tests. Toxicological studies will be completed on the effects of disinfectants and supplemented with epidemiological studies where feasible (i.e. chlorine dioxide). Recent research has indicated that some alternate disinfectants may cause adverse health effects. The proposed toxicological studies will provide data for assessing the health risk of alternative disinfectants.

...the development of a more complete data base from which to set criteria for waste water reuse. Bioassay techniques developed in conventional drinking water research are applied to the reuse situation to assess the health effects of waste water reuse. Inorganic and organic constituents of advanced waste water treatment plant effluents will be identified and additional toxicity studies performed where inadequate health information exists.

1980 Explanation of Change from Budget Estimate

The net decrease of \$218,800 results from several actions. An increase of \$81,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$4,300 and \$9,800, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$286,400 to this activity.

1981 Plan

The Agency requests a total of \$12,359,100 and 52 permanent workyears for this program, of which \$3,054,000 is for the Salaries and Expenses appropriation and \$9,305,100 is for extramural purposes under the Research and Development appropriation. The \$336,800 increase over the current level will enable EPA to conduct research on health effects of contaminants in drinking water as they relate to human reproduction and early development.

Health effects research on drinking water will continue to focus on organic contaminants in 1981. The quality of drinking water will be defined by both chemical analysis and biological screening tests. Research on organic contaminants of drinking water will be concentrated on carcinogenics. The results will potentially provide the data base for the establishment of maximum contaminant levels for several widely occurring carcinogens (i.e., 1,1,1-trichloroethane, carbene tetrachloride, 1,1,2-trichloroethane, 1, 2dichloroethane and tetrachloroethylene. Screening tests based upon mutagenic effects will be used to predict carcinogenic activity. It is necessary to develop screening tests to determine such activity, for various organics found in drinking water at very low levels (i.e. part per billion). The current bioassay tests have limitations. Attention will be given to teratogenic effects. Development of methods devoted to suitably preparing organic concentrates and identifying biologically active fractions will continue to be an area of importance. Key compounds, such as benzene; 2,4, dichlorophenol and 1,1-dichloroethylene, will be the subject of long-term toxicologic study. A report on carcinogenic risk of organic contaminants will be completed. Health risk assessment based on available epidemiological, chemical, and toxicological data is necessary and will be accomplished to provide guidelines for setting preliminary limits for selected chemicals that are known carcinogens and/or toxic chemicals.

to establish the relationship of specific types of cardiovascular diseases, especially hypertension, to sodium levels in drinking water and heart attack rates to magnesium levels in drinking water. Toxicological studies will be conducted to determine the impact of various combinations (synergisms) of calcium, magnesium, lead, cadmium, sodium and other chemical substances in water on the development of cardiovascular disease. These are long-term studies that will be conducted over the next 3 to 5 years to provide supportable data for verifying the preliminary observations.

Cardiovascular disease, unfortunately, is not the only adverse health effect shown to be associated with inorganic contaminants of drinking water. Toxicological studies will be continued which will determine whether blood lead levels which are currently considered to be in the normal range, delay the central nervous system development in children. The significance of drinking water as a source (relative to other sources) will be established. The bioavailability of certain metals, such as lead, cadmium, and zinc, in hard and soft waters and in food will be investigated to determine safe levels.

Epidemiological studies will be completed to determine whether asbestos occurring in drinking water from natural erosion, mining operations, and asbestos-cement pipe is a contributing factor in increased cancer rates. The outcome of this research will provide the necessary data base for a treatment technique to reduce leaching of asbestos fibers.

Epidemiological studies of the association between barium and increased incidence of hypertension will be investigated. Previous results found in a retrospective study indicated that communities with high levels of barium (above the current standard) had higher death rates for cardiovascular disease than communities with low levels of barium. In 1981, epidemiological research will be conducted to test such a hypothesis and determine if the higher incidence of cardiovascular diseases and death rates are related to barium and/or sodium levels in drinking water. The effect of using home water softeners will also be examined since many of these devices increase the level of sodium in water.

Neurological disease, including multiple sclerosis, is being studied to determine whether there is an association between such diseases and certain inorganic, organic, or microbiological contaminants of drinking water. Both toxic metals and viruses are considered by some researchers to be possible predisposing factors for some of these chronic diseases. Since cases of multiple sclerosis occur in a north-south gradient similar to that of certain drinking water parameters, it is hoped that epidemiological research will add to our understanding of these diseases and their prevention.

of chloramines, chlorine, chlorine dioxide, and ozone disinfection will be completed. Such research should provide data useful in assessing alternative disinfection practices.

Health effects research on microbiological contaminants in drinking water will continue to be concerned with examining waterborne outbreaks of infectious diseases to determine the causative agent. The EPA, in collaboration with the Center for Disease Control, will continue to provide technical assistance and investigate ongoing waterborne disease outbreaks. Studies on the occurrence and significance of Legionella and Giardia in water supplies to assess the need for treatment criteria will be completed. Work will continue on improving methods for the concentration and identification of viruses found in drinking water which are known to be associated with waterborne disease outbreaks. These improvements will permit a more accurate assessment of the significance to health of viruses in drinking water.

Studies on the potential health effects associated with the reuse of highly treated municipal waste water which were started in 1980 will be continued. Toxicological testing techniques developed in conventional drinking water research will be applied to the wastewater reuse. Inorganic and organic constituents of advanced wastewater treatment plant effluents will be identified and additional toxicity studies performed on those substances for which little health information is available. This is part of a 10 year program which has as its ultimate objective the development of the data base sufficient to set reasonable criteria for reuse standards. Criteria will be developed by 1985 for emergency reuse.

TREATMENT AND GROUND WATER PROTECTION

1979 Accomplishments

In 1979, the program obligated \$10,068,000 of which \$2,775,600 was for salaries and expenses and \$7,292,400 for extramural activities.

In the treatment area, results in 1979 include the following:

- A report was published defining methods for determining the costs of 99 treatment processes. The report gives examples of how to conduct cost analyses and the data is arranged for computer use.
- A report was completed on granular activated carbon treatment, providing information from pilot and field evaluation projects. This data was used in establishing the data base for the standard setting process.
- Field investigations were expanded in response to increased incidences of ground water contamination from organic solvents to develop treatment techniques for removing such solvents from drinking water. Cooperative pilot scale studies with the U.S. Air Force and utilities in Connecticut and New Jersey have provided important information on the usefulness of treatment techniques such as aeration and adsorption. A project involving pilot field application of the processes was started with a utility on Long Island.

and ozone.

- A report was completed that brings together the available information on water filtration for the removal of asbestos fibers. Results from EPA sponsored research on filtration at Duluth and Seattle have shown that asbestos (both chrysotile and amphibole) fiber concentrations in drinking water can be substantially reduced by the use of coagulants and/or polymers with granular media filtration.
- Studies on asbestos cement pipe have shown the importance of pH conditions and high zinc levels to protect the pipe from attack from corrosion.
- Information was developed on the efficiency of water treatment processes for the removal of Giardia lamblia cysts from drinking water and shows that the cysts can be inactivated by chlorine. A symposium was held to bring together information on waterborne transmission and control.

The results in the ground water protection area in 1979 include the following:

- A guidance document was prepared in support of the underground injection control regulations for calculating pressure increases around injection wells to determine the radius of influence of such wells. This report was used to determine the radius of influence for several injection fields.
- An interim research report was published which provided some of the first data on the movement and fate of organic contaminants introduced directly into an aquifer during artificial recharge.
- A method for predicting ground water quality changes due to surface mining activities was extended to include coal gasification and in-situ shale retorting.
- A method was developed which allows, for the first time, uncontaminated ground water samples to be collected for trace organic analysis from depths greater than 25 feet.
- Technical assistance was provided to the Office of Enforcement as well as regional offices in developing assessment and correction strategies for several hazardous waste disposal sites.

1980 Program

In 1980, the Agency has allocated a total of \$9,734,200 to this program, of which \$3,106,800 is for the Salaries and Expenses appropriation and \$6,627,400 is for extramural purposes under the Research and Development appropriation.

In the drinking water treatment program, organic compounds, inorganic compounds (including asbestos) and microorganisms which are found as contaminants in drinking water are investigated to provide means of control. As in the health program, organic contaminants remain the highest priority research area, particularly as treatment requirements for specific organics evolve and treatment practices change.

standard setting process. Early results from evaluations of complete treatment systems will become available and will be analyzed for the user community.

Information on economical treatment processes for inorganic contaminants are being extended through evaluation of processes in the field. Pilot scale processes are being evaluated for a number of contaminants found in different water sources. Materials in water resulting from corrosion and/or additives for water treatment are addressed.

Insuring protection against microbiological contaminants continue to be a goal in this program. Thus as treatment processes change and alternate disinfectants are used, care will be taken to assure that microbiological contaminants are not increased in the attempt to reduce chemical contamination.

In the ground water protection area, biological and organic chemical indicators of ground water pollution are being assessed; short courses are being developed for ground water modelers and for water resources and quality managers who need to understand ground water models; and technical assistance is being given to the regulatory activities in developing underground injection control and hazardous waste disposal regulations. Technical assistance will be provided in completing the Surface Impoundment Assessment. Considerable involvement is underway in helping to develop an Agency ground water protection strategy. Methods for reducing ground water pollution from septic tank systems will be studied in cooperation with the municipal technology program. A major effort is also underway with three research programs cooperating to determine the ground water pollution potential from land application facilities. This latter effort will result in an understanding of some of the characteristics (e.g. chemical, geophysical and pollution source) which influence organic pollutant transport and transformation in the subsurface environment.

1980 Explanation of Change from Budget Estimate

The net decrease of \$968,800 results from several actions. An increase of \$96,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million ADP costs resulted in a decrease of \$3,500 and \$3,200, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$66,800 to this activity.

A transfer of \$991,600 was made to the water quality media to waste water systems control technology development to reflect the transfer for demonstration technology for potable reuse of waste water; the research being conducted in 1980 is in the water quality program.

1981 Plan

The Agency requests a total of \$14,079,200 and 78 permanent workyears for this program, of which \$3,588,600 is for the Salaries and Expenses appropriation and \$10,490,600 is for the Research and Development appropriation. This request reflects an increase of 10 permanent workyears and \$4,345,000 over the current level.

The increase will be focused specifically on the needs of small systems, which comprise 80 to 90 percent of all drinking water systems and which regularly serve approximately 20 percent of the U.S. population. The research is needed to evaluate information on cost-effective technology and illustration of cooperative arrangements for small systems. This type of data will enable these systems to meet national and state drinking water standards established to protect public health.

treatment methods usable by small towns; (2) develop information upon which more community cooperative arrangements can be established after which communities can establish a common source for services or can enter into an agreement with public or private organizations to provide such services; and (3) evaluate treatment systems and unit processes to determine whether or not they are amenable to certification by non-government organizations and under what circumstances certification would be meaningful. Such certification would provide valuable guidance to the small towns and the system designers in selecting treatment methods.

At the same time, the remainder of the program will move forward to provide information on economical treatment processes to control specific compounds of health concern which are discharged to, and are found in, our drinking water sources. Efforts will be made to produce, evaluate and bring together information on the performance of existing units producing water from questionable or suspect sources. The evaluations will include cost data and information on effects on microbiological quality.

In the ground water protection research area, the focus will be on developing the scientific bases for implementing EPA's ground water strategy. Also planned is a study of methods for rehabilitating already polluted aquifers. Finally, the understanding of organic transport and transformation gained in 1980 will be extended to beginning development of predictive models for assessing hazards associated with various pollution sources.

Monitoring and Technical Support

	<u>Original Estimate 1981</u>	<u>Revised Estimate 1981</u>	<u>President's Reduction</u>
	(dollars in thousands)		
<u>Appropriation</u>			
Quality Assurance:			
Salaries and Expenses.....	\$ 575	\$ 571	-\$4
Research and Development.....	<u>433</u>	<u>433</u>	<u>...</u>
Grand Total.....	1,008	1,004	- 4

DRINKING WATER

Monitoring and Technical Support

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
		(dollars in thousands)			
Quality Assurance:					
Salaries and Expenses..	\$510	\$577	\$555	\$575	\$20
Research and Development.....	<u>455</u>	<u>148</u>	<u>433</u>	<u>433</u>	...
Grand Total.....	965	725	988	1,008	+20
<u>Permanent Positions</u>					
Quality Assurance.....	11	9	10	10	...
<u>Full-time Equivalency</u>					
Quality Assurance.....	10	9	14	14	...

Budget Request

The Agency requests a total of \$1,007,800 and 10 permanent workyears for 1981, and increase of \$19,700 from 1980. Included in this total is \$574,800 for the Salaries and Expenses appropriation and \$433,000 for the Research and Development appropriation.

Program Description

The drinking water quality assurance program supports the Agency's drinking water program by standardizing monitoring methods; providing quality control procedures for operational use; supplying standard samples and reference materials; conducting methods validation and performance evaluation studies; developing sampling and analytical methodology and quality control guidelines and manuals; and participating in regional quality control workshops. The Agency uses the procedures, protocols, and materials generated by this program to assure that the data generated from the use of measurement systems are accurate, intercomparable and legally defensible.

1979 Accomplishments

During 1979, resources totaled \$964,700. Included in this total is \$509,800 for salaries and expenses and \$454,900 for extramural purposes. Specific accomplishments include the following:

- Publication of a manual for interim certification of laboratories involved in analyzing public drinking water. The manual includes chemical, microbiological and radiochemical analyses for regional and State certification.

Provision of quality control samples and standard reference materials to analytical laboratories for the analysis of currently regulated contaminants in drinking water in support of the Safe Drinking Water Act and the National Interim Primary Drinking Water Regulations.

- procedures as required under the Laboratory Certification Program.
- Certification of on-site evaluation teams in all ten EPA regions to conduct performance evaluations of drinking water laboratories in their respective regions.
 - Completion of 25 on-site evaluations of State and regional radiochemistry laboratories.
 - Evaluation and approval of two alternative analytical test procedures for national use.

1980 Program

In 1980, the Agency has allocated a total of \$988,100 to this program, of which \$555,100 is in the Salaries and Expenses appropriation and \$433,000 is for extramural purposes in the Research and Development appropriation. Major activities of the program include:

- National interlaboratory performance evaluations;
- On-site evaluation of principal State radiochemistry laboratories and four EPA regional radiochemistry laboratories;
- Development, preparation and distribution of quality control and performance evaluation samples for use by EPA regions and States;
- Validation of several measurement methods for monitoring trace metals and pesticides;
- Preparation and distribution of quality assurance guidance for EPA regions, including assistance in proper use of test procedures and quality control techniques; and
- Continuation of evaluation and approval of alternate analytical test procedures for national use.

1980 Explanation of Change from Budget Estimate

The net increase of \$263,100 results from several actions. An increase of \$21,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$7,000 to this activity.

A transfer of \$250,000 was made from the Air media from air quality assurance to correct an incorrect transfer of interdisciplinary funds to the air media in the budget request; the funds were reprogrammed to the media to more accurately portray the intended purpose by media of the quality assurance program.

The Agency requests a total of \$1,007,800 and 10 permanent workyears for this program of which \$574,800 is in the Salaries and Expenses appropriation and \$433,000 is for the Research and Development appropriation.

In 1981, the program will:

- Evaluate and validate alternate analytical measurement methods.
- Develop and deliver quality control samples, reference materials and technical assistance documents required to support drinking water standards.
- Develop a repository of quality control reference samples for radio-chemical, chemical, and biological measurements in support of the laboratory certification program.
- Prepare and publish quality control guidelines, sampling procedures, and analytical methods manuals for radiochemical, chemical, biological, and microbiological measurement methods.
- Develop national guidance to assure uniformity for evaluating and certifying public water supply laboratories.
- Develop an automated water laboratory test system for EPA and State drinking water laboratories.
- Conduct on-site inspection and performance evaluations for the program office and regional laboratories to determine the capabilities of measurement systems and operators to analyze drinking water for unknown contaminants.

Criteria, Standards, and Guidelines

	Actual 1979	Budget Estimate 1980 (dollars	Current Estimate 1980 in thousands)	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Drinking Water Standards and Regulations Development:					
Salaries and Expenses	\$2,022	\$1,720	\$2,616	\$2,983	+\$367
Abatement, Control and Compliance.....	3,224	3,500	3,282	2,300	-982
State Program Guidelines and Regulations Development:					
Salaries and Expenses	2,034	2,000	2,401	2,475	+74
Abatement, Control and Compliance.....	2,017	2,000	1,770	1,537	-233
Total:					
Salaries and Expenses	4,056	3,720	5,017	5,458	+441
Abatement, Control and Compliance.....	5,241	5,500	5,052	3,837	-1,215
Grand Total.....	9,297	9,220	10,069	9,295	-774
<u>Permanent Positions</u>					
Drinking Water Standards and Regulations Development.....	39	45	52	46	-6
State Program Guidelines and Regulations Development.....	48	58	54	55	+1
Total.....	87	103	106	101	-5
<u>Full-time Equivalency</u>					
Drinking Water Standards and Regulations Development.....	45	54	58	54	-4
State Program Guidelines and Regulations Development.....	55	65	66	65	-1
Total.....	100	119	124	119	-5

DRINKING WATER

Criteria, Standards, and Guidelines

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Drinking Water Standards and Regulations Development:			
Salaries and Expenses.....	\$ 2,983	\$ 2,971	-\$12
Abatement, Control and Compliance....	2,300	2,300	...
State Program Guidelines and Regulations Development:			
Salaries and Expenses	2,475	2,461	-14
Abatement, Control and Compliance	1,537	1,537	...
Total:			
Salaries and Expenses	5,458	5,432	-26
Abatement, Control and Compliance	3,837	3,837	...
and Total	9,295	9,269	-26

The Agency requests a total of \$9,294,900 for 1981, a decrease of \$773,400 from 1980. Included in this total is \$5,457,500 for Salaries and Expenses and \$3,837,400 for Abatement, Control and Compliance, with an increase of \$440,900 and a decrease of \$1,214,300, respectively. These resources will be used to develop revised primary drinking water regulations; establish additional contaminant standards; provide guidance and assistance to the regions and States on the implementation of the organics regulations and for emergency exposure situations and emergency response; and review of variances and exemptions and compliance schedules, and development of compliance schedules where EPA has primacy. EPA will also develop methods to determine drinking water quality criteria of direct and indirect reuse of waste water; establish ground water quality criteria; develop guidance documents on the implementation of the UIC program in non-primacy States and on Indian lands, provide national oversight and conduct program evaluations of the public water systems, underground injection control and sole source programs; and establish a comprehensive testing and evaluation program for point-of-use home water treatment devices.

Program Description

The Safe Drinking Water Act requires EPA to assure the safety of drinking water through the establishment and implementation of national primary drinking water regulations specifying maximum permissible bacteriological, chemical, and radiological contaminant levels to protect the public health. This requires EPA to determine exposure and health risks of drinking water contaminants and to assess the technology and economic feasibility of controlling these contaminants. Interim primary drinking water regulations which addressed bacteriological, radiological, and chemical contaminants became effective in June 1977. Based upon the National Academy of Sciences (NAS) report received by EPA in May 1977, EPA revised a portion of these regulations to include additional contaminants. Further revisions to these regulations based on the NAS study and subsequent studies are being developed. In addition, EPA promulgated in June 1979 secondary drinking water regulations which deal with the aesthetic quality of drinking water.

EPA is also responsible for developing regulations and program guidance for State public water systems supervision and underground injection control programs. The public water system supervision program regulations provide that all public water systems meet the requirements of the interim and revised primary drinking water regulations. The underground injection control program regulations are designed to protect existing and potential underground drinking water sources from contamination through underground injection practices. EPA is adopting a phased approach in listing the States which require UIC programs. To date, 41 States have been listed with the remaining States to be listed during 1980. This schedule will allow the control of underground hazardous waste disposal under the UIC program to commence simultaneously with control of hazardous waste disposal under the Resource Conservation and Recovery Act. As part of the effort to protect underground sources of drinking water, regulations for the designation of sole source aquifers are being developed. Additional activities to provide support in program development such as data management, public awareness, special monitoring studies, and toxicological assistance will continue.

During 1979, obligations totalled \$5,245,800, of which \$3,223,700 was for extramural projects. In 1979, public hearings on the proposed revisions to the Interim Primary Drinking Water Regulations (IPDWR) for trihalomethane and synthetic organics were conducted. In addition, an international symposium on granular activated carbon treatment technology was jointly sponsored to address the effectiveness of the technology in organics removal. Based upon the public comments, final trihalomethane regulations were prepared. Secondary drinking water regulations on the aesthetic quality of drinking water were promulgated in 1979. Economic impact studies of these and other program regulations were conducted, and management information systems on monitoring data, violations, etc. were maintained. Amendments to the 1977 regulations particularly affecting non-community systems were proposed in 1979.

Other accomplishments during 1979 included the completion of the mandated study on viruses in drinking water, signing of a memorandum of agreement between EPA and the Food and Drug Administration transferring to EPA authority over direct and indirect additives to drinking water. In addition, public hearings were conducted on the Draft Report on Water Supply - Wastewater Coordination Study mandated by Section 1442 of the Safe Drinking Water Act and Section 516 of the Clean Water Act. Scientific expertise was provided during the Three-Mile Island nuclear accident to ensure that the drinking water supplies did not exceed the maximum contaminant levels for radionuclides. In addition, a large number of advisory values for non-regulated contaminants were evaluated.

1980 Program

In 1980, the Agency has allocated a total of \$5,897,700 to this program element, of which \$2,615,700 is for the Salaries and Expenses appropriation and \$3,282,000 is for extramural purposes under the Abatement, Control and Compliance appropriation. The activities in this element will continue to emphasize the Agency's continuing health initiative. An amendment to the IPDWR for trihalomethanes (THMs) was promulgated on November 29, 1979. Guidance documents on the implementation of the THM regulation will be prepared: treatment requirements for organics removal will be re-examined; and technical amendments to the Interim Primary Drinking Water Regulations will be promulgated. These amendments will revise the monitoring requirements for bacteriological contaminants and turbidity in non-community systems and will establish new requirements for sodium and corrosion control.

To implement the Memorandum of Understanding with the Food and Drug Administration, procedures and protocols to control direct and indirect additives to drinking water will be established and implemented.

Section 1442 of the Safe Drinking Water Act authorizes the Administrator to conduct a variety of studies dealing with drinking water. Many of these studies are on-going and require constant modifications. Studies to be completed this year are: (1) cost of compliance with National Interim Primary Drinking Water Regulations and alternative means of financing these costs; (2) reaction of chlorine and humic acids and effects of the contaminants which result from such reactions; (3) present and future availability of safe supplies of drinking water; and (4) study of polychlorinated biphenyls and other substances known or suspected to be carcinogenic which contaminate actual or potential sources of drinking water and the effects of such contamination and means of controlling, treating or removing such contaminants.

the net increase of \$27,000 resulting from certain activities. The net increase of \$27,000 is included in a proposed supplemental appropriation. A congressional reduction of \$1 million to Agency ADP costs resulted in a decrease of \$22,900. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$70,400 to this activity.

A reprogramming of \$1,000,000 was made within the drinking water media from special studies and demonstrations to provide support for the program to control direct/indirect additives to drinking water. A transfer of \$141,600 within the Office of Water and Waste Management was made to program management to reflect centralizing economic analysis activities. A reprogramming was also made of \$159,000 within drinking water to state program guidelines and regulations development.

1981 Plan

The Agency requests a total of \$5,283,000 for this program, of which \$2,982,500 is for the Salaries and Expenses appropriation and \$2,300,500 is for the Abatement, Control and Compliance appropriation. The Abatement, Control and Compliance funds will be used to gather data on drinking water contaminants, to evaluate health effects data and technological techniques and to conduct economic impact studies on the cost of meeting and implementing the drinking water regulations. The major objective of the 1981 program will be to expand the coverage of the primary drinking water regulations. This includes establishing standards for 10 organic chemicals and protozoa, virus and 10 inorganic chemicals; promulgation of comprehensive revisions to the coliform bacteria regulations and monitoring frequency requirements. In addition, the following activities will be undertaken: developing methods to determine drinking water quality criteria for direct and indirect reuse of waste water; and establishment of a comprehensive testing and evaluation program for point-of-use home water treatment devices. The activity relating to the control of direct and indirect additives to drinking water that was initiated in 1980 will be severely curtailed.

STATE PROGRAMS GUIDELINES AND REGULATIONS DEVELOPMENT

1979 Accomplishments

Obligations in 1979 totalled \$4,050,900, of which \$2,016,800 was for extramural purposes. Accomplishments for the State programs guidelines and regulations development are divided into two major categories: public water systems supervision program and the ground water protection program.

In the public water system supervision program an additional five States were approved for primary enforcement responsibility, bringing the total to 44. All ten regional offices were evaluated, which included determination of program effectiveness in 15 non-primacy States. Management steps were taken to improve performance. Also, a comprehensive guidance on the issuance of variances and exemptions was developed and public participation and awareness activities were continued.

Accomplishments in the ground water protection program included the reproposal of the Underground Injection Control Regulations; the designation of 18 additional States as requiring underground injection control programs; the review of two new sole source aquifer petitions and approval of one petition for designation; promulgation of the UIC grant regulations and issuance of program guidance on the conduct of the inventory of injection wells, and on aquifer mapping.

In 1980, the Agency has allocated a total of \$4,170,600 to this program, of which \$2,400,900 is for salaries and expenses and \$1,769,700 is for extramural purposes under the Abatement, Control and Compliance appropriation.

In the public water system supervision program, attention will focus on continued oversight of regional operations in primacy States and program activities in non-primacy States. Guidance will be developed for the issuance of variances and exemptions for new standards, and assistance will be provided on the implementation of the THM regulations. The priority of the ground water protection program is the development of a coordinated agency ground water strategy. Other activities to be conducted include the designation of the remaining States requiring UIC programs; promulgation of the UIC and sole source aquifer regulations; providing guidance on UIC program implementation and public participation and awareness activities relating to the UIC program. Data from the assessment of surface impoundments will be analyzed and a final report prepared.

1980 Explanation of Change from Budget Estimate

The net increase of \$170,600 results from several actions. An increase of \$85,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$5,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$69,300 to this activity.

A reprogramming of \$159,000 was made within the drinking water media from standards and regulations development in order to support costs projected on the basis of 1979 actual expenditures.

1981 Plan

The Agency requests a total of \$4,011,900 for this program, of which \$2,475,000 is for the Salaries and Expenses appropriation and \$1,536,900 is for the Abatement, Control and Compliance appropriation. National oversight of the public water system supervision program will be conducted through regional program evaluations, and guidance for program implementation in non-primacy States, Indian lands and on interstate carriers will be issued. Other planned activities include review of variances and exemptions granted for drinking water regulations and assistance in conducting State evaluations. Activities in the ground water protection program will focus on the development of guidance documents for implementation of UIC programs in non-primacy States and Indian lands; review of UIC primacy applications; guidance on implementation of an ADP system for the UIC program; implementation of a public information strategy; and evaluation of regional implementation of the sole source program. Other activities in the ground water protection program will include finalization of the Report on Surface Impoundments.

State Program Resource Assistance

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Public Water Systems			
Supervision Program Grants:			
Abatement, Control and Compliance.....	\$29,450	\$29,450	...
Underground Injection Control Grants:			
Abatement, Control and Compliance.....	8,574	8,574	...
Special Studies, Demonstrations and Training:			
Abatement, Control and Compliance.....	1,550	1,550	...
Total:			
Abatement, Control and Compliance.....	39,754	39,574	...

State Program Resource Assistance

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
			(dollars in thousands)		
<u>Appropriation</u>					
Public Water Systems Supervision Program Grants:					
Abatement, Control and Compliance.....	\$25,057	\$29,450	\$29,450	\$29,450	...
Underground Injection Control Grants:					
Abatement, Control and Compliance.....	6,638	7,795	4,395	8,574	+\$4,179
Special Studies, Demonstrations and Training:					
Abatement, Control and Compliance.....	2,243	1,550	900	1,550	+650
Total:					
Abatement, Control and Compliance.....	33,938	38,795	34,745	39,574	+4,829
<u>Permanent Positions....</u>	...	...	...	...	...
<u>Full-time Equivalency..</u>	...	...	...	...	...

Budget Request

The Agency requests a total of \$39,574,500 for 1981 for the Abatement, Control and Compliance appropriation, an increase of \$4,829,500 from 1980. These funds support State activities in acquiring and maintaining primary enforcement responsibility for the public water system supervision and underground injection control programs. Financial assistance will also be provided to State rural water associations to provide training and technical assistance to small rural water systems.

Program Description

Under the Safe Drinking Water Act, the States are encouraged to assume principal responsibility for implementing the public water system supervision and underground injection control programs. Recognizing that the States would require financial assistance to implement these programs, Congress has appropriated funds to the States to aid in developing and maintaining programs that would satisfy the minimum requirements of the regulations designed to protect public health and underground sources of drinking

water. These financial assistance programs are a means of strengthening the cooperative relationship between the State and Federal Governments. In the public water system supervision program, only States with primacy are eligible for grants. In the underground injection control program, only States designated by the Administrator are eligible for grants. Currently, 41 States have been designated, the remainder will be designated during 1980. All States must assume primacy within two years after the original grant award to be eligible for continued financial assistance. In the underground injection control grant program, EPA may utilize the funds for its implementation activities in States that indicate their intent not to assume primary enforcement responsibility.

Financial assistance is also provided to State rural water associations to aid in providing technical assistance and training to owners and operators of small rural water systems to enable them to meet the requirements of the Safe Drinking Water Act. Fellowships and academic grants are awarded to State and local staff to aid in their continuing education in the drinking water field.

PUBLIC WATER SYSTEMS SUPERVISION PROGRAM GRANTS

1979 Accomplishments

During 1979 a total of \$25,057,200 was awarded to 50 States that had either assumed primacy or were making a diligent effort and showed substantial progress toward assuming primacy. The States used these funds for salaries and other administrative costs to carry out the following activities: maintenance of data systems; enforcement of Interim Primary Drinking Water Regulations; laboratory certification and updating laboratory capabilities; surveillance and technical assistance to community water systems; and public participation and awareness. As a result of this financial assistance, five additional States were approved for primacy during 1979 bringing the total to 44.

1980 Program

In 1980, the Agency has allocated a total of \$29,450,000 to this program under the Abatement, Control and Compliance appropriation. These funds are available to provide financial assistance to those States which have assumed primacy for the public water system supervision program. Currently 45 States have primacy and an additional six may achieve primacy and be eligible for grants. These grant funds will be used for salaries and other related program management activities; implementation of the organic regulations; data management; enforcement of the National Interim Primary Drinking Water Regulations, and public notification, public participation, and public awareness, and training programs for State personnel.

1980 Explanation of Change from Budget Estimate

There is no change from the budget estimate.

1981 Program

The Agency requests a total of \$29,450,000 for this program under the Abatement, Control and Compliance appropriation. These funds will be used to maintain present on-going State programs which include emergency response; data processing systems; adoption of organic regulations; sanitary surveys; follow-up on MCL violation notifications; and public participation and awareness activities. In addition, funds will support revisions to existing programs to include implementation of the trihalomethane regulations and

other amendments to the Interim Primary Drinking Water Regulations; the implementation of the small systems strategy; and additional follow-up of systems which are in non-compliance with drinking water regulations.

STATE PROGRAM RESOURCE ASSISTANCE - UNDERGROUND INJECTION CONTROL PROGRAM (UIC)

1979 Accomplishments

During 1979, grant funds totalling \$7,600,000 were available to the States for establishing UIC programs; obligations totalled \$6,637,700. Forty-one (41) States are eligible to apply for grants to develop and establish their UIC programs. In the event that a State indicates that it will not assume primacy and does not elect to apply for a grant, EPA may utilize the funds allocated to such States and/or Indian lands to award contracts or grants or to cover in-house costs related to activities which could not be delegated to a non-Federal entity in the development and implementation of an underground injection control program. Activities included: establishing the institutional framework for implementing a UIC program; conducting inventories of injection facilities of Class I, II, III, IV, and V wells; mapping of aquifers to be used in designation of underground sources of drinking water; and establishing public participation and awareness activities.

1980 Program

In 1980, the Agency has allocated a total of \$4,395,000 to this program under the Abatement, Control and Compliance appropriation. These funds are available to all States designated as requiring a UIC program. Approximately \$85,000 will be used by EPA to cover additional salaries and expenses of regional personnel who are working to implement UIC programs on Indian lands. EPA will also use the funds allocated to States who indicate they will not assume primacy to issue contracts and grants for providing assistance in establishing and implementing programs in these States. Activities to be conducted by the States and/or EPA will include: inventory of wells; Class I and II permit reviews; permitting a limited number of salt water disposal wells; aquifer mapping; administration and support services; and emergency response.

1980 Explanation of Change from Budget Estimate

The decrease of \$3,400,000 is a result of congressional action.

1981 Program

The Agency requests \$8,574,500 for this program under the Abatement, Control and Compliance appropriation. Funds will be available to support program implementation activities in those States which have achieved primary enforcement responsibility within two years after receiving their initial grant and those States seeking primacy within the two-year period. For those States that have not assumed primacy, EPA will use their allocated funds to implement their programs. Approximately \$100,000 will be transferred to salaries and expenses to defray expenses associated with implementation activities which cannot be performed by a non-Federal entity. Activities to be conducted will include report review and surveillance of Class I, II, and III wells; Class III well site permit review; training of well operators; regulation by rule; aquifer mapping; permitting additional wells; regulating Class IV wells, inventory and assessment of Class V wells; and administration and support services.

SPECIAL STUDIES AND DEMONSTRATIONS AND TRAINING

1979 Accomplishments

Grants totalling \$2,000,000 were awarded to 24 rural water associations use in educating the owners/operators of rural water systems in the requirements for the Safe Drinking Water Act and also for providing technical assistance in the solutions of drinking water problems. Sixty-five (65) fellowships totalling approximately \$173,000 were awarded to State personnel to update and increase their knowledge in drinking water technology. Also, 28 grants totalling \$68,980 were awarded to academic institutions to encourage academic pursuits and careers in the drinking water field.

1980 Program

In 1980, the Agency has allocated a total of \$900,000 to this program under the Abatement, Control and Compliance appropriation. A total of \$400,000 will be awarded to State rural water associations to maintain support to rural water districts for training, technical assistance, public awareness projects and special studies. Approximately 30 fellowships totalling \$500,000 will awarded for continued training of State and local personnel in the drinking water field.

1980 Explanation of Change from Budget Request

A net decrease of \$650,000 results from (1) the transfer of \$1 million within the drinking water media to standards and regulations development to provide extramural funds for the control of direct and indirect additives to drinking water and (2) the congressional increase of \$1.5 million for academic training, of which \$350,000 was for the drinking water media.

1981 Program

The Agency requests a total of \$1,550,000 for this program under the Abatement, Control and Compliance appropriation. These funds will be used to continue and expand programs in approximately 24 State rural water associations.

DRINKING WATER

Drinking Water Management

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Drinking Water Management Public			
Water Systems:			
Salaries and Expenses.....	\$6,199	\$6,161	-\$38
Abatement, Control and Compliance.....	1,208	1,208	...
Drinking Water Management			
Ground Water Protection:			
Salaries and Expenses.....	2,383	2,372	-11
Abatement, Control and Compliance.....	<u>35</u>	<u>35</u>	<u>...</u>
Total:			
Salaries and Expenses.....	8,582	8,533	-49
Abatement, Control and Compliance.....	<u>1,243</u>	<u>1,243</u>	<u>...</u>
Grand Total.....	9,825	9,776	-49



DRINKING WATER

Drinking Water Management

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Drinking Water Management					
Public Water Systems:					
Salaries and Expenses..	\$5,190	\$5,585	\$5,701	\$6,199	+\$498
Abatement, Control and Compliance.....	183	2,500	1,266	1,208	-58
Drinking Water Management					
Ground Water Protection:					
Salaries and Expenses..	963	1,715	1,227	2,383	+1,156
Abatement, Control and Compliance.....	15	...	35	35	...
Total:					
Salaries and Expenses..	6,153	7,300	6,928	8,582	+1,654
Abatement, Control and Compliance.....	198	2,500	1,301	1,243	-58
Grand Total.....	6,351	9,800	8,229	9,825	+1,596
<u>Permanent Positions</u>					
Drinking Water Management					
Public Water System.....	183	217	207	208	+1
Drinking Water Management					
Ground Water Protection.	34	47	45	61	+16
Total.....	217	264	252	269	+17
<u>Full-time Equivalency</u>					
Drinking Water Management					
Public Water Systems....	204	228	230	232	+2
Drinking Water Management					
Ground Water Protection.	37	48	46	67	+21
Total.....	241	276	276	299	+23

Budget Request

The Agency requests a total of \$9,524,900 for 1981, an increase of \$1,595,400 from 1980. Included in this total are \$8,582,200 for the Salaries and Expenses appropriation and \$1,242,700 for the Abatement, Control and Compliance appropriation, with an increase of \$1,653,900 and a decrease of \$58,500, respectively.

to provide oversight of States with primary enforcement responsibility, continue to assist in the implementation of the organic regulations, and continue EPA implementation in non-primacy States. The activities of the ground water protection program include the implementation of the sole source aquifer regulations and assistance to the States in the development and implementation of underground injection control (UIC) programs. The UIC program activities to be carried out by EPA in States without primacy include conduct of inventories and assessments of injection facilities, aquifer mapping, designation of aquifers which are drinking water sources, technical review of permit applications, and implementation of training and public awareness programs.

Program Description

Under the Safe Drinking Water Act, Congress intended that the States would be primarily responsible for assuring the safety of drinking water and the protection of underground sources of drinking water. The role of the Federal Government is to provide assistance to the States in the development of the public water systems supervision and the underground injection control programs. To assist States in developing and implementing these programs, EPA personnel provide guidance on the interpretation of regulatory requirements and specify the minimum requirements for primary enforcement responsibility. In the event that States are unable or unwilling to assume responsibility for either the public water system supervision or the underground injection control programs, EPA must develop and administer control strategies and programs. This includes monitoring and surveillance activities as well as record-keeping responsibilities. In addition, EPA is required to establish and implement similar programs in Indian reservations and for interstate carrier conveyances. Drinking water management activities for the public water systems supervision programs include implementation of Federal responsibilities in those States that do not assume primacy, oversight of States with primacy, review of variances and exemptions, and assistance in the implementation of the organics standards. The drinking water management activities for the ground water protection program include the review and processing of sole source aquifer designations petitions; review of projects in designated areas; assistance to those State which are designated as requiring UIC programs to encourage assumption of primacy; coordination of regional ground water programs with RCRA programs; implementation of a ground water strategy; development of public participation and awareness activities; establishment of programs in non-primacy States; oversight in primacy States; and emergency response assistance.

DRINKING WATER MANAGEMENT - PUBLIC WATER SYSTEM SUPERVISION

1979 Accomplishments

A total of \$5,373,600 was obligated, of which \$183,400 was for extramural purposes. Five additional States achieved primacy during 1979 bringing the total to 44. Oversight was provided for the 44 primacy States; 15 primacy State evaluations were conducted and programs were implemented in the 13 non-primacy States. Other activities included review of violation and public notification reports, assistance to the States relating to the inclusion of non-community systems in their public water system supervision program; and assistance to States in issuing variances and exemptions and establishing compliance schedules. In addition, emergency assistance was provided in the Three-Mile Island nuclear accident.

1980 Program

In 1980, the Agency has allocated a total of \$6,967,100 to this program, of which \$5,700,900 is for Salaries and Expenses and \$1,266,200 is for extramural purposes under the Abatement, Control and Compliance appropriations. These resources will be used to provide continued oversight in 45 primacy States which includes grant administration, program review, technical assistance in adopting the organic regulations

during the year and will continue implementing a full program in the remaining six non-cooperating States. EPA activities in non-primacy States will include issuing exemptions, developing compliance agreements, surveillance, implementation of non-community systems program, assuring public notification and monitoring and reporting. Abatement, Control and Compliance funds support EPA's implementation activities in non-primacy States.

1980 Explanation of Change from Budget Estimate

The net decrease of \$1,117,900 results from several actions. An increase of \$219,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$31,900 and \$14,400, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$216,000 to this activity.

Reprogrammings in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfers from water quality NEPA compliance municipal waste facility construction (\$43,800); from water quality manpower planning and training (\$44,100); from drinking water Underground Injection Control Program (\$40,600); to water quality municipal waste treatment facility construction (\$211,900); to water quality ambient water quality monitoring (\$114,400); to water quality NEPA compliance/EIS preparation (\$7,200); to water quality environmental emergency response and prevention (\$39,100); to water quality waste treatment operations and maintenance (\$2,800); to water quality state programs regulations and guidelines (\$8,700); and to water quality spill prevention and response (\$1,300).

A transfer of \$1,250,000 was made to water quality ambient monitoring for regional lab equipment which is being used for monitoring and analysis work.

1981 Program

The Agency requests a total of \$7,407,000 for this program, of which \$6,199,300 is for the Salaries and Expenses appropriation and \$1,207,700 is for the Abatement, Control and Compliance appropriation. These resources will be used for oversight and evaluation of State primacy programs, assistance to States on modifications to the primary drinking water regulations, program implementation in non-primacy States which will include sanitary surveys, public notification for violations of the primary drinking water regulations, record-keeping, data management and review of requests for variances. The Abatement, Control and Compliance resources will support these EPA activities in non-primacy states. In addition, continuing program activities include operation of public water systems supervision programs on Indian lands, for interstate carrier conveyances and on Federal facilities in non-primacy States.

DRINKING WATER MANAGEMENT - UNDERGROUND INJECTION CONTROL

1979 Accomplishments

Obligations in 1979 totalled \$977,200, of which \$14,700 was for extramural purposes. Activities in this program element focused on technical assistance to 23 designated States to assist and encourage them in assuming primary enforcement responsibility for the UIC program. Activities included assistance to the States in the preparation of program plans, grant applications and review of existing programs to assess the impact of proposed underground injection control regulations. Sole source aquifer designation petitions were processed and technical evaluations initiated. In addition, projects proposed in designated areas were reviewed to ensure that the sole source aquifer would not be contaminated. Assistance and oversight was provided for the State surface impoundment assessments. The regions also provided emergency

which \$1,227,400 is for the Salaries and Expenses appropriation and \$35,000 is for the Abatement, Control and Compliance appropriation. The regions will provide guidance and technical assistance in developing State programs to all States working toward primary enforcement responsibility. Activities that will be included are assistance in the preparation of grant applications, assessments of current programs, statutes and regulations; and development of UIC programs. Regions will be implementing public awareness activities in an effort to communicate the need for State UIC programs in ground water protection. Plans will be formulated for total or partial EPA implementation of UIC programs in States that are unable or unwilling to assume primary enforcement responsibility and on Indian lands. Special efforts will be placed on the coordination of the UIC program with the RCRA program.

Activities in the sole source aquifer program will continue with an estimated five petitions to be received during 1980. Other activities will include completion of the State surface impoundment assessments coordination of regional ground water programs with RCRA programs; and participation in the development of a coordinated ground water strategy.

1980 Explanation of Change from Budget Estimate

The net decrease of \$452,600 results from several actions. An increase of \$47,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and salaries and expenses resulted in a decrease of \$7,400 and \$3,900, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$49,400 to this activity.

Reprogrammings in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfers to solid waste hazardous management regulatory stratospheric implementation (\$9,500); to water quality environmental emergency response and prevention (\$1,200); to municipal waste treatment facility construction (\$172,000); to pesticide use management (\$42,200); to solid waste management program implementation (\$4,500); to ambient air quality monitoring (\$176,600); to water quality waste treatment operations and maintenance (\$4,200); to air quality management implementation (\$65,800); to drinking water public systems supervision program assistance (\$40,600); to solid waste uncontrolled hazardous waste sites (\$17,100); to air EIS review (\$5,600); and from noise regional program implementation (\$1,300).

1981 Program

The Agency requests a total of \$2,417,900 for the program, of which \$2,382,900 is for the Salaries and Expenses appropriation and \$35,000 is for the Abatement, Control and Compliance appropriations. The major program activity will focus on assistance to the States which are eligible to assume primary enforcement responsibility. In addition, EPA will prepare implementation programs for Indian lands and for those States that do not assume primacy. Simultaneous with this effort, EPA will continue to work with the remaining States in their efforts to achieve primacy within the statutorily mandated timeframe. The regions will continue to administer the sole source aquifer program which includes the technical review of petitions and reviews of proposed projects on designated aquifers. Coordination with the NPDES and RCRA programs will be a high priority activity.

Drinking Water Enforcement

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 755	\$ 750	-\$5
Abatement, Control and Compliance.....	<u>9</u>	<u>9</u>	<u>...</u>
Total.....	764	759	- 5

DRINKING WATER

Drinking Water Enforcement

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and Expenses.....	\$469	\$835	\$871	\$755	-\$116
Abatement, Control and Compliance...	48	...	66	9	-57
Total.....	517	835	937	764	-173
<u>Permanent Positions</u>	15	31	33	28	-5
<u>Full-time Equivalency</u>	18	34	34	32	-2

Budget Request

The Agency requests a total of \$764,500 for 1981, a decrease of \$172,700 from 1980. Included in this total is \$755,200 for Salaries and Expenses and \$9,300 for Abatement, Control and Compliance, with a decrease of \$115,600 and \$57,100 respectively. The 28 permanent workyears requested for 1981 is a decrease of five from the 1980 level.

Program Description

The Safe Drinking Water Act of 1974, as amended, provides the statutory requirements for a Federal/State drinking water program. The Act assures the safety of drinking water through two mechanisms: the establishment and enforcement of Primary Drinking Water Regulations, which specify the maximum allowable levels of drinking water contaminants, and Underground Injection Control (UIC) regulations for protection of underground drinking water supplies.

The Safe Drinking Water Act provides for State assumption of the drinking water program, and requires EPA to implement the program in States that have not been delegated enforcement responsibility. The Public Water System (PWS) program encompasses the following enforcement activities; investigate violations and take legal action against violators of the Primary Drinking Water Regulations in primacy States which request such assistance and in all non-primacy areas, review variances and exemptions granted by primacy States to assure compliance with the regulations, issue variances and exemptions in non-primacy areas, and where necessary initiate emergency enforcement actions.

The Underground Injection Control (UIC) program requires that EPA designate States which can assume the UIC program. By 1981 all 57 States will be designated. Enforcement program activities will include approval of the enforcement sections of primacy applications for State UIC programs, preparation for implementing UIC compliance monitoring and enforcement programs in non-primacy States, issuance of UIC permits, investigation and initiation of enforcement action for violations of the regulations and response to emergencies when necessary.

In 1979, a total of \$17,800 was allocated, of which \$10,000 was for contracts. Included in this amount is \$17,800 for analytical support services for investigations of an emergency action.

During 1979, EPA initiated the first two civil actions for violations of the Safe Drinking Water Act (SDWA). These actions enhance the credibility of the enforcement program within the regulated community and provide valuable experience for future preparation and prosecution of similar actions.

Drinking water enforcement activities also included oversight responsibility in 45 primacy States and territories, enforcement responsibility in 12 non-primacy States and territories, and review of the enforcement aspects of six State primacy applications. In addition, draft amendments to the Safe Drinking Water Act (SDWA) were prepared. The proposed amendments contain provisions which would streamline the enforcement process by providing authority for the issuance of administrative compliance orders and the assessment of administrative civil penalties.

1980 Program

In 1980, the Agency has allocated a total of \$937,200 and 33 permanent workyears to this program. Of the \$937,200, \$870,800 is for Salaries and Expenses and \$66,400 for extramural purposes under the Abatement, Control and Compliance appropriation.

During 1980, the highest priority of the drinking water enforcement program will be response to emergency drinking water situations that involve imminent and substantial hazards to public health and safety. The program will also focus on issuing approximately 180 variances and exemptions to public water systems in non-primacy States not in compliance with Primary Drinking Water Regulations and on initiating enforcement actions, where necessary, to assure compliance with the requirements of the Act. An estimated 30 enforcement actions will be undertaken for violations of the regulations by public water systems in States without primacy and in States that have primacy but have requested EPA assistance.

Additional resources will be devoted to overseeing State public water supply primacy programs, preparing program guidance for issuance of variances and exemptions, initiation of enforcement actions, and evaluation of State UIC primacy applications.

In 1980, the extramural funds will be used to provide quick analytical support for response to potential emergencies involving imminent and substantial hazards to public health and safety.

1980 Explanation of Change from Budget Estimate

The net increase of \$102,600 results from several actions. An increase of \$33,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$6,300 and \$2,200, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$80,300 to this activity.

Regional reprogrammings in order to support personnel costs in those areas which changed from the projections used one-year ago in the formulation of the 1980 budget resulted in transfers from toxic substances enforcement (\$12,900); to air stationary source enforcement (\$1,900); to financial management (\$10,000); and to personnel management (\$3,500).

In 1981, the Agency requests a total of \$764,500 for this program, of which \$755,200 is for the Salaries and Expenses appropriation, and \$9,300 is for the Abatement, Control and Compliance appropriation. The request for 28 permanent workyears represents a decrease of five from the previous year's level.

During 1981, the highest priority of the drinking water enforcement program will be response to emergency drinking water situations that involve imminent and substantial hazards to public health and safety. Drinking water enforcement will also focus on two programs: public water systems implementation and underground injection control (UIC). For the public water system implementation program, activities will include overview of State Drinking water enforcement programs (PWS & UIC), review of 21 primacy applications, providing legal support for variance and exemption activities in non-primacy States, support for the initiation of approximately 23 new enforcement actions, and continued support for enforcement proceedings initiated in 1980. Activities will also include issuance of Notices of Violation to States with primacy that have not adequately enforced provisions of the Act. The UIC program will begin implementation in 1981. The implementation plan includes legal and technical support for overview of State primacy programs, permit program initiation, and compliance monitoring and enforcement programs in non-primacy States. If necessary, a limited number of UIC permits will be issued by EPA in non-primacy States.



Solid Waste

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		

Appropriation

Salaries and Expenses.....	\$32,895	\$32,719	-\$176
Research and Development.....	22,562	22,562	...
Abatement and Control and Compliance.....	91,991	91,991	...
Total	\$147,448	\$147,272	-176

PROGRAM HIGHLIGHTS

Public Sector Activities:

Salaries and Expenses.....	3,884	3,865	-19
Research and Development.....	22,562	22,562	...

Total, Research and Development Program.....	26,446	26,427	-19
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Waste Management Regulations, Guidelines and Policies:

Salaries and Expenses.....	6,369	6,332	-37
Abatement, Control and Compliance.....	18,637	18,637	...

Financial Assistance:

Abatement, Control and Compliance.....	48,000	48,000	...
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Waste Management Strategies Implementation:

Salaries and Expenses.....	10,130	10,075	-55
Abatement, Control and Compliance.....	3,033	3,033	...

Technical Assistance:

Salaries and Expenses.....	1,600	1,593	-7
Abatement, Control and Compliance.....	5,094	5,094	...

Uncontrolled Hazardous Waste Sites:

Salaries and Expenses.....	1,737	1,733	-4
Abatement, Control and Compliance.....	16,570	16,570	...

Total



Hazardous Waste Enforcement:

Salaries and Expenses.....
Abatement, Control and Compliance....

Original Estimate 1981	Revised Estimate 1981	President's Reduction
\$5,086 632	5,059 632	-27 ...

Permits Issuance:

Salaries and Expenses.....
Abatement, Control and Compliance...

4,090 25	4,063 25	-27 ...
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Total:

Salaries and Expenses.....
Abatement, Control and Compliance...

9,176 657	9,122 657	-54 ...
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Total, Enforcement Program.....

9,833	9,779	-54
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<u>Appropriation</u>	<u>Actual 1979</u>	<u>Estimate 1980</u>	<u>Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>	<u>Page</u>
			(dollars in thousands)			
Salaries and Expenses.....	\$9,875	\$22,350	\$15,456	\$32,895	+\$17,439	
Research and Development...	7,135	6,960	12,745	22,562	+9,817	
Abatement and Control and Compliance.....	45,511	62,979	71,859	91,991	+20,132	
Total.....	\$62,521	\$92,289	\$100,060	\$147,448	+\$47,388	
Permanent Workyears.....	280	397	406	774	+368	
Full-time Equivalency.....	339	483	496	972	+482	
Outlays.....	\$63,024	\$57,600	\$83,700	\$125,500	+\$41,800	
Authorization Levels.....	\$172,162	*	*	*		

* Authorization pending.

PROGRAM HIGHLIGHTS

Public Sector Activities:						SW-13
Salaries and Expenses...	\$1,317	\$1,183	\$1,498	\$3,884	+\$2,386	
Research and Development.....	<u>7,135</u>	<u>6,960</u>	<u>12,745</u>	<u>22,562</u>	<u>+9,817</u>	
Total, Research and Development Program	8,452	8,143	14,243	26,446	12,203	
Waste Management Regulations, Guidelines and Policies:						SW-21
Salaries and Expenses...	3,397	8,388	4,623	6,369	+1,746	
Abatement, Control and Compliance.....	9,586	3,000	11,906	18,637	+6,731	
Financial Assistance:						SW-31
Salaries and Expenses...	...	...	...	...	...
Abatement, Control and Compliance.....	32,190	42,550	38,600	48,000	+9,400	
Waste Management Strategies Implementation:						SW-37
Salaries and Expenses...	2,366	3,552	3,625	10,130	+6,505	
Abatement, Control and Compliance.....	106	...	115	3,033	+2,918	

Appropriation	1979	1980	1980	1981	1981 vs. 1980	Page
	(dollars in thousands)					
Technical Assistance:						SW-43
Salaries and Expenses...	\$1,867	\$4,549	\$1,604	\$1,600	-4	
Abatement, Control and Compliance.....	3,042	...	3,919	5,094	+1,175	
Uncontrolled Hazardous Waste Sites:						SW-49
Salaries and Expenses...	...	504	558	1,737	+1,179	
Abatement, Control and Compliance.....	...	17,429	16,537	16,570	+33	
Total:						
Salaries and Expenses...	7,630	16,993	10,410	19,636	+9,426	
Abatement, Control and Compliance.....	44,924	62,979	71,077	91,334	+20,257	
Total, Abatement and Control Program.....	52,554	79,972	81,487	111,170	+29,683	
Hazardous Waste Enforcement:						SW-52
Salaries and Expenses...	928	4,174	3,547	5,086	+1,539	
Abatement, Control and Compliance.....	587	...	783	632	-151	
Permits Issuance:						SW-58
Salaries and Expenses...	...	...	...	4,090	+4,090	
Abatement, Control and Compliance.....	...	...	...	25	+25	
Total:						
Salaries and Expenses...	928	4,174	3,547	9,176	+5,629	
Abatement, Control and Compliance.....	587	...	783	657	-126	
Total, Enforcement Program.....	\$1,515	\$4,174	\$4,330	\$9,833	+\$5,503	

Appropriation	Actual 1979	Estimate 1980	Estimate 1980	Estimate 1981	Decrease 1981 vs. 1980	Page
(dollars in thousands)						
<u>Permanent Positions</u>						
Public Sector Activities,						SW-13
Total, Research and						
Development Program.....	21	20	23	69	+46	
Waste Management Regulations,						
Guidelines and Policies..	91	97	110	141	+31	SW-22
Financial Assistance.....	...	...	...	...	...	SW-31
Waste Management Strategies						
Implementation.....	95	129	122	262	+140	SW-37
Technical Assistance.....	47	37	32	26	-6	SW-43
Uncontrolled Hazardous						
Waste Sites.....	...	15	17	19	+2	SW-49
Total, Abatement and						
Control Program.....	233	278	281	448	+167	
Hazardous Waste Enforcement						
Permit Issuance.....	25	99	102	136	+34	SW-52
Total, Enforcement Program	...	...	...	121	-121	SW-56
Total, Enforcement Program	25	99	102	257	+155	
<u>Full-time Equivalency</u>						
Public Sector Activities,						SW-13
Total, Research and						
Development Program.....	35	30	36	89	+53	
Waste Management Regulations,						
Guidelines and Policies...	122	157	163	197	+34	SW-22
Financial Assistance.....	...	...	...	...	...	SW-31
Waste Management Strategies						
Implementation.....	92	131	131	313	+182	SW-37
Technical Assistance.....	69	46	41	35	-6	SW-44
Uncontrolled Hazardous						
Waste Sites.....	...	15	17	19	+2	SW-49
Total, Abatement and						
Control Program.....	273	349	351	563	+212	
Hazardous Waste Enforcement						
Permit Issuance.....	31	105	110	151	+41	SW-52
Total, Enforcement Program	...	...	...	175	-175	SW-56
Total, Enforcement Program	31	105	110	326	+216	

Congress and the public on the need for nationwide regulation of hazardous waste and emergency assistance to the most threatening problem sites. The potential for serious public health damages and environmental degradation caused by improper management of industrial and municipal wastes, as well as, the alarming frequency with which damaging incidents occur, makes effective administration of a national solid waste program a critical need in the years ahead.

The annual generation of municipal and industrial wastes totals almost 500 million metric tons. This includes 54 million metric tons of hazardous wastes, such as toxic chemicals, pesticides, acids, caustics, flammables and explosives. Only 10 percent of these are currently disposed of safely. With the curtailment of emissions to air and water due to other environmental laws, EPA estimates the amount of hazardous waste will grow by 30 percent in the next decade.

An EPA contractor study indicated that 32,000 to 50,000 dumpsites across the nation may already contain hazardous wastes. 1,200-2,000 of these may be significant problem sites. Potentially thousands of American communities face the risk of suffering public health and environmental damages such as occurred at the Love Canal in New York.

EPA's strategy for addressing these problems is two fold: emphasis on the implementation of a regulatory program for control of hazardous wastes and the management of wastes not classified as hazardous, through Subtitles C and D of the Resource Conservation and Recovery Act (RCRA); and high priority given to the continuation of the Agency program to identify, investigate, evaluate and, if necessary, respond to uncontrolled hazardous waste sites, as defined in the interim strategy issued by the Deputy Administrator during 1979.

Hazardous/Solid Waste Regulatory Program

The Resource Conservation and Recovery Act of 1976 (RCRA) established the first national program to protect public health and the environment from the damages caused by improper waste management practices. To handle prospective hazardous waste problems, EPA is continuing to develop the regulatory program mandated by RCRA which will reduce risks from improper hazardous waste disposal practices.

Requested increases for the solid waste budget in 1980 and 1981 acknowledge, for the first time since enactment of RCRA in 1976, the magnitude and importance of the hazardous waste problem. EPA has prepared a 1980 budget supplemental request reflecting the need to build an extensive knowledge of industrial wastestreams and hazardous waste treatment and disposal technology to be incorporated into the regulations. The 1981 budget request further demonstrates the Agency's strong support for the hazardous waste control program. EPA intends to improve the knowledge base supporting the regulations; broaden the scope of the regulations; accelerate the field implementation of the regulations; ensure adequate enforcement; and encourage strong State programs.

In response to a suit filed against EPA for missing the statutory deadline for promulgation of the major RCRA regulations, the Federal District Court approved December 31, 1979, as the promulgation date for the seven Subtitle C regulations. EPA proposed a list and criteria for defining hazardous waste; standards for generators and transporters; standards for hazardous waste treatment, storage and disposal facilities; procedures for notification of hazardous waste activities; and regulations for facility permits and development of State hazardous waste programs. Despite this progress, EPA failed to meet the ambitious schedule approved by the Court due, in large part, to: the comprehensive scope of the Subtitle C regulations; the complexity of the technical and policy issues raised in public comments and EPA's analyses of these comments; the undeveloped state of hazardous waste management technologies; the inclusion of new regulatory concepts; and efforts to coordinate and integrate the Subtitle C regulations with requirements of other major environmental laws.

EPA has submitted for Court approval a revised promulgation schedule for the Subtitle C regulations:

- in February 1980, EPA will promulgate standards for generators and transporters of hazardous wastes, and notification requirements;
- in April 1980, EPA will promulgate a list and four criteria for determining a hazardous waste, and interim status standards for facilities treating, storing and disposing of hazardous wastes;
- in fall 1980, EPA will promulgate technical performance standards for treatment, storage and disposal facilities.

By late 1980, EPA will move into an implementation phase for the hazardous waste program. Two phases of interim authorization for state hazardous waste programs will begin in 1981, the first phase introduced by the interim status standards and the second phase keyed to the effective date of the technical standards for hazardous waste facilities. Each phase will allow States two years to upgrade their hazardous waste programs to meet authorization requirements. EPA expects 37 States to seek and receive at least interim authorization in 1981. While RCRA provides for and encourages authorization of States to operate the hazardous waste regulatory program, it also requires that EPA operate the program for those states that do not seek or are unable to obtain authorization.

In 1981, the Agency will inaugurate a 6-year program to permit an estimated 30,000 hazardous waste treatment, storage and disposal facilities nationwide. States and EPA regional offices will issue, on almost a case-by-case basis, best engineering judgment permits against performance standards under Section 3004. This regulatory approach will require individual technical evaluations and increase the number of formal public hearings for permits.

EPA's regional Enforcement and Abatement and Control offices will share responsibility for issuing the 7,500 facility permits in the 19 unauthorized States. The Abatement and Control resources will be used to conduct the detailed technical review of the permit applications while Enforcement will provide legal review, administrative support and analysis of routine technical problems.

The enforcement provisions of RCRA center upon the administrative and public hearings requirements of permit issuance, and upon compliance monitoring activities in those States which do not assume responsibility for hazardous waste management. The enforcement program is responsible for developing enforcement provisions of the regulations; mechanisms for regional oversight of authorized states and enforcement programs in unauthorized states; and mechanisms for taking enforcement or prosecutory actions, and negotiating enforcement agreements. During 1981, regions will begin establishing compliance monitoring programs in unauthorized States. In these States, EPA will conduct site inspections; initiate enforcement actions (Notices of Warning, Notices of Violations, Compliance Orders, etc.) where generators, transporters, and storage/disposal facilities fail to comply with the law; and operate ADP tracking systems to maintain and monitor manifest, inspection, and enforcement information. For authorized states, EPA will conduct oversight activities, including joint inspections with the States, to determine whether or not States are adequately enforcing RCRA requirements.

conservation and recovery. Under Subtitle D, criteria for the classification of sanitary landfills and guidelines for the development of State plans have been promulgated, thereby ushering in the implementation phase of the program. The emphasis in 1980 is on State initiation of their disposal site inventory. Also, under the President's Urban Policy, a 3-year grant program to local communities for resource recovery feasibility projects will conclude in 1981.

Financial and technical assistance are provided to assist the States in implementing their responsibilities under RCRA. Assistance to Federal, State and local agencies is provided in all areas of solid waste management through Technical Assistance Panels composed of expert contractors, EPA staff, and other experienced public officials. Grants to States are awarded annually for the development and administration of state hazardous and solid waste programs. In 1981 Subtitle C grants will grow substantially in recognition of the major role the States will soon play in implementing hazardous waste management programs. At the same time, States are expected to move toward self-supporting nonhazardous waste programs. Federal Subtitle D assistance, therefore, is being phased out over a 5-year period.

Research and development activities will assume, in 1981, a new double focus in order to: (1) provide a firm scientific basis for the RCRA regulations and the permit guidelines, and (2) accelerate development of techniques for investigation, remedial treatment, and containment to support the uncontrolled hazardous waste site program. In direct support of RCRA, the research program will be improving the techniques for: (1) sampling, chemical analysis and biological testing to support listing and de-listing of hazardous wastes, and (2) for evaluating the design and operation of proposed land disposal facilities and incineration facilities in the permitting process. A quality assurance program will be initiated to support both the investigation of uncontrolled hazardous waste sites and the characterization of industrial hazardous waste streams. The research program will also provide technical support and testing where necessary to determine the risks from hazardous waste sites. This effort will include coordination of work done by other agencies in health risk research. Other programs will include: hazardous waste site monitoring technique development; emergency response technology development for imminent hazards; studies of high volume wastes from mining; and development of technologies for recycle, reuse and treatment of hazardous wastes from industry.

Uncontrolled Hazardous Waste Site Program

The Resource Conservation and Recovery Act (RCRA), however, does not deal directly with the problem of abandoned, inactive or potentially inactive sites, except through the imminent hazard provision of Section 7003.

Consequently, EPA established the uncontrolled hazardous waste site program as an interim program to address the worse known problems associated with uncontrolled hazardous waste sites. The primary objective of the program is to eliminate threats to public health and welfare and ecologically sensitive areas. The interim strategy encompasses aggressive site discovery actions, investigations, emergency assistance and containment of sites where eligible under Section 311 of the Clean Water Act of 1977 or through enforcement actions. The resources for responding to a site under Section 311 of the Clean Water Act will be provided by the environmental emergency response and prevention program. This interim approach will only bridge the gap until "Superfund" legislation is enacted. It is not intended to be a major program of clean-up or containment in advance of funds and authorities available under the new legislation.

participate in the identification, investment, assessment and case preparation for those sites which may be potential enforcement actions. Technical assistance and operational guidance have been provided by both the newly formed Abatement and Control uncontrolled hazardous waste sites program and the emergency response and prevention and solid waste programs. Research and Development activities have begun to focus on several priority areas as described above.

During 1980, the uncontrolled hazardous waste site program will continue to implement the interim strategy as delineated in the 1979 memoranda from EPA's Deputy Administrator. This strategy is based on the policies established during 1979 on site identification and discovery, field investigation, emergency response and enforcement actions. Top priority of this program in 1980 will be to ensure that only the most serious hazardous waste sites are addressed first, given the large number of potentially dangerous sites EPA must address.

The program plans to continue to develop, implement and maintain the interim strategy in 1981 at the same resource levels as 1980, and according to the same policies established during 1979-1980. Pending enactment of "Superfund", most corrective actions at uncontrolled hazardous waste sites will be limited to short-term remedial action using available Section 311(k) funds and resources from the environmental emergency response and prevention program. As more sites are identified, increasing emphasis will be placed on the priority system in order to determine which sites to investigate with the limited available resources. Particular emphasis will also be given to integrating the Section 311, enforcement and investigation program efforts in order to make maximum use of expertise and available funds. If "Superfund" legislation is enacted during 1981, the resource requirements for this program will increase significantly.

Purpose - Research and Development Program

The solid waste research and development program, consistent with the goals of the Resource Conservation and Recovery Act of 1976 (RCRA), is directed to the development of technologies, methodologies, and the scientific data base necessary to achieve environmentally acceptable, cost-effective solid and hazardous waste management from generation through disposal.

The objectives of the programs are: (1) to develop methodologies and/or equipment to eliminate the release into the environment of materials in solid and hazardous waste which would be adverse to public health and welfare; (2) to establish a technical basis to support both EPA's efforts in developing guidelines and regulations for solid and hazardous waste management and the implementation of these guidelines and regulations by the Federal, State and local governments and the private sector; (3) to provide standardized monitoring systems, quality assurance, and support to the Agency's regulatory programs and the uncontrolled hazardous dumpsite program; (4) to evaluate and develop new or improved management techniques; (5) to evaluate and develop new or improved methods for the reduction, separation, processing, and recovery of resources including energy; and (6) to explore the development and validation of screening techniques for toxicity of solid waste.

Purpose - Abatement and Control Program

The solid waste abatement and control budget activity encompasses activities for promoting the protection of the public health and the environment through improved solid waste management practices. These activities include developing and promulgating regulations under Subtitles C and D of the Resource Conservation and Recovery Act (RCRA); promoting resource conservation and recovery as the preferred solid waste management approach; providing technical and policy guidance to accompany these activities; assisting and encouraging State programs; providing technical assistance as mandated by RCRA; managing the President's Urban Policy grant program; and, for hazardous waste management, operating a Federal program when States are unwilling or unable to do so. This budget activity also includes emergency assistance to the most threatening uncontrolled hazardous waste site problems.

States have the primary role in implementing the Resource Conservation and Recovery Act. The authorization of State hazardous waste management programs is of primary importance to

increase their responsibilities outlined in the Act for nonhazardous waste, and will receive financial and technical assistance to do so. Federal Subtitle D grant assistance is being phased out over a 5-year period, with States expected to move towards self-supporting non-hazardous waste programs.

EPA has the primary role in establishing national standards and programs to ensure proper management, transportation, treatment, storage, and disposal of hazardous waste and proper disposal of nonhazardous waste, and promoting resource conservation and recovery as the preferred solid waste management approach.

For hazardous waste, this includes promulgating a list and criteria for determining what constitutes a hazardous waste; standards for generators and transporters of hazardous waste, and for owners and operators of hazardous waste treatment, storage and disposal facilities; procedures for notification of hazardous waste activities; technical standards for permitting hazardous waste facilities using "Best Engineering Judgment" and requirements for authorization of State hazardous waste programs. For non-hazardous waste, EPA must promulgate criteria defining a sanitary landfill and conduct an inventory of all land disposal sites. EPA is also responsible for providing technical and other guidance for implementing the regulations. The RCRA mandated Technical Assistance Panels program will provide an outlet of expertise to States and local governments encountering problems on all aspects of solid waste management.

The Resource Conservation and Recovery Act (RCRA) does not deal directly with the problem of abandoned, inactive or potentially hazardous waste sites, except through the imminent hazard provision of Section 7003. EPA has established an interim program to address the worst known problems related to uncontrolled sites. The primary objective of the program is to eliminate threats to public health and welfare and ecologically sensitive areas.

The Abatement and Control activities are categorized under the following subactivities:

Waste Management Regulations, Guidelines and Policies: This subactivity involves (1) the development and promulgation of hazardous and non-hazardous waste regulations; (2) the development of technical and policy guidance for implementing the regulations; (3) the conduct of engineering, design, environmental and economic evaluations and assessments of solid waste management technologies and practices; and (4) national management and oversight of regional program implementation activities.

Financial Assistance: This subactivity provides grants (1) to States for the development and operation of hazardous waste management programs under Subtitle C of RCRA; (2) to States for the development of State non-hazardous waste regulations; (2) the and conduct of the RCRA mandated land disposal site inventory under Subtitle D of RCRA; and (3) to local governments for feasibility studies and other project development activities leading to the the implementation of resource and energy recovery systems.

Waste Management Strategies and Implementation: This subactivity involves: (1) oversight of authorized States that are developing and implementing hazardous waste programs; (2) conduct of a Federal program for unauthorized States under Subtitle C, including issuance of permits to hazardous waste facilities using "Best Engineering Judgment"; (3) direct support and oversight for implementation of the solid waste management planning and land disposal site inventory requirements under Subtitle D; and (4) management of grants to local governments for resource and energy recovery projects under the President's Urban Policy Program.

Technical Assistance: This subactivity provides for (1) national management of the Technical Assistance Panels program; (2) technical assistance to State and local governments on all aspects of solid waste management; (3) public participation and education programs; and (4) the development and distribution of public and technical information materials.

Uncontrolled Hazardous Waste Sites: This subactivity provides for (1) aggressive identification of problem uncontrolled hazardous waste sites, (2) investigation leading to assessment and case preparation of those sites which may be potential enforcement actions, and (3) emergency assistance (where eligible emergency assistance and containment will be done under authority of Section 311 of the Clean Water Act (see description of Environmental Emergency Response and Prevention program element under Water Quality Media). Case preparation and enforcement actions are managed under the enforcement solid waste budget activity.

Purpose, Enforcement Program

The goals of the solid waste enforcement program are to see that all applicable facilities comply with standards established under the Resource Conservation and Recovery Act, regulating transportation treatment, storage, and disposal of solid and hazardous wastes, and to take legal action to compel responsible parties to take remedial steps regarding uncontrolled sites posing an imminent and substantive hazard to health and the environment. To achieve this goal, EPA has established a single program element for 1980, consisting of two subelements: (1) the hazardous waste enforcement subelement and (2) the uncontrolled hazardous waste site subelement. For 1980 only, the hazardous waste enforcement subelement includes 2 permanent workyears which will support hazardous waste permit issuance activities. In 1981, however, the permitting and uncontrolled hazardous waste site enforcement resources become separate program elements, and Solid Waste Enforcement will consist of three program elements: (1) the hazardous waste permit issuance program, (2) the uncontrolled hazardous waste site enforcement program and (3) the hazardous waste enforcement program.

Solid waste enforcement provisions were enacted largely as the result of wide scale, historical mismanagement of hazardous wastes, and are designed to prevent similar mismanagement from occurring in the future. Regulation will take place through the permitting of hazardous waste management facilities and subsequent monitoring of those facilities to verify compliance. Permitting and compliance monitoring programs will regulate not only generators of hazardous wastes, but on and off-site treatment, storage and disposal facilities as well. A separate enforcement mechanism, the hazardous waste manifest system, will monitor hazardous waste transporters to ensure that wastes transported from a generator to a treatment, storage or disposal facility actually reach the intended destination.

Under provisions of RCRA, States may assume responsibility for operating permit and enforcement programs. In cases where a State has interim or final authorization to conduct such programs, EPA is available to assist in State efforts, and will overview authorized programs for adequacy.

Permit issuance, compliance monitoring and enforcement programs are currently in their formative stages. EPA will not begin to issue permits, monitor for compliance, or take enforcement actions in connection with permitted facilities before the start of 1981. However, investigation and enforcement activities were initiated in 1979 against uncontrolled hazardous waste dump sites suspected of posing imminent or substantial hazards to public health and the environment. The Hazardous Waste Enforcement Task Force, created to prepare and manage imminent hazard enforcement case actions, has thus far filed 13 cases with the Department of Justice, using emergency enforcement provisions available under Section 7003 of RCRA, Section 1431 of the Safe Drinking Water Act, Section 504 of the Clean Water Act, and TSCA. Initiation of enforcement actions against sites posing an imminent or substantial danger will continue to be the highest priority activity for the Solid Waste enforcement program until such time as these sites no longer present a threat.

Salaries and Expenses..... +17,439

The net increase is primarily related to the increased workyears.

Research and Development..... -9,817

The net increase is due to hazardous waste monitoring and measurement development and quality assurance; research on thermal destruction of hazardous waste; uncontrolled hazardous waste sites; and health effects associated with hazardous waste sites. There is a decrease in municipal solid waste land disposal and resource recovery, and large volume waste characterization will be phased out.

Abatement, Control and Compliance..... +20,132

The net increase provides additional funds for regulatory support under Subtitle C of RCRA; State grants, for hazardous waste management; regional implementation and/or oversight of hazardous waste programs; technical assistance; and the uncontrolled hazardous waste sites program. These increases are offset by a decrease in State solid waste management planning grants.

1981 Solid Waste Program..... 147,448

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of \$147,447,800 is requested in 1981. This request, by appropriation account, is as follows:

Salaries and Expenses.....	\$32,894,700
Research and Development.....	22,562,200
Abatement, Control and Compliance.....	91,990,900

This represents an increase of \$47,388,100 over the 1980 level. This is due to several actions: +\$3.3 million for regulatory support under Subtitle C of RCRA; +\$11.4 million in State grants for hazardous waste management; +9.6 million for regional implementation and/or oversight of hazardous waste programs; +\$1.4 million for technical assistance; and +\$1.2 million for uncontrolled hazardous waste sites program. These increases are partially offset by a decrease of \$2.0 million for State solid waste management planning grants, as part of a 5-year phase out of Subtitle D grant funding. An increase of +1.5 million for enforcement of the RCRA Subtitle C program primarily at the regional level; and +\$4.1 million for regional permit issuance and State permit program oversight. An increase of +\$4.0 million for hazardous waste monitoring and measurement development and quality assurance; +\$5.9 million for research activities on thermal destruction of hazardous waste; +\$2.6 million for uncontrolled hazardous waste sites and +\$3.0 million for research activities on the health effects associated with hazardous waste sites. These increases are offset by a decrease of \$3.3 million, as programs on municipal solid waste land disposal and resource recovery, and large volume waste characterization will be phased out.

2. Changes from Original 1980 Budget Estimate

Changes from the budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$92,289
Congressional increase/decrease:	
Resource recovery local financial assistance..	-3,950
Academic training.....	+90
Travel.....	-91
ADP.....	-16
Supplies and expenses.....	-35
Proposed pay raise supplemental.....	+508
Reprogramming for authorized workyears.....	-281
Miscellaneous reprogrammings.....	-454
Proposed RCRA supplemental.....	+12,000
Current 1980 estimate.....	100,060

Congressional decreases to the solid waste media request included a reduction of \$3,950,000 to resource recovery local financial assistance grants; a \$2 million decrease to travel resulting in a reduction of \$91,000 to this media; a \$1 million decrease to ADP resulting in a decrease of \$16,000; and a \$2 million decrease to supplies and expenses resulting in a decrease of \$35,000 to the solid waste media.

A supplemental is proposed to partially fund the October 1979 pay raise and includes \$508,000 for this media. The overall reprogramming throughout the Agency to provide for authorized workyears results in a decrease of \$281,000. Miscellaneous reprogrammings result in a decrease of \$454,000.

A proposed supplemental under RCRA will provide an increase of \$12 million.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980	Estimate 1981
	(in thousands of dollars)	
Prior year obligations.....	\$62,520	\$103,882
Effect of congressional changes.....	-4,002	...
Pay raise supplemental.....	+508	...
Reprogrammings.....	-735	...
Proposed RCRA supplemental.....	+12,000	...
Change in amount of carryover funds available	+11,778	-3,822
Program increase.....	-3,000	+44,940
Change in rate of obligation.....	+24,813	...
Total estimated obligations.....	103,882	145,000
(From new obligation authority).....	(90,060)	(135,000)
(From prior year funds).....	(13,822)	(10,000)

Congressional changes discussed in the previous section are expected to result in a decrease of \$4,002,000 to obligations. The effect of the proposed supplemental for partial funding of the October 1979 pay raise results in an increase of \$508,000.

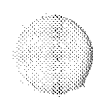
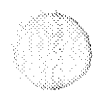
Reprogrammings result in a decrease of \$735,000 to obligations. The proposed supplemental for RCRA will increase obligations by \$12 million.

The amount of carryover funds to be obligated in 1980 is \$13,822,000, an increase of \$11,778,000 from the 1979 level. In 1981, it is estimated that \$10 million of carryover funds will be obligated, a decrease of \$3,822,000 from the 1980 level.

The increase in budget authority in 1980 was previously estimated to decrease obligations by \$3 million. In 1981, the program change will increase obligations by \$44,940,000.

Public Sector Activities

	<u>Original Estimate 1981</u>	<u>Revised Estimate 1981</u>	<u>President's Reduction</u>
	(dollars in thousands)		
<u>Appropriation</u>			
Control Technology			
Salaries and Expenses.....	\$3,884	\$3,865	-\$19
Research and Development.....	<u>22,562</u>	<u>22,562</u>	<u>...</u>
Total.....	26,446	26,427	-19



	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase - Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
<u>Control Technology:</u>					
Salaries and Expenses.	\$1,317	\$1,183	\$1,498	\$3,884	+\$2,386
Research and Development.....	7,135	6,960	12,745	22,552	+9,817
Total.....	8,452	8,143	14,243 ^{a/}	26,446	+12,203
<u>Permanent Positions....</u>	21	20	23	69	+46
<u>Full-time Equivalency..</u>	35	30	36	89	+53

a/ Includes a \$5,600,000 pending supplemental for 1980 research necessary to support the Research Conservation and Recovery Act (RCRA) regulation development.

Budget Request

The Agency requests a total of \$26,445,800 for 1981, an increase of \$12,203,300 and 46 permanent workyears over 1980. Included in this total is \$3,883,600 for Salaries and Expenses and \$22,562,200 for the Research and Development appropriation, with increases of \$2,385,600 and \$9,817,700, respectively. Of this increase, \$4,020,000 will be devoted to a program for hazardous waste monitoring and measurement methods development and quality assurance; \$5,950,000 to expand the research needed to provide data and guidance manuals on thermal destruction of hazardous wastes to support RCRA permit writers, and \$2,550,000 to increase work on the development of technologies for remedial actions for uncontrolled hazardous waste dumpsites; and an increase of \$3,000,000 to document and determine the health risks associated with hazardous waste sites. In turn, an offsetting decrease of \$3,316,700 will be effected by phasing out the following areas during 1981: municipal solid waste, land disposal, resource recovery from municipal solid waste, and large volume wastes characterization.

and operating problems and researching resource recovery from solid waste. Only a limited number of projects were performed on hazardous waste. After the passage of RCRA, EPA revised its research strategy towards the very difficult problem of hazardous wastes and their effects on the environment. There is now the realization that past mismanagement of hazardous wastes has left us with a legacy of dangerous situations which must be identified and cleaned up. Research to guide the cleanup effort and to develop better hazardous waste management practices must be accelerated.

The program will be directed to the development of technologies, methodologies and the scientific data base necessary to achieve environmentally acceptable, cost-effective solid and hazardous waste management (generation through disposal) in which reuse and recovery of resources are important considerations.

1979 Accomplishments

In 1979, obligations were \$8,452,000 which included \$1,317,300 for inhouse expenses and \$7,134,700 for extramural activities. During 1979, EPA:

- Completed pilot-scale studies and published a report on the physical and chemical stability performance of 10 liner materials which were exposed to municipal solid waste leachate.
- Published a report on the results of seven years of field-scale research to characterize gas and leachate generation and pollutant removal at municipal solid waste landfills. A two-dimensional model of leachate migration patterns was developed and correlated with field results. This research forms the basis for the prediction of the performance of sanitary landfills.
- Completed and published the results of an evaluation on the status of land cultivation technology for treating industrial and municipal wastes, including case studies of specific facilities, review of design parameters and documentation of environmental impacts.
- Conducted a national symposium on land disposal and resource recovery of municipal solid wastes and published proceedings. The technical areas covered included methods development and cost assessment, identification of pollutant potential, prediction of pollutant migration, design of facilities, and disposal/recovery alternatives.
- Completed and published an evaluation of three waste leaching test methods to assist in developing regulations for the identification of hazardous waste under the Resource Conservation and Recovery Act of 1976 (RCRA).
- Provided the Office of Solid Waste and the States with a technique for performing the inventory of disposal facilities. The technique uses site data which can easily be obtained from State records and site visits.

problems caused by uncontrolled hazardous waste dumps. Some of the sites which received and continue to receive assistance include: Kin-Buc, Love Canal, and the LaBounty Landfill.

- Provided 1.5 workyears of direct technical assistance to the Office of Solid Waste in preparation of the RCRA hazardous waste regulations. Efforts included review of public comments, preparation of background documents and of draft revised regulations.
- Completed and published a study which compared emissions from St. Louis refuse-derived fuel (RDF) plants and other waste handling facilities. The results showed that relatively large emissions of bacteria can be expected from solid waste processing plants which have no dust control. Analyses for viruses were negative.
- Sponsored a symposium on scrap futures markets for the purpose of discussing with industry representatives the feasibility of using such market trading to increase the use of recycled secondary materials recovered from wastes. The symposium highlighted a completed research study and a handbook on scrap futures markets developed by the research program. At least one futures exchange has subsequently announced the formation of a futures market for ferrous scrap.
- Completed a study which determined that the lack of a ready market is the major impediment to recovering glass from solid wastes.
- Conducted a national symposium on waste pesticide disposal research and development needs.
- Completed and published the results of a study to determine the nature and quantity of industrial hazardous waste which is treated and disposed of in municipal and private off-site facilities. The study found that 23 percent of the hazardous waste generated by the five major industrial categories studied was managed in this manner.
- Demonstrated that densified forms of refuse derived fuels (d-RDF) can successfully be substituted for coal in industrially sized stoker fired boilers. Tests completed at the Erie, Pennsylvania General Electric plant represented a major cooperative effort between industry and EPA.
- Completed and published a study which analyzed specific scenarios for municipal solid waste disposal in 1990 with and without resource recovery. Results show that the net environmental impact of resource recovery would be positive. Discharge of some pollutants to surface waters would increase but most air pollution emissions would be reduced, less landfill capacity would be required, and energy savings would be realized.
- Completed and published, in a manual, the results of a study to determine the performance and design of natural and artificial surface covers for controlling moisture infiltration at land disposal facilities.

- Completed a field study of mining solid waste and initiated a major environmental and engineering assessment of mining solid waste management practices in response to RCRA.
- Initiated field studies of the technical and environmental requirements for co-combustion of selected hazardous wastes in cement kilns.

1980 Program

In 1980, the Agency has allocated a total of \$14,242,500 to this program, of which \$5,600,000 is a pending supplemental for research necessary to support RCRA regulation development for landfills, land treatment and thermal destruction. Of this total, \$1,498,000 is for the Salaries and Expenses appropriation and \$12,744,500 is for extramural purposes under the Research and Development appropriation. The 1980 program includes:

- Landfilling: Studies ongoing at the end of 1979 will be continued. They include: bench, pilot scale, and lysimeter studies of rates of leachate and gas production under different moisture regimes, gas and leachate migration, leachate attenuation in various soils, characteristics of natural and synthetic liners, and control technology for the treatment of leachate and gas from municipal and hazardous waste landfills. A major effort will be undertaken to develop and publish guidance manuals on containment, chemical fixation of waste, liner performance and design, landfarming, water mass balance calculations, surface cover design, leachate collection, waste and leaching modification, pollutant transport, and landfill closure procedures. A major 5-year research program will be initiated to provide critical data needed to support the implementation and mission of the RCRA hazardous waste disposal regulations. Ongoing research in municipal landfill site design and operation will be completed. No additional municipal solid waste research will be conducted beyond 1980.
- Hazardous Waste Destruction: The following small scale studies underway at the end of 1979 will be continued: time and temperature requirements for thermal destruction, detoxification, biodegradation, and bulk encapsulation of hazardous materials. A major effort will be initiated to develop a guidance manual for assessing permit applications for hazardous waste incinerators. Ongoing thermal decomposition research will be expanded and accelerated to produce protocols for conducting incinerator test burns, for measuring and analyzing hazardous waste destruction efficiency and air pollution control equipment effectiveness, for predicting the performance of alternative incinerator designs, and for determining the basic thermal decomposition requirements and decomposition product production for hazardous waste streams to be regulated under RCRA.
- Remedial Action: Field verification of a remedial scheme at a polluting municipal solid waste site will be continued. In addition, remedial schemes will be designed and field verification initiated. The effectiveness of existing hazardous materials spill control equipment for emergency response action at uncontrollable sites will also be evaluated at field sites.

recovery from municipal solid wastes to reuse and recovery from industrial wastes.

- Hazardous Waste Monitoring: Sampling and analytical methods for hazardous wastes and for the air, water and soil samples taken from hazardous waste disposal sites are being evaluated, validated, and developed. In addition, a quality assurance program is being initiated in support of the investigation and enforcement actions on uncontrolled hazardous waste sites.
- Hazardous Waste Treatment: The effort will be directed towards detoxification and/or recovery techniques for wastes from the organic chemicals industry, as well as towards evaluating technologies available for recovery of metal values from the ferrous and non-ferrous industry.
- High Volume Wastes: A major effort consisting of a 3-year program to assess the environmental impact of hazardous waste generation, current waste management practices, and the development of new control requirements for the mining industry is underway.

1980 Explanation of Change from Budget Estimate

The net increase of \$6,099,800 results from several actions. An increase of \$46,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$4,600. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$20,100 to this activity.

A transfer of \$478,000 was made within the solid waste media, from the abatement and control uncontrolled hazardous waste sites activity where the resources were included in the hazardous waste sites amendment.

Also included is a \$5.6 million pending supplemental for research necessary to support the Resource Conservation and Recovery Act regulation development.

1981 Plan

The Agency requests a total of 69 permanent workyears and \$26,445,800 for this program, of which \$3,883,600 is for the Salaries and Expenses appropriation and \$22,562,200 is for the Research and Development appropriation. This represents an increase of 46 permanent workyears and \$12,203,300.

Of this increase, \$4,020,000 will be devoted to a program for hazardous waste monitoring and management methods development and quality assurance; \$5,950,000 to expand the research needed to provide data and guidance manuals on thermal destruction of hazardous wastes to support RCRA permit writing; \$2,550,000 to expand research into technologies that can be used for remedial actions at uncontrolled hazardous dumpsites; and \$3,000,000 to document and determine the health risks associated with hazardous waste sites. EPA's R&D program on health effects will be coordinated with other federal agencies having more prominent roles. In turn, an offsetting decrease of \$3,316,700 will be effected by phasing out the following areas during 1981: municipal solid waste land disposal, resource recovery from municipal solid waste and large volume wastes characterization.

that will provide a sound scientific and legal basis for the data required by the RCRA regulations and the uncontrolled hazardous waste site program. Major activities will include:

- Developing and evaluating protocol procedures for obtaining hazardous waste samples.
- Completing a problem definition study for air monitoring.
- Evaluating methods for analysis of samples.
- Completing a manual using best available methodology for analysis of samples.
- Evaluating bioaccumulation test procedures in the proposed regulation (Section 3001).
- Providing analytical methods for characterization of wastes listed in the RCRA (Section 3001).
- Initiating intercomparison studies in support of RCRA, (Section 3004).
- Providing additional reference materials on soil and sludge.

Remedial Action The remedial action program is concerned with the development and assessment of technologies which can be used for clean-up activities at uncontrolled hazardous dumpsites. In this program, EPA will not be accepting the responsibility for cleaning up any hazardous dumpsite which is not owned by the Federal government. The legal responsibility for clean-up at these sites may belong to States, local governments or private entities, and the EPA can not assume this responsibility. The funds in this program therefore will not be used to pay for the clean-up at a non-Federal site. EPA will develop and assess technologies which may be used at clean-up sites and will be assessing technologies developed by others that are used in remedial actions at hazardous sites. The EPA commitment at non-Federally owned sites in this program therefore is limited to the assessment of specific equipment and technologies. The EPA costs will be associated with this assessment activity only. The overall cost of cleaning up the hazardous dumpsite would remain with the entity which has the legal responsibility for clean-up. Whereever possible, the EPA demonstration and assessment activity will be conducted at test facilities and hazardous dumpsites which are owned by the federal government.

In 1981, the program will be expanded to undertake field testing of technologies available for abating pollution problems at uncontrolled waste sites. Much of the knowledge and technology for this action has already been developed under the hazardous waste spills program, but requires field testing. The program will initiate field testing of a variety of on-site treatment options within 3-6 months of the start of the program. Permanent remedial action methods will also be developed and tested under actual field conditions so that (a) quick response capability for initial cleanup operations can be validated; (b) defensible long-term closure recommendations can be made to various regulatory agencies; and (c) effectiveness of remedial schemes can be established. The development of technology for containment of pollutant emissions will be directed toward preventing pollutants from leaving the boundary of the site and contaminating the groundwater, surface waters, air and surrounding soil media. This program will demonstrate remedial action techniques, equipment and technology to contain, treat or destroy the hazardous wastes; the leachate produced from the wastes; the contaminated soils, standing water and groundwater; and volatiles or gases.

Field Treatment In 1981, this program will demonstrate at one or more hazardous waste dump sites (including pits, ponds, lagoons, subsurface fills, and storage sites) the following remedial action technologies and equipment:

- A field-modified anaerobic/aerobic biological treatment system for biodegradable hazardous materials.
- A mobile system for "washing" contaminated soils.
- Mobile physical-chemical systems, including flocculation/sedimentation, activated carbon treatment equipment for concentrating wastes and leachates.
- A mobile thermal regeneration system for granular activated carbon.
- Land cultivation with nutrient injection. This process provides for the in-situ biodegradation of the organic hazardous wastes or contaminants in the waste site.
- Catalytic wet oxidation of chlorinated hydrocarbons.
- Three mobile hazardous waste or leachate preprocessing/concentration technologies (modified multiple stage thin film distillation, continuous mechanical sludge dewatering, and the Dravo electro-coagulation process).

Onsite destruction In 1981, this program will demonstrate a mobile incineration system for destroying hazardous materials which appear as floating scum in lagoons, as contents of drums, or as contaminated soils.

Landfilling and Land Treatment The major effort begun in 1980 to develop and publish guidance manuals for the implementation of the hazardous waste regulations will be continued. The following manuals will be completed, incorporating research results and data: containment, chemical fixation of wastes, liner performance and design, land treatment, water mass balance calculations, surface cover design, leachate collection, waste and leaching modification, and landfill closure procedures. Training programs in the use of the manuals for EPA and state permit writers will be established. An extensive five year research program to expand and improve the data base in the manuals will be continued. New manuals on volatile emissions from landfills and surface impoundments and on predicting pollution migration in soils will be initiated. New and novel concepts for early detection and repair of landfill and surface impoundment failures will be investigated.

Hazardous Waste Destruction The major effort begun in 1980 to develop and publish guidance manuals for the implementation of hazardous waste regulations will be expanded (\$5,950,000 increase from 1980). The manuals on conducting incinerator test burns for measuring hazardous waste destruction efficiency and air pollution control equipment effectiveness and for predicting the performance of new incinerator design will be completed but with limited data bases. An extensive test burn program will be undertaken to directly support the evaluation of permit applications by performing preliminary small scale test burns. Results from these test burns will be used in the design of the required full scale test burn. New methods for measuring toxic compounds in the incinerator offgases will be investigated. The effectiveness of incineration of hazardous wastes in industrial boilers will be monitored in experimental units and full scale operations. The guidance manuals will be updated as new data and methods become available from these programs.

Hazardous Waste Treatment Ongoing efforts to develop or assess technologies using physical, chemical and biological methods to concentrate, neutralize, or detoxify hazardous wastes from industry will be continued. An industry by industry examination will be made to identify potential uses for these technologies as alternatives to landfilling or thermal destruction.

Risk Assessment A new initiative (\$3,000,000) will provide for chemical, epidemiological, toxicological, and clinical tests to determine the health risks from hazardous waste sites. EPA's activities in this area will be coordinated with other federal agencies having more prominent roles.

In dealing with hazardous waste disposal sites, it is not always possible to eliminate the hazardous materials from the environment, i.e., some hazardous substances, no matter what is done, will continue to show up in food, drinking water or the air. In such cases it is necessary to provide an estimate of the residual risk as a function of the extensiveness of various abatement and control actions. This program will:

- determine which measurements are needed for exposure determination and calculation of risk, i.e., air exposures, drinking water, soil levels, etc;
- determine the population at risk and the health effects;
- wherever possible develop from available data, a dose-response relationship derived from the community's exposure situation;
- perform short-term biological tests where needed;
- provide, from the above, an estimate of the number of people who will suffer serious adverse health effects from exposure to hazardous waste and estimate the increased risk to the exposed population.

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Regulations, Guidelines and Policies/Hazardous Waste:			
Salaries and Expenses.....	\$4,994	\$4,966	-\$28
Abatement, Control and Compliance.....	17,726	17,726	...
Regulations, Guidelines and Policies/Solid Waste:			
Salaries and Expenses.....	740	735	-5
Abatement, Control and Compliance.....	600	600	...
Regulations, Guidelines and Policies Resource Conservation:			
Salaries and Expenses.....	635	631	-4
Abatement, Control and Compliance.....	311	311	...
Regulations, Guidelines and Policies/EIS:			
Abatement, Control and Compliance.....	...	...	...
Love Canal:			
Abatement, Control and Compliance.....	...	...	...
Total:			
Salaries and Expenses.....	6,369	6,332	-37
Abatement, Control and Compliance.....	18,637	18,637	...
Grand Total.....	25,006	24,969	-37



Waste Management Regulations, Guidelines and Policies

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase - Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Regulations, Guidelines and Policies/Hazardous Waste:					
Salaries and Expenses...	\$1,862	\$5,848	\$3,499	\$4,994	+ \$1,495
Abatement, Control and Compliance.....	4,701	3,000	10,376 <u>a/</u>	17,726	+7,350
Regulations, Guidelines and Policies/Solid Waste:					
Salaries and Expenses...	994	1,805	829	740	-89
Abatement, Control and Compliance.....	686	...	1,200	600	-600
Regulations, Guidelines and Policies/Resource Conservation:					
Salaries and Expenses...	541	735	295	635	+340
Abatement, Control and Compliance.....	110	...	330	311	-19
Regulations, Guidelines and Policies/EIS:					
Abatement, Control and Compliance.....	150	...	...	...	...
Love Canal:					
Abatement, Control and Compliance.....	3,939	...	...	...	...
Total:					
Salaries and Expenses...	3,397	8,388	4,623	5,369	-1,746
Abatement, Control and Compliance.....	9,586	3,000	11,906	18,637	+6,731
Grand Total.....	12,983	11,388	16,529 <u>a/</u>	25,006	+8,477

a/ Includes a proposed supplemental for \$6.4 million to provide first phase of an effort to refine EPA's data base on the scope of the Hazardous Waste problem, and to assist permit writers in their efforts to permit new and existing facilities.

Regulations, Guidelines and Policies/Solid Waste.....	27	23	23	13	-10
Regulations, Guidelines and Policies/Resource Conservation.....	12	5	9	9	...
Total.....	91	97	110	141	+31
<u>Full-time Equivalency</u>					
Regulations, Guidelines and Policies/Hazardous Waste.....	67	99	107	151	+44
Regulations, Guidelines and Policies/Solid Waste.....	35	38	33	23	-10
Regulations, Guidelines and Policies/Resource Conservation.....	20	20	23	23	...
Total.....	122	157	163	197	+34

Budget Request

The Agency request for this subactivity is \$25,005,100 and 141 permanent workyears. Included in this amount is \$6,369,300 for the Salaries and Expenses appropriation and \$18,636,800 for the Abatement, Control and Compliance appropriation. An increase of \$6,731,000 is provided for 1981 extramural funding, primarily in support of regulations under Subtitle C of Resource Conservation and Recovery Act (RCRA).

Program Description

This subactivity involves the promulgation of standards and regulations to ensure proper hazardous and solid waste management practices and the economic, industrial, technological, environmental and other analyses to support the rulemaking function. Also included are the development of technical and policy guidance for implementation of the RCRA regulations and national oversight of implementation activities. The following program elements are included in this subactivity:

Regulations, Guidelines, Policies/Hazardous Waste -- This program element provides for national management of the RCRA Subtitle C program. Included are further development and refinement of the criteria and regulations for identification, management and disposal of hazardous wastes; and supportive analyses and assessments of management approaches and technologies. Also included is provision of guidance to the regions and States for nationally consistent implementation of the Subtitle C regulations.

Regulations, Guidelines, Policies/Solid Waste -- This program element provides for national management of the RCRA Subtitle D program. This includes development of technical and policy guidance on Subtitle D State planning and implementation issues, and oversight and guidance to support States' application of the criteria for determining a sanitary landfill and carrying out the Open Dump Inventory.

grant program, development of guidelines for federal procurement of products containing recycled materials, evaluation of resource recovery technologies and conduct of resource recovery seminars to promote adoption of resource recovery and conservation as a preferred solid waste management option.

Regulations, Guidelines, Policies/EIS Preparation -- Until 1980 this program element provided for the completion of environmental impact statements (EIS) and economic impact analyses for regulations under Subtitles C and D of RCRA.

Love Canal -- This program element existed in 1979 and contained funding for a demonstration project of remedial work at the Love Canal in Niagara, New York.

REGULATIONS, GUIDELINES, POLICIES/HAZARDOUS WASTE

1979 Accomplishments

On December 18, 1978, EPA proposed a list and criteria for determining a hazardous waste (Section 3001), standards for generators of hazardous waste (Section 3002) and standards for owners and operators of hazardous waste treatment, storage and disposal facilities (Section 3004). Regulations for permit issuance (Section 3005) and for authorized State programs (Section 3006) were combined with similar regulations under the Clean Water, Clean Air, and Safe Drinking Water Acts for, respectively, the National Pollutants Discharge Elimination System (NPDES), Prevention of Significant Deterioration (PSD), and Underground Injection Control (UIC) into a consolidated regulatory proposal.

Several technical analyses and studies were initiated to support development or revision of regulatory assumptions in order to:

- respond to more than 40 major and hundreds of minor issues raised by over 1,200 public comments received on the proposed regulations;
- promulgate the regulations by the December 31, 1979 deadline approved by the Federal District Court (subsequently revised); and
- prepare an implementation program.

The major contractual efforts in 1979 included an assessment of the impact of alternative regulatory options on generators of small amounts of hazardous waste; an analysis of the costs and economic impacts of the regulations on six most-affected industries and on surface impoundments already in use for industrial waste water treatment; quality assurance and validations of test protocols; and development of design and operating guidance for inclusion in manuals for owners and operators of hazardous waste treatment, storage and disposal facilities subject to the Section 3004 regulations.

Design began on a data processing system to accommodate data to be generated by the notification, manifest reporting and permit activities associated with Subtitle C implementation. The system will be designed for compatibility with other EPA and existing State systems.

EPA continued to receive information on the effects of exposure to the improper management of hazardous waste and rendered assistance to regional offices and states in responding to hazardous waste emergencies, such as in Toone, Tennessee, and in Jackson County, Indiana, where large amounts of chemical waste were improperly stored in a sandy, ground water discharge area.

uncontrolled dumpsites and initiated the design of a new Federal emergency response and clean-up program to supplement Subtitle C's regulatory control of currently-operating disposal sites. Beginning in 1980, this program is included under the uncontrolled hazardous waste sited budget subactivity.

1980 Program

The current estimate for this program element is 78 permanent workyears and \$13,875,200, of which \$3,499,400 is for Salaries and Expenses, and \$10,375,800 is for extramural purposes under the Abatement, Control and Compliance appropriation.

EPA, with the agreement of Federal District Court, will complete analysis of issues raised by public comments and promulgate, in February 1980, standards for generators of hazardous waste (Section 3002); standards for transporters of hazardous waste (Section 3003); and a notice on notification requirements (Section 3010). These will be followed in April 1980, by an initial list and four criteria for determining a hazardous waste (Section 3001) interim status standards for owners and operators of hazardous waste treatment, storage and disposal facilities (Section 3004) and regulations for permit issuance (Section 3005) and for authorization of State programs (Section 3006) as part of the Consolidated Permits regulations. These core regulations will be followed by Section 3004 technical standards for treatment, storage and disposal facilities in the fall of 1980.

The Federal standards under Section 3004 will be Best Engineering Judgement standards. They will set performance standards to be met by landfills, landfarms, surface impoundments, incinerators, and land treatment facilities and specify the factors to be considered in individual facility permitting. This approach for regulation of the estimated 30,000 treaters, storers and disposers of hazardous waste nationwide shifts the burden of developing the permit parameters to the State and regional permit writer. To guide the application of Best Engineering Judgment to a permit in later years, headquarters will begin to develop the extensive knowledge base needed about industry specific wastestreams and control practices and technologies.

EPA will initiate in 1980 the first phase of an extensive evaluation of industrial waste to yield data and information to support five regulatory development needs of the hazardous waste program:

- assessments of industry-specific treatment and disposal practices and impacts to support issuance of Best Engineering Judgment permits against Section 3004 performance standards;
- establishment of safe cut-off levels for regulatory coverage of wastestreams (small generator cut-offs);
- speedy response to petitions to remove a hazardous waste from the initial Section 3001 list;
- justification of additional listings under Section 3001; and
- identification of candidate wastestreams for reuse and recovery activities.

approximately 220 industrial waste streams, development of analytical procedures, and analysis of samples.

Another essential component of the 1980 extramural program is support for the onset of implementation activities in late 1980 and 1981. Developmental work will continue on manuals to assist permit writers in evaluating facilities against performance standards and to describe preferred designs and operating procedures for facility owners and operators seeking to comply with the Best Engineering Judgement standards. Analyses will be conducted of policy issues, such as siting of hazardous waste facilities and State authorization, and on permitting procedures. Development of ADP systems to facilitate implementation and reporting requirements will continue. A national contract for regional handling and processing of up to 450,000 notifications from generators, transporters and hazardous waste facilities will be developed.

1980 Explanation of Changes from Budget Estimate

The net increase of \$5,026,500 results from several actions. An increase of \$102,600 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$17,900 and \$12,700, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$133,500 to this activity.

A transfer of \$915,100 was made within the solid waste media to other activities and \$26,100 was transferred to the management and support media to support an inventory support contract and a Waste Alert Program (A citizen education program for hazardous waste). A transfer of \$183,900 was made within the solid waste media to technical information development and \$186,900 to management and support for the Office of Water and Waste Management program management in order to provide for projected costs based on 1979 expenditures.

A proposed supplemental for \$6.4 million is proposed for 1980 to provide critical regulatory data to permit effective and timely implementation of the hazardous waste regulatory effort in 1981.

1981 Plan

Resources required for this program element are 119 permanent workyears and \$22,720,100, of which \$4,994,300 is for the Salaries and Expenses appropriation and \$17,725,800 is for the Abatement, Control and Compliance appropriation. The major increases in the hazardous waste program element will expand technical support for its regulations under Sections 3001 and 3004 of RCRA.

EPA will not have the knowledge base to list in its initial Section 3001 regulations all the hazardous wastestreams covered by RCRA and to prescribe national standards for the generation, transport, treatment, storage and disposal of each wastestream. In 1981, EPA will continue building the data and information base it needs to refine and broaden its hazardous waste regulations.

The second year of the industrial waste evaluation will continue to:

- develop methods, procedures and tests to identify the harmful contaminants in complex industrial wastestreams;
- sample and analyze the wastestreams to determine their hazardous characteristics and the seriousness of their hazard; and
- analyze current disposal techniques, their costs and environmental effects, and disposal capacity problems.

EPA will complete development and validation of test protocols for additional waste characteristics, such as low-level radioactivity, infectiousness, phytotoxicity, and mutagenicity and teratogenicity, and continue to develop proper analytical tools and methodologies.

Industry and waste-specific technical guidance materials will be issued to assist State and regional permit writers. Based on a study of recovery technology and amenable wastestreams, an assessment of how to support development of viable industrial waste recovery processes will be conducted.

Development of mechanisms for assuring adequate post-closure financial responsibility for hazardous waste facilities will be completed.

The changing American energy supply plan adds a component to the 1981 hazardous waste program. Synthetic fuel technologies have the potential to create large volumes of potentially harmful wastes. In 1981, EPA will issue preliminary guidance documents to advise the growing synfuels industry on appropriate facility designs and management procedures and will develop regulations for wastes such as retorted shale, coal gasification ash and spent catalysts from coal gasification and oil shale processing.

Headquarters will also provide national policy and procedural guidance on State authorization issues, hazardous waste program administration, and evaluation of permits.

REGULATIONS, GUIDELINES, POLICIES/SOLID WASTE

1979 Accomplishments

The Agency promulgated criteria for classification of sanitary landfills under Section 4004 of RCRA and guidelines for the development and implementation of State solid waste management plans under Section 4002. The criteria specify conditions that must be met regarding floodplains, surface water, ground water, application to land producing food-chain crops, disease, air quality, and safety. The regulation also establishes a definition of open dumping as required in Section 1008 of RCRA and serves as a partial guideline under Section 405 of the Clean Water Act for disposal and utilization of waste water treatment plant sludge. A manual was developed for States' use in classifying solid waste disposal facilities according to the Section 4004 criteria for the Open Dump Inventory.

Landfill design and operation guidelines (Section 1008) were proposed and studies were initiated of the agricultural chemicals, pulp and paper, textiles and food processing industries to support future development of Section 1008 guidelines to control nonhazardous industrial waste disposal.

The comprehensive sludge study required by Section 8002 was forwarded to Congress.

1980 Program

In 1980, the Agency has allocated a total of \$2,028,800 to this program, of which \$828,800 is for Salaries and Expenses and \$1,200,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

Suits have already been filed requiring EPA's defense of both the landfill criteria of Section 4004 and the State planning guidelines of Section 4002. In combination with the criteria, publication of the Site Classification Manual and a program of assistance and training sessions for the States will constitute the base of Federal policy and technical guidance in 1980 to support States' initiation of the Open Dump Inventory. National management of the States' preparations for conduct of the inventory process will also be provided. The initial installment of the inventory is scheduled for late 1980 publication.

date of January 31, 1981.

Work will continue on development of additional guidelines under Section 405 of the Clean Water Act on municipal waste water treatment sludge disposal and utilization. Guidelines for the giveaway or sale of processed sludge will be proposed. Section 1008 guidelines for landfill disposal will be issued. Studies will continue on ground water monitoring, landfill, landspreading and surface impoundment design and operation to support development of Section 1008 guidelines and refinement of technical guidance for the states and regions on solid waste disposal. EPA will co-sponsor with FAA and the Fish and Wildlife Service a comprehensive study of means to diminish dangers to aviation from birds congregating at landfills in the vicinity of airports.

1980 Explanation of Changes from Budget Estimate

The net increase of \$223,800 results from several actions. An increase of \$31,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$14,400 to this activity.

A reprogramming of \$206,500 was made within the solid waste media from regulations, guidelines and policies/hazardous waste (\$47,700); regulations, guidelines and policies/resource conservation and recovery (\$116,100); and solid waste technical assistance (\$42,700), to cover the remaining amount needed for the inventory support contract.

1981 Plan

Resources required for this program element are \$1,340,000 and 13 permanent workyears, of which \$740,000 is for Salaries and Expenses and \$600,000 is for Abatement, Control and Compliance. In 1981, the headquarters program will continue to concentrate on national management of the Open Dump Inventory, development of remaining sludge management guidelines, and guidance on technical and policy issues of State solid waste management planning and implementation.

Given the broad scope of the State solid waste management plans and the number of State agencies and organizations to be involved, EPA expects to continue to provide guidance on implementation as States' plans begin to phase-in during 1981.

Section 1008 guidelines will be prepared on preferred designs and methods of operation of surface impoundments and landspreading. These, along with Section 1008 guidelines to be developed for land disposal of wastes from selected industries, such as pulp and paper and food processing, will provide technical guidance for compliance with State solid waste regulatory programs.

Additional comprehensive guidelines under Section 405 of the Clean Water Act, addressing sludge incineration, energy recovery, landfilling, landspreading, and disposal of sludge in surface impoundments, will be proposed in 1981. This will satisfy provisions of the Clean Water Act and RCRA for regulations on disposal and utilization of municipal sludge.

REGULATIONS, GUIDELINES, POLICIES/RESOURCE RECOVERY

1979 Accomplishments

In 1979, extramural efforts provided for economic, technical and environmental evaluations of state-of-the-art resource recovery systems, and a study to support Section 6002 Federal procurement guidelines for highway construction products containing recycled materials.

materials; subsidies for resource recovery; railroad freight rate discrimination; product regulations; beverage container deposits; bounties on durable and hazardous consumer goods; national litter tax; local user fees; and a national solid waste disposal tax.

The Agency managed a competitive process to select 66 communities to share in \$15 million in grants under the President's Urban Policy Program for local resource recovery system planning.

Detailed reports were issued on the design and operation of the San Diego County Resource Recovery Facility and the Landgard pyrolysis project in Baltimore. Evaluations of European waterwall combustion systems and on small modular incinerators with heat recovery were completed.

In 1979, a Memorandum of Understanding was completed delineating responsibilities between EPA, for planning and development, and the Department of Energy, for design and construction of municipal waste resource recovery systems. EPA initiated development of a 5-year plan for Federal resource conservation activities.

1980 Program

The current estimate for this program is 9 permanent workyears and \$625,000, of which \$295,000 is for Salaries and Expenses and \$330,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

Follow-up funding of \$10 million will be provided for the 66 urban grantees of the President's Urban Policy Program to move into the second phase of their planning for projects to convert municipal solid waste to useable energy and materials. A contract to provide a model to assist EPA and grantees in technical project management will be continued and three workshops to train grantees in the model's use will take place. Headquarters will provide national oversight of regional management of the grants and evaluate the grantees' use of funds in the first phase.

The first three Federal procurement guidelines are scheduled for proposal in 1980, for fly ash as a cement supplement, recycled paper products and composted sewage sludge as a soil conditioner or fertilizer. Development will begin of future Section 6002 guidelines on procurement of recycled construction materials.

In 1980, eight comprehensive evaluations will begin on several resource recovery system components, such as air classifiers, and on commercial-scale facilities, such as the Andco-Torrax pyrolysis plant in Frankfurt, Germany. The evaluations of the technological, operational, economic, environmental and institutional aspects of performance of resource recovery systems expand the knowledge base available to local decision-makers. Intended for publication in 1980 are evaluations of refuse-fired energy systems in Europe and small modular incinerators with heat recovery.

Resource recovery seminars and an updated Resource Recovery Implementation Guide continue to supply information to support technology transfer among State and local public administrators.

The interagency 5-year plan for Federal resources conservation and recovery programs to help systemize long-term planning will be completed.

the net decrease of \$110,000 results from several actions. An increase of \$11,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$5,100 to this activity.

A reprogramming of \$116,100 was made within the solid waste media to solid waste regulations, guidelines and policies to support a contract for inventory support.

1981 Plan

The Agency requests \$946,000 for this program element, of which \$635,000 is for the Salaries and Expenses Appropriation and \$311,000 is for the Abatement, Control and Compliance appropriation.

Headquarters will maintain its oversight of ongoing regional management of the Presidents' Urban Policy grant program to assist selected local governments complete their feasibility studies, procurement and pre-implementation activities for resource conservation and recovery projects. This includes providing assistance to the regions in refining project work plans for the final phase and evaluating the progress of second phase projects.

Section 6002 procurement guidelines will be developed for recycled construction materials and for insulation products using recovered materials. Previously proposed guidelines will be finalized.

Evaluation will be continued on selected resource recovery systems and reports issued on the design and performance of state-of-the-art and commercial technologies, particularly in regard to small-scale usage. This activity will form a contribution to the ongoing recovery seminars organized by EPA to aid decision-makers and expand resource recovery.

REGULATIONS, GUIDELINES, POLICIES/EIS PREPARATION

1979 Accomplishments

In 1979, contract studies continued on the environmental impacts of the landfill criteria, sludge guidelines, Section 1008 landfill guidelines, and the set of seven Subtitle C regulations. Contract studies were also continued to determine the overall economic impact of the hazardous waste regulations and sludge disposal guidelines and impact of the Subtitle C regulations on selected industrial sectors.

1980 Program

No resources are requested.

1981 Plan

No resources are requested.

LOVE CANAL

1979 Accomplishments

Congress appropriated \$4 million to the Agency for a grant to the State of New York for a clean-up demonstration project at the Love Canal. In conjunction with EPA's award of the grant immediate efforts to contain and clean up the Love Canal site, such as dispatch of EPA's mobile waste water treatment unit and covering the site, were initiated.

- assess the extent of aquifer contamination due to leachate migration and evaluate its environmental impact;
- construct containment and leachate collection systems around the site;
- design, construct and operate a permanent treatment and disposal system for intercepted leachate;
- perform epidemiological studies of area residents;
- analyze possible site effectiveness of remedial measures and plan additional remedial activities.

1980 Program

No resources are requested for this program element. The congressional add-on was provided for 1979 only. Remedial, rehabilitation, monitoring and evaluation work under the grant agreement will continue, however, in 1980 and beyond.

1981 Plan

No resources are requested.

SOLID WASTE

Financial Assistance

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Hazardous Waste Management			
Financial Assistance to			
States:			
Abatement, Control and Compliance.....	\$30,000	\$30,000	...
Solid Waste Management			
Financial Assistance to States:			
Abatement, Control and Compliance.....	8,000	8,000	...
Resource Recovery Local			
Financial Assistance:			
Abatement, Control and Compliance.....	10,000	10,000	...
Total:			
Abatement, Control and Compliance	48,000	48,000	...
Grand Total	48,000	48,000	...



Financial Assistance

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase - Decrease - 1981 vs 1980</u>
	(dollars in thousands)				
<u>Appropriation</u>					
Hazardous Waste Manage- ment Financial Assistance to States:					
Abatement, Control and Compliance	\$14,501	\$18,600	\$18,600	\$30,000	+\$11,400
Solid Waste Management Financial Assistance to States:					
Abatement, Control and Compliance	11,138	10,000	10,000	8,000	-2,000
Resource Recovery Local Financial Assistance:					
Abatement, Control and Compliance	6,551	13,950	10,000	10,000	-
Total					
Salaries and Expenses					
Abatement, Control and Compliance	<u>32,190</u>	<u>42,550</u>	<u>38,600</u>	<u>48,000</u>	<u>+9,400</u>
Grand Total	32,190	42,550	38,600	48,000	+9,400
<u>Permanent Positions</u>	...	...	...	...	...
<u>Full-time Equivalency</u>	...	...	...	...	...
Budget Request					

The Agency request for this budget subactivity is \$48,000,000 for the Abatement, Control and Compliance appropriation, an increase of \$9,400,000 from 1980. This reflects a decrease of \$2,000,000 for solid waste management grants to States, due to the 5-year phase out of Federal financial assistance under Subtitle D of RCRA. An increase of \$11,400,000 is requested for hazardous waste management grants to States for Subtitle C implementation.

Program Description

This subactivity provides financial assistance to State governments for developing and implementing hazardous and non-hazardous waste management programs under Subtitles C and D of RCRA. Financial assistance is also provided to local government for resource and energy recovery projects. The following program elements comprise this subactivity.

programs must be capable of receiving authorization under Subtitle C of RCRA. Grants are awarded on a formula basis which takes into account a State's population, land area, number of hazardous waste generators and amount of hazardous waste.

Solid Waste Management Financial Assistance to States -- This program element provides grants to State solid waste management agencies under Subtitle D of RCRA. Grants are awarded on a basis of State population. These grants support States in pursuing their responsibilities under RCRA to conduct an inventory of all solid waste disposal sites, complete solid waste management plans, and implement State regulatory programs for the management of non-hazardous waste.

Local Resource Recovery Financial Assistance -- This program element provides grants as part of the President's Urban Policy Program for feasibility studies and other project development activities leading to the implementation of resource and energy recovery systems.

HAZARDOUS WASTE MANAGEMENT FINANCIAL ASSISTANCE

1979 Accomplishments

Grants totalling \$14,500,500 were awarded in 1979. Financial assistance was given to all States which showed a good faith effort in developing and implementing a hazardous waste management program substantially equivalent to the Federal hazardous waste program. EPA interprets this to mean that the State program would need to cover substantially the same wastes and activities (generation, transportation, treatment, storage and disposal) as the Federal program, and that the requirements should provide substantially the same level of protection to human health and the environment.

The States' primary activity in 1979 was to draft enabling legislation and regulations which would establish the authority and capability for operating substantial equivalent programs. The problem of Love Canal, along with several other well publicized incidents, had a marked effect on prompting many States to take action on hazardous waste management. Specifically, in 1979, several States enacted legislation and have or are in the process of promulgating regulations for hazardous waste management. States also began to hire and train staff, who would serve as the infrastructure required for an operational hazardous waste management program.

The following are examples of specific actions taken by States to begin meeting the requirements of a substantially equivalent program.

- Assistance was given for disposal of hazardous wastes on a case-by-case basis.
- Public participation and information functions were developed.
- Regulations and guidelines were developed for all aspects of hazardous waste management including generation, storage, treatment, transport and disposal and for authorization of State programs.
- A management information system was developed for tracking compliance with the manifest.

1980 Program

The total current estimate for this program is \$18,600,000 for Abatement, Control and Compliance. This will allow States to continue developing hazardous waste management

In late 1980, States will be able to receive interim authorization. This will allow States to operate programs that provide substantially the same degree of protection as the Federal program, during the period they are developing programs capable of receiving final authorization.

Interim authorization will occur in two phases. This will enable States to continue preparation of necessary legislation and regulations prior to promulgation of the entire Federal Subtitle C regulatory program. Phase I will cover generator and transporter requirements and preliminary facility standards. Phase II will cover permitting of hazardous waste treatment, storage and disposal facilities. States may receive interim authorization beginning six months after the promulgation of the Section 3001 regulations. States may receive interim authorization for Phase II after the Section 3004 technical standards are promulgated. Interim authorization for both parts extends for 24 months beyond the earliest date Phase II begins. During this period, States will upgrade their programs to qualify for final authorization. States are expected to seek authorization for both phases.

In general, in order to receive interim authorization for either phase a State program should have:

- legislative authority adequate for the State to carry out its responsibility for that phase;
- regulations in effect necessary to implement the requirements of that phase;
- control over a substantial majority of hazardous wastes generated, transported, treated, stored and disposed of in the State;
- capacity to inspect, monitor, and require recordkeeping, reporting and monitoring in order to determine compliance with the requirements of that phase;
- enforcement capabilities that are adequate to ensure compliance with the requirements of that phase; and
- adequate resources to administer and enforce the requirements of that phase.

For those States unwilling or unable to obtain authorization, EPA is required to operate a Federal program. At the discretion of the Administrator, unobligated grant funds remaining after negotiation with the States in a Region, and funds for which no grant application has been received, may be used to meet the costs of a required Federal program in any State not applying for, or which has been denied interim or final authorization.

1980 Explanation for Changes from Budget Estimate

There was no change.

1981 Plan

EPA requests a total of \$30,000,000 under this program for Abatement, Control and Compliance. This reflects an increase of \$11,400,000 over the 1980 level.

In 1981, the interim authorization period will still be in effect. States will continue to receive financial assistance for their efforts toward developing and implementing hazardous waste management programs. States that are ineligible for authorization in 1981 can still be funded to develop a program eligible for future

Only those States totally divorcing themselves from the program will not qualify for grant funds. EPA will continue to use unobligated funds to operate Federal programs for these unauthorized States.

SOLID WASTE MANAGEMENT GRANTS TO STATES

1979 Accomplishments

Grants totalling \$11,138,300 were awarded in 1979. The 1979 congressional add-on of \$4 million was not obligated in 1979, but will be used by the States in 1980. In 1979, States continued to develop comprehensive solid waste management plans which would meet the six requirements under Section 4003 of RCRA. The States also continued drafting and supporting passage of legislation and implementing regulations to provide an adequate regulatory base to assume their responsibilities under RCRA concerning non-hazardous waste. This includes regulations governing new municipal and industrial waste disposal sites; right-of-entry for on-site industrial waste disposal; site monitoring and inspection requirements; compliance scheduling; removal of long-term contract prohibitions; and administrative and judicial enforcement mechanisms.

States also continued to gather background information on the location, ownership and other pertinent data of solid waste disposal sites. The development of appeal and other administrative procedures was also initiated in 1979. These pre-inventory activities are pertinent and necessary in order to effectively initiate the inventory program. They will enable the States to develop a good data base identifying all of the facilities within their jurisdiction and the facilities needing to be evaluated each year.

1980 Program

The total current estimate for this program is \$10,000,000 in new obligation authority for Abatement, Control and Compliance. An additional \$4 million will be available in 1979 carryover funds. EPA will continue to encourage the development and implementation of strong State programs to oversee and regulate non-hazardous waste. Since the enactment of RCRA, many States have appreciably strengthened their capacity to assume such responsibilities under the Act.

EPA will work with the States to develop a long-term financial base resting on user charges. Therefore, beginning in 1980, Federal financial assistance will be phased-out over a 5-year period. This will require that States use grant funds during 1980 through 1984 for only the highest priorities under Subtitle D of RCRA -- completion of an inventory of all solid waste disposal sites to determine whether they should be classified as open dumps (and therefore be closed or upgraded) or as sanitary landfills; completion of a comprehensive State solid waste management plan; and development and implementation of State regulatory programs for the management of all non-hazardous waste.

In 1980, the inventory of solid waste disposal sites will be given highest priority. Since such an inventory is very resource intensive, a majority of the grant funds will be used for this purpose. EPA will insure that at least 60 to 75 percent of the 1980 allotments to each State is used for this purpose. The remaining funds should support the other high priority activities.

1980 Explanation for Changes from Budget Estimate

There was no change.

EPA requests a total of \$8,000,000 under this program for Abatement, Control and Compliance. This reflects a decrease of \$2,000,000 over the 1980 level, due to the 5-year phase out of Federal financial assistance under Subtitle D of RCRA.

In 1981, States will continue to conduct the inventory of solid waste disposal sites, and have an on-going program to classify such sites. There should also be a marked increase in the number of States completing comprehensive solid waste management plans, and passing legislation and implementing regulations covering non-hazardous waste. EPA will also continue to work with the States in developing user-charges as a means of financing activities within their solid waste management program.

LOCAL RESOURCE RECOVERY FINANCIAL ASSISTANCE

1979 Accomplishments

Grants totalling \$6,550,900 were awarded in 1979. EPA selected 68 local governments from 205 applicants for award under the President's Urban Policy grant program, for feasibility studies and other project development activities leading to implementation of resource and energy recovery systems. The program's major initiatives are to overcome one of the major barriers to resource recovery implementation -- inadequate funding for planning activities -- and have a positive economic and labor impact on urban areas.

The 63 projects finally awarded represent nearly 10 percent of the U.S. municipal solid waste stream. They also represent a total potential construction cost of over \$4 billion and will provide more than 2,000 jobs. Fifty-six (56) are directly related to energy recovery. The remaining seven are related to source separation activities.

In 1979, EPA began assisting applicants in developing comprehensive workscopes, closely monitored their progress in initiating activities, and provided grantees with in-house and contractor support as problems arose. Thus, with both financial and technical assistance, the rate of resource recovery project implementation will be accelerated by avoiding delays caused by decision-making errors and inadequate information, and by enabling those communities with limited funds and high potential for success to investigate the feasibility of resource recovery.

1980 Program

The total current estimate for this program is \$10,000,000 for Abatement, Control and Compliance. EPA will continue to provide grant funding to those communities selected in 1979. The selected communities may use the funds to perform any of the following type activities necessary to successfully implement a resource or energy recovery system: waste stream and market surveys; financial analyses; selection of procurement, technology and financing options; analysis and design of necessary ordinances or legislation; site selection; public participation; preparation and evaluation of bids; and finalizing contracts for systems, markets and waste supply.

In 1980, EPA will continue to monitor the progress of grantees. Along with providing additional grant funds, EPA will use a portion of the funds for contractor assistance on technical management of the grants and on evaluating the overall program.

1980 Explanation for Changes from Budget Estimate

The Congress reduced the Agency's request by \$3,950,000.

Compliance. This represents the same amount as in 1980. In 1981, EPA will provide additional funds to grantees, enabling them to complete their final program phases.

Waste Management Strategies Implementation

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollar in thousands)		
<u>Appropriation</u>			
Hazardous Waste Mgmt Regulatory Strategy Implementation:			
Salaries and Expenses.....	\$9,052	\$9,004	-\$48
Abatement, Control and Compliance.....	3,018	3,018	...
Solid Waste Management Program Implementation:			
Salaries and Expenses.....	1,078	1,071	-7
Abatement, Control and Compliance.....	15	15	...
Total:			
Salaries and Expenses.....	10,130	10,075	-55
Abatement, Control and Compliance.....	3,033	3,033	...
Grand Total.....	13,163	13,108	-55



SOLID WASTE

Waste Management Strategies Implementation

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs 1980
			(dollars in thousands)		
<u>Appropriation</u>					
Hazardous Waste Mgmt Regulatory Strategy Implementation:					
Salaries and Expenses...	\$1,373	\$2,443	\$2,369	\$9,052	+\$6,683
Abatement, Control and Compliance	96	...	100	3,018	+ 2,918
Solid Waste Management Program Implementation:					
Salaries and Expenses...	993	1,109	1,256	1,078	178
Abatement, Control and Compliance	10	...	15	15	...
Total:					
Salaries and Expenses...	2,366	3,552	3,625	10,130	+6,505
Abatement, Control and Compliance	106	...	115	3,033	+2,918
Grand Total.....	2,472	3,552	3,740	13,163	+9,423
<u>Permanent Positions</u>					
Hazardous Waste Management Regulatory Strategies.....	58	89	81	227	+ 146
Solid Waste Program	37	40	41	35	- 6
Total	95	129	122	262	+ 140
<u>Full Time Equivalency</u>					
Hazardous Waste Regulatory Strategy.....	56	88	86	275	+ 189
Solid Waste Management Program Implementation....	36	43	45	38	- 7
Total.....	92	131	131	313	+ 182

Budget Request

The resources requested for this budget subactivity are \$13,163,800 and 262 permanent workyears. This includes a total of \$10,130,000 for Salaries and Expenses and \$3,033,000 for Abatement, Control and Compliance, with an increase of \$6,505,000 and \$2,918,000, respectively. This also includes an increase of 140 positions. The increase provides for regional implementation of a hazardous waste management system in unauthorized States; issuance of permits to hazardous waste treatment, storage and disposal facilities in unauthorized States using "Best Engineering Judgement" standards; and technical support and oversight of authorized States.

Program Description

The objectives of the regional office solid waste management program are to implement regulations, guidelines and policies as required under Subtitles C and D of RCRA; and to develop regional, State and local programs for resource conservation and recovery. The following program elements comprise this subactivity:

Hazardous Waste Management -- This program element includes activities that will increase the ability of States to receive authorization for implementing hazardous waste management programs under Subtitle C of RCRA. RCRA mandates EPA to authorize States that develop and implement hazardous waste management programs substantially equivalent to the Federal hazardous waste program. The EPA regions will work closely with States to develop programs that meet all the federally mandated requirements. For States unwilling or unable to obtain authorization, EPA will operate a Federal program.

Solid Waste Implementation -- This program element includes activities that will increase the ability of States to implement solid waste management programs under Subtitle D of RCRA. The EPA regions will be responsible for managing the RCRA mandated solid waste disposal site inventory. The EPA regions will also provide assistance to States in developing comprehensive solid waste management plans, and in developing and implementing non-hazardous waste regulatory programs. Management of local resources recovery grants under the President's Urban Policy program is also provided.

HAZARDOUS WASTE MANAGEMENT

1979 Accomplishments

In 1979, obligations totalled \$1,468,900; the regions' major activity was in assisting and monitoring the development of State legislation, regulations and other requirements necessary to qualify for Federal authorization (interim and final). The regions also began strengthening their capabilities to implement a Subtitle C hazardous waste management program in States unwilling or unable to obtain Federal authorization.

The second highest priority during 1979 was responding to hazardous waste emergencies and imminent hazards. Specifically, the regions analyzed suspect situations, conducted technical evaluations to determine the extent of damage, and provided recommendations for cleanup and disposal as needed. The regions cooperated with the Office of Enforcement, which determined appropriate legal actions to take in response to such emergencies. (This activity will be covered in the "Uncontrolled Hazardous Waste Sites" subactivity in 1980 and beyond).

1980 Program

The total current estimate for this program is 81 permanent workyears and \$2,469,100, of which \$2,369,100 is for Salaries and Expenses and \$100,000 is for Abatement, Control and Compliance.

In 1980, the EPA regions will continue to work closely with the States in developing and strengthening their hazardous waste management programs to qualify for interim authorization. This will include helping States to establish a base program that is substantially equivalent to the Federal hazardous waste program, and to develop the application packages required for interim authorization.

The regions will also continue strengthening their own capability to implement hazardous waste programs in unauthorized States. This is especially critical with regard to permitting of hazardous waste facilities. Since EPA does not have the knowledge base to promulgate national design standards for disposal facilities, EPA will be required to issue permits based on "Best Engineering Judgement". This will require technical evaluation of permits on almost a case-by-case basis, significantly increasing the regional workload. In order to initiate a credible permitting program immediately after promulgation of Subtitle C, EPA regions will need to begin hiring and training a permit evaluation staff in 1980 to assume this responsibility.

EPA will initiate the Subtitle C implementation process in mid-1980, by mailing out notification forms to individuals and firms believed to be involved in hazardous waste management activities. EPA regions will be responsible for receiving and processing these forms in late 1980, as well as issuing notices of interim permit status to all notifiers.

1980 Explanation of Changes from Budget Estimate

The net increase of \$26,200 results from several actions. An increase of \$87,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$12,100 and \$2,600, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$210,300 to this activity.

Regional reprogrammings were made to cover projected costs based on 1979 expenditures and resulted in a reprogramming within the solid waste media of \$193,800 to other activities; \$11,200 to the air media; \$12,500 to the water quality media; \$9,500 from drinking water activities; \$18,200 to the noise media; and \$30,400 to the toxic substance media.

1981 Plan

EPA requests a total of 227 permanent workyears and \$12,069,900, of which \$9,051,500 is for Salaries and Expenses and \$3,018,400 is for Abatement, Control and Compliance. This reflects an increase of 146 positions and \$9,600,800 over the 1980 level.

In 1981, EPA regions will begin the interim authorization process. This will include reviewing State authorization packages prior to authorization to ensure all

As final determinations of appropriateness are made, memoranda of agreement will be negotiated with each State by the regions.

The regions will also oversee these States while they continue to work toward qualifying for final authorization. Regional oversight activities will include monitoring States' program authorization status; ensuring compliance with the interim standards; reviewing State progress reports; and identifying and resolving problem areas that arise during implementation. The State permitting process will be monitored, including reviewing 10 percent of State issued facility permits and conducting site inspections of 10 percent of State facilities.

The implementation of hazardous waste management programs in unauthorized States will begin in 1981. Regional responsibilities will include answering questions and resolving problems of generators, transporters, and facilities concerning the Subtitle C regulations; installing data processing and analysis systems to receive and analyze annual reports from facilities; and closely monitoring compliance with the manifest system's reporting requirements and interim permit standards. This information will help EPA identify implementation problems and set priorities for permitting.

In 1981, the Agency and States will inaugurate a 6-year program to permit an estimated 30,000 hazardous waste treatment, storage and disposal facilities nationwide. The increase requested for 1981 will provide resources for the EPA regions to begin the permit issuance process using "Best Engineering Judgement" (BEJ) standards. States and EPA regional offices will issue, on almost a case-by-case basis, best engineering judgement permits against performance standards under Section 3004. The BEJ regulatory approach will require individual technical evaluations and will increase the number of formal public hearings for permits. The resources under this program element will be used to conduct the detailed technical review of the permit applications, while resources requested under hazardous wastes enforcement will provide legal review, administrative support and analysis of routine technical problems.

The \$3,018,400 in extramural resources requested will fund contractors to provide technical support in evaluating permit applications. The resources requested under this program and the enforcement program will enable EPA to issue the estimated 7500 permits in unauthorized States over a 6-year period. If fewer States accept the program, additional EPA resources may be required or the length of the permit period will increase. In addition, as BEJ standards are refined and national design standards developed, initial BEJ permits may need to be revised, requiring additional EPA resources.

SOLID WASTE MANAGEMENT

1979 Accomplishments

In 1979, the regions assisted States in assuming their responsibilities under Subtitle D of RCRA. Specifically, the regions received and commented on State comprehensive solid waste management plans. Assistance was also provided in preparing for the RCRA mandated inventory of land disposal sites. This involved assessing State legislative bases and examining State regulations against the Federal landfill criteria, reviewing the necessary appeal and other administrative procedures, and recommending areas where further State action was needed before conducting the inventory.

The regions also began administering and managing the 63 Urban Policy resource recovery grants within their jurisdictions by helping grantees in refining their workscopes.

1980 Program

The current estimate for this program element is 41 permanent workyears and \$1,271,300 of which \$1,256,300 is for Salaries and Expenses and \$15,000 is for Abatement, Control and Compliance.

In 1980, the regions will negotiate, award, and oversee State Subtitle D grants. A primary responsibility will be to ensure funds are directed to only the highest priority activities. The regions will need to be certain that States direct at least 60 to 75 percent of their allotment to the land disposal site inventory. Regions will manage the inventory process beginning in 1980.

Regional assistance will be provided as States begin developing and implementing regulatory powers for disposal of non-hazardous waste. This will involve assessing regulatory needs and providing support and advice in drafting legislation. Regional oversight will also be provided as States begin establishing resource conservation and recovery programs.

The initiation of State/EPA agreements under RCRA, the Clean Water Act and the Safe Drinking Water Act will begin in 1980. EPA personnel under this program element will support this process by planning, implementing and managing the agreements as they relate to solid waste. This will provide an integrated and consistent approach to solving pollution problems covered under the above programs. The regions will be involved in negotiating agreements with the States, coordinating them with other EPA and State programs, and monitoring them after approval.

The President's Urban Policy Program of local resource recovery grants will continue to be managed by the regions.

1980 Explanation of Changes from Budget Estimate

The net increase of \$162,600 results from several actions. An increase of \$48,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$8,600 and \$600, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$42,100 to this activity.

Regional reprogrammings were made to cover projected costs based on 1979 expenditures and resulted in a reprogramming of \$73,500 within the solid waste media from other activities; \$4,500 from the drinking water media; and \$3,300 from the water quality media.

EPA requests a total of 35 permanent workyears and \$1,093,100, of which \$1,078,100 is for the Salaries and Expenses appropriation and \$15,000 is for the Abatement, Control and Compliance appropriation. This reflects a decrease of 6 permanent workyears and \$178,200 from the 1980 level.

In conjunction with EPA's phase-out of Federal financial assistance under Subtitle D of RCRA, the regions will concentrate primarily on helping States work toward implementing adequate and self supporting programs covering non-hazardous waste. This will involve helping States complete solid waste management plans, and pass legislation and implementing regulations. A large part of this effort will require the regions to negotiate and monitor State/EPA agreements, in order to ensure the programs are properly implemented. The regions will also work with States in developing user charges as a means of financing solid waste management programs when Federal funds are no longer available.

Regional management of the land disposal site inventory will continue during 1981. The information gathered will be forwarded to headquarters for additional installment in the published inventory.

The regions will continue to manage and provide support under the President's Urban Policy Program, as grantees move toward completing feasibility studies of resource and energy recovery systems for their communities.

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Technical Information Development:			
Salaries and Expenses.....	\$1,094	\$1,090	-\$4
Abatement, Control and Compliance.....	600	600	...
Solid Waste Technical Assistance Delivery/ Headquarters:			
Salaries and Expenses.....	120	119	-1
Abatement, Control and Compliance.....	4,494	4,494	...
Solid Waste Technical Assistance Delivery/ Regions:			
Salaries and Expenses.....	386	384	-2
Abatement, Control and Compliance.....	...	...	...
Total:			
Salaries and Expenses	1,600	1,593	-7
Abatement, Control and Compliance.....	5,094	5,094	...
Grand Total.....	6,694	6,687	-7



<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
		(dollars in thousands)			
<u>Technical Information Development:</u>					
Salaries and Expenses..	\$899	\$1,065	\$968	\$1,094	+\$126
Abatement, Control and Compliance.....	593	...	780	600	-180
<u>Solid Waste Technical Assistance Delivery/ Headquarters:</u>					
Salaries and Expenses..	396	2,967	121	120	-1
Abatement, Control and Compliance.....	2,449	...	3,139	4,494	+1,355
<u>Solid Waste Technical Assistance Delivery/ Regions:</u>					
Salaries and Expenses..	572	517	514	386	-128
Abatement, Control and Compliance.....	...	...	...	-	-
<u>Total:</u>					
Salaries and Expenses..	1,867	4,549	1,604	1,600	-4
Abatement, Control and Compliance.....	<u>3,042</u>	<u>...</u>	<u>3,919</u>	<u>5,094</u>	<u>+1,175</u>
Grand Total.....	4,909	4,549	5,523	6,694	+1,171
<u>Permanent Positions</u>					
<u>Technical Information Development.....</u>					
	13	9	10	10	-
<u>Solid Waste Technical Assistance Delivery/ Headquarters.....</u>					
	12	10	3	3	-
<u>Solid Waste Technical Assistance Delivery/ Regions.....</u>					
	22	18	19	13	-6
Total.....	47	37	32	26	-6

Full-time Equivalency

Technical Information Development.....	22	17	17	16	-1
Solid Waste Technical Assistance Delivery/Headquarters.....	14	10	4	4	...
Solid Waste Technical Assistance Delivery/Regions.....	23	19	20	15	-5
Total	59	46	41	35	-6

Budget Request

The resources requested for this budget subactivity are \$6,693,800 and 26 permanent work-years. This includes a total of \$1,600,000 for the Salaries and Expenses appropriation and \$5,093,800 for the Abatement, Control and Compliance appropriation, with a decrease of \$4,000 and an increase of \$1,175,000, respectively. The amount requested in this budget would provide technical assistance funds of \$5 million rather than 20% percent of the RCRA request. An appropriation language change has been submitted for this change.

Program Description

Funding under the subactivity enables EPA to provide States and local governments with a comprehensive technical assistance program on solid and hazardous waste management and resource conservation and recovery. EPA is also able to manage a participatory public education and information program, as well as develop and provide technical information concerning RCRA regulations, guidelines and programs. Section 2006(b) of RCRA mandates EPA to establish Technical Assistance Panels for the purpose of providing technical assistance to States, local governments, and Federal agencies upon request. These panels consist of experts from EPA, State and local officials (under the peer matching program), consultants under contract to EPA, or any other individuals serving voluntarily. Peer matching uses officials from one community to help another community solve a problem with which they have had similar experience.

The management of the Technical Assistance Panels program and implementation of a RCRA orientation training program are also included. The following program elements comprise this subactivity.

Technical Information Development -- This program element includes the management of hearings, meetings and other public participation activities necessary in the development of all regulations, guidelines and programs under RCRA. Management of RCRA orientation training courses for new Federal and State employees will be provided. EPA's management of a participatory public education and information program on solid waste management issues, and preparation, publication and dissemination of reports to Congress and the President and other publications are also included.

Technical Assistance - Regional Offices -- This program element includes regional management of the Technical Assistance Panels program for States and local governments and delivery of technical assistance by regional personnel.

Technical Assistance - Headquarters -- This program element includes national program management by EPA headquarters in establishing regional level-of-effort contracts for technical assistance and in managing an evaluation reporting system of the technical assistance provided. Management and monitoring of peer matching technical assistance grants is also included.

1979 Accomplishments

In 1979, extramural expenditures under this program element included a congressional add-on of \$100,000 for an academic training program. Four universities were awarded grants under this program to develop and teach innovative model courses on hazardous waste management.

EPA published Final Regulations on Public Participation in Programs under the Resource Conservation and Recovery Act (RCRA), Clean Water Act (CWA), and Safe Drinking Water Act (SDWA). These regulations replaced the Interim Guidelines for Public Participation in Solid Waste Management. Thirteen (13) public hearings and six public meetings were held in 1979 on proposed RCRA regulations, guidelines and programs under development.

The 4-year public education program on RCRA implementation, Waste Alert!, was successfully begun 1979. Citizen fear of hazardous waste sites is the basis of opposition to new hazardous waste facility siting and has become a major problem of waste management. This program has begun to enhance public understanding of the various components of the problem, and create support for regulatory programs to deal with hazardous and solid waste siting, disposal and recovery. Five citizen education grants were awarded in 1979, and these grantees developed, organized and managed four regional Waste Alert! conferences.

In response to approximately 17,000 requests from the public, over 790,000 technical and public information documents were distributed. EPA prepared and published 254 new information projects, including reports to Congress and the President, journal articles, news releases, technical reports and graphic presentations. The Agency also completed development of an orientation training workshop for new Federal and State employees involved in all aspects of solid waste management.

1980 Program

The total current estimate for this program element is 10 permanent workyears and \$1,748,400, of which \$968,400 is for Salaries and Expenses and \$780,000 is for Abatement, Control and Compliance. In 1980, EPA will continue to manage public participation activities, providing an open process of government and promoting public awareness and comment in the course of making decisions on RCRA programs. This will include 10 public hearings and meetings on RCRA regulations, guidelines and programs in 1980.

The 4-year public education program, Waste Alert!, will enter its second year. The initial two years are focusing on identifying and educating citizen leaders, developing proposals for implementing public participation under RCRA at the State level, planning for State Waste Alert! conferences, and identifying State action groups for participation in such conferences. Six additional regional conferences will be held in 1980.

The orientation training workshop, aimed at enhancing the ability of new Federal and State employees to assume their responsibilities under RCRA, will be scheduled.

The preparation, publication and distribution of information materials will continue, particularly as implementation of the Subtitle C program begins. EPA plans to distribute an additional 800,000 copies of technical and public information documents to the public. Approximately 250 new solid waste information projects will be prepared and published during the year.

mental appropriation. A congressional increase of \$1.5 million to academic training resulted in an increase of \$90,000 to this activity. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$8,200 to this activity.

A reprogramming of \$183,900 was made within the solid waste media, from hazardous waste regulations, guidelines and policies, to cover projected costs as based on 1979 expenditures. A reprogramming of \$400,000 was made within the solid waste media, from hazardous waste regulations, guidelines and policies to fund the Waste Alert! program, a citizen education program for hazardous waste.

1981 Plan

EPA requests a total of 10 permanent workyears and \$1,693,800 under this program element, of which \$1,093,800 is for the Salaries and Expenses appropriation and \$600,000 is for the Abatement, Control and Compliance appropriation. This reflects a decrease of \$54,600 from the 1980 level.

Public participation in RCRA programs will continue in 1981, including public hearings and meetings on all regulations, guidelines and programs. Management of the orientation training workshops will continue to be provided, including the periodic updating of course material such as training manuals.

The public education program, Waste Alert!, will continue into its third year. Waste Alert! conferees will begin forming coalitions and serve as a corps to help citizens at the local level understand solid waste management projects and issues, such as land-fill siting, resource recovery and the problems of abandoned waste sites. Citizens in all 50 States will ultimately be involved in shaping national, State and local programs and policies concerning waste management.

The preparation, publication and distribution of information documents and reports is expected to continue at the 1980 level of output.

TECHNICAL ASSISTANCE DELIVERY - REGIONAL OFFICES

1979 Accomplishments

In 1979, obligations totalled \$571,700. EPA regions continued operation of the Technical Assistance Panels program, in order to meet the RCRA mandate of providing State and local governments within their jurisdictions with technical assistance on all aspects of solid waste management. In 1979, EPA regions responded to 288 requests through the use of regional personnel (62), contractors (136), and peer matching (90).

In 1979, the Panels program began providing an increasingly wider scope of technical assistance than in the past. As an example, hazardous waste management requests increased from 15 percent to 23 percent of the requests for technical assistance in 1979. Further increases are expected with promulgation of the Subtitle C regulations. This program has been highly successful in supplying information for rational decision-making at the State and local level, thereby expediting the implementation of waste management programs by one to three years. Two examples of such assistance in 1979 were:

seminar will provide State and local decision-makers with up-to-date and comprehensive information on the benefits of this disposal alternative, including technologies, procurement strategies and financing opportunities.

- The Minnesota Pollution Control Authority received technical assistance in developing alternative solutions to problems of soil and groundwater contamination at four hazardous waste sites. Through the Panels program existing data on the sites was analyzed and recommendations for remedial action and follow-on monitoring were presented.

1980 Program

The total current estimate for this program element is 19 permanent workyears and \$514,400 for Salaries and Expenses. The program will remain structured to include individual consultant contracts for each regional office. This support and the other services enable each region to maintain comprehensive coverage of its jurisdiction's needs. These services will act as a catalyst for States and local governments as they begin to implement their responsibilities under Subtitles C and D of RCRA, such as the inventory of all solid waste disposal sites and State hazardous waste management program development and implementation.

This assignment of primary responsibility for provision of technical assistance to the regions has become increasingly significant, as unique regional, State, and local differences and needs are encountered. EPA realizes that the regions are more familiar with the specific waste management problems of its jurisdiction and can better integrate the Panels program with the development of RCRA's regulatory programs.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$2,300 results from several actions. An increase of \$20,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$3,300. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$2,700 to this activity.

Regional reprogrammings within the solid waste media resulted in a transfer of \$20,300 to other activities; a transfer of \$6,700 to the air media; and \$4,900 from the water quality media.

1981 Plan

EPA requests a total of 19 permanent workyears and \$386,500 under this program for the Salaries and Expenses appropriation. This reflects a decrease of \$127,900 from the 1980 level.

The resources will enable EPA regions to continue coordinating and administering the delivery of technical assistance through the RCRA mandated Panels program. This will include receiving and responding to minor technical assistance inquiries, reviewing and evaluating requests for assistance, selecting modes of assistance and developing workscopes. Technical assistance will continue to be provided through contractor, peer matching and EPA regional personnel.

EPA will also use Older Americans, IPAs and other special employment categories that do not affect the Agency's ceiling. They will participate in the management and actual provision of technical assistance in each region.

In 1979, obligations totalled \$2,845,300, of which \$2,448,900 was for extramural purposes. EPA headquarters awarded funds to 10 regional contracts and 6 public interest groups for peer matching services under the RCRA mandated Technical Assistance Panels program. EPA headquarters policy was to provide direct technical assistance on all aspects of solid waste management only when regional personnel, consultants or peer matching was either insufficiently developed or unable to respond in a timely manner.

EPA developed and issued a regional projects officer's guidance document, revised a document explaining the Panels' program to State and local officials, and issued a summary report of 1978 Panels program activities.

1980 Program

The total current estimate for this program element is 3 permanent workyears and \$3,260,000 of which \$121,200 is for Salaries and Expenses and \$3,138,800 is for Abatement, Control and Compliance. By 1980, the regions will have fully developed their own expertise in all areas of solid waste management potentially needing technical assistance. However, EPA headquarters will continue to be responsible for managing the Technical Assistance Panels program nationally. National management will ensure consistency of the overall program among the regions, provide a mechanism for the development and distribution of general policy and guidance documents, and provide the regions with a central contact point for providing input into the program.

EPA will award 10 new level-of-effort contracts in 1980. These contracts will provide for quicker response to client communities, will be easier to administer, and will have lower cost per effort due to less contractor paperwork in processing requests. Six public interest group peer matching grants will be awarded and monitored, and the overall Panels program will be evaluated.

1980 Explanation of Changes from Budget Estimate

The net increase of \$292,300 results from several actions. An increase of \$4,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$69,500 to this activity.

A reprogramming of \$400,000 was made within the solid waste media from hazardous waste regulations, guidelines and policies for contracts related to the development and implementation of Office of Solid Waste's hazardous waste regulations. Also, a reprogramming of \$42,700 was made within the solid waste media to hazardous waste regulations, guidelines and policies to cover increased hazardous waste activities.

1981 Plan

EPA requests a total of 3 permanent workyears and \$4,613,500 under this program element, of which \$119,700 is for the Salaries and Expenses appropriation and \$4,493,800 is for the Abatement, Control and Compliance appropriation. This reflects an increase of \$1,353,500 over the 1980 level.

In 1981, national management of the Technical Assistance Panels program will continue to be provided. This will include negotiating, awarding and monitoring consultant contracts and public interest group peer matching grants; conducting reporting and recordkeeping activities; and evaluating the overall program to enable EPA to ascertain the effectiveness and responsiveness of the various technical assistance provided.

	Original Estimate 1981 <u>(dollars in thousands)</u>	Revised Estimate 1981 <u>(dollars in thousands)</u>	<u>President's Reduction</u>
<u>Appropriation</u>			
Salaries and Expenses.....	\$1,737	\$1,733	-\$4
Abatement, Control and Compliance.....	<u>16,570</u>	<u>16,570</u>	<u>...</u>
Total.....	18,307	18,303	-4



Uncontrolled Hazardous Waste Sites

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
			(dollars in thousands)		
<u>Appropriation</u>					
Salaries and	...				
Expenses.....	...	\$504	\$558	\$1,737	+\$1,178
Abatement, Control					
and Compliance....	...	<u>17,429</u>	<u>16,537</u>	<u>16,570</u>	<u>+33</u>
Total.....		17,933	17,095	18,307	+1,211
<u>Permanent Positions.</u>	...	15	17	19	+2
<u>Full-time Equivalency</u>	...	15	17	19	+2

Budget Request

The Agency requests \$18,307,000 and 19 permanent workyears for this subactivity in 1981, an increase of \$1,211,400. Included in this request are \$1,736,500 for the Salaries and Expenses appropriation and \$16,570,000 for the Abatement, Control and Compliance appropriation. A portion of the increase is to cover purchase of special equipment for emergency response and investigative work by regional offices. This special equipment is necessary because the highly toxic nature of the wastes encountered requires specialized field handling and protective equipment such as an activated carbon treatment trailer and mobile stream diversion systems. This subactivity, when combined with the resources requested under the "Hazardous Waste Enforcement" subactivity, define the total Agency resources directly committed to the uncontrolled hazardous waste sites problem.

Program Description

The uncontrolled hazardous waste site program is an interim program to address the worst known problems associated with uncontrolled hazardous waste sites. The interim strategy encompasses site discovery actions, investigations to determine the potentially most serious sites, emergency assistance and containment of those sites where eligible under Section 311 of the Clean Water Act of 1977 or through enforcement actions. This interim approach will only bridge the gap until "Superfund" legislation is enacted and is not intended to be a major program of cleanup or containment in advance of funds and authorities available under the proposed new legislation.

The primary objective of the program is to eliminate threats to public health and welfare and ecologically sensitive areas from uncontrolled hazardous waste sites. Rough preliminary estimates reveal that there may be 30,000 to 50,000 sites containing hazardous wastes, of which 1,200-2,000 may present potentially significant problems. To date, EPA and the States have merely "scratched the surface" of the hazardous waste site problem. Only a small number of these sites have been inventoried and the extent of risks posed by them is in most cases still unknown. Current authority limits remedial measures to spill response actions and restricts enforcement action to those sites which pose an "imminent and substantial" danger to public health and the environment. Because of this limited authority, actual and potential damage to public health from these sites has gone unabated in the past. Prior to the presently developing interim strategy, Federal action against the dangers of uncontrolled hazardous waste sites was largely a response to chance discovery of such a site and/or the development of an emergency situation that threatened or actually exposed people to harm or injury.

formed primarily by contract personnel); (2) to assess the degree of hazard at sites; and (3) to provide all possible support to EPA enforcement officials in developing and prosecuting cases against culpable persons.

1980 Program

In 1980, the Agency has allocated a total of \$17,095,100 and 17 permanent workyears to this program, of which \$558,100 is for Salaries and Expenses and \$16,537,000 is for extramural purposes under the Abatement, Control and Compliance appropriation. Additional resources for this program are provided by the Office of Enforcement and the Office of Research and Development.

The uncontrolled hazardous waste site program was developed in late 1979 as a result of an EPA task force study on an "Agencywide Hazardous Waste Site Enforcement and Response System". The interim plan resulting from this study was presented as a 1980 budget amendment to Congress for \$20 million and was appropriated by Congress at the end of the fiscal year. During 1979, a substantial number of serious health threats from past practices of indiscriminate disposal of highly toxic hazardous wastes were discovered. The effects of the uncontrolled waste disposal sites ranged from contamination of surface and ground waters, including drinking water supplies, to fish and wildlife kills, vegetation destruction, threats to public safety because of fires or explosions, and direct exposure and injury as happened at Love Canal. EPA's response is primarily through enforcement actions using the emergency authority of Section 311 until passage of "superfund."

During 1980, the uncontrolled hazardous waste site program will begin to implement the interim strategy as delineated in the June 27, 1979, and November 27, 1979, memoranda from EPA's Deputy Administrator. This strategy is based on the policies established during 1979 and includes on site identification and discovery, field investigations, emergency response, and enforcement actions.

The 1980 program relies extensively on contractor support included under this sub-activity to provide dedicated field investigative personnel to the regions, the National Enforcement Investigation Center (NEIC), and the Environmental Response Team (ERT), and to perform site identification, investigation and enforcement case preparation. The contractor will also provide other non-dedicated services such as drilling sample wells, retaining expert consultants such as epidemiologists, and procuring engineering services to determine remedial measures. The \$16.5 million in contracts will include a \$7-\$8 million field investigation contract, which should be awarded by February 1980, and a \$8-\$9 million series of chemical analysis contracts for analyzing samples obtained during the site investigations. An additional contract will be awarded to manage and control the shipment of samples to and from the regional offices and the laboratories. It is projected that the program will conduct, through the national contract, preliminary investigations on 500 sites, full investigations on 70 sites and support for enforcement cases against 35 sites. It is estimated that 5,000 samples will be analyzed for organics, inorganics and heavy metals by the contracted laboratories.

The overall "Hazardous Waste Site Management Information System" will be implemented in 1980, as defined in the November 9, 1979, memorandum of the EPA Deputy Administrator. The system is designed to provide a consistent framework for regional decision making by developing and documenting the information available on each site from the point of initial identification through the investigation, cleanup and enforcement stages. The system will be used both as a management tool and a source for policy makers. Top priority in 1980 is

1980 Explanation of Changes From Budget Estimates

The net decrease of \$837,500 results from several actions. An increase of \$20,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$23,100 and \$800, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$515,100 to this activity. A transfer of \$478,000 was made within the solid waste media to hazardous waste monitoring and technical support for the hazardous waste sites admendment and \$121,000 was transferred to management and support for support costs associated with the hazardous waste admendment; for budgetary purposes, these resources were requested within this activity. A reprogramming of \$208,500 was made within the solid waste media from hazardous waste management regulatory strategies implementation (\$141,100) and from hazardous waste regulations, guidelines and policies (\$67,400) for response to uncontrolled hazardous waste sites. A reprogramming from other media was implemented in order to support hazardous waste site responsibilities, \$54,700 from the water quality media; \$171,100 from the drinking water media.

1981 Plan

The Agency requests a total of \$18,306,500 and 19 permanent workyears in 1981 for this program, of which \$1,736,500 is for the Salaries and Expenses appropriation and \$16,570,000 for the Abatement, Control and Compliance appropriation. Additional resources for this program are provided by the Office of Enforcement and the Office of Research and Development.

The program plans to continue to develop, implement and maintain the interim strategy for response to hazardous waste sites in 1981, as established in policy memoranda during 1980. Pending enactment of "superfund" legislation, most corrective actions at uncontrolled hazardous waste sites will be limited to short term remedial action using available Section 311(k) funds. As more sites are identified, increasing emphasis will be placed on the priority system in order to determine which sites to investigate with the limited available resources. Particular emphasis will also be given to integrating the Section 311, enforcement and investigation program efforts in order to make maximum use of expertise and available resources.

The investigation and sample analysis contracts should be fully in place by 1981 to augment and support regional resources efforts. Both contracts will continue to be funded in 1981 at about the same level (\$16,570,000 total) as in 1980. In 1981, it is projected that 500 preliminary site investigations, 70 full investigations, and support for 35 enforcement cases will be completed. The number of samples to be analyzed will reach approximately 5,000 during the year.

Hazardous Waste Enforcement

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u> (dollars in thousands)	<u>Current Estimate 1980</u> (dollars in thousands)	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>Appropriation</u>					
<u>Hazardous Waste Enforcement:</u>					
Salaries and Expenses.	\$928	\$2,174	\$1,516	\$3,161	+\$1,645
Abatement, Control and Compliance.....	587	...	783	632	-151
<u>Uncontrolled Hazardous Waste Site Enforcement:</u>					
Salaries and Expenses.	...	2,000	2,031	1,925	-106
Abatement, Control and Compliance.....	...	...	...	...	...
<u>Total:</u>					
Salaries and Expenses.	928	4,174	3,547	5,086	+1,539
Abatement, Control and Compliance.....	587	...	783	632	-151
Grand Total.....	1,515	4,174	4,330	5,718	+1,388
<u>Permanent Positions</u>					
<u>Hazardous Waste Enforcement.....</u>					
	26	46	41	83	+42
<u>Uncontrolled Hazardous Waste Site Enforcement.</u>					
	...	53	61	53	-8
Total.....	26	99	102	136	+34
<u>Full-time Equivalency</u>					
<u>Hazardous Waste Enforcement.....</u>					
	31	52	49	98	+49
<u>Uncontrolled Hazardous Waste Site Enforcement.</u>					
	...	53	61	53	-8
Total.....	31	105	110	151	+41
<u>Budget Request</u>					

The Agency requests a total of \$5,718,300 for 1981, an increase of \$1,388,400 over 1980. Included in this total is \$5,086,100 for Salaries and Expenses and \$632,200 for Abatement, Control and Compliance, with an increase of \$1,538,800 and a decrease of \$150,400, respectively. The request of 136 permanent workyears for 1981 represents an increase of 34 over the workyears available to this program in the previous year.

SOLID WASTE

Hazardous Waste Enforcement

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Hazardous Waste			
Enforcement:			
Salaries and Expenses.	\$3,161	\$3,144	-\$17
Abatement, Control			
and Compliance.....	632	632	...
Uncontrolled Hazardous			
Waste Site Enforcement:			
Salaries and Expenses.	1,925	1,915	-10
Abatement, Control			
and Compliance.....	...	...	...
Total:			
Salaries and Expenses.	5,086	5,059	-27
Abatement, Control			
and Compliance.....	632	632	...
Grand Total.....	5,718	5,691	-27



promulgate regulations to control hazardous wastes from the point of generation to the point of final disposal.

The hazardous waste enforcement program is at this time organized into two major, separate components: (1) the hazardous waste enforcement program and (2) the uncontrolled hazardous waste site enforcement program. In July of 1979, EPA determined that the clean-up by responsible parties of hazardous waste dumpsites threatening public health would be given "highest Agency priority" and established an agency-wide Hazardous Waste Enforcement and Emergency Response System. Consequently, a "National Hazardous Waste Enforcement Task Force" was established to coordinate and manage the imminent hazard cases initiated under Section 7003 of RCRA, Section 1431 of the Safe Drinking Water Act, Section 504 of the Clean Water Act, and the Toxic Substances Control Act. Since its inception, the Task Force has been active in evaluating potential hazards at sites known to contain hazardous waste and in assisting in legal action and emergency Federal actions to contain the spread of contaminants where existing local authority and funding is insufficient. The Task Force was established as a separate component to expedite handling of uncontrolled hazardous waste site cases in conjunction with a newly-formed Hazardous Waste Section in the Department of Justice. (Task Force functions and activities are discussed under the Uncontrolled Hazardous Waste Site Enforcement justification.

The hazardous waste enforcement program is responsible for development of an overall enforcement strategy to implement a monitoring program designed to ensure compliance with RCRA Subtitle C regulations. The regulations will require generators and transporters of hazardous waste to comply with certain procedural standards, such as recordkeeping, reporting, and proper containerization, and will also require that all transported hazardous wastes be accompanied by a manifest document and that such wastes be taken only to permitted hazardous waste management facilities. Hazardous waste management facilities will be required to obtain a permit from EPA or an authorized State. Procedures for routine inspection and sampling of facilities which generate, transport, treat, store, or dispose of hazardous wastes will be developed, and guidelines will be promulgated establishing standards of evidence needed to support enforcement actions in cases of manifest system or permit violations. This unit will also be responsible for promulgating rules of practice governing the issuance of compliance orders and hearings conducted to assess administrative penalties or suspend or revoke permits.

HAZARDOUS WASTE ENFORCEMENT

1979 Accomplishments

Obligations in 1979 totaled \$1,514,700, of which contract funds totalling \$587,100 were expended in 1979 to support development of the overall enforcement strategy and to assist the Office of Solid Waste in developing an ADP system to meet anticipated program needs. Funds were also used to develop a RCRA penalty policy for use in administrative, civil, or criminal proceedings.

Program activities in 1979 focused on efforts to formulate a comprehensive enforcement strategy for the implementation of a hazardous waste enforcement program in the later part of 1980 or the beginning of 1981. Included in this effort was the preparation of a draft document entitled "Enforcement Priorities Model," designed to provide national guidelines for establishing and operating enforcement programs and for addressing suspected

"General Inspections Manual" to be used to inspect permitted sites. The purpose of the manual is to provide the necessary administrative guidance needed to properly conduct inspections of hazardous waste facilities. In addition, hazardous waste enforcement personnel were involved in developing amendments to RCRA which would eliminate certain internal inconsistencies and strengthen the regulatory and enforcement mechanisms of the Act. Prior to establishment of the Task Force in June of 1979, and as part of the Agency's effort to assess the imminent and substantial hazard presented by designated sites, staff resources were also devoted to investigation of uncontrolled sites and preparation of enforcement cases.

1980 Program

In 1980, the Agency has allocated a total of \$2,298,500 to this program, of which \$1,515,900 is for Salaries and Expenses and \$782,600 for the Abatement, Control and Compliance appropriation. Permanent workyears allocated in 1980 total 41, an increase of 15 over the 1979 program level.

The highest priority for the 1980 hazardous waste enforcement program will be assisting the Office of Solid Waste in the development and completion of final RCRA regulations. In 1980, regional staff also will finalize plans to conduct hazardous waste enforcement programs in States most likely to receive interim or final authorization during 1981. The headquarters, in preparation for 1981, will design ADP systems to maintain and monitor manifest, inspection, and enforcement information. The regions will participate in headquarters sponsored training sessions to establish an adequate level of regional expertise on inspection procedures and enforcement case preparation. EPA will develop criteria for use in 1981 to assess and approve enforcement portions of applications from 37 states seeking interim or final authorization. Criteria will also be developed for use in evaluating the adequacy of authorized state programs in 1981 and subsequent years.

Contract funds available in 1980 total \$783,500 and will be used to support ADP system development and operation, and additional assistance in completion of the overall RCRA implementation strategy.

1980 Explanation of Change from Budget Estimate

The net increase of \$124,300 results from several actions. An increase of \$51,600 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$5,900 and \$20,900, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$230,100 to this activity.

A transfer of \$7,000 was made from the water quality media to support travel costs. A transfer of \$50,000 was made to management and support to the Office of Enforcement program management to support work with the Special Assistant for Litigation management associated with imminent hazards under RCRA. A reprogramming of \$68,900 was made within this media to uncontrolled hazardous waste sites in support of those activities.

The Agency requests a total of \$3,793,100 for this program, of which \$3,160,900 is for the Salaries and Expenses appropriation and \$632,200 for the Abatement, Control and Compliance appropriation, an increase of \$1,645,000 and a decrease of \$150,400 respectively. A total of 83 permanent workyears will be available to the program in 1981, an increase of 42 over the 1980 level.

The 1981 program will consist of the following activities. Regions will establish and conduct compliance monitoring and enforcement programs for all States not granted interim or final authorization. As the authorized States begin implementing their programs, EPA will provide legal and technical assistance, as requested, and evaluate the adequacy of the state enforcement programs. Regions will be responsible for maintaining management information systems in order to manage notification, manifest system, compliance monitoring, and inspection activities in unauthorized States.

Contract funds totaling \$632,200 will support ADP system design improvements, the updating or expanding of existing training manuals covering compliance inspection and case development procedures, qualitative evaluation of State hazardous waste management plans, the public outreach program, and development and implementation of consolidated inspection procedures.

UNCONTROLLED HAZARDOUS WASTE SITE ENFORCEMENT

1979 Accomplishments

In July 1979, the Hazardous Waste Enforcement Task Force was established to take enforcement actions against uncontrolled hazardous waste sites posing the most immediate threats to health and the environment. The authority to remedy hazardous waste sites and spills that present an "imminent and substantial" hazard is included in the emergency provisions of several acts, including Section 7003 of RCRA, Section 1431 of the Safe Drinking Water Act, TSCA, and Section 504 of the Clean Water Act.

In August of 1979 the Task Force began developing a Hazardous Waste Site Tracking System. This computerized system, which became operational in January 1980, tracks the status of potential hazardous waste sites from initial identification through the site investigation, remedial, and enforcement stages. As of November 30, 1979, 3,913 potentially hazardous sites had been identified and entered into the system. The system provides Agency management with statistical summaries on accomplishments, milestones and the status of enforcement actions against individual sites.

1980 Program

The Agency has allocated a total of \$2,031,400 to this program for 1980 all of which is for Salaries and Expenses. A total of 61 permanent workyears have been allocated for 1980, an increase of 8 over the 1979 program level.

During 1980, the uncontrolled hazardous waste site enforcement program will continue to place high priority on enforcement actions concerning uncontrolled waste sites that pose an imminent threat to public health and safety and to the environment.

potential danger presented by these sites. The Agency will continue to bring enforcement actions against uncontrolled hazardous waste sites using available authorities from the Resource Conservation and Recovery Act, the Safe Drinking Water Act, the Clean Water Act, and the Toxic Substances Control Act.

Approximately 40 cases will be initiated during 1980 against sites that pose the greatest imminent hazard to health and the environment. The cases will require the responsible parties to either stop activities and/or undertake costly cleanup actions at their own expense. The Agency will conduct hundreds of preliminary assessments and site inspections to develop these cases and determine the need for remedial actions.

Training sessions for Agency and State personnel on topics such as site investigations, use of the safety manual, chain of custody and document control will continue. Enforcement will continue to work closely with Department of Justice, regional, and State enforcement personnel to develop and negotiate regionally and nationally managed enforcement cases.

1980 Explanation of Change from Budget Estimate

The net increase of \$31,400 results from several actions. An increase of \$65,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$15,200 and \$13,200, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$400 to this activity.

A transfer of \$2,500 was made within the solid waste media to hazardous waste management regulatory strategy implementation to support the continued cooperative education program. A transfer of \$57,000 was made from the water quality media and \$30,000 from the pesticides media to reflect the transfer of 50 percent of the oil spill enforcement capability since these activities are closely related. This reprogramming gives formal recognition to otherwise hidden responsibilities which draw on other abatement and control and enforcement resources; in this case some pesticides and water enforcement capability is being diverted to initiate enforcement actions where hazardous waste disposal presents an imminent danger to public health and welfare. A transfer of \$160,000 was made to the management and support media of resources received under hazardous waste amendment to regional and nationwide support costs; for budgetary purposes these funds were requested in this element. A transfer of \$68,900 was made within the solid waste media from hazardous waste enforcement and \$1,500 from air stationary source enforcement to support projected costs based on 1979 expenditures.

1981 Plan

In 1981, the Agency requests an appropriation of \$1,925,000, all of which is for the Salaries and Expenses appropriation. This is a decrease of \$106,200 from 1980. The request for 53 permanent workyears represents a decrease of eight from 1980.

hazardous to public health and the environment. During the 1991 time period, an increasing percentage of Task Force time will be devoted to litigation support activities as previously field cases come to trial. The program will also concentrate on the identification of additional uncontrolled sites and take appropriate enforcement action. Enforcement, working with the regions, will investigate and assess hazardous waste sites. Finally, headquarters will continue to provide technical and legal support to the States to augment their hazardous waste enforcement efforts.

Contract support available through the uncontrolled hazardous waste site element of the Office of Water and Waste Management will be used to supplement in-house site investigation and sample analysis resources.

Hazardous Waste Permit Issuance

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Salaries and Expenses...	\$4,090	+\$4,090
Abatement, Control and Compliance.....	25	+25
Total.....	4,115	+4,115
<u>Permanent Positions.....</u>	121	+121
<u>Full-time Equivalency...</u>	175	+175

Budget Request

The Agency requests a total of \$4,114,300 for hazardous waste permitting in 1981. This is the first year the program will be funded. The request includes \$4,089,600 for Salaries and Expenses and \$24,700 for Abatement, Control and Compliance. All of the 121 permanent workyears requested are an increase from 1980.

Program Description

The hazardous waste permit program is part of the comprehensive effort required by the Resource Conservation and Recovery Act (RCRA) to manage hazardous waste. The Act prohibits treatment, storage or disposal of hazardous waste except in accordance with an EPA or approved State-issued permit. RCRA permits are a mechanism for controlling hazardous waste by imposing performance standards on treatment, storage, and disposal facilities. These standards, set by the hazardous waste management program, will assure that hazardous waste is managed according to environmentally acceptable practices. EPA estimates there are a total of 30,000 sites that will require permits, 7500 of which will be issued by EPA. The remaining 22,500 permits will be issued by States with approved RCRA programs.

Development of adequate State hazardous waste permit programs is another significant aspect of the permits issuance program. RCRA places great emphasis on approving state programs allowing them to issue permits with either temporary "interim authorization" or full authorization if they meet RCRA's requirements. EPA's role in the State authorization process is twofold. First, EPA will support State efforts to develop adequate State permit programs by providing them with technical, legal, and administrative assistance. Secondly, EPA will oversee approved programs to assure that State permits are issued in conformance with national program policies. EPA's success in authorizing State programs will affect the volume of permitting done by the Agency.

As part of its continuing effort to improve the regulatory process, EPA is consolidating permit issuance procedures for five permit programs. Coordination and consolidation of the permitting process will benefit both the public and the Agency by reducing delay and simplifying permitting procedures.

SOLID WASTE

Hazardous Waste Permit Issuance

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses...	\$4,090	\$4,063	-27
Abatement, Control and Compliance.....	25	25	...
Total.....	4,115	4,088	-27



The regulatory framework for the hazardous waste permitting program was advanced significantly in 1979 with proposal of the consolidated permit regulations. Included in this proposal are both permitting and standards for State program approval authorized by Sections 3005 and 3006 of RCRA.

Work also moved forward in 1979 on development of a permitting strategy which will provide national guidance for the hazardous waste permit program.

1980 Program

The first priority for the 1980 hazardous waste permit program is to promulgate final consolidated permit regulations and application forms. This will enable EPA to begin approval of state permitting State programs. Promulgation of these regulation will provide the framework for the hazardous waste permit program.

Permit resources in 1980 are carried under the hazardous waste enforcement program. They will be devoted to the review of State hazardous waste permit programs to determine if they qualify for interim authorization under Section 3006 of RCRA, and to provide national guidance and coordination of permit issuance procedures.

1981 Plan

The Agency requests a total of \$4,114,300 for this program, of which \$4,089,600 is for the Salaries and Expenses appropriation and \$24,700 is for the Abatement, Control and Compliance appropriation. All of the 121 permanent workyears requested are an increase from 1980.

In 1981, EPA will begin implementation of a 6-year program to permit an estimated 7,500 hazardous waste management facilities. The major component of this program will be permit issuance to facilities that treat, store, or dispose of hazardous waste. EPA will begin issuing permits to both off- and on-site hazardous waste management facilities in 1981, in accordance with guidance provided by EPA's hazardous waste permitting strategy. Challenges to permit terms and conditions or permit denials are also expected to require EPA efforts. This is necessary to provide fully effective permits and clear the way for implementing the hazardous waste control provisions and enforcement action.

In 1981, approximately 37 States are expected to receive interim authorization to begin issuing an estimated 22,500 hazardous waste permits. EPA intends to provide States with legal, technical, and administrative assistance to enable them to develop permit programs that qualify for full authorization.

EPA is requesting \$24,700 in contract support to provide technical assistance for hearings on RCRA permit terms and conditions.

Pesticides

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>APPROPRIATION</u>			
Salaries and Expenses.....	\$30,928	\$30,739	-\$189
Research and Development.....	3,780	3,780	...
Abatement, Control and Compliance.....	39,292	39,292	...
Total.....	74,000	73,811	-189
<u>PROGRAM HIGHLIGHTS</u>			
Health and Ecological Effects:			
Salaries and Expenses.....	5,021	4,993	-28
Research and Development.....	949	949	...
Industrial Processes:			
Salaries and Expenses.....	117	117	...
Research and Development.....	2,783	2,783	...
Monitoring and Technical Support:			
Salaries and Expenses.....	517	514	-3
Research and Development.....	48	48	...
Total:			
Salaries and Expenses.....	5,655	5,624	-31
Research and Development.....	3,780	3,780	...
Total, Research and Development Program.....	9,435	9,404	-31
Registration and Tolerances:			
Salaries and Expenses.....	10,593	10,527	-66
Abatement, Control and Compliance.....	1,148	1,148	...
Standards Setting and RPAR:			
Salaries and Expenses.....	10,070	10,007	-63
Abatement, Control and Compliance.....	27,112	27,112	...



	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
Federal and State Program			
Support:			
Salaries and Expenses.....	420	417	-3
Abatement, Control and Compliance.....	...	...	...
Total:			
Salaries and Expenses.....	21,083	20,951	-132
Abatement, Control and Compliance.....	28,260	28,260	...
Total, Abatement and Control Program.....	49,343	49,211	-132
Pesticides Enforcement:			
Salaries and Expenses.....	4,190	4,164	-26
Abatement, Control and Compliance.....	11,032	11,032	...
Total, Enforcement Program.....	15,222	15,196	-26

1981 Budget Est. *

* Jan 1980 Prev. Budget as
adjusted by QCRD restructuring

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
		(dollars in thousands)				

APPROPRIATION

Salaries and Expenses.....	\$32,369	\$24,657	\$33,721	\$30,928	-\$2,793
Research and Development.....	7,401	3,358	5,922	3,780	-2,142
Abatement, Control and Compliance.....	30,469	34,235	28,513	39,292	+10,779
Total.....	70,239	62,250	68,156	74,000	+5,844
Permanent Workyears.....	936	979	985	914	-71
Full-time Equivalency.....	1,044	1,117	1,128	1,034	-94
Outlays.....	58,210	58,600	57,000	63,000	+6,000
Authorization levels.....	81,998	*	*	*	

*Authorization pending.

PROGRAM HIGHLIGHTS

Health and Ecological Effects:						P-12
Salaries and Expenses.....	4,904	6,010	6,520	5,021	-1,499	
Research and Development.....	3,225	2,288	2,014	949	-1,065	
Industrial Processes:						P-23
Salaries and Expenses.....	...	...	26	117	+91	
Research and Development.....	4,091	900	3,860	2,783	-1,077	
Monitoring and Technical Support:						P-28
Salaries and Expenses.....	407	270	500	517	+17	
Research and Development.....	85	170	48	48	...	
Total:						
Salaries and Expenses.....	5,311	6,280	7,046	5,655	-1,391	
Research and Development.....	7,401	3,358	5,922	3,780	-2,142	
Total, Research and Development Program.....	12,712	9,638	12,968	9,435	-3,533	
Registration and Tolerances:						P-31
Salaries and Expenses.....	7,848	6,788	11,212	10,593	-619	
Abatement, Control and Compliance.....	3,039	5,402	296	1,148	+852	
Standards Setting and RPAR:						P-38
Salaries and Expenses.....	13,336	6,455	10,591	10,070	-521	
Abatement, Control and Compliance.....	15,062	18,105	15,522	27,112	+11,590	
Federal and State Program Support:						P-44
Salaries and Expenses.....	1,802	1,728	1,652	420	-1,232	
Abatement, Control and Compliance.....	3,514	1,978	3,780	...	-3,780	

Total, Abatement and Control Program.....	44,601	40,456	43,053	49,343	+6,290	
Pesticides Enforcement:						P-47
Salaries and Expenses.....	4,072	3,406	3,220	4,190	+970	
Abatement, Control and Compliance.....	8,854	8,750	8,915	11,032	+2,117	
Total, Enforcement Program.....	12,926	12,156	12,135	15,222	+3,087	
<u>Permanent Positions</u>						
Health and Ecological Effects	128	124	128	80	-48	P-12
Industrial Processes.....	...	...	...	...	...	P-23
Monitoring and Technical Support.....	9	9	12	23	+11	P-28
Total, Research and Development Program.....	137	133	140	103	-37	
Registration and Tolerances....	314	361	341	341	...	P-31
Standards Setting and RPAR.....	348	335	331	316	-15	P-38
Federal and State Program Support.....	48	39	64	17	-47	P-44
Total, Abatement and Control Program.....	710	735	736	674	-62	
Pesticides Enforcement, Total Enforcement Program.....	116	116	111	137	+26	P-47
<u>Full-time Equivalency</u>						
Health and Ecological Effects..	167	172	185	119	-66	P-12
Industrial Processes.....	...	...	...	...	...	P-23
Monitoring and Technical Support.....	10	9	13	24	+11	P-28
Total, Research and Development Program.....	177	181	198	143	-55	
Registration and Tolerances....	314	396	381	381	...	P-31
Standards Setting and RPAR.....	356	364	356	336	-20	P-38
Federal and State Program Support.....	58	52	71	20	-51	P-44
Total, Abatement and Control Program.....	728	812	808	737	-71	
Pesticides Enforcement, Total Enforcement Program.....	139	124	122	154	+32	P-47

These products contribute to major societal benefits such as increased agricultural productivity, lower domestic food prices, esthetic amenities for American consumers, more favorable balance of payments due to increased exports of agricultural products, and control of human disease vectors. On the other hand, pesticides, designed to be injurious to living organisms and deliberately introduced into the environment for this purpose, have the potential of causing unacceptable harm to human health and the environment. Since most of these products are used on human or animal food crops wherein human exposure is unavoidable, or in other situations with the potential for human exposure, their potential for causing unacceptable harm is heightened.

The objective of the pesticide program is to protect the public health and the environment from unreasonable pesticide risks while permitting the use of necessary pest control technologies. This objective is pursued through four principal means: (1) review of existing and new pesticide products, (2) use management, (3) enforcement, and (4) research and development.

Review of Existing and New Products

New pesticide products are reviewed and registered upon a finding that the product will not pose unreasonable risks to humans or the environment, taking into consideration the economic, special, and environmental costs and benefits stemming from use of the pesticide. Risk is often quantified in terms of the number of or probability of certain health effects in a given population, while benefits are most often stated in dollar valuations of such effects as increased crop yields, lower food costs, reduced chance of disease or the cost savings with respect to the use of alternative control measures. Prior to any registration the benefits of a particular pesticide must be demonstrated to exceed the risk. The review and reregistration of all federally and State-registered products now on the market is required by the 1972 Amendments to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Most existing products were originally registered before the chronic effects (e.g. cancer, birth defects, gene mutations, etc.) of exposure to toxic chemicals were well understood. Their reregistration will thus require more thorough and consequently more resource intensive review of all test data for both acute and chronic effects and in many cases, the collection of the basic data itself.

The Federal Pesticide Act of 1978, which amended the FIFRA, endorsed the regulatory reforms requested by EPA that would streamline the review process and allow the agency to increase and improve its regulatory decision making options. Major changes approved in the review and registration approach include generic pesticide registration, conditional registration, and the elimination of certain legal obstacles that were severely hindering the registration process and blocking the entry of new products to the market.

In the past, registration entailed an examination of risk for each product, one at a time. However, generic registration of pesticides entails a single, comprehensive evaluation of risks and benefits of the active ingredient chemicals common to numerous products, based on all data relevant to the registration decision. For every pesticide chemical and its formulations, performance standards and safety criteria will be set, to which registrants must adhere, in order to register and reregister products. In addition, standards for registration will state tolerable levels of exposure for fool, consumers, field workers, applicators, and other persons and organisms unintentionally exposed to pesticides.

searching and evaluation, but they are also intended to provide expertise in areas where adequate numbers of trained and experienced people are simply unavailable, such as in toxicology. In all cases, the Agency will provide stringent quality control oversight on all extramural activities. In no case will contractors be called upon to make regulatory decisions or recommendations.

The generic approach was implemented because of the opportunity it presents for increased economy and efficiency in the pesticides registration process. This approach (The Registration Standards Program) provides an opportunity to broaden and validate the data base the Agency uses in decision making to systematically review earlier submitted data and decisions, to encourage and permit fuller public participation in the regulatory process, and to document the rationale employed at each step in the process. Continuing will be efforts to: eliminate inconsistency in label directions and warnings for similar products, assure that pesticide products previously registered for intrastate use meet Federal safety standards, reassess tolerances, and restrict use of those products that are significantly hazardous.

The program will most directly impact the public health and the quality of the environment through the imposition of a variety of regulatory restrictions. EPA's regulatory options range from cancellation of uses to unconditional registration. Where unreasonable adverse effects are identified, the Agency may initiate rebuttable presumption against registration (RPAR) proceedings, in which suspect chemicals are subjected to focused risk/benefit assessment and alternative chemicals are considered, so as not to adversely impact agricultural productivity or pest control ability. In cases where a lesser degree of hazard may exist, the Agency may consider such risk reducing measures as: precautionary labeling, childproof packaging restriction to use by certified applicators, and mandated use of protective clothing.

Other key elements of the program to review pesticide products include the following:

Registration, which enables new products to enter the market. Under this program, new pesticide products are registered, and current registrations are amended for new uses and/or new formulations. Registration (pre-market clearance) of pesticides is a comprehensive process designed to optimize the safe and effective use of pesticides. Under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), all pesticides legally marketed in the United States must be registered by the Agency.

Amendments to the FIFRA have authorized a program of generic pesticides registration. In the past, registration entailed an examination of risk of each product one at a time. However, generic registration of pesticide entails a single comprehensive evaluation of risks and benefits of the technical material common to numerous products based on all data relevant to the registration decision. The new system will demand less time and money both from EPA and the registrant.

Development of generic pesticide standards will take time and until such standards are developed and the complete new reregistration program is put in place, Congress has authorized a program for EPA to grant conditional registrations. Conditional registration will allow EPA to process applications of new products which are similar to ones already registered, and thus permit the new products to enter the market on an equal footing with others already registered and in turn provide consumers with a wider range of comparable products. Ultimately, all products will be reviewed comprehensively when reregistered under generic pesticide registration standard.

conditional registration of new chemicals if the public interest would be served by a registration, and if risks during the period required to complete and submit additional studies are not unreasonable.

Central to the conditional registration program is incremental risk assessment. The law requires the Agency to focus its attention only on the increased risks (incremental risks) posed by the registration of "old" pesticides and new uses of "old" pesticides. Specifically, conditional registration of both identical and substantially similar products and uses and new uses is authorized only if the new product or use would not significantly increase the risk of unreasonable adverse effects on the environment.

In the future, conditional registration will be useful for allowing time to meet new data requirements or, in some special cases, for permitting early registration of brand new chemicals.

Litigation challenging both the constitutionality of the new amendments and also the Agency's authority to consider all pertinent data in making decisions on the registerability of pesticide products has been initiated by 17 pesticide manufacturers; unless resolved in the Agency's favor, it could have the effect of halting the conditional registration program and, ultimately, standards development as well.

Special Registration, which encompasses: (a) the issuance of experimental use permits under Section 5 of the FIFRA to generate data for registration, (b) establishment of temporary tolerances to cover safe levels of pesticide residues in food and feed from pesticide use for experimental purposes, (c) granting of emergency exemptions under Section 18 of the FIFRA to permit the temporary use of unregistered pesticides, (d) issuance of Section 24(c) special local need registrations, largely handled by the States with Federal oversight, and (e) issuance of minor use registrations through liaison with public interest user-oriented groups.

Congress has provided the authority to issue Experimental Use Permits (EUP's) to allow large scale experimentation necessary for the development of data for new pesticides or new uses of currently registered pesticides. These data are necessary to allow the Agency to evaluate the potential hazards to man and the environment when application is made for registration of the new chemical. Because of the importance of biologicals and third-generation pesticides to integrated pest management programs, special efforts will be made to process EUP applications for these pesticides so that data gathered may be used to allow them to enter the registration system rapidly.

These efforts are particularly important if the proposed use is on food or feed crop, since testing under an EUP usually involves thousands of acres of valuable food or feed crops. In such cases, destruction of the crop is not economically feasible or desirable; thus the Agency must establish temporary tolerances for residues of the pesticide which may remain on the food or feed commodity, thereby allowing for safe marketing and consumption of the commodity. Sufficient data must be submitted to allow the Agency to determine that the residue levels of the pesticide which result from its use are adequate to protect the welfare of the consumer.

The issuance of an EUP and the establishment of a temporary tolerance require a technical or scientific determination of the Agency, on a case-by-case basis, that the human and environmental risks and the benefits to be derived from the issuance of the EUP and temporary tolerance are within the goals and objectives of the Agency, as mandated by law.

FIFRA allows the Agency to issue emergency exemptions authorizing the use of unregistered pesticides or uses when it has been determined that such pesticides are necessary to alleviate the emergency without undue risk to man and the environment.

regulations, including the right to disapprove registrations issued contrary to Congress' intent. These usually involve food and feed uses for which tolerances have not been established, or uses of pesticides which have been suspended or cancelled by the Agency.

State also have special needs to issue experimental use permits on occasion. Such permits are usually needed to allow an interested pesticide producer to conduct the experimentation that will be needed to support a later State registration for a particular purpose. Congress has provided that States may issue such experimental use permits, subject to EPA overview, in the same manner as for the state registrations.

Special registration provides data for the registration of pesticides, flexibility in responding to emergency situations, and offers support to State and local governments in registering pesticides for local use only.

Tolerances. Under the Federal Food, Drug, and Cosmetic Act, as amended, (FFDCA), the Agency establishes tolerance levels and exemptions from the requirement of a tolerance for pesticide residues in or on raw agricultural commodities and processed foods. These tolerance levels protect the public health while giving appropriate consideration to the necessity for the production of an adequate, wholesome, and economical food supply.

Determination of tolerances involves careful review and evaluation of residue chemistry and toxicology data to ensure that maximum residue levels likely to be found in foods are safe for human consumption. Included in this consideration is the cumulative affect of the same pesticide chemical and other related substances with the same physiological activity. Analytical methods are tested to ensure that adequate enforcement of the established tolerance can be achieved.

EPA will implement more flexible minor use tolerance data review procedures involving data requirements and scientific decision making. This will parallel conditional registration and other newly authorized registration remedies to EPA's pesticide registration program.

Use Management

Pesticides are classified, based upon their potential harm through misuse, for either general or restricted use. Restricted use pesticides may be applied only by certified applicators. This method of regulation provides a major tool in risk reduction for use of an essential pesticide which might otherwise be cancelled. In 1981, responsibility and resources for the certification and training of applicators of restricted use pesticides will be transferred to the enforcement program under the Office of Enforcement to operate Federal certification and training programs in Colorado and Nebraska, to provide grants in support of state certification programs and to fund applicator training conducted by the Department of Agriculture Extension Service. The use management program will provide technical assistance to upgrade training materials to the 12th grade level; assist the States by providing assistance with regard to pesticide spills, kills and fires; conduct limited evaluation activities; and handle pesticide inquiries from farmers, registrants and the public.

Enforcement

The pesticides enforcement program is designed to support the objectives of regulating pesticide supply and use. The program emphasizes increased State involvement through Federal/State cooperative enforcement grants. Through such grants, the States are able to support comprehensive enforcement programs and bring local expertise into the national regulatory effort. In 1981, EPA will continue its efforts to involve most or all of the States and Territories in this program. Enforcement activities,

provide grants in support of state certification programs and to fund applicator training conducted by the Department of Agriculture Extension Service. This transfer is intended to strengthen the environmental benefits of the program, provide a programmatic linkage between the certification and training program and the state enforcement programs, and re-emphasize the priority of implementing certification and training programs in Colorado and Nebraska along with increased enforcement in these same States. Training materials will be upgraded to the 12th grade level and will emphasize the risks associated with pesticides.

Research and Development

The research and development program supports the Agency's pesticides regulatory activities through the development of data required to support administrative reviews and litigation. Such data are required on the major classes of pesticides now registered by EPA and in common use as well as on chemicals considered as possible substitutes for cancelled pesticides. The program places emphasis on three basic elements necessary to evaluate overall human health and environmental hazards from pesticides: (1) identification of population at risk, (2) assessment of individual exposure, and (3) determination of adverse effects. Exposure assessment research will improve and develop protocols to determine occupational exposure to pesticides through their use, determine potential exposure of the general population to pesticides in air, freshwater, coastal waters, soil, sediment, plants, and fish and other animals, and determine the exposure of nontarget fish and wildlife. In addition, research is carried out to obtain data which will permit safety evaluations of the "new generation" pest control agents, such as insect viruses, sterility agents, and insect hormones, and to develop alternative means of pest management which can economically and acceptably reduce the quantity of pesticides introduced into the environment.

Research and Development activities provide scientific data to support the pesticide program by means of the Health Effects, Ecological Effects and Exposure Assessment programs. In addition, R&D will develop biological methods for controlling pests, to be used as alternatives to or integrated with chemical pesticides for management of agricultural and urban pests (Integrated Pest Management), and provide Quality Assurance methods for ensuring high quality testing and other protocols required for risk assessment.

Registered uses of pesticides determine the population group at risk. As increased amounts of exposure assessment data become available, it will be possible to make accurate and meaningful identifications of overall populations at risk. Registrants have provided much data on adverse effects and, although there is a continuing need for health and ecological effects data, particularly on new compounds, highest priority will be placed on exposure assessment due to the lack of available data on this topic. Exposure assessment research will be geared to the development of protocols to determine exposure to pesticides through use, population exposure through all media, and exposure of non-target organisms.

The Quality assurance program develops methods for analyzing and monitoring pesticides and their residues. Both internal quality control and external quality assurance will be applied to every protocol. Additional efforts will be made to ensure that in-house and extramural pesticide laboratories are routinely involved in quality assurance programs for chemical analysis.

Finally, the Integrated Pest Management program will develop systems for use with chemical pesticides to provide a necessary alternative for the pesticide registration process. Expanded emphasis will be directed to major ecosystems (corn, cotton, soybeans, alfalfa, and apples) and urban pests.

1980 Pesticides Program.....	\$68,156
Salaries and Expenses.....	-2,793
<p>The net reduction results from a decrease to health and ecological effects (\$1.5 million); registrations and tolerances (\$.6 million) standards setting and RPAR (\$.5 million); pesticides use management (\$.2 million).</p>	
Research and Development.....	-2,142
<p>The net decrease results from reductions to health and ecological effects (\$1 million) and industrial processes (\$1.1 million).</p>	
Abatement, Control and Compliance.....	+10,779
<p>The net increase is for the standards setting and RPAR (+\$11.6 million) as offset by a reduction in pesticide enforcement grants (-\$.8 million).</p>	
1981 Pesticides Program.....	74,000

SUMMARY OF BUDGET ESTIMATE

1. Summary of Budget Estimate

An appropriation of \$73,999,700 is requested for 1981. This request by appropriation account, is as follows:

Salaries and Expenses.....	\$30,927,300
Research and Development.....	\$3,780,200
Abatement, Control and Compliance.....	\$39,292,200

This represents an increase of \$5,843,500 from the 1980 level. Increased funding in the amount of \$11,069,200 for standards setting and RPAR will provide for the continued development of pesticide registration standards which are crucial to improve the efficiency of future pesticides registration and reregistration activities; for the continuation of rebuttable presumption against registration (RPAR) actions which are necessary to properly assess the risks and benefits of compounds and to implement restrictions on compounds suspected of causing unreasonable adverse health effects; for the lab audit program to ensure the validity of data presented by registrants in support of past, current and future registrations; and to implement agreements made with Silvex registrants subsequent to the Administrator's emergency suspension of the product's major uses.

The registration and tolerances activity is being increased by \$223,800 to provide increased support for the conditional registration process. The pesticides enforcement grant program is being reduced by \$830,000. The pesticides use management activity is being decreased, primarily to reflect a transfer of certification and training resources to the pesticides enforcement activity.

primarily to shift resources to toxic substances health activities where common needs exist for such things as certain analytical testing methodologies, equipment, and toxicological testing methodologies; and to reflect a redirection of activities to engage in pesticide exposure assessment research that will determine the concentrations of pesticides to which organisms and populations are exposed. A new program, exposure assessment, is funded by an increase of \$787,500 and will be utilized to develop methodologies for exposure assessment and to conduct exposure analyses on 20 Office of Pesticides Program designated pesticides in fresh water, marine, and terrestrial environments.

The industrial processes activity is being decreased by \$986,000 due to co-funding of a project with USDA-Science and Education Administration.

2. Changes from Original 1980 Budget Estimate

Changes from the Budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$62,250
Congressional increases/decreases:	
Travel.....	-133
ADP.....	-11
Supplies and Expenses.....	-12
Integrated pesticides management	
multicrop experiment.....	+2,500
Mosquito control research.....	500
Pesticides applicator training.....	+1,750
Reprogramming for salary costs.....	+62
Proposed pay raise supplemental.....	+1,216
Miscellaneous reprogramming.....	+34
Current estimate 1980.....	68,156

The Congress reduced Agency travel costs and supplies and expenses by \$2 million each. This resulted in a decrease of \$133,000 and \$12,000, respectively. A congressional reduction of \$1 million to ADP costs created a decrease of \$11,000 to this media. The Congress increased the pesticides media for an IPM multicrop experiment, \$2.5 million; for mosquito control research, \$500,000; and for pesticides applicator training, \$1,750,000.

An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$62,000 for this media. The proposed pay raise supplemental to partially fund the October 1979 pay raise will increase the pesticides media by \$1,216,000.

Miscellaneous reprogrammings resulted in transfers to the air media, \$51,100; to the solid waste media, \$30,000; to management and support, \$105,000; from water quality, \$100,400; from the drinking water media, \$42,200; from the noise media, \$6,000; from radiation, \$6,700; from the toxic substances media, \$16,700; and from the interdisciplinary media, \$50,000.

	Estimate 1980 (in thousands)	Estimate 1981 of dollars)
Prior year obligations.....	\$70,240	\$67,255
Effect of congressional changes.....	+2,768	...
Effect of pay raise supplemental.....	+1,216	...
Change in amount of carryover funds available	-3,065	+901
Program changes.....	-4,000	+5,000
Effect of reprogrammings.....	+96	...
Change in rate of obligations.....	...	...
Total estimated obligations.....	67,255	73,156
(From new obligation authority).....	(66,000)	(71,000)
(From prior year funds).....	(1,255)	(2,156)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The congressional changes referred to in the previous section are estimated to increase obligations by \$2,768,000. The partial funding of the October 1979 pay raise through a proposed supplemental is expected to increase obligations by \$1,216,000.

The amount of carryover funds estimated to be obligated in 1980 is \$1,255,000, a decrease of \$3,065,000 from the 1979 level. In 1981, it is estimated that \$2,156,000 will be obligated from carryover funds, an increase of \$901,000 over the 1980 level.

The program change in 1980 was previously estimated to result in a decrease of \$4 million. In 1981, the program increase is expected to increase obligations by \$5 million.

PROGRAM LEVELS

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase+ Decrease - 1981 vs. 1980</u>
<u>Registration Standards</u>					
Registration Standards completed.....	1*	47	10-20	20-40	+ 10-20
<u>RPAR Decisions:</u>					
Final RPAR Decisions.....	15	20	15	15	----
Lab Audits	33	70	25-35	25-35	----
<u>Registration</u>					
New Chemical Registrations...	17	32	15-22	15-22	----
Old Chemical Applications....	1,457	3,340	5,330	5,330	----
Amendments and Supplemental Applications.....	22,978	29,600	22,240	22,240	----
Reregistrations.....	---	1,440	0-500	3,000-10,000	+3,000-9,500
<u>Special Registration</u>					
Emergency Exemptions.....	285	260	350	350	----
Experimental Use Permits.....	176	240	240	240	----
24 (c) State Registrations...	1,086	1,500	1,200	1,200	----
<u>Tolerances:</u>					
Tolerance Petitions.....	137	135	160	160	----
Amendments.....	110	125	150	150	----
Inert Ingredient Requests....	9	60	40	40	----
<u>Enforcement:</u>					
Establishment Inspections....	3,910	1,860	4,105	4,300	+195
Use/Reentry and Experimental Use Observations.....	7,588	3,795	7,970	8,350	+380
Market place Investigations.	9,635	4,660	10,100	10,600	+500
Import Investigations.....	215	190	200	200	----

* Completion of prototype

PESTICIDES

Health and Ecological Effects

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs 1980</u>
	(dollars in thousands)				
Health Effects:					
Salaries and Expenses...	\$2,912	\$4,035	\$4,135	\$2,439	-\$1,696
Research and Development	2,617	1,703	1,712	321	-1,391
Ecological Effects:					
Salaries and Expenses...	1,992	1,975	2,386	2,178	-208
Research and Development	609	585	301	244	-57
Exposure Assessment:					
Salaries and Expenses...	...	...	...	404	+404
Research and Development	...	...	...	384	+384
Total:					
Salaries and Expenses...	4,904	6,010	6,521	5,021	-1,500
Research and Development	3,226	2,288	2,013	949	-1,064
Grand Total.....	8,130	8,298	8,534	5,970	-2,564
<u>Permanent Positions</u>					
Health Effects.....	80	72	71	31	-40
Ecological Effects....	48	52	57	49	-8
Exposure Assessment	...	...	...	11	+11
Total	128	124	128	91	-37
<u>Full-time Equivalency</u>					
Health Effects	104	100	99	43	-56
Ecological Effects....	63	72	86	75	-11
Exposure Assessment...	...	...	...	11	+11
Total.....	167	172	185	129	-56

Budget Request

In 1981, the Agency requests \$5,970,400 and 91 permanent workyears for this program, of which \$5,021,200 is for the Salaries and Expenses appropriation and \$949,200 for extramural purposes under the Research and Development appropriation. This represents a net decrease of \$2,563,500 and 37 permanent workyears; decreases of \$1,499,100 and \$1,064,400, respectively. Included in this net decrease are several actions: a decrease of \$3,086,900 and 40 permanent workyears in the health effects area and a decrease of \$264,100 and eight permanent workyears in the ecological effects program. There is an increase of \$787,500 and 11 permanent workyears for exposure assessment, a new program

PESTICIDES

Health and Ecological Effects

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Health Effects:			
Salaries and Expenses...	\$ 2,439	\$ 2,437	-\$2
Research and Development	321	321	...
Ecological Effects:			
Salaries and Expenses....	2,178	2,165	-13
Research and Development	244	244	...
Exposure Assessment:			
Salaries and Expenses....	404	391	-13
Research and Development.	<u>384</u>	<u>384</u>	<u>...</u>
Total:			
Salaries and Expenses....	5,021	4,993	-28
Research and Development.	<u>949</u>	<u>949</u>	<u>...</u>
Grand Total.....	5,970	5,942	-28

which will provide specialized information on exposure estimation and testing methodologies on pesticides for risk assessment under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Program Description

The pesticide health effects research program addresses three major areas: 1) the assessment of human exposure methodologies and the development of suitable human exposure protocols which can be applied by industry; 2) the assessment and generation of data to predict and document the public health impact of biological pest control agents (biorationals); and 3) the continued evaluation of carcinogenicity and other toxic effects of pesticides through screening tests and animal toxicology studies.

The pesticides ecological effects program conducts research to determine cumulative ecological impacts of pesticides on target and non-target organisms, and, through this role, supplies technical support to the registration/reregistration processes. The program also evaluates the impact of pesticides being considered as substitutes for pesticides whose registrations are not being renewed; develops and validates new toxicological and analytical methods; and provides technical support to the Office of Pesticides Programs (OPP), the enforcement program, and the regional offices to aid in administrative decision-making under FIFRA.

The ecological effects research program has two components: (1) the study of the ecological effects of pesticides in general; and (2) the determination of the ecological effects of specific candidate substitute pesticide chemicals. The general ecological effects portion of the program deals with the determination of fate, transport, and the effects of pesticides and substitute chemicals in estuarine, marine, freshwater and terrestrial habitats. The substitute chemical portion of the program deals with the determination of the adequacy, suitability, and availability of substitute pesticides or chemicals to act as replacements for pesticides determined to be unsuitable by the Agency. This program is instrumental in the development of testing protocols and the determination of pesticide transport and fate within ecosystems and relating this information to hazard assessments for regulatory purposes.

The pesticides exposure assessment program includes the formulation of cost-effective, standardized protocols for generating exposure concentration estimates and improved techniques for assessing the resultant human exposure to pesticides in air, water (fresh water and marine), soil, and in sediments. This will be accomplished by studies of (1) the transport, transformation, and concentration of 20 pesticides (selected by OPP) in air, freshwaters, estuaries, and coastal waters; (2) the bioaccumulation of these pesticides by biota; and (3) their leaching from soils.

HEALTH EFFECTS

1979 Accomplishments

In 1979, the program obligations totaled \$5,528,800, of which \$2,912,400 was expended for salaries and expenses and \$2,616,400 for extramural activities. Accomplishments under this program include:

- Studies to determine skin and respiratory exposures during home and garden use of diazinon, endosulfan, and carbaryl were carried out to establish a data base for product labeling. A comparison study of diazinon exposures from different application procedures indicated exposure from garden hose sprayers was greater than from a hand pressure sprayer with approximately 90% of the exposure to the skin and less than 10% being respiratory for both application methods.
- Cooperative studies with Washington State University were carried out to evaluate hazards for agricultural workers who re-enter apple orchards containing phosalone and phosmet residue. The results will be used to determine if the treatment-re-entry time interval is adequate.
- Guthion (an organophosphate insecticide) was studied for possible teratogenic effect in rats and mice. Although guthion produced toxic effects on the fetus when given to the pregnant female at high doses, it was not possible to show embryo toxicity at doses below the maternal toxic level. It was concluded that guthion does not present a teratogenic hazard under normal use conditions.
- The metabolism of decamethrin (a synthetic pyrethroid) was studied in both plants and animals. No toxic metabolites were found. This information will aid in the comparison of toxicities of natural and synthetic pyrethroids.
- The toxicity of the herbicide, dinoseb, was studied in the rat. The compound produced testicular pathology and inhibited sperm production at high dosage levels. The significance of this information to exposed workers will be further explored.
- Pharmacokinetic studies with two insecticides heptachlor and EPN (an organophosphate insecticide), were completed in the rat. Both compounds produce metabolites which produce a significant toxic hazard. An understanding of the pharmacokinetics is basic to the overall understanding of the safe use of the compounds.
- Teratology studies were carried out on endrin (a chlorinated hydrocarbon insecticide) in hamsters and mice. Studies were also carried out in rat and mice on maneb (a fungicide) and two substances resulting from the bodies metabolizing maneb and dachamethrin. These studies were necessary to close gaps in the existing data on these pesticides.
- Studies on the neurotoxic effects of EPN (an organophosphate insecticide) and two cotton defoliants (DEF and merphos) were made on chickens to define the minimally toxic subchronic dietary dose and to elucidate the potential skin absorption. The results of the studies will aid in the hazard evaluation of the test compounds.
- Twenty-five (25) pesticide compounds were screened for mutagenic effects using gene mutation and DNA damage in bacteria and yeast as indicators. The work was performed as part of a larger effort to develop and validate new screening tests for mutagenic effects.

- The usefulness of isozymes of lactate dehydrogenase and creatinine phosphokinase as indicators of potential teratogenic effects of chemicals was evaluated. Both parameters show promise as predictors of teratogenic effects. This work will be continued in 1980.
- Toxicity tests for use in predicting human health hazard of NPV (Nuclear Polyhedrosis Virus) and other new generation biological pesticides were evaluated. This work was performed as part of an ongoing program to devise an adequate safety testing protocol for biological pesticides.
- Impurity studies with technical grades of malathion and acephate (both organophosphate insecticides) showed contaminants with high mammalian toxicity. These contaminants appear to be implicated in human poisoning cases with malathion occurring in Pakistan. Representative samples of products marketed in the country have not been found to contain hazardous levels of these contaminants.

1980 Program

In 1980, the Agency has allocated a total of \$5,847,400 to this program, of which \$4,134,800 is for the Salaries and Expenses appropriation and \$1,712,600 is for extramural purposes under the Research and Development appropriation.

The pesticides health effects program provides research information and technical assistance in support of Agency activities under the legal requirements of the FIFRA. Activities emphasize research to develop new and improved methodologies for use by registrants in establishing safety for human health of currently used and proposed new pesticides. Tests are also being carried out on specific compounds to meet regulatory needs in RPAR and other programs.

Research areas include exposure measurement and human health effects. Exposure tests are being carried out under actual field conditions to estimate human exposure. The effects studies utilize selected animal models to predict possible human health effects from pesticide chemicals.

In 1980, the program will:

- Develop and validate new methodologies for accumulating pesticide exposure data to be used in determining pesticide registration standards.
- Determine the level of exposure to pesticides by persons either occupationally or environmentally exposed.
- Determine health effects of major classes of chemical pesticides now registered by EPA. During 1980, re-testing will be carried out on approximately 20 individual compounds.
- Evaluate the health effects of selected biological pest control agents. Initial emphasis will be given to the study of insect viruses.
- Develop, validate and apply new toxicological analysis and evaluation methods which may have use in pesticide registration, application or approval.

- Improve, refine, develop, validate and apply the application of analytical chemical methods and good laboratory practices for detecting and measuring pesticides which may have adverse health effects.
- Provide technical assistance and rapid response capability in the area of pesticide toxicology to other EPA offices.
- Continue work initiated in 1979 to determine the feasibility of extrapolating human pesticide exposure data between compounds and between different exposure situations to aid in the development of regulatory testing requirements.
- Continue the on-going laboratory effort to refine, develop, and validate animal and cell culture methods for assessing the potentially mutagenic and carcinogenic effects of pesticides.
- Increase the scope of analytical chemical methods by evaluating more pesticides in a broad variety of human tissues and environmental media. Emphasis will be placed on the detection of metabolites in human and animal tissues, excreta, air and other environmental media. Analytical methods needed in exposure measurement procedures will be given priority.

1980 Explanation of Change from Budget Estimate

The net increase of \$109,400 results from several actions. An increase of \$118,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$5,200 and \$100, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$53,700 to this activity.

A reprogramming of \$50,000 was made from the interdisciplinary media, anticipatory research, to cover personnel reassignments of individuals with special capabilities as a result of the abolishment of the Criteria Development and Special Studies Division.

1981 Plan

The Agency requests a total of \$2,760,500 and 31 permanent workyears for this program, of which \$2,439,200 is for the Salaries and Expenses appropriation and \$321,300 for extramural purposes under the Research and Development appropriation. This represents a decrease of \$3,086,900 and 40 positions. The decrease reflects: the desire to strengthen exposure assessment activities outside the health research area, the shifting of resources to toxic substances health activities where common needs exist for such things as certain analytical testing methodologies, equipment, and toxicological testing methodologies, and lessening of RPAR activity. Some redirection occurred to augment other agency priority needs.

Specific activities planned for 1981:

- Conduct acute, subchronic and chronic toxicity studies for prediction of human health hazards in order to verify and increase our understanding of the results of industry sponsored studies.

- Develop in vitro and in vivo screening models for neurotoxic and behavioral effects.
- Identify reproduction dysfunction indicators which are reflective of pesticide toxicity.
- Continuing review of clinical pathology and toxicology of poisoning cases.
- Conduct toxicological evaluation generic chemicals as requested by the OPP.
- Develop methods for identification and detection baculoviruses.
- Conduct toxicological evaluation of selected biological agents.
- Determine pharmacokinetics of selected pesticides.
- Provide technical assistance to the OPP to include rapid responses to requests for hazard and risk assessment.

ECOLOGICAL EFFECTS

1979 Accomplishments

In 1979, this program obligated \$2,601,300, of which \$1,992,100 was for inhouse expenses and \$609,200 for extramural expenses. During 1979 the program:

- Developed techniques for determining the aquatic hazards of encapsulated or slow release pesticides as compared to standard technical grade pesticide materials. Generated toxicity data and collected information to determine how long effective concentrations of two insecticides, methyl-parathion and Dursban, persist in the environment.
- Conducted fresh water micro-ecosystem studies in which the sensitivity of aquatic communities was compared to the sensitivity of single species in standard toxicity tests. Several important differences were observed that cannot be detected in single species tests.
- Obtained acute and chronic aquatic toxicity data for several pesticide compounds of imminent concern to the Office of Pesticide Programs.
- Issued results of a terrestrial microcosm studies indicating that ninety percent of the radioactive material was accounted for. Broken down, it was found that 55 percent was in soil, 30 percent in plants, and 5 percent in other components of the system. Such partitioning values are important in determining the amounts of pesticides degraded or which may enter other environmental food chains or habitats. Rodent test animals contained sixty times more material per unit mass than soil. The results relate well to chemical behavior in the natural environment.

- Conducted studies and published "Soil Core Microcosms - A Potential Screening Tool." This effort was to evaluate the suitability of soil core techniques to examine organic chemical materials (e.g. Hexachlorobenzene, 2,4,5 - T, methylparathion and Dieldrin). Results show that the majority of these chemicals remain in the top 2 centimeters of soil and that 2,4,5, - T had no effect on soil nutrient losses. The other pesticide chemicals showed slight effects at low treatment levels.
- Studied the disposition of four fungicides (pentachloronitrobenzene, pentachlorophenol, hexachlorobenzene and captan) in terrestrial microcosm chambers and compared the results to the reference compound Dieldrin. Results were published in a report titled "Fate of Selected Fungicides in a terrestrial Laboratory Ecosystem." Captan and PCP degraded rapidly in soils and plants. The majority of all the test materials was found in soil except for captan which volatilized. With the exception of HCB and Dieldrin, little ecological magnification occurred.
- Tested pesticides for toxicity to marine organisms including several insecticides Pydrin, Permethrin, Bolero, Fentrifanil, Larvin, Dursban, and Bux. Pydrin and Permethrin were found to be highly toxic to most estuarine biota. Pydrin, Permethrin and Dursban were tested for persistence in estuarine sediments and water and results compared with other pesticides' persistence values.
- Conducted chronic tests using Mysid shrimp which show that the insecticide, endosulfan, reduced both survival and reproduction rates.
- Tested macrobenthic animal communities against the pesticide Trithion. Trithion had no significant effect on the total number of individuals and species inhabiting sand. Trithion was bioaccumulated in the clam and thus could enter the human food chain.
- Measured the toxicity, bioconcentration and persistence of the pesticides acephate, methyl parathion, phorate, aldicarb, carbophenothion, and ethoprop in bioassays (acute and chronic tests) using various marine species.
- Conducted studies which show that chlorination by-products in seawater may be accumulated in oysters and may pose a treat to humans.
- Completed acute static 96 hour tests of creosote on fish and shrimp which revealed that a number of sublethal effects were possible.
- Investigated pentachlorophenol, a biocide, and found that it is biodegradable but may require a combination of organisms acting in concert in order to carry out the degradation process.
- Conducted studies dealing with the adsorption/desorption equilibria of Kepone in sediments which show that partition coefficients are dependent upon sediment concentration. This effect is similar in occurrence to other organic chemicals, heavy metals and radioactive substances adsorbing to clays, soils and sediments.

1980 Program

In 1980, the Agency has allocated a total of \$2,686,500 to this program, of which \$2,385,500 is for the Salaries and Expenses appropriation and \$301,000 is for extramural purposes under the Research and Development appropriation.

The 1980 research program will continue studying particular compounds of interest to the Agency's regulatory and enforcement offices. Emphasis is being given to the development, standardization, and validation of methods to be used in assessing the environmental exposure and effects of pesticides. These tests include acute, chronic, bioaccumulation, community, behavioral and microbial effects methodologies. The development of terrestrial, marine and freshwater test systems and microcosms is continuing. Specific protocols for pesticide types are being developed and procedures validated through intra-laboratory comparative testing. New methods are being developed to determine the environmental effects of newly developed but characteristically different pesticides. Emphasis is also being directed toward the measurement of the effects of pesticide exposure to aquatic and terrestrial organisms, populations and ecosystems. A data base for important pesticides will be developed for use by the OPP in establishing generic standards for pesticides, RPAR procedures, etc. Specific protocols for effects assessment are being developed.

Major efforts are also being made toward the measurement of the concentration, duration, and timing of environmental exposure to pesticides. Results from this research will be integrated with the effects information into a hazard assessment for each compound or class of compounds.

The following are some of the specific activities planned for 1980:

- Develop a protocol for assessing hazards to non-target fish and wildlife from applications of pesticides on farmlands, forests, lawns, and other sites and insure that the protocol can be transformed to data requirements for industry.
- Test RPAR pesticides and suggested RPAR alternatives (representing families of pesticides) to determine "no effect" levels on terrestrial and aquatic indicator plants and animals, as well as expand RPAR and alternates tested to include "no effect" levels on communities and in microcosms. Pesticides will be selected in cooperation with the OPP either by using the RPAR process or by assessing available data and proposing research to fill identified gaps.
- Develop a protocol to determine transport, fate, and transformation related to effects assessments in the terrestrial, freshwater, and marine environments.
- Continue the development of fate and transport protocols.
- Review data and identify knowledge gaps for hazard assessments. Conduct laboratory tests on ecological effects of additional RPAR compounds. Provide synthesis of fate and effects data into hazard assessment model.
- Expand development of protocol work on experimental environments or microcosms and microbial effects.
- Expand quick screening tests for mutagenicity, teratogenicity, carcinogenicity in aquatic organisms caused by specific pesticides.

- Study the effects of alternate methods of pest control (viruses) on aquatic arthropods.

1980 Explanation of Change from Budget Estimate

The net increase of \$126,500 results from several actions. An increase of \$89,800 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$3,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$46,100 to this activity.

A reprogramming of \$93,800 was made from between media within the Office of Research and Development, as a result of the reorganization of the programmatic functions of the Corvallis and Las Vegas labs after 1979 RIF.

A reprogramming of \$38,000 was made from the water quality media from freshwater ecological effects to reflect the reassignment of an employee as a result of the overall cut in positions at the Duluth lab. A reprogramming of \$41,000 was made to the management support media to lab support for lab maintenance costs due in part to the increasing costs of energy. A reprogramming of \$5,000 was made to the toxic substances media for toxic substances transport and fate to help cover the cost of a symposium on the state of the art of the use of lab rate data in predicting environmental fate of new chemicals.

1981 Plan

The Agency requests a total of \$2,422,400 and 49 permanent workyears for this program, of which \$2,178,100 is for the Salaries and Expenses appropriation and \$244,300 is for the Research and Development appropriation. The net decrease of \$264,100 and eight permanent workyears reflects a redirection of activities to engage in pesticide exposure assessment research that will determine the concentrations of pesticides to which organisms and populations are exposed. This will allow a more complete analysis of risk/hazard potentials.

The 1981 research program is directed toward commonly used pesticides and their metabolites, new generation pesticides, and substitute or alternative pesticides which are, or may be used, in various environments. Studies will focus on a variety of trophic levels and investigations will range from effects assessment on the simplest planktonic organisms to complex aquatic and terrestrial ecosystem interactions. Toxicology studies will be carried out to obtain dose/response functions for varying durations of exposure in samples of single species.

Studies will be conducted regarding the potential pesticide effects on species populations and on population/community structures. At the most complex level, determinations will be made on how pesticides can affect entire ecosystems, i.e., how pollutant stress can alter the structure and dynamic functional interrelationships among the ecosystem's many components.

Activities will continue the development, refinement and utilization of experimental methods and techniques to study and evaluate pesticide impact on biotic and abiotic components in estuarine, marine, freshwater and terrestrial habitats. This includes rapid screening tests, bioassays and analytical capabilities as well as complex microcosms. These testing systems allow experimentation under controlled conditions and form a basis for developing testing protocols which will be used in future laboratory evaluations by both public and private sector investigators.

Other projects will include tests on the lethal and sublethal effects of pesticides on organism growth and development. Investigations will determine the life stages of representative organisms which are most sensitive to various compounds and/or their degradation products as well as the effects of pesticides on reproduction, viability of succeeding generations and potential behavioral effects. Validation of laboratory studies will be carried out via field conformation efforts and where applicable risk/hazard assessments will be documented.

Specifically, this research program will:

- Test chemicals undergoing the RPAR review process, as well as RPAR-alternate, generic standards and other specific pesticides with appropriate aquatic and terrestrial organisms as requested by the OPP. For each chemical tested this includes (1) assistance in determining gaps in scientific knowledge, selection of test organisms and specific life cycle tests, (2) conducting bioassays on approximately 20 compounds, (3) interpreting and assessing bioassay and chemical residue data in relation to hazard assessment and (4) serving as an expert witness as required.
- Continue to evaluate existing aquatic and terrestrial test methods to insure the Agency maintains state-of-the-art status in the testing program to determine relationships between short-term and chronic tests as well as relationships between freshwater and marine species. Alternate test species for existing aquatic tests will also be developed.
- Develop tests and supportive data to permit maximum extrapolation from laboratory tests to the environment at a minimum cost. Develop methods necessary to conduct acute and chronic avian toxicity tests.
- Generate data on effects of specified compounds on fish and wildlife. Approximately five chemicals will be tested. In addition, 12 chemicals of choice will be used in avian toxicity tests.
- Participate in development and refinement of "good laboratory practices."
- Provide analytical chemical support concerning effects assessment and methods development.

EXPOSURE ASSESSMENT

1981 Plan

The Agency requests a total of \$787,500 and 11 permanent workyears for this program, of which \$403,900 is for the Salaries and Expenses appropriation and \$383,600 for extramural purposes under the Research and Development appropriation. This is a new program prepared to meet a high priority need of the Office of Pesticides Program (OPP). The resources will be utilized to develop methodologies for exposure assessment and to conduct exposure analyses on 20-OPP designated pesticides in fresh water, marine, and terrestrial environments. Work will also be carried out to provide some improved and standardized protocols for studies of the fate of pesticides for possible inclusion in the pesticide registration guidelines.

The program will be concerned with:

- The transport and transformation of pesticides in marine and terrestrial environments: Data on the concentration of eight pesticides and their degradation or metabolic products in these environments will be generated. From these data, laboratory methods will be developed for estimating potential exposure to pesticides and improved protocols for testing the transport and transformation, including bioaccumulation of pesticides in the marine environment. The improved protocols may be incorporated into the pesticide registration guidelines.
- The concentration of pesticides in areas where they are applied and in surrounding sediments, soils, plants, and animals: The volatilization, photolysis, hydrolysis, and microbial degradation of the 20 pesticides selected by OPP will be studied. The results will be used to develop improved protocols for conducting such studies and serve as basic information for the OPP risk analyses.
- The establishment of a Pesticide Environmental Exposure Assessment Team (PEEAT): PEEAT will involve several EPA laboratories and is intended to provide highly specialized technical assistance to OPP on estimates of potential human exposure to pesticides in air, freshwater (surface and ground), coastal waters, soil, sediment, plants and fish and other animals.

PESTICIDES

Industrial Processes

	Original Estimate <u>1981</u>	Revised Estimate <u>1981</u>	President's Reduction <u></u>
	(dollars in thousands)		
<u>Appropriation</u>			
Integrated Pest			
Management:			
Salaries and			
Expenses.....	\$ 117	\$ 117	...
Research and			
Development.....	<u>2,783</u>	<u>2,783</u>	<u>...</u>
Grand Total.....	2,900	2,900	...

PESTICIDES

Industrial Processes

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Integrated Pest					
Management:					
Salaries and					
Expenses.....	...	...	\$26	\$117	+91
Research and					
Development.....	\$4,091	\$900	3,860	2,783	-1,077
Grand Total.....	4,091	900	3,886	2,900	-986
<u>Permanent Positions</u>					
Integrated Pest					
Management.....	...	...	...	...	...
<u>Full-time Equivalency</u>					
Integrated Pest					
Management.....	...	...	...	...	...

Budget Request

The Agency requests a total of \$2,900,000 for 1981, a decrease of \$986,000 from 1980. Included in this total is \$117,000 for the Salaries and Expenses appropriation and \$2,783,000 for extramural purposes under the Research and Development appropriation, with an increase of \$91,000 and a decrease of \$1,077,000, respectively. There is a net decrease of \$986,000 from 1980 to 1981. However, due to the \$1,000,000 cut in the 1981 program and the co-funding of the "15 University IPM Consortium" project with USDA-Science and Education Administration, there is an increase of \$514,000 in available funds. This increase will assure that IPM mosquito control strategies are integrated into holistic rice production IPM pest control programs.

Program Description

The integrated pest management research program is authorized under Section 20 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The objective of this program is to reduce dependence upon chemical pesticides by providing economically acceptable alternative pest controls for agricultural and urban pests. Such alternatives would be equal in efficacy to current methods and be able to be implemented with reasonable ease. The program is designed to couple ecological and biological information with economically acceptable practices to keep insect or plant pest populations at levels that do not cause economic hardship to the producer or urban dweller.

This program supports the Agency's policy to minimize the exposure of chemical pesticides to humans and the environment. The principal objective is the development of alternative control strategies that utilize a holistic or total systems approach. Research is conducted to enlarge the basic knowledge of major managed ecosystems. This knowledge is then used for the development of ecologically-oriented pest management systems for

ctions, they are less energy dependent, optimize economic returns to producers and society, and minimize adverse effects on the environment.

Large acreage crops with heavy pesticide usage currently receive the major attention. This research program is developing Integrated Pest Management (IPM) control strategies for cotton, alfalfa, apples, soybeans, corn, and the control of mosquitos in rice production systems through three multi-university research consortium projects. Each consortium project is being closely coordinated and integrated with related IPM research and extension activities within the USDA Science and Education Administration (SEA).

The strategy of research is similar for all crops. Major insect weed and disease pest are identified for intensive study. For each crop, insect population dynamics, and biological and ecological influences, are carefully determined and their interactions with the plant community are identified. The effects is natural field control mechanisms such as predators, temperature, moisture, diseases, and similar controls are identified and studied. The research information is incorporated into mathematical models so that control tactics and control strategies may be developed for a range of situations in each crop system.

Close working relationships are maintained by the EPA program staff with the researchers and in turn with the agricultural experiment stations, extension service agents, farmers, and other pesticide applicators who ultimately implement the research findings. Integrated pest management strategies have been successfully demonstrated in a number of field studies arising from EPA sponsored research.

The distribution of research findings and technology transfer are necessary steps in the research program. In addition to publication in the scientific and popular literature, seminars and workshops are sponsored to meet these needs. In a pilot program in one State, farmers may phone their county extension service agents to obtain computer based, up-to-date recommendations for pest control for their specific location.

The use of pesticides within and around homes and urban work places is of continuing concern especially when people, unaware of the danger, are in close proximity to potentially hazardous pesticide compounds. To combat this, an urban IPM program has been structured to investigate alternative controls for pests found in and around urban structures. Improved sanitation coupled with trapping and the use of predator insects is the present emphasis of the program. Information is also being gathered on pesticide use practices and social attitudes regarding pests and pest management in urban situations. Research activities are closely coordinated with the technology transfer activities to assure that the latest results are available. The short-term strategy is to support the transfer of readily available technology and to identify research needs. Identified needs will be prioritized and investigations started to provide data needed to develop comprehensive urban IPM strategies.

INTEGRATED PEST MANAGEMENT

1979 Accomplishments

In 1979, the program utilized \$4,091,300 of which \$400 was for inhouse expenses and \$4,090,900 was for extramural expenses.

The second year of a 4-year study on, "IPM Systems For Corn Soil Insects" was completed. Research showed that black cutworm pheromone trap catches will be useful as an early warning system by being able to predict when the cutworms reach the life stage that causes damage to the corn plant. Significant progress is also being made on determining the black cutworm economic damage thresholds.

New techniques being investigated for controlling corn rootworms include new chemicals, preventative planting time treatments vs. curative cultivation time insecticides, and the influence of tillage operations and crop residues on the effectiveness of insecticides.

A new wireworm sequential sampling approach was developed that will allow growers, pest management personnel, and researchers the flexibility of selecting risk levels for making decisions regarding planting time applications of insecticides for the reduction of crop damage. Additional research will validate the sequential sampling approach during the last two years of the study.

A farm level decision model is being developed that addresses the questions that growers face regarding the control of cutworms and rootworms. Data collection on corn yields, pest control practices, weather factors cultural practices and infestation levels is underway and will be used to validate the models.

Control methods for the "imported" fire ant utilizing chemical, physical, and biological control techniques were developed and evaluated in a three-year study completed in 1979. Mound knockdown plus spot treatment procedures offer promise for mechanized fire ant control.

A strategy of insect control was developed which utilized a defined mixture of pheromone components for a complex of closely-related apple pests. This strategy should be applicable in pest management programs now underway in New York apple orchards.

The EPA provided direct financial support for the 9th International Congress of Plant Protection and for a 2-day working conference on Pest Control Strategies for the Future.

Two congressionally mandated IPM research projects were initiated in 1979. The "15-University IPM Consortium" project will develop IPM strategies for cotton, alfalfa, apples and soybeans. This project was initially funded in 1978 for the purpose of developing the final 5-year research program and to begin research studies. A communications and coordination mechanism was developed to assure close working relationships between EPA, USDA-SEA, and the "15-University IPM Consortium." Work continued during this transition year to develop control techniques for the four crops (cotton, alfalfa, apples and soybeans).

The "Mosquito-Riceland IPM Consortium" project was initiated in 1979. This 5-year project will develop strategies optimizing nonchemical approaches to managing mosquito populations in freshwater irrigated cropping systems using the riceland agroecosystem as a model. This project is also being closely coordinated with USDA-SEA.

In 1980, the Agency has allocated a total of \$3,886,000 to this program, of which \$26,000 is for the Salaries and Expenses appropriation and \$3,860,000 is for extramural purposes under the Research and Development appropriation. This level of funding will permit the continuation of the three large consortium projects.

The second year of the "15-University IPM Consortium" project is being funded to develop alternative nonchemical methods of pest control; methods for using chemical pesticides in a more selective, judicious, economical and environmentally compatible manner; computerized integrative models for optimizing crop management and pest control practices; economic analysis of each new crop-pest management program; identification and characterization of new agents for pest control; basic studies on pest population dynamics, interactions of pests with hosts and natural enemies, dispersion and migration, dormancy, behavior, and biotic and abiotic factors affecting survival and rates of increase; training of pest management specialists and decision-makers; IPM demonstration areas in cooperation with extension personnel to illustrate the practicality and economic benefits of IPM to farmers; and optimal crop-pest management systems.

The second year of funding for the "Mosquito-Riceland IPM Consortium" project will aid in developing alternative nonchemical methods of riceland mosquito control; methods for using chemical pesticides in a more judicious, economical, and environmentally compatible manner; efficacy and safety tests on new pesticides being proposed for mosquito control; nonchemical approaches for riceland mosquito control; survey and prediction technology; computerized integrative models for forecasting mosquito outbreaks and for optimizing the effectiveness of mosquito control strategies; economic analysis of mosquito management strategies; training of pest management specialists and decision-makers; and training of farmers and the general public will be accomplished by using workshops and demonstration areas being used in conjunction with extension personnel to illustrate the efficiency of the IPM approach to mosquito management in the riceland ecosystem. The importance of controlling riceland mosquitos lies in both the direct effects on the healthy well-being and human and livestock populations resulting from the pestiferous biting and their indirect role as vectors for disease causing agents of man and his domestic animals.

The final year of "IPM Systems for Corn Soil Insects" is being funded. New IPM control tactics are being demonstrated for the black cutworm, corn rootworm, and wireworms. Decision making models coupled with economic studies will be available for growers to use. During 1980, this project will be coordinated with the new USDA-SEA regional IPM program that have identified the corn crop production system as a high priority. Future research in this area will be expanded in cooperation with USDA to develop total IPM systems for all pests (weed, insects, diseases) of corn.

The second year of a 3-year project on the biological control of aphids in urban shade trees is being funded. EPA is developing a comprehensive urban IPM research and demonstration program for major urban pests, including structural pests, lawn and garden pests and parks, trees and other right-a-way pests. This project is also being closely integrated with the new USDA-SEA regional IPM programs that have identified urban IPM as a high priority.

The net increase of \$2,986,000 results from several actions. A congressional increase was made for the integrated pest management multicrop experiment, \$2,500,000, and mosquito control research, \$500,000.

A reprogramming of \$14,000 was made to management and support to lab support for lab maintenance costs due in part to increasing costs of energy.

1981 Plan

The Agency requests a total of \$2,900,000 for this program, of which \$117,000 is for the Salaries and Expenses appropriation and \$2,783,000 is for the Research and Development appropriation. The net decrease of \$986,000 does not present a cut in the actual research to be performed, since the "15-University IPM Consortium" will be jointly funded by EPA and USDA-SEA; both agencies have requested \$1,500,000 for funding the third year, which is estimated to cost \$3,000,000 total.

During 1981, EPA and USDA-SEA will continue the joint communications and coordination mechanism implemented in 1980 which will assure that EPA research and implementation programs are fully integrated with SEA's IPM research, extension and education program. The "15-University IPM Consortium" project will utilize a joint EPA-USDA technical guidance and oversight review team to assure that this project is fully integrated with the USDA-SEA regional IPM programs which are being developed.

The third year of the "Mosquito-Riceland IPM Consortium" will be funded. Joint project management and review will be continued to assure that IPM mosquito control strategies are integrated into holistic rice production IPM pest control programs.

An expanded urban IPM research program on urban pests, including technical assistance and demonstrations will be supported. An extension and education plan based on the results will be developed in cooperation with USDA-SEA.

Documentation of the environmental benefits and reduced human exposure of pesticides from implementing IPA crop ecosystem strategies is a high priority. In cooperation with USDA, multi-crop multi-pest regional IPM demonstrations will be conducted. These studies will demonstrate the benefits to producers and users of IPM strategies. Economic studies coupled with predictive models will assist producers in making pest control decisions.

The remainder of the IPM program will provide support for (1) special pest problems like the fire ant; (2) planning and support of USDA-SEA regional IPM programs; (3) technology transfer activities; and (4) in-house program support.

Monitoring and Technical Support

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Quality Assurance:					
Salaries and Expense.....	407	270	500	517	+17
Research and Development.....	85	170	48	48	...
Grand Total.....	492	440	548	565	+17
<u>Permanent Positions</u>					
Quality Assurance....	9	9	12	12	...
<u>Full-time Equivalency</u>					
Quality Assurance....	10	9	13	13	...

Budget Request

The Agency requests a total of \$565,400 and 12 permanent workyears for 1981, an increase of \$16,900 from 1980. Included in this total is \$517,400 under the Salaries and Expenses appropriation and \$48,000 for extramural purposes under the Research and Development appropriation with an increase of \$16,900 for Salaries and Expenses. The program will continue at the 1980 level of effort.

Program Description

The objectives of the pesticides quality assurance program are to provide standardized analytical measurement systems of verified performance characteristics which are capable of generating accurate and intercomparable data of known quality, and to provide quality control materials which assure that these measurement systems continue to provide data of known quality. These controls are necessary so as to allow regulatory decisions to be made which cannot be successfully challenged based on quality of the data expressed in terms of precision and accuracy, and to assure that data used by EPA are produced above this minimal level of quality.

A repository of pesticide chemicals of known purity is maintained to supply the analytical community with suitable reference and calibration materials. Pesticide chemicals incorporated into a variety of environmental materials (biological tissues, soil, or water) also serve as reference samples for maintaining the satisfactory performance of measurement systems. Analytical supplies, rigorously examined for compliance with quality control specifications, are furnished to help the national mentoring network develop comparable data on human and environmental pesticide residues.

PESTICIDES

Monitoring and Technical Support

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Quality Assurance:			
Salaries and			
Expenses.....	\$ 517	\$ 514	-\$3
Research and			
Development.....	<u>48</u>	<u>48</u>	<u>...</u>
Grand Total.....	565	562	- 3

1979 Accomplishments

During 1979, obligations totaled \$491,500. Included in this total is \$406,700 for salaries and expenses and \$84,800 for extramural purposes. Specific accomplishments include the following:

- Distributed pesticide reference materials to over 1,000 laboratories. Over 20,000 samples were furnished from the more than 500 compounds currently stocked.
- Conducted a 12-laboratory collaborative study of an improved method for determination of hexachlorbenzene and mirex residues in adipose tissue.
- Expanded the ongoing program of determining the stability of pesticide standard solutions to include carbamates and triazines.
- Maintained quality control of critical analytical supplies for the national network through rigorous acceptance testing program.
- Provided continual repair and calibration service support to epidemiology study laboratories, EPA Regional laboratories, and the Health Effects Research Laboratory at Research Triangle Park, North Carolina. Conducted on-site visits to two participating laboratories. Approximately 854 instruments were serviced and 13 gas chromatograph units were rebuilt.
- Established in-house certification and chemical characterization for pesticide reference standards.

1980 Program

In 1980, the Agency has allocated a total of \$548,500 to this program, of which \$500,500 is for the Salaries and Expenses appropriation and \$48,000 is for extramural purposes in the Research and Development appropriation. Specific outputs include:

- Upgrade quality of pesticide calibration material repository through in-house certification of purity for at least 200 compounds.
- Provide pesticide reference materials to support legal measurements made by FDA and EPA.
- Complete method performance evaluation for analytical procedure for alkyl phosphate in urine.
- Continue quality assurance support of human health and epidemiological monitoring programs.
- Develop standardized protocols for biological testing of pesticides and quality control guidelines for use in biological testing laboratories.
- Develop special pesticide reference materials for toxaphene in milk, soil, and urine.
- Institute an annual meeting of pesticide residue chemists to exchange information on new techniques and analytical pitfalls discovered through the performance evaluation.

1980 Explanation of Change from Budget Estimate

The net decrease of \$108,500 results from several actions. An increase of \$16,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$400. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$7,400 to this activity.

A reprogramming of \$100,000 was made from pesticides registration standards to reflect a transfer of staff as a result of the reorganization of the programmatic functions of the Corvallis and Las Vegas labs after a 1979 RIF.

1981 Plan

The Agency requests a total of \$565,400 and 12 permanent workyears for this program, of which \$517,400 are in the Salaries and Expenses appropriation and \$48,000 are for extramural purposes in the Research and Development appropriation. The increase of \$16,900 reflects increased administrative costs. In 1981 the program will:

- Maintain the repository of pesticide calibration materials and improve the quality of the repository to support the legal measurement requirements of the Food and Drug Administration and Environmental Protection Agency.
- Provide the Office of Pesticide Programs epidemiology monitoring laboratories with standardized analytical support materials such as Gas Chromatography column packing, florisil, etc.
- Maintain electronics calibration and repair service.
- Develop certified pesticide calibration materials.
- Assist the Office of Pesticide Programs epidemiology monitoring laboratories in estimating the quality of their performance.
- Expand support to the Office of Pesticide Programs epidemiology monitoring laboratories by providing performance evaluations of analytical systems through "unknowns" analysis.
- Perform an on-site inspection to evaluate the adequacy of instrumentation and capabilities of the Office of Pesticide Programs epidemiology laboratories' monitoring activities.
- Expand the scope of available analytical tools and calibration materials to address high priority pesticides.
- Add pesticide metabolites and environmental breakdown products to the pesticide repository.

Registration and Tolerances

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Registration:			
Salaries and Expenses.....	\$ 6,876	\$ 6,833	-\$43
Abatement, Control and Compliance.....	709	709	...
Special Registration:			
Salaries and Expenses.....	1,869	1,857	-12
Abatement, Control and Compliance.....	273	273	...
Tolerances:			
Salaries and Expenses.....	1,848	1,837	-11
Abatement, Control and Compliance.....	166	166	...
Total:			
Salaries and Expenses.....	10,593	10,527	-66
Abatement, Control and Compliance.....	1,148	1,148	...
Grand Total.....	11,741	11,675	-66

PESTICIDES

Registration and Tolerances

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Registration:					
Salaries and Expenses..	\$4,179	\$4,419	\$7,391	\$6,876	-\$514
Abatement, Control and Compliance.....	2,653	3,831	103	709	+606
Special Registration:					
Salaries and Expenses..	2,100	1,241	2,001	1,869	-132
Abatement, Control and Compliance.....	277	380	27	273	+246
Tolerances:					
Salaries and Expenses..	1,569	1,128	1,820	1,848	+28
Abatement, Control and Compliance.....	109	1,191	166	166	...
Total:					
Salaries and Expenses..	7,848	6,788	11,212	10,593	-619
Abatement, Control and Compliance.....	3,039	5,402	296	1,148	+852
Grand Total.....	10,887	12,190	11,508	11,741	+233
<u>Permanent Positions</u>					
Registration.....	156	235	222	222	...
Special Registration....	84	66	62	62	...
Tolerances.....	74	60	57	57	...
Total.....	314	361	341	341	...
<u>Full-time Equivalency</u>					
Registration.....	162	245	246	245	-1
Special Registration....	82	84	68	69	+1
Tolerances.....	70	67	67	67	...
Total.....	314	396	381	381	...

The Agency requests a total of \$11,740,900 for 1981, an increase of \$233,800 over the current 1980 estimate. Included in this total is \$10,592,600 for Salaries and Expenses and \$1,148,300 for Abatement, Control and Compliance, with a decrease of \$618,400 and an increase of \$852,200, respectively.

Program Description

The focus of this program is on the registration and special registration of pesticides and on the establishment of residue tolerances for each registered product.

Since 1947, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) has been the primary vehicle for regulating pesticides. Until 1972, the law was focused on the proper labeling of pesticide products shipped in interstate commerce. In 1972, however, P.L. 92-516 strengthened the law considerably, changing it from a labeling law to a comprehensive regulatory statute. The 1972 Amendments reflected the public concern about potential adverse health impacts of pesticides only then becoming apparent, the need to adequately assess the "reasonableness" of the risks posed by these products and to permit continued sale and use of those products found not to pose unreasonable risks. P.L. 92-516 charged EPA with the responsibility not only for requiring adequate premarket data review of new products, but also for reexamining previously registered products, and reregistering those which continue to meet today's safety standards.

The Agency encountered numerous obstacles in attempting to carry out the registration responsibilities imposed by the 1972 law. Registration came to a near standstill due to ongoing litigation over use of one company's data by another, and because for many products data sufficient to meet today's data requirements had not yet been generated. At the same time, however, the law allowed earlier-registered products, identical to those for which registration is now sought, to remain on the market pending reregistration, giving rise to a "double standard" among manufacturers of like products. The 1978 Amendments to the FIFRA recognized the inequities of the previous system, and permitted some far-reaching changes in the registration program which have simplified the regulation of pesticides in this country.

The new law incorporated several important amendments which build upon the major areas covered by previous laws, including registration of pesticides to prevent unreasonable hazards to humans or the environment. Registration (premarket clearance) of pesticides is a comprehensive process designed to help ensure the safe and effective use of pesticides. Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), all pesticides legally marketed in the United States must be registered by the Agency.

Under the new law, the EPA is authorized to develop generic pesticide standards for each pesticide active ingredient encompassing all of its approvable formulations and uses. In the past, registration entailed an examination of the risk of each product, one at a time. However, generic registration of pesticides entails a single, comprehensive evaluation of risks and benefits of the technical material common to numerous products based on all data relevant to the registration decision. The new system will demand less time and money both from EPA and the registrant.

Development of pesticide generic standards will take time and until such standards are developed and the complete new reregistration program is put in place, Congress has authorized a program for EPA to grant conditional registrations. Conditional registration will allow EPA to process applications for registration of new products which are like ones already registered without additional data, and thus permit the new products to enter the market on an equal footing with others already registered and in turn provide consumers with a wider range of comparable products. Ultimately, all products will be reviewed comprehensively when reregistered under generic

New uses of "old" chemicals and new chemicals will also be eligible for conditional registration if EPA determines that enough information is available to evaluate unique hazards that may be posed by the new uses. The Agency is also authorized to issue conditional registration of new chemicals if the public interest would be served by a registration, and if risks during the period required to complete and submit additional studies are not unreasonable.

In the future, conditional registration will be useful for allowing time to meet new data requirements or in some special cases, for permitting early registration of brand new chemicals.

The registration process will focus on new chemicals, new products containing previously registered pesticides, new uses and use restrictions, new formulations, labeling changes, supplemental registrations and reregistrations. Priority will be given to environmentally protective pesticides and innovative technologies.

The special registration of pesticides encompasses: (a) the issuance of experimental use permits under Section 5 of FIFRA to generate data for registration, (b) establishment of temporary tolerances to cover safe levels of pesticide residues in food and feed from pesticide use for experimental purposes, (c) granting of emergency exemptions under Section 18 of FIFRA to permit the temporary use of unregistered pesticides, (d) issuance of Section 24(c) special local need registrations, largely handled by the States with Federal oversight, and (e) issuance of minor use registrations through liaison with public interest user-oriented groups. Special registration provides data for the registration of pesticides, flexibility in responding to emergency situations, and offers support to State and local governments in registering pesticides for local use only.

Under the Federal Food, Drug, and Cosmetic Act, as amended, (FFDCA), the Agency establishes tolerance levels and exemptions from the requirement of a tolerance for pesticide residues in or on raw agricultural commodities and processed foods. These tolerance levels protect the public health while giving appropriate consideration to the necessity for the production of an adequate, wholesome, and economical food supply.

Determination of tolerances involves careful review and evaluation of residue chemistry and toxicology data to ensure the maximum residue levels likely to be found in foods are safe for human consumption. Included in this consideration is the cumulative effect of the same pesticide chemical and other related substances with the same physiological activity. Analytical methods are tested to ensure that the adequate enforcement of the established tolerance can be achieved.

EPA will implement more flexible minor use tolerance data review procedures involving data requirements and scientific decision making. This will parallel conditional registration and other newly authorized registration remedies to EPA's pesticide registration program.

Current operations give high priority to tolerance petitions, innovative pesticide chemicals and biologically integrated alternatives for pest control. Both of these Integrated Pest Management (IPM) techniques reduce the amount of conventional pesticide chemicals applied and significantly reduce environmental and human risk. In addition, fee requirements for petitions for tolerances of such products are adjusted or waived. Tolerance petitions are the only pesticide actions for which fees are charged.

REGISTRATION

1979 Accomplishments

Accomplishments in 1979 focused on implementation of the 1978 Amendments to the FIFRA designed to streamline the regulatory process, reduce the burdens on industry, and insure public accessibility to basic health and safety studies while closely guarding industry's property rights and rewarding innovation. In response to these amendments, the Agency promulgated regulations governing conditional registration, waivers of efficacy requirements, compensation for the use of data and registrant's responsibilities for data submission. Over 200 conditional registrations for products similar to already registered products were issued. Four brand new chemicals were granted conditional registration to combat cotton pests. In addition, 12 conditional registrations for new chemicals were granted. Over 24,000 registration actions (old chemical applications, new chemical applications, amendments and supplemental applications, etc.) were processed in 1979.

1980 Program

In 1980, the Agency has allocated a total of \$7,493,300 to this program, of which \$7,390,300 is for Salaries and Expenses and \$103,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

In 1980, the Agency will process applications for new chemicals on a priority basis while giving special attention to new chemicals that offer an extra measure of protection to the environment. Tasks to be completed during 1980 are the processing of: applications for the registration of products that contain new chemicals both for food uses and non-food uses, 70; applications for the registration of new products that contain old chemicals, but are identical or substantially similar to those that are currently registered, 5,300; applications to amend current pesticide product labels to add uses (food and non-food), 440; applications for administrative amendments and supplemental registrations, more than 20,000; and minor amendments, 1,800. Additional tasks include the follow-up on submission and review of data as conditions for the conditional registration of products and the review of adverse effects data submitted under Section 6(a)(2) of the FIFRA.

A plan for the upgrading of labeling on currently registered products will be completed and implemented. Promulgation of the regulations and guidelines for biologicals, will be completed. Environmentally protective pesticide products and other items with review priority will be processed more rapidly.

In 1980, development of an automated system will be initiated to permit tracking of applications in the registration process flow. A series of simplified instructions to help registrants apply for registration is being prepared, in order to reduce the number of applications returned to registrants for additional information, before the Agency can either register or deny an application. In addition, during 1980, most sections of the proposed Registration Guidelines will be revised and written into the final form.

1980 Explanation of Changes from Budget Estimates

The net decrease of \$756,100 results from several actions. An increase of \$263,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$1 million to ADP costs resulted in a decrease of \$11,100.

A reprogramming of \$1,008,500 was made to pesticide RPAR review to realign the program contract support for the internal analytical methodology.

1981 Plan

The Agency requested a total of \$7,584,900 for this program, of which \$6,875,700 is for the Salaries and Expenses appropriation and \$709,200 for Abatement, Control and Compliance.

In 1981, conditional registration of pesticide products containing currently registered active ingredients will be used extensively until pesticide generic standards are developed. The program will also highlight the registration of environmentally protective pesticides for which complete hazard data are available.

The Agency expects to process 96 new chemical applications (48 food and 48 non-food) through scientific and regulatory reviews to assess the potential hazards associated with the use of new products. Expedient processing will be provided for environmentally protective pesticides.

Applications involving old chemicals will be processed for conditional registration of products. Conditional registration activities will be undertaken for 100 products involving a significant variation in formulation and for 5,200 products involving formulations similar to already registered products.

Applications to amend registration will focus on a number of areas. New food and non-food use applications will total 220 and 220 respectively. The Agency will process 1,800 applications for minor changes, and 4,000 administrative amendments. An estimated 200 products will be the subject of conditional registration follow-up actions to ensure full compliance with all conditions placed on conditionally registered products. Data reviews, under Section 6(a)(2) of FIFRA, will be undertaken for 25 data submissions to determine if any unacceptable adverse effects are expected from legal uses of registered pesticides. Supplemental registration applications are expected to total 16,000 and will be processed within six weeks of receipt.

Other accomplishments under these programs will include the development of 40 re-registration call-in packages based on generic standards. Continuing efforts will include direct dissemination of information to the farm worker and other representative groups at the Federal, State and local levels, and improved product labeling and monitoring techniques. A management information system will be developed which will permit the consolidation of specialized farm worker, pesticide use, and industry data into a pesticide data base. Suitable guidelines will be developed for evaluating the potential hazards of new pesticides to agricultural workers, along with guidelines establishing suitable reentry intervals for farm workers for treated fields. An attempt will be made to finalize scientific, technical and other data necessary for assessment of farm worker risk and to assess the most effective methods to minimize this risk.

SPECIAL REGISTRATION

1979 Accomplishments

In 1979, resources spent on the special registration process totaled \$2,376,800, which included \$2,099,500 for Salaries and Expenses and \$277,300 for Abatement, Control and Compliance activities.

As in the case of registration, the Agency moved to implement key provisions of the 1978 Amendments to the FIFRA, particularly relating to the authority of States to issue product registration for special local needs. In light of these statutory changes, the Agency published a statement reflecting its thinking on minor use pesticide registration and tolerances. The Congress has clarified that EPA is to make minor use pesticide registration data requirements "commensurate with anticipated extent of use, pattern of use, and the level and degree of potential exposure of man

In 1980, the Agency has allocated a total of \$2,027,800 to this program, of which \$2,000,700 is for Salaries and Expenses and \$27,100 is extramural purposes under the Abatement, Control and Compliance appropriation.

The Agency will continue the special registration program by (a) issuing experimental use permits to support registration requirements, (b) establishing temporary tolerances to cover safe levels of pesticide residues, (c) granting emergency exemptions to allow the use of unregistered pesticides and (d) providing guidance and directions to States which issue pesticide registrations and experimental use permits to meet local needs. The Agency expects to process 240 experimental use permits, 55 temporary tolerance petitions, and 350 emergency exemptions, and will review 1,200 State registrations. Agency oversight and guidance will be provided for an estimated 100 State issued experimental use permits.

1980 Explanation of Changes from Budget Estimate

The net increase of \$406,600 results from several actions. An increase of \$76,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a increase of \$7,300 to this activity.

A reprogramming of \$323,200 was made from pesticide tolerances for improvement in internal analytical methodology which identified base program contract support.

1981 Plan

The Agency requests a total of \$2,142,400 for this program, of which \$1,869,300 is for the Salaries and Expenses appropriation, and \$273,100 is for the Abatement, Control and Compliance appropriation.

During 1981, the special registration program will evaluate in terms of risks and benefits, an expected 350 Section 18 emergency exemption requests to allow pesticides to be used to control unexpected agricultural or public health pest outbreaks, and to either grant or deny such requests as expeditiously as possible. Approximately 240 applications for experimental use permits will be evaluated each within the statutory limit of 120 days. This will allow pesticide research and development to continue for new pesticides and for new uses of currently registered pesticides. Biologicals and third-generation pesticides will be given special attention; an attempt will be made to process these within 100 days. An estimated 55 petitions for temporary tolerances, and 80 resubmissions supporting experimental use permits, will be evaluated. The Agency will review an estimated 1,200 Section 24(c) State registrations which provide for the use of a pesticide in a special local need situation within a given State, and 100 Section 5(f) State experimental use permits to allow continuing research and development of pesticides to meet special local needs.

TOLERANCES

1979 Accomplishments

In 1979, resources spent for the tolerance setting process totaled \$1,677,700, which included \$1,568,700 for Salaries and Expenses and \$109,000 for Abatement, Control and Compliance activities.

Accomplishments during 1979 include the processing of 137 petitions, 110 amendments, and nine inert ingredient requests to establish residue levels. An estimated 400 telephone and 260 written requests for tolerance information were processed, with a written response time averaging less than two weeks.

1980 Program

In 1980, the Agency has allocated a total of \$1,986,000 to this program, of which \$1,820,000 is for Salaries and Expenses, and \$166,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

These resources will permit the Agency to review all incoming tolerance actions to establish residue levels that will protect human health, and provide written replies (acknowledgements) to tolerance petitions within two weeks. The Subcommittee on Oversight and Investigations, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, and EPA's Science Advisory Board have made recommendations concerning the tolerance-setting process. In response to these recommendations, the Agency is now actively developing proposed program changes. Once these are agreed upon, additional resources may be required. An estimated 160 new petitions, 150 amendments, and 40 inert ingredient requests will be processed. This processing includes administrative handling, coordination and data review, scientific review of data, regulatory decision making, and preparation of Federal Register notices. Replies will be made to 300 written and 450 telephone requests, including both specific congressional inquiries and general correspondence. Replies to written inquiries will average two weeks turnaround time.

1980 Explanation of Changes From Budget Estimates

The net decrease of \$333,000 results from several actions. An increase of \$71,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A reprogramming of \$404,200 was made to pesticide special registrations (\$323,200) and to pesticide RPAR reviews (\$81,000) to realign the program contract support for the internal analytical methodology.

1981 Plan

The Agency requests a total of \$2,013,600 for this program, of which \$1,847,600 is for the Salaries and Expenses appropriation and \$166,000 for Abatement, Control and Compliance.

These resources will enable the Agency to carefully evaluate chemistry and metabolism data for 160 petitions and 150 amendments to determine the nature and level of pesticide residues expected to remain in or on food crops when used according to the proposed label directions. Toxicology data for 160 petitions and 150 amendments will be evaluated to determine if foods containing these residue levels are safe for human consumption. These evaluations will also take into account the cumulative effect of the tolerances already established for the pesticide chemical and other pesticide chemicals with related pharmacological activity. Specific analytical methods will be evaluated to determine their suitability for enforcement of proposed tolerances. The Agency expects to publish in the Federal Register seventy notices establishing tolerances.

Standards Setting and RPAR

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Registration Standards:					
Salaries and Expenses..	\$8,068	\$3,861	\$5,958	\$5,592	-\$366
Abatement, Control and Compliance.....	6,844	8,591	6,561	11,846	+5,285
RPAR Reviews:					
Salaries and Expenses..	5,114	2,531	4,551	4,394	-157
Abatement, Control and Compliance.....	8,218	9,514	8,961	15,266	+6,305
EIS Preparation:					
Salaries and Expenses..	154	63	82	84	+2
Total:					
Salaries and Expenses..	13,336	6,455	10,591	10,070	-521
Abatement, Control and Compliance.....	15,062	18,105	15,522	27,112	+11,590
Grand Total.....	28,398	24,560	26,113	37,182	+11,069
<u>Permanent Positions</u>					
Registration Standards.	158	197	183	168	-15
RPAR Reviews.....	188	135	145	145	...
EIS Preparation.....	2	3	3	3	...
Total.....	348	335	331	316	-15
<u>Full-Time Equivalency</u>					
Registration Standards.	194	203	200	181	-19
RPAR Reviews.....	157	158	153	152	-1
EIS Preparation.....	5	3	3	3	...
Total.....	356	364	356	336	-20
<u>Budget Request</u>					

The Agency requests a total of \$37,182,200 for 1981, an increase of \$11,069,200 from 1980. Included in this total is \$10,069,900 for Salaries and Expenses and \$27,112,300 for Abatement, Control and Compliance, a decrease of \$521,900 and an increase of \$11,591,100, respectively. This level of funding will provide for the continued development of pesticide registration standards, which are crucial to improve the efficiency of future pesticide registration and reregistration activities. The budget will also permit the continuation of rebuttable presumption against registration (RPAR) actions which are necessary to properly assess the risks and benefits of compounds and to implement restrictions on compounds suspected of causing unreasonable adverse health effects. The RPAR investigative process will be made a part of the registration standards

Standards Setting and PRAR

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Registration Standards:			
Salaries and Expenses.....	\$ 5,592	\$ 5,557	-\$35
Abatement, Control and Compliance.....	11,846	11,846	...
RPAR Reviews:			
Salaries and Expenses.....	4,394	4,366	-28
Abatement, Control and Compliance.....	15,266	15,266	...
EIS Preparation:			
Salaries and Expenses.....	84	84	...
 Total:			
Salaries and Expenses.....	10,070	10,007	-63
Abatement, Control and Compliance.....	27,112	27,112	...
Grand Total.....	37,182	37,119	-63

setting system in 1981. By then, any newly suspect chemicals will enter the standards process and will be subjected to RPAR review when unreasonable adverse effects are identified. The laboratory audit program will be continued to ensure the validity of data presented by registrants in support of past, current and future registrations. Funding is also requested to implement agreements made with Silvex registrants subsequent to the Administrator's emergency suspension of the product's major uses. These agreements provide that the Agency must accept for disposal all Silvex products registered by the registrants which are voluntarily cancelled by them and delivered to disposal facilities designated by EPA.

Program Description

In order to use resources efficiently, the Agency developed a new approach to reregistration which was ratified by Congress--developing registration standards for each of the active ingredient chemicals currently used in pesticide products. This approach, however, is currently the subject of litigation which could cause redirection or major changes in the program. The uncertainties caused by this litigation and its possible impacts are described later in this section. EPA will concentrate its efforts on the approximately 500 chemicals currently used as active ingredients, which will permit decisions on the reregistration of all existing products. Many of the approximately 1,400 chemicals originally identified as discrete active ingredients are not in production or have chemical forms that allow them to be judged as a family rather than one by one.

The development of a registration standard is divided into five phases: (1) data gathering and preparation, (2) scientific review, (3) identification and analysis of regulatory options, (4) regulatory standard drafting and distribution, and (5) integration of comments and preparation of the revised standard. Several mixture and formulation standards will probably be developed for each chemical standard produced. Pesticide residue tolerances, already established under authority of the Federal Food, Drug and Cosmetic Act, will also be reviewed and respecified for each of the food or animal crops to which the chemical is applied. (The establishment of new residue tolerances is funded under the registration and tolerances subactivity). Finally, all pesticide products that use the chemical as an active ingredient and meet the specifications of the standard will be reregistered. (Reregistration, as distinguished from standards production, is funded under the registration and tolerances subactivity, as are resources for new product registrations and amendments to existing registrations). Incorporating this standard setting approach into the Agency's entire pesticides abatement, control, and compliance program will facilitate registration and reregistration actions.

Due in part to the uncertainties caused by litigation challenging the constitutionality of basic FIFRA data use and disclosure provisions, the Agency may not be able to actually produce the number of published standards planned for 1980 and 1981. While EPA believes that the legal underpinnings of the program are fundamentally sound, the delays and Agency effort associated with pending challenges are likely to affect output in the form of actual published standards. In the event, however, that litigation or other exogenous events prevent or significantly delay final publication of standards, the Agency will nonetheless continue the process of systematically reviewing the data base upon which registration of current pesticides is based. In short, the actual number of completions for both 1980 and 1981 may vary dependent upon events largely outside EPA's control. If the court rulings are not favorable to EPA, the Agency will return to the Authorization and Appropriations Committees for guidance.

chemicals requires a risk/benefit determination after an in-depth review of potential hazards on a use by use basis. Public hearings are conducted, if necessary, to reach final determinations. The RPAR process includes analysis of the exposure of humans and the environment to the pesticide, including environmental impact analysis; analysis for oncogenicity, mutagenicity and teratogenicity risk; review of the benefits of the pesticide's uses; review of the possible substitutes for the chemicals; and assessment of the possible regulatory options. In 1981, the registration standards system will include the RPAR program, assuming that current litigation does not preclude the development of standards. The RPAR and registration standards systems are similar in their need to review all available data, and similar in outputs; therefore it is reasonable to combine the two in order to maximize effectiveness and efficiency.

The Agency will continue to conduct systematic audits of laboratories and the quality of laboratory studies to evaluate their impact on decision making. This is being done because of indications that there are defects in basic studies used to support pesticide registrations. These lab data validations are important to the registration, RPAR, and tolerance setting processes since reliable data is needed to proceed with actions to identify and restrict or remove hazardous pesticides from use, as well as to establish pesticide standards for streamlined registration and reregistration.

On February 28, 1979, the Administrator issued an emergency suspension, the first in the Agency's history, for major uses of the pesticides 2,4,5-T and Silvex. This action was taken due to the apparent correlation between human miscarriage and uses of these products, as well as extensive animal data. Subsequent to this and as mandated in the FIFRA, agreements were made with Silvex registrants that the Agency must accept for disposal all Silvex products registered by the registrants which are voluntarily cancelled by them and delivered to disposal facilities designated by EPA. Specific disposal activities include contracting for performance testing of disposal techniques, development of Environmental Impact Statements to cover shipment and disposal operations, cleansing and disposal of Silvex containers, securing required governmental permits, coordinating and supervising shipping and disposal operations and contracting with facility operators for actual disposal.

REGISTRATION STANDARDS

1979 Accomplishments

In 1979, a total of \$14,911,700 was spent, including \$6,843,600 for information services, scientific data review, and other contracts. These resources were used to gather and prepare data, to develop one registration standard as an example of the type of standards that will be produced, to gather pesticide use and usage information, to perform economic impact analyses of various regulatory recommendations, to support toxicology and chemistry data evaluations, and to evaluate health effects. The registration standard system was initiated and the initial phases were tested in 1979. Standard setting activities focused on identification and resolution of major policy issues, development of detailed internal procedures to complete the data gathering and data evaluation phases of the registration standards process, and identification of procedures to facilitate the integration of the RPAR process into the standards setting process. The data gathering phase was initiated for 28 active ingredients, and was completed for 16.

1980 Program

In 1980, the Agency has allocated a total \$12,518,700 to this program, of which \$5,958,400 is for Salaries and Expenses and \$6,560,300 is for extramural purposes under the Abatement, Control and Compliance appropriation. The extramural resources are for information service and scientific data review contracts to support the development of registration standards.

During 1980, the system will start in earnest and the emphasis will shift from a development mode to a production mode. Using a chemical prioritizing system, work is expected to be initiated on an additional 25-40 standards, and between 10 and 20 registration standards are expected to be completed.

1980 Explanation of Change from Budget Estimates

The net increase of \$66,700 results from several actions. An increase of \$224,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$40,000.

A reprogramming of \$100,000 was made to the Office of Research and Development within the pesticides media to implement a transfer of staff at the Corvallis lab. A reprogramming of \$17,700 was made to pesticide RPAR reviews for improvement in internal analytical methodology which identified base program contract support.

1981 Plan

The Agency requests a total of \$17,438,500 for this program, of which \$5,592,100 is for the Salaries and Expenses appropriation and \$11,846,400 for the Abatement, Control and Compliance appropriation for information services and scientific data review contracts.

These resources are expected to permit the completion of 20-40 standards started in 1979 and 1980 and the initiation of an additional 25-40 standards in 1981. Extensive extramural resources will be used to gather, evaluate, and analyze scientific data. However, the Agency may not be able to complete the planned number of standards due to the uncertainties caused by litigation attacking the constitutionality of basic FIFRA data use and disclosure provisions. In the event that litigation prevents or significantly delays completion of the standards, EPA will nonetheless continue the process of systematically reviewing the data base upon which registration of current pesticides is based. If the court rulings are not favorable to EPA, the Agency will return to the Authorization and Appropriations Committees for guidance.

The registration standard setting program will incorporate the RPAR investigative process in 1981 unless exogenous factors, such as litigation, inhibit the integration. The two systems are similar in their need to review all available data, and similar in outputs; therefore, it is reasonable to combine the two in order to maximize effectiveness and efficiency. The absorption is primarily a matter of integrating current RPAR procedures into the parallel registration standards development process and defining the exact RPAR-related outputs which the Agency will develop as part of the standards process.

1979 Accomplishments

A total of \$13,486,600 was spent for this program, including EIS preparation; \$8,218,300 was spent for contracts for information services, site/pest information, use analyses, scientific exposure/hazard assessments and risk/benefit information.

In 1979, the Agency reached substantive decisions on 15 chemicals including chlorobenzilate, BAAM, Endrin, and Benomyl, although the administrative and appellate proceedings could run on for some years. A special effort was initiated to review the RPAR process and develop new procedures and management structures to improve its efficiency and effectiveness. Major contracts for scarce risk and benefit analytical expertise were put in place in 1979. The contractors, both private and public organizations, supplemented the Agency's limited in-house specialists, e.g. toxicologists, entomologists, etc. Support for three hearings which resulted from RPAR decisions was provided.

Thirty-three (33) lab audits were performed and 190 audits were conducted on registrant validations of possibly faulty lab data. The lab audit process identified several new suspect chemicals and four labs which had significant problems. The results of the lab audit program were fed back into the RPAR and registration processes with a view toward identifying data gaps and the need for revised decisions.

After emergency suspension of Silvex in 1979, agreements were reached with major registrants of Silvex in which they agreed to request voluntary cancellation of their products and EPA agreed to arrange for disposal. The Agency initiated actions to investigate and determine the legal requirements for and quantities, location, and nature of the products to be disposed. The Agency also suspended major uses of the pesticide 2,4,5-T in 1979 and will continue to review this chemical through the RPAR process in 1980.

1980 Program

In 1980, the Agency allocated a total of \$13,594,300 to this program, including EIS preparation, of which \$4,633,400 is for Salaries and Expenses and \$8,960,900 is for extramural purposes under the Abatement, Control and Compliance appropriation. The extramural resources are for information services, site/pest information, use analyses, scientific exposure/hazard assessments and risk/benefit information.

Substantive decisions are projected on up to 15 chemicals and 10-15 chemicals are expected to begin review under the RPAR process. In late 1980, the emphasis will gradually shift towards the later phases of RPAR action as the process is merged with the registration standards system. Support will be provided for 2 to 4 hearings resulting from RPAR decisions. Major contractual efforts will continue, and new procedures and management structures will be developed as the result of reviews of the RPAR process initiated in 1979. During 1980, a shift will occur toward the development of ecological effects laboratory audit procedures and 25-35 laboratory audits are projected. Agency activities initiated in 1979 concerning Silvex disposal will continue.

1980 Explanation of Changes from Budget Estimate

The net increase of \$1,486,300 results from several actions. An increase of \$172,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$3,600 to this activity.

A reprogramming within the Office of Pesticide Programs was made from pesticide registration standards (\$17,700); pesticide registrations (\$1,008,500); pesticide tolerances (\$81,000); and pesticide use management (\$203,200), for improved internal analytical methodology which identifies base program contract support.

1981 Plan

The Agency requests a total of \$19,743,700 for this program, including EIS preparation, of which \$4,477,800 is for the Salaries and Expenses appropriation and \$15,265,900 for the Abatement, Control and Compliance appropriation for contracts for information services, use analyses, scientific exposure/hazard assessment and risk/benefit and site/pest information. Increased extramural resources will be devoted to small mission contracts to provide additional exposure analysis, benefit analysis, and other analysis associated with risk/benefit assessments of suspect chemicals or groups of suspect chemicals.

At this level of resources, substantive decisions are expected on approximately 15 chemicals and 5-10 chemicals may be identified for review under the RPAR process as spin-offs from the registration standard reviews. In 1981, the RPAR investigations will be integrated with the registration standard development system unless exogenous factors, such as litigation concerning the standards system, hinders Agency plans. Chemicals will usually be initiated into RPAR review only when the preliminary registration standards review reveals evidence of possible unreasonable adverse effects. The process will continue to rely heavily on contractors in 1981 to supplement Agency resources. Technical support is expected to be provided to 5-9 hearings resulting from RPAR decisions. In 1981, the laboratory audit program will shift emphasis from health effects to include studies on ecological effects and chemical fate. In 1981, approximately 25-35 laboratory audits will be performed; other audit activities will include evaluating reports of registrants (whose pesticide products are supported by studies done by laboratories whose practices are suspect) and reassessing past regulatory decisions, such as tolerances, which were based on a pivotal study found to be invalid through the audit program.

In 1981, \$4,000,000 is requested which will allow continuation of Silvex disposal operations begun in earlier years as these products continue to be collected from distributors and retailers by registrants. The specific disposal activities will include contracting for performance testing of disposal techniques in order to obtain disposal permits and clearances; contracting for development of Environmental Impact Statements to cover shipping and disposal operations; contracting with disposal facility operators to dispose of Silvex pesticides; contracting for cleansing and disposing of Silvex pesticide containers; securing necessary federal, state, and local permits; and coordinating and supervising shipment and actual disposal operations. The Agency may also have to accept 2,4,5-T products as well as the rest of Silvex if cancellation proceedings are completed and the final decision is to cancel some or all of the originally suspended uses.

PESTICIDES

Federal and State Program Support

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Pesticide Use Management:					
Salaries and Expenses..	\$1,802	\$1,728	\$1,652	\$420	-\$1,232
Abatement, Control and Compliance.....	3,514	1,978	3,780	...	-3,780
Total.....	5,316	3,706	5,432	420	-5,012
<u>Permanent Positions.....</u>	48	39	64	17	-47
<u>Full-time Equivalency....</u>	58	52	71	20	-51

Budget Request

The Agency requests a total of \$420,000 for 1981, a decrease of \$5,012,200 from 1980. The full request is for Salaries and Expenses and no funds for Abatement, Control, and Compliance. This is a decrease of \$1,231,800 and \$3,780,400, respectively.

Program Description

EPA is committed to ensuring that State and local governments assume a large responsibility for pesticide control programs. The Agency has been working with States in the implementation of cooperative Federal/State programs, in particular those involving the certification and training of applicators to apply restricted use pesticides. EPA believes that this will not only result in better control of pesticides and fewer accidents, but will also be more cost effective and responsive to local needs. The States are now extensively implementing these programs. EPA is also working with other Federal agencies and Indian tribes that apply significant amounts of pesticides in the development of their programs for training and certification. In order to insure necessary continuity, EPA will continue to assist the States, Federal agencies and Indian tribes in upgrading existing programs and will support Federal certification programs in Colorado and Nebraska where the States have not assumed responsibility. In 1981, these responsibilities will be undertaken by the enforcement program.

The Agency also provides information to the public and industry on activities associated with pesticide registration and conducts activities directed at educating the public on safe use practices. In accord with Section 4(c) of FIFRA, instructional materials on pest management practices, especially integrated pest management (IPM) techniques, are being distributed to the public.

Federal and State Program Support

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Pesticide Use Management:			
Salaries and Expenses.....	\$420	\$417	-\$3
Abatement, Control and Compliance.....	...	...	...
Total.....	420	417	- 3

1979 Accomplishments

In 1979, \$5,315,900 was spent for pesticide use management activities of which \$3,514,100 was for Abatement, Control and Compliance. Of this amount \$930,000 was transferred to the Department of Agriculture Extension Service for the applicator training program. EPA has approved 47 State Certification plans which have been fully implemented. Federal certification plans have been implemented in Colorado and Nebraska and one Federal certification plan (DOD), was approved. Fifty-four (54) State training plans have been funded through USDA and are now operating. Indian certification policy has been developed and approved. A grant to the Association of American Pesticide Control Officials (AAPCO) to maintain the State FIFRA Issues Research and Evaluation Group (SFIREG) has enabled the Agency to evaluate alternatives to Federal funding assistance to the States' certification and training programs. Under a contract with the General Services Administration, all EPA pesticide mailing lists were consolidated and computerized. This has resulted in the development of 28 mailing lists containing almost 7,000 addresses.

In addition to supporting the nationwide certification and training of applicators, regional pesticide branches provided assistance to pesticide manufacturers, formulators, and distributors on all aspects of registration requirements; assisted states in the development of, and evaluated, emergency use exemptions and local use registrations; supported public health and safety needs by providing assistance with pesticide spills and fires, farm worker safety programs, poison control centers, hospitals and worker clinics; conducted pesticide accident investigations, which resulted in improved data on pesticide accidents and misuse and which will in turn be used to support registration decisions and label changes; provided technical assistance to their counterparts in the water programs to improve pesticide use practices around water; represented and disseminated information regarding the full range of Agency policies and programs to all affected governmental and private entities; and responded to congressional, public, press, and FOI requests for information.

These activities have had several major positive impacts. The certification and training program, by reaching over 1.5 million applicators, has lessened the incidence of accidental pesticide misuse. The presence of the pesticide classification/applicator certification program as a viable, relied-upon alternative to pesticide cancellation has protected agricultural production costs from further upward pressure. Finally, the information outreach program has broadened State and public understanding of pesticide issues, and has thereby facilitated implementation of the FIFRA.

1980 Program

In 1980, the Agency has allocated a total of \$5,432,200 to this program, of which \$1,651,800 is for Salaries and Expenses and \$3,780,400 is for extramural purposes under the Abatement, Control and Compliance appropriation. Federal funding will be provided to the States for support of certification and training programs. The Federal share for this support may be up to 50 percent of program costs. A contract has been let for the evaluation of training in six States and will provide the basis for upgrading all programs.

Regional program activities have a high degree of continuity. No new initiatives are anticipated for 1980. The program will continue activities started in prior years.

The net increase of \$1,726,200 results from several actions. An increase of \$61,000 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$8,700 and \$10,000 respectively. The Congress also provided an increase of \$1,750,000 for pesticides applicator training. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$85,800 to this activity.

Regional reprogrammings in order to support projections of costs based on 1979 expenditures resulted in transfers from pesticides enforcement (\$25,600); from radiation program implementation (\$6,700); from drinking water underground injection control program (\$22,400); to ambient air quality monitoring (\$7,300); from pesticides special registrations (\$19,800); to water quality municipal waste treatment facility construction (\$88,600); from noise program implementation (\$6,000); from toxics management (\$21,700); to pesticides RPAR reviews (\$203,200); and from water quality NEPA compliance/municipal waste treatment facility construction (\$45,000).

1981 Plan

The Agency requests a total of \$420,000 for the Salaries and Expenses appropriation.

This request reflects a major reprogramming of pesticide use management activities in which certification and training resources will be transferred to the enforcement program. This transfer will include \$3,000,000 requested to operate Federal certification and training programs in Colorado and Nebraska, to provide grants in support of State certification programs, and to fund applicator training conducted by the Department of Agriculture Extension Service. This transfer is intended to strengthen the environmental benefits of the program, provide a programmatic linkage between the certification and training program and the State enforcement programs, and reemphasize the priority of implementing certification and training programs in Colorado and Nebraska along with increased enforcement in these same States. Resources remaining in pesticide use management will: maintain liaison with the Office of Enforcement on upgrading training materials to the 12th grade level; ensure dissemination of current knowledge on restricted use classification; provide assistance to the States on pesticide spills, kills, and fires; process pesticide inquiries; and conduct limited evaluation studies.

PESTICIDES

Pesticides Enforcement

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Pesticides Enforcement:			
Salaries and Expenses.....	\$ 3,753	\$ 3,730	-\$23
Abatement, Control and Compliance.....	112	112	...
Pesticides Enforcement Grant Support:			
Salaries and Expenses.....	437	434	-3
Pesticides Enforcement Grants:			
Abatement, Control, and Compliance.....	7,920	7,920	...
Pesticides Certification and Training Grants:			
Abatement, Control and Compliance.....	<u>3,000</u>	<u>3,000</u>	<u>...</u>
Total:			
Salaries and Expenses.....	4,190	4,164	-26
Abatement, Control, and Compliance.....	<u>11,032</u>	<u>11,032</u>	<u>...</u>
Grant Total.....	15,222	15,196	-26

PESTICIDES

Pesticides Enforcement

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
			(dollars in thousands)		
Pesticides Enforcement:					
Salaries and Expenses.....	\$3,598	\$3,406	\$2,765	\$3,753	+\$ 988
Abatement, Control and Compliance.....	57	8,750	165	112	- 53
Pesticides Enforcement Grants Support:					
Salaries and Expenses.....	474	...	455	437	- 18
Pesticides Enforcement Grants:					
Abatement, Control, and Compliance.....	8,797	...	8,750	7,920	- 830
Pesticides Certification and Training Grants:					
Abatement, Control and Compliance.....	...	...	...	3,000	+3,000
Total:					
Salaries and Expenses....	4,072	3,406	3,220	4,190	+ 970
Abatement Control, and Compliance.....	<u>8,854</u>	<u>8,750</u>	<u>8,915</u>	<u>11,032</u>	<u>+2,117</u>
Grand Total.....	12,926	12,156	12,135	15,222	+3,087
<u>Permanent Positions</u>					
Pesticides Enforcement.....	110	116	97	121	+ 24
Pesticides Enforcement Grants Support.....	<u>6</u>	<u>...</u>	<u>14</u>	<u>16</u>	<u>+ 2</u>
Grand Total.....	116	116	111	137	+ 26
<u>Full-time Equivalency</u>					
Pesticides Enforcement	127	124	105	137	+ 32
Pesticides Enforcement Grants Support.....	<u>12</u>	<u>...</u>	<u>17</u>	<u>17</u>	<u>...</u>
Grand Total.....	139	124	122	154	+ 32

A total of \$10,220,000 and 107 permanent workyears is requested for the 1981 pesticide enforcement program. Included in this total is \$4,189,200 for the Salaries and Expense appropriation and \$11,031,600 for the Abatement, Control and Compliance appropriation with increases of \$969,000 and \$2,116,300, respectively. The total request reflects an increase of 26 permanent workyears and \$3,085,300, resulting from the transfer of the applicator certification and training program to the Office of Enforcement from the Office of Pesticides and Toxic Substances, involving an increase of \$3,987,000 and 26 permanent workyears, offset in part by a decrease of \$830,000 for pesticides cooperative enforcement grants.

Program Description

The EPA pesticides enforcement program, covering approximately 8,000 firms involved in the production of pesticides sold and distributed in the United States and millions of persons using those pesticides, is administered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act, as amended. The first priority of the program is initiating enforcement actions in emergency situations involving substantial threats to public health and safety. The program also emphasizes compliance on the part of the pesticide industry with registration, classification, and labeling requirements, and compliance by users and applicators of pesticides in observing proper label directions for use. As a result of Federal/State enforcement agreements, the program is conducted largely by cooperating State agencies. Included in the overall program are: observation of pesticide applications; sampling and label checks of pesticides at production sites and in the marketplace; registration of pesticide-producing establishments; and initiation of enforcement actions including civil penalties, criminal prosecutions, seizures, stop sales, and injunctive actions. In addition, the pesticides enforcement program in FY 1981 will include the administration and oversight of the applicator certification and training program. This responsibility includes the funding of State certification and training programs, EPA oversight of such programs, administration and enforcement of Federal certification and programs in Colorado and Nebraska, and administration of certification and training programs among Indian tribes.

EPA is committed to ensuring that State governments participate to the maximum extent in the national pesticides enforcement program. The Agency has worked with the States in the implementation of cooperative Federal/State programs, particularly in establishing cooperative enforcement grants and applicator certification and training programs. With State participation, the breadth and effectiveness of the enforcement program have been greatly enhanced, the control over the use of pesticides has improved, and increased responsiveness to local needs has been realized.

1979 Accomplishments

Total obligations for this program in 1979 were \$12,925,800, of which \$4,072,100 was for salaries and expenses and \$8,853,700 was for extramural purposes. The extramural funds included \$105,200 for contracts (including an evaluation of the effectiveness of the State grant program, training for laboratory inspection program, and ADP support), and \$8,797,000 for support of cooperative enforcement grants with 43 States and Territories.

During 1979, the program accomplished the following: 977 inspections of pesticide-producing establishments; 396 use and reentry inspections; 215 inspections at ports of entry; and 1320 marketplace inspections. As a result of these efforts, the Agency issued: 228 civil actions for product/producer/use violations; 588 Section 9 notices of warning for product/producer violations; and 184 stop sale, use, or removal orders. The Agency also participated in four investigations of incidents of alleged falsification of data submitted in support of product registration, and published Notices of Judgment, detailing the legal disposition of those civil and criminal actions instituted under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended.

1980 Program

The 1980 planned resource level for this program is 111 permanent workyears and \$12,135,500, of which \$3,220,200 is for the Salaries and Expenses appropriation and \$8,915,300 is for the Abatement, Control and Compliance appropriation. Contract funds in the amount of \$170,800 will be used for specialized training for pesticides enforcement personnel in the laboratory inspection program and for ADP support. A total of \$8,750,000 will be used to fund cooperative enforcement grants.

The 1980 pesticides enforcement program will have as its first priority, at both headquarters and in the regions, the initiation of enforcement actions in emergencies involving substantial threats to public health and safety. Other programwide responsibilities include emphasis upon enforcement of pesticide use and application, improvement of enforcement methods through greater cooperation with States, and development of cases of national or regional significance. Other important activities, including establishment of cooperative enforcement grants with States, will be continued. The grants will provide for participation by approximately 56 States and Territories in all areas of pesticides enforcement. As in previous years, the pesticides enforcement program will be directed toward the general objectives of ensuring user compliance with label directions for use, and ensuring adherence to the product requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

Federal pesticides enforcement activities will focus on those States not participating in the grant program and those States having programs which do not adequately address EPA's enforcement concerns within resource limits. EPA user compliance activities will include 396 use, re-entry, and experimental use inspections. Product and producer compliance activities conducted by EPA will include 928 establishment inspections, 1254 marketplace inspections, and 200 inspections at ports of entry. Additional use, establishment, and marketplace inspections will be conducted by State agencies under the terms of cooperative enforcement grants.

1980 Explanation of Change from Budget Estimate

The net decrease of \$21,000 results from several actions. An increase of \$122,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$75,900 and \$2,400, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$72,000 to this activity.

on other abatement and control and enforcement resources; in this case some pesticides and water enforcement capability is being diverted to initiate enforcement actions where hazardous waste disposal presents and imminent danger to public health and welfare.

Reprogramming in order to support costs on the basis of 1979 actual expenditures resulted in regional transfers to air stationary source enforcement (\$27,300); to pesticides use management (\$25,600); to air stationary source enforcement (\$16,500); from water quality enforcement (\$5,100); and from water quality permit issuance (\$7,100).

A reprogramming of \$50,000 was made to the media for litigation management support and establishment of a special investigations unit in the immediate office of the Assistant Administrator for enforcement.

1981 Plan

In 1981, plans are to include the participation of all or nearly all States and Territories in the enforcement grant program. State activities will include use, reentry, and experimental use inspections, establishment inspections and marketplace inspections. As a consequence of this enhanced State role in the overall program, the Federal role will continue to be that of program management, oversight, and training. In States without grants, and in States having programs which do not adequately address certain enforcement concerns, Federal enforcement activities will continue within resource limits. In addition, the enforcement program will include the funding of State applicator certification and training programs, oversight of such State programs, administration and enforcement of Federal applicator certification and training programs in Colorado and Nebraska, and administration of certification and training programs among Indian Tribes.

The 1981 request for this activity is \$15,220,800 and 137 positions; these figures represent an increase of \$3,085,300 and 26 positions: Included in this total is \$4,189,200 for salaries and expenses and \$11,031,600 for abatement, control, and compliance. Of the total budget, \$7,920,000 is available for the support of 56 cooperative enforcement grants with States and Territories. An additional \$3,000,000 in grant funds will be available to support the administration, enforcement, and oversight of applicator certification and training programs. Contract funds will total \$106,600 and will be used for ADP support and specialized training for pesticides enforcement personnel in performing laboratory data inspections and subsequent enforcement case development.

In 1981, the pesticides enforcement program has as its first priority the initiation of enforcement actions in emergencies involving substantial threats to public health and safety. Emphasis will also be placed upon enforcement of pesticide use and application, upon improvement of enforcement methods through greater cooperation with States, and upon the development of cases of national or regional significance.

Radiation

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$8,552	\$8,504	-\$48
Research and Development.....	1,433	1,433	...
Abatement, Control and Compliance.....	7,797	7,797	...
Total.....	17,782	17,734	-48
<u>PROGRAM HIGHLIGHTS</u>			
Health and Ecological Effects:			
Salaries and Expenses.....	1,557	1,550	-7
Research and Development.....	1,433	1,433	...
Monitoring and Technical Support:			
Salaries and Expenses.....	191	190	-1
Total:			
Salaries and Expenses.....	1,748	1,740	-8
Research and Development.....	1,433	1,433	...
Total, Research and Development Program.....	3,181	3,173	-8
Radiation Criteria			
Standard and Guidelines:			
Salaries and Expenses.....	2,342	2,328	-14
Abatement, Control and Compliance.....	4,735	4,735	...
Environmental Impact Assessment:			
Salaries and Expenses.....	3,861	3,839	-22
Abatement, Control and Compliance.....	3,062	3,062	...
Radiation Program Implementation:			
Salaries and Expenses.....	601	597	-4
Abatement, Control and Compliance.....	...	...	...
Total:			
Salaries and Expenses.....	6,804	6,764	-40
Abatement, Control and Compliance.....	7,797	7,797	...

RADIATION

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980 (dollars in thousands)	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
<u>Appropriation</u>						
Salaries and Expenses...	\$6,923	\$7,919	\$8,936	\$8,552	-\$384	
Research and Development	738	1,572	840	1,433	+593	
Abatement, Control, and Compliance.....	1,796	7,710	7,486	7,797	+311	
Total.....	9,457	17,201	17,262	17,782	+520	
Permanent Positions.....	198	208	215	215	...	
Full-time Equivalency...	218	253	252	248	-4	
Outlays.....	8,589	13,000	14,400	15,100	+700	
Authorization Levels....	2,500	*	*	*		

*Authorization for the Environmental Research, Development, and Demonstration Authorization Act is pending. Remaining funds are authorized by virtue of the Appropriation Act.

PROGRAM HIGHLIGHTS

Health and Ecological

Effects:

Salaries and Expenses	\$1,107	\$1,358	\$2,110	\$1,557	-\$553	R-9
Research and Development.....	738	1,572	840	1,433	+593	

Monitoring and Technical Support:

Salaries and Expenses	182	191	+9	R-13
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Total:

Salaries and Expenses	1,107	1,358	2,292	1,748	-554	
Research and Development.....	738	1,572	840	1,433	+593	

Total, Research and

Development Program....	1,845	2,930	3,132	3,181	+49	
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Radiation Criteria

Standard and Guidelines:

Salaries and Expenses	1,762	2,350	2,186	2,342	+156	R-15
Abatement, Control and Compliance.....	1,078	4,600	4,576	4,735	+159	

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
(dollars in thousands)						
<u>PROGRAM HIGHLIGHTS</u>						
Environmental Impact Assessment:						R-17
Salaries and Expenses.	3,159	3,312	3,848	3,861	+13	
Abatement, Control and Compliance.....	697	3,000	2,910	3,062	+152	
Radiation Program Implementation:						
Salaries and Expenses.	895	899	610	601	-9	R-21
Abatement, Control and Compliance.....	21	110	...	...	...
Total:						
Salaries and Expenses.	5,816	6,561	6,644	6,804	+160	
Abatement, Control and Compliance.....	1,796	7,710	7,486	7,797	+311	
Total, Abatement and Control Program.....	7,612	14,271	14,130	14,601	+471	
<u>Permanent Positions</u>						
Health and Ecological Effects.....	24	29	28	28	...	R-15
Monitoring and Technical Support.....	...	...	5	5	...	R-13
Total, Research and a/ Development Program ..	24	29	33	33	...	
Radiation Criteria, Standards, and Guidelines	49	66	60	60	...	R-15
Environmental Impact Assessment.....	100	96	106	106	...	R-17
Radiation Program Implementation.....	25	17	16	16	...	R-21
Total, Abatement and Control Program.....	174	179	182	182	...	

a/ These figures do not include reimbursable positions associated with the off-site monitoring program. The ORD reimbursable program is the results of a long standing agreement between EPA and the Department of Energy (DOE) to provide monitoring services to the DOE in response to specific DOE requirements and programs at and around the Nevada Test Site.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
(dollars in thousands)						
<u>Full-time Equivalency</u>						
Health and Ecological Effects.....	31	36	34	34	...	R-9
Monitoring and Technical Support.....	...	...	5	5	...	R-13
Total, Research and a/ Development Program ..	31	36	39	39	...	
Radiation Criteria, Standards, and Guidelines	55	77	75	73	-2	R-15
Environmental Impact Assessments.....	103	114	120	118	-2	R-17
Radiation Program Implementation.....	29	26	18	18	...	R-21
Total, Abatement and Control Program.....	187	217	213	209	-4	

a/ These figures do not include reimbursable positions associated with the off-site monitoring program. The ORD reimbursable program is the result of a long standing agreement between EPA and the Department of Energy (DOE) to provide monitoring services to the DOE in response to specific DOE requirements and programs at and around the Nevada Test Site.

OVERVIEW AND STRATEGY

Exposure to ionizing radiation results from naturally occurring sources, medical and industrial applications of x-rays and radioactive materials, and from various aspects of nuclear power development. EPA accepts as a prudent public 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 attributable to exposure to radiation should occur to individuals or to the environment without offsetting benefits.

Exposure to man-made non-ionizing radiation (NIR) at radio and microwave frequencies, which was negligible prior to World War II, has increased with both the number and power of NIR sources. This trend is expected to continue, and EPA is evaluating and acting on the associated risks.

EPA's mandate to protect the public health and environment from adverse effects of radiation exposure derives from (1) the Federal guidance authority transferred under the Atomic Energy Act by Reorganization Plan #3 of 1970, (2) the Clean Air Act Amendments of 1977 which provide authority to regulate radioactive air pollutants through the standard setting authorities of the Act, (3) the Resource Conservation and Recovery Act (RCRA) and the Uranium Mill Tailings Radiation Control Act (UMTRCA) which charges EPA with providing standards for protection from waste materials with radioactive content, and (4) other authorities contained in the Federal Water Pollution Control Act, the Marine Protection Research and Sanctuaries Act, the Safe Drinking Water Act, the Public Health Service Act, and the National Environmental Policy Act.

These legislative authorities generally prescribe an environmental assessment, technology assessment, and standard setting role for EPA. In some cases enforcement responsibilities are given to other agencies, notably the Nuclear Regulatory Commission. In these instances EPA performs some oversight functions to insure that established standards and guidance are followed.

Within the framework of the applicable legislation, the Radiation program strategy is to:

- Maintain a capability for environmental and technology assessment to quantify the nature of existing and emerging radiation problems and the potential impact of advanced technology still in the planning stages;
- Concentrate the application of assessment and regulatory capabilities in those areas which promise the greatest reduction in potential adverse health effects and environmental impacts from radiation;
- Respond to issues of serious public concern, utilizing EPA's expertise to evaluate these concerns and, if necessary, point out the need to control those situations where the corrective actions required are the responsibility of other Agencies;
- Emphasize EPA's regulatory mission to establish standards for air emissions of radionuclides, for radiation in specific environmental pathways; and where federal guidelines are used, place emphasis on meaningful interagency participation in both the development and the application of the guidelines;
- Assist in the development and testing of State, local, and Federal plans to respond to emergency situations involving nuclear events or large, unexpected releases of radioactivity;
- Employ the extensive research capabilities of the other Federal agencies whenever possible, and augment or complement the existing research when a special need exists or where there is a lack of other Federal effort.

Within this general strategy, activities mandated by the Clean Air Act of 1977 and those associated with radioactive waste management are accorded the highest priority in 1980 and 1981. The emphasis on the Clean Air Act activities is consistent with general public concern over radiation and the existence of a significant number of poorly defined and uncontrolled sources which may be emitting radioactive air pollutants. The role in the control of radioactive waste disposal which will result in environmentally sound solutions to radioactive waste disposal problems is highlighted by the report of the Interagency Review Group on Nuclear Waste Management (IRG). This report set forth schedules to be met by all Federal agencies to meet Federal Government commitments to energy development alternatives.

As a result of investigations of the Interagency Task Force on the Health Effects of Ionizing Radiation, in October 1979, the President approved the establishment of a Radiation Policy Council under the chairmanship of the Administrator of EPA. The Council will provide advice to EPA on concerns relating to regulation and interagency coordination beginning in 1980.

EPA's research and development program has stressed the identification and evaluation of health effects of chronic low level human exposure to non-ionizing radiation. Such research fills a gap in Federal research on radiation and is a prelude to the establishment of any required Federal guidance for acceptable environmental levels of such radiation.

Following the Three Mile Island incident, EPA reexamined its policies and procedures with respect to accidental releases of radionuclides from nuclear accidents. EPA's role in the coordination of monitoring has been clarified and strengthened. The Agency's ability to physically respond to radiation emergencies will be further strengthened in 1980 and 1981. In 1980, the regional radiation program staffs will stress the development of State emergency response plans. As soon as possible in 1980 and 1981 emphasis will be placed on the testing of such plans.

Purpose, Research and Development Program

The establishment of protective guidelines for permissible levels of radiation in the environment is an EPA responsibility. Reorganization Plan No. 3 of 1970 transferred all functions of the Federal Radiation Council to EPA. The reorganization also transferred to the Administrator the authority, under provisions of the Public Health Service Act, as amended in 1980, to conduct research as necessary to provide scientific data needed for the formulation of standards. EPA is conducting research on the potential health effects associated with those frequencies of non-ionizing radiation most commonly found in the general environment.

Purpose, Abatement and Control Program

The radiation program's abatement and control activities concentrate primarily on the establishment of specific criteria and standards for environmental 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 may be sources of environmental radiation; and provides technical assistance to other governmental agencies.

The principal objective of the radiation abatement and control program is to eliminate unnecessary potential health effects by minimizing exposure to radiation sources. This goal will be attained through environmental monitoring, risk assessments and, when necessary, by establishing standards, criteria and guidance to minimize risk in a cost-effective manner.

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

Radiation Criteria, Standards, and Guidelines

This subactivity includes activities and outputs related to the development of environmental standards and Federal radiation guidelines for protection of the public health and environment from radiation exposures from nuclear energy applications, naturally-occurring radioactive materials, medical and occupational radiation, and non-ionizing radiation. Development of these standards and guidelines involves evaluation of health effects data, radiation measurements, technological and non-technological control measures, and the economics of control measures.

This subactivity includes activities and outputs related to (1) developing the support information and documentation necessary for the preparation of standards and guidelines; (2) ensuring that environmental radiation considerations are properly treated in major Federal decisions through the NEPA process, (3) responding to unplanned contaminating events, and (4) assisting other Federal agencies and States on specific environmental problems and radiation control actions.

Specific activities include reviewing other agencies' environmental impact statements, monitoring for radiation in the environment including laboratory analysis of the resulting samples, evaluating new and emerging technologies, developing methods for determining environmental pathways and identifying and locating specific sources emitting radioactive materials into air or water.

Radiation Program Implementation

This subactivity includes activities and outputs related to providing regional support to States in the implementation of their radiation control programs. It also includes the review of environmental impact statements for existing technologies and assistance to States and other Federal agencies on specific environmental problems and radiation control actions.

SUMMARY OF INCREASES AND DECREASES

	<u>(in thousands of dollars)</u>
1980 Radiation Program.....	\$17,262
Salaries and Expenses.....	-384
The net decrease results primarily from a shift to extramural funds in the health effects activity, offset by an increase for equipment purchases.	
Research and Development.....	+593
The increase results from a shift of funds from Salaries and Expenses for the health effects activity.	
Abatement, Control and Compliance.....	+311
The net increase will provide contract support for field measurements needed in support of the regulatory program.	
1981 Radiation Program.....	<hr/> 17,782

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

A total of \$17,782,200 is requested in 1981. This request, by appropriation account, is as follows:

Salaries and Expenses.....	\$8,551,500
Research and Development.....	7,797,400
Abatement, Control and Compliance.....	1,433,300

This represents an increase of \$520,400 over the 1980 level. The increase for the environmental impact assessment activity will provide contract support for field measurements needed in support of the regulatory program. The radiation criteria standards, and guidelines activity includes an increase for equipment purchases and additional contract support to standards setting.

2. Changes from Original 1980 Budget Estimate

Changes from the budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$17,201
Congressional decreases:	
Travel.....	-9
ADP, Supplies and Expenses.....	-1
Reprogramming for authorized workyears.....	-319
Proposed pay raise supplemental.....	+296
Miscellaneous reprogrammings.....	+94
Current 1980 estimate.....	17,262

Congressional changes to the radiation media include a reduction of \$9,000 to travel costs, \$100 to ADP costs, and \$400 to supplies and expenses.

An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$319,000 to this media. The proposed supplemental for partial funding of the October 1979 pay raise will increase the radiation media by \$296,000.

Miscellaneous reprogrammings were made from the air media, \$16,000; from water quality, \$77,600; from noise, \$6,000; to the pesticides media, \$6,700; and \$100 to the management and support media.

	Current Estimate 1980 (in thousands of dollars)	Estimate 1981
Prior year obligations.....	\$9,456	\$17,780
Congressional changes.....	-10	...
Proposed pay raise supplemental.....	+296	...
Reprogrammings.....	-225	...
Change in amount of carryover funds available.....	+358	-518
Program increase.....	+6,000	+300
Change in rate of obligation.....	+1,905	...
Total estimated obligations.....	17,780	17,562
(From new obligation authority).....	(16,693)	(16,993)
(From prior year funds).....	(1,087)	(569)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The items discussed in the previous section -- congressional changes, pay raise supplemental, and reprogrammings -- result in a net increase of \$61,000 to obligations.

The amount of carryover funds to be obligated in 1980 is \$1,087,000, an increase of \$358,000 over the 1979 level. In 1981, it is estimated that \$569,000 of carryover funds will be obligated, a decrease of \$518,000 from the 1980 level.

The increase in budget authority in 1980 was previously estimated to increase obligations by \$6 million; in 1981, the program increase is expected to increase obligations by \$300,000.

RADIATION

Health and Ecological Effects

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	<u>(dollars in thousands)</u>		
<u>Appropriation</u>			
Health Effects:			
Salaries and Expenses.....	\$1,557	\$1,550	-\$7
Research and Development.....	<u>1,433</u>	<u>1,433</u>	<u>...</u>
Grand Total.....	2,990	2,983	-7



Health and Ecological Effects

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
			(dollars in thousands)		
Health Effects:					
Salaries and Expenses....	\$1,107	\$1,358	\$2,110	\$1,557	-\$553
Research and Development.....	<u>738</u>	<u>1,572</u>	<u>840</u>	<u>1,433</u>	<u>+ 593</u>
Grand Total.....	1,845	2,930	2,950	2,990	+ 40
<u>Permanent Positions</u>					
Health Effects.....	24	29	28	28	...
<u>Full-time Equivalency</u>					
Health Effects.....	31	36	34	34	...

Budget Request

The Agency requests \$2,990,200 and 28 permanent for the radiation health effects program, which \$1,556,900 is for the Salaries and Expenses appropriation and \$1,433,300 is for the Research and Development appropriation; a decrease of \$553,100 and an increase of \$593,300, respectively. There is a net increase of \$40,200; program activities will not change from the current level.

Program Description

In recent years, there has been increasing public interest in the potential health effects that may be associated with non-ionizing radiation (NIR). To address such concerns, EPA is conducting a health effects research program which now accounts for approximately 25 percent of Federal research on non-ionizing radiation and is the largest intramural effort in this field in the United States. Present research focuses on radiofrequency and microwave radiation in the range of 300 to 300,000 megahertz. Such frequencies are most prevalent in the environment and are emitted from a variety of sources such as radar systems, microwave ovens, radios, televisions, and other communication devices.

The health effects program is designed to provide EPA and other concerned agencies with an understanding of the biological consequences of exposure to non-ionizing radiation. This is accomplished with several research approaches. Biological effects studies in animals are increasingly focused on chronic exposures to low-level radiation, that is, conditions analogous to the exposure circumstances for humans in the general environment. The primary research objectives are to determine if reproducible biological effects exist and then to establish dose-response models. Critical points to be evaluated include behavioral, immunologic, hematologic, physiologic, reproductive, genetic, and teratologic factors. As a necessary tool for effects research, efforts are also directed towards improving dosimetric methods and exposure systems.

Research in this program is also directed at improving our understanding of how non-ionizing radiation reacts biophysically on living systems. Such studies aim to identify which frequencies present the greatest potential for adverse effects by examining the relationship between frequency and energy deposition in tissue. Other studies focus on the

A minor component of the non-ionizing health effects program utilizes epidemiological research approaches. While the bulk of the effort uses animal models, epidemiology studies are being phased into the program to complement the laboratory animal investigations.

Data developed in this program will be utilized in the development of environmental radiofrequency guidance. EPA's Office of Radiation Programs has announced its intention to develop interim guidance in 1981 and efforts undertaken through the research program will be critical to this action. This research program also provides technical assistance to Regional radiation offices regarding sources of public health concern.

1979 Accomplishments

In 1979, the radiation research and development program resources were \$1,844,500; of this amount, \$1,106,800 was spent on salaries and expenses and \$737,700 on extramural research and development activities. During 1979 the program:

- Completed a major multidisciplinary evaluation of the effects of 100 megahertz (FM radio) on rats exposed throughout pregnancy and, for offspring, until 90 days postnatally. This is the first experimental work of 100 megahertz, a frequency which is an important contributor to total ambient levels of radiofrequency radiation and is close to frequencies at which maximum absorption of energy occurs in human tissue. The rate of energy absorption in the test animals was equivalent to that experienced by humans exposed to half of the occupational guideline level. No statistically significant differences between controls and exposed animals were found with regard to behavioral, immunological, hematological, teratological, and reproductive endpoints. Enzymatic changes in the brains of some animals were observed however, and are under further examination.
- Demonstrated a statistically significant rise in antibody levels following acute exposure (two hours per day for five days) of mice to a pulsed frequency (nine gigahertz-radar) at a power density of ten milliwatts per square centimeter. Subsequent challenge of the exposed animals to virulent pneumococcal bacteria did not, however, produce any differences in mortality or infection resistance between controls and experimental animals under this exposure regimen.
- Completed a pilot study intended to examine the feasibility of using persons employed at the Massachusetts Institute of Technology's Radiation Laboratory during World War II as a cohort in which to examine the long-term effects of radar exposure. A subset of the population was deemed suitable for epidemiological follow-up.
- Developed and tested a microwave spectrometer capable of sweeping frequencies ranging from 250 to 8000 megahertz (comprising high VHF, UHF, microwave oven and some radar frequencies) in order to determine the energy absorption spectrum of biological samples and systems.
- Constructed a circularly polarized waveguide (exposure) system for use in animal studies on health effects at 970 megahertz. The system is designed to allow continuous (24 hour) irradiation of a test animal. Development of such a capability is important for two reasons. First, this frequency was recently allocated by the Federal Communications Commission (FCC) for land mobile communications and, hence, is a potentially important source for human exposure. Second, 970 megahertz is close to the maximum energy absorption in rat tissue. The system, thus, has a high utility for experimentation with these species.

In 1980, the Agency has allocated \$2,950,000 to this program of which \$2,110,000 is for the Salaries and Expense appropriation and \$840,000 for extramural purposes under the Research and Development appropriation.

The activities underway in 1980 represent new directions and important expansions of previous types of investigative approaches. Frequencies typical of those contributing the most to ambient levels of radiofrequency radiation are the subject of experimental research. Development of a new exposure system will allow the first investigations on 970 megahertz to begin this year. Chronic, lifetime studies of animals exposed to power densities lower than 5 milliwatts per square centimeter are emphasized. Application of varied exposure and experimental regimens will allow development of dose-response and time-dependency data.

Investigations with laboratory animals are continuing to evaluate the effects of varied frequencies and power densities on important biological parameters relative to behavior, physiology, hematology, teratology, and reproduction. Increased antibody response after acute exposure to a radar frequency is being evaluated further under varied exposure times and conditions to determine if the response is time dependent, a variable critical to standard setting. Squirrel monkey infant mortality following in utero exposure to 2450 megahertz (microwave oven frequency) is under investigation. The behavioral response of primates to the stresses posed by non-ionizing radiation at various levels is being examined to supplement similar research on rodent species. An important area of inquiry centers on the evaluation of physiological and behavioral responses of animals to microwave--induced thermal stress. The objective is to determine if thermosensitive structures may be stimulated by absorbed microwave energy to trigger changes in effector responses that regulate body temperature.

The first epidemiological studies in this program are underway. Selected cancer incidence and mortality rates from the Portland, Oregon area are being enumerated and compared to available radio emission data as well as to other important etiological factors. Scientists involved in radar research and development during World War II will be traced to ascertain their overall and specific mortality and disease history. Prior to embarking on a more ambitious epidemiological program on non-ionizing radiation effects, a study is being undertaken to identify populations suitable for follow-up according to such evaluative criteria as sample size, population composition, follow-up feasibility, and the potential for accurate and precise exposure assessment.

Resources are being devoted to improving the Agency's capability for assessing radio-frequency exposure on the general population. Specifically, this program is providing pulsed mode measurement equipment for use in the Agency's environmental monitoring program. This capability will permit better, more complete estimates of ambient levels. In conjunction with the Office of Radiation Programs, regional radiation representatives will be provided, if necessary, with the appropriate monitoring equipment and training, for identifying sources and frequencies of potential public health impact and concern.

The identification of biologically important frequency ranges is continuing and represents a major, long-term commitment to clarifying the mechanisms of non-ionizing radiation acting on living systems. For example, a study is being conducted on the causes and significance of increased calcium release from brain tissues in relation to different power densities and frequencies. Calcium is important for the normal functioning central nervous system. Further, it is now known that non-ionizing radiation is not absorbed uniformly, but, can be distributed in patterns of concentrated energy termed "hot spots". The consequences of such "hot spots" to critical tissues is being examined in studies on energy production and metabolism in the brain, including interactions with neuronal membranes. Other research will concentrate on suggested radiation related alterations in the blood barrier where the potential exists for the entry of agents into delicate brain tissues. Frequency specificity and wave mode will be compared since pulsed mode radiation (e.g., radars) may be more effective in altering barrier permeability than continuous wave radiation.

results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million ADP costs and resulted in a decrease of \$1,600 and \$100, respectively. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$18,000 to the activity.

1981 Plan

The Agency requests a total of \$2,990,200 and 28 permanent workyears for this program, of which \$1,556,900 is for the Salaries and Expense appropriation and \$1,433,300 is for extramural purposes under the Research and Development appropriation.

Many activities started in 1980 will be continued in 1981. The current emphasis is on chronic effects of low-level radiation which requires long-term exposure conditions. In most cases, investigations on exposed animals will employ dose rates equivalent to those associated with human exposure to power densities equal to or less than 5 milliwatts per square centimeter. The effects of pulsed versus continuous wave (CW) radiation will continue to be an area of concentration, especially for immunological, behavioral, and neurophysiological research.

Immunological studies will evaluate the functional, structural, and biochemical integrity of components of the blood and of the immune system of animals exposed to various frequencies and power levels. Neurochemical and neuropathological responses will be investigated, including the continued assessment of potential blood brain barrier alterations. Behavioral studies emphasizing threshold sensitivity for heat stress, will be undertaken for primates exposed to a power density dose series. The study of the effects of intrauterine and postnatal exposures on infant mortality in squirrel monkeys will continue. The potential for dominant lethal/mutagenic effects in chronically exposed rats will be examined. Thermal physiology studies will continue to evaluate the physiological and neuroendocrine parameters which may be affected by microwave induced heat stress.

The epidemiological study of World War II radar researchers will continue. Increased emphasis will be placed on refining population exposure estimates through the development and improvement of methods to account for multiple confounding variables. Such methodology should improve from general population exposure surveys as well as improve exposure data for epidemiological studies.

Dosimetric research will continue to provide basic support for health effects research but will also work toward refining thermographic measurement techniques. Efforts will continue to validate experimentally both computerized predictive models of body heat flow and computer-generated analyses of data from infrared thermography. A larger, multi-animal exposure facility suitable for lifetime, long-term studies will be developed. Efforts will continue to define which specific frequencies of non-ionizing radiation are absorbed in biological systems. Resonant frequency/system interactions of biopolymers, subcellular organelles, and cellular systems will be sought. Isolated brain tissues and nerve cell membranes exposed in a dose-response series to both pulsed and CW radiation will be assessed in terms of effects on action potential, nerve conduction velocity, and impulse firing rates. The effects of non-ionizing radiation on biochemicals important to the metabolic processes of the brain will also continue to be studied.

RADIATION

Monitoring and Technical Support

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Quality Assurance			
Ionizing Radiation:			
Salaries and Expenses.....	\$191	\$190	-\$1

RADIATION

Monitoring and Technical Support

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
			(dollars in thousands)		
Quality Assurance					
Ionizing Radiation:					
Salaries and Expenses....	\$182	\$191	+\$9
<u>Permanent Positions</u>					
Quality Assurance					
Ionizing Radiation.....	5	5	...
<u>Full-time Equivalency</u>					
Ionizing Radiation.....	5	5	...

Budget Request

The Agency requests a total of \$191,100 and 5 permanent workyears for 1981 for the Salaries and Expenses appropriation. Program activities will continue at the 1980 level.

Program Description

This program was established in 1980 to document and improve the precision, accuracy and intercomparability of radiation measurements; to provide calibration facilities, expertise; equipment, guidelines, training, and performance evaluations needed by the program offices and states; and to supply quality control samples and reference materials containing radionuclides.

1979 Accomplishments

The program did not exist in 1979.

1980 Program

In 1980, the Agency has allocated a total of \$182,200 to this program, within the Salaries and Expenses appropriation. Major activities include:

- Execution of 20 laboratory intercomparison studies with State, Federal, university and private nuclear laboratories.
- Testing and evaluation of two methods for radioactive pollutants.
- Maintenance of a centralized source of expertise in the area of radiation quality assurance, radiochemistry, and instrumentation.

1980 Explanation of Change from Budget Estimate

The net increase of \$182,200 results from several actions. An increase of \$7,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$300. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$4,700

and \$50,000 was made from the most quality assurance work of the most quality assurance work reflect the support of a new program dealing with ionizing radiation quality assurance.

1981 Plan

The Agency requests a total of \$191,100 and 5 permanent workyears for 1981, of which the entire amount is for the Salaries and Expenses appropriation. During 1981 the program will:

- Conduct 20 routine laboratory intercomparison studies with State, Federal, university and private nuclear laboratories.
- Test and evaluate one measurement method for a radioactive pollutant.
- Provide a centralized source of expertise in the area of quality assurance for radiation, radio-chemistry and instrumentation.

RADIATION

Radiation Criteria, Standards, and Guidelines

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Environmental Standards and Guidelines:			
Salaries and Expenses.....	\$2,342	\$2,328	-\$14
Abatement, Control and Compliance.....	4,735	4,735	...
Total.....	7,077	7,063	-14

RADIATION

Radiation Criteria, Standards, and Guidelines

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
<u>Appropriation</u>					
Environmental Standards and Guidelines:					
Salaries and Expenses.....	\$1,762	\$2,350	\$2,186	\$2,342	+\$156
Abatement, Control and Compliance...	1,078	4,600	4,576	4,735	+159
Total.....	2,840	6,950	6,762	7,077	+315
<u>Permanent Positions</u>					
Environmental Standards and Guidelines.....	49	66	60	60	...
<u>Full-time Equivalency</u>					
Environmental Standards and Guidelines.....	55	77	75	73	-2

Budget Request

The Agency requests a total of \$7,076,600 and 60 permanent workyears for 1981, an increase of \$314,600. Included in this total is \$2,341,500 for Salaries and Expenses and \$4,735,100 for Abatement, Control and Compliance, with increases of \$155,900 and \$158,700 respectively. A decrease in total workyears results from a reduction of two other-than-permanent-full time workyears and results in a slight reduction in salaries and expenses. However, an increase in equipment purchases will result in a net increase in the salaries and expenses accounts. The additional increase in compliance will provide additional contract support to standards setting.

Program Description

Environmental standards and guidelines are developed and promulgated under this subactivity. These standards and guidelines protect the public health and the environment by minimizing risk from radiation exposures from nuclear energy applications, naturally occurring radioactive materials, medical and occupational radiation exposure and nonionizing radiation.

ENVIRONMENT STANDARDS AND GUIDELINES

1979 Accomplishments

Fiscal year 1979 resources included approximately \$1,077,900 in contract support. In 1979, guidance on the risks of radon exposure from phosphate mined land was completed for the State of Florida. Federal guidance for the clean-up of plutonium contaminated lands

nonionizing radiation, and a protection action guide for accidental airborne releases.

1980 Program

In 1980, the Agency has allocated a total of \$6,762,000 and 75.0 full time equivalents to this program, of which \$2,185,600 is for salaries and expenses and \$4,576,400 is for extramural purposes under the Abatement, Control, and Compliance appropriation. 1980 program efforts will focus on three regulatory areas: radioactive waste disposal, Federal Guidance, and control of airborne radionuclides under the Clean Air Act. Planned radioactive waste activities includes final action on criteria for the disposal of radioactive waste and standards for the management of uranium mill tailings from inactive sites. A standard for disposal of high level radioactive wastes and uranium mill tailing standard for active sites, will be proposed. Additional actions under development include siting criteria for ocean disposal of low level radioactive wastes, packaging criteria for low level waste, a land disposal standard for low level waste, a decommissioning standard for nuclear facilities and three disposal standards under the Resource Conservation and Recovery Act (RCRA) (uranium mine wastes, phosphate mine and processing waste and zirconium processing wastes).

Planned Federal Guidance activities for 1980 include the proposal of guidance on general occupational exposure. Actions under development include a protection action guide (PAG) for accidental airborne release, a PAG for exposure via food pathways, and guidance for general exposure to nonionizing radiation in the radio frequency. Occupation Guidance for special groups of workers is also being pursued. Pursuant to the authority of the Clean Air Act, regulatory development is being concentrated on the radionuclide hazards of mineral extraction processes and on large scale coal combustion. It is anticipated that this effort will lead to the proposal of at least one standard during 1980.

1980 Explanation of Change from Budget Estimate

The net decrease of \$187,600 results from several actions. An increase of \$90,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,600. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$239,100 to this activity.

A reprogramming of \$37,000 was made to the Air media to air emission testing, analysis and data support/preproduction compliance to support the fuel economy program.

1981 Plan

The Agency requests a total of \$7,076,600 and 60 permanent workyears for this program of which \$2,341,500 is for the Salaries and Expenses appropriation and \$4,735,100 for Abatement, Control and Compliance. 1981 program efforts will continue to focus on radioactive waste disposal, Federal Guidance, and the control of airborne radionuclides under the Clean Air Act. Planned radioactive waste activities will include final action on a standard for disposal of high level radioactive wastes. Proposals will include: siting criteria for ocean disposal of low level radioactive waste, standards for decommissioning of nuclear facilities, and RCRA standards for disposal of zirconium processing wastes, uranium mine wastes and phosphate mining and processing wastes. Work will continue on standards for land disposal of low level radioactive waste and low level waste packaging criteria. 1981 Federal Guidance activities will include final actions on general occupation exposures and Protection Action Guides for accidental airborne release. Proposals will include a protection action guide for food pathways, guidance for nonionizing radiation and an occupation guide for special classes of workers. Clean Air Act radionuclide activities will continue to concentrate on resource extraction and larger scale coal combustion, although some work will begin on standards addressing other sources. It is

RADIATION

Environmental Impact Assessment

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Monitoring and Analysis:			
Salaries and Expenses.....	\$2,496	\$2,482	-\$14
Abatement, Control and Compliance.....	1,900	1,900	...
Technology Assessment:			
Salaries and Expenses.....	1,365	1,357	-8
Abatement, Control and Compliance.....	<u>1,162</u>	<u>1,162</u>	<u>...</u>
Total:			
Salaries and Expenses.....	3,861	3,839	-22
Abatement, Control and Compliance.....	<u>3,062</u>	<u>3,062</u>	<u>...</u>
Grand Total.....	6,923	6,901	-22

RADIATION

Environmental Impact Assessment

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs 1980</u>
	(dollars in thousands)				
Monitoring and Analysis:					
Salaries and Expenses..	\$1,816	\$1,972	\$2,431	\$2,496	+\$65
Abatement, Control and Compliance.....	351	1,400	1,375	1,900	+525
Technology Assessment:					
Salaries and Expenses..	1,343	1,340	1,417	1,365	-52
Abatement, Control and Compliance.....	346	1,600	1,535	1,162	-373
Total:					
Salaries and Expenses..	3,159	3,312	3,848	3,861	+13
Abatement, Control and Compliance.....	697	3,000	2,910	3,062	+152
Grand Total.....	3,856	6,312	6,758	6,923	+165
<u>Permanent Positions</u>					
Monitoring and Analysis.....	59	58	67	67	...
Technology Assess- ment.....	41	38	39	39	...
Total.....	100	96	106	106	...
<u>Full-time Equivalency</u>					
Monitoring and Analysis.....	61	67	72	71	-1
Technology Assess- ment.....	42	47	48	47	-1
Total.....	103	114	120	118	-2

Budget Request

The Agency requests a total of \$6,923,100 and 106 permanent workyears for 1981, an increase of \$165,800. Included in this total is \$3,860,800 for Salaries and Expenses and \$3,062,300 for Abatement, Control and Compliance, with increases of \$13,100 and \$152,700, respectively. A decrease in total workyears results from a reduction of two other-than-permanent-full-time workyears. This reduction, along with efforts to adjust the skill mix between monitoring and analysis and technology assesment, will result in a net increase of only \$13,000 in salaries and expenses. The increase requested for abatement control and compliance will provide contract support for field measurements needed in support of the regulatory program.

Program Description

MONITORING AND ANALYSIS

This program encompasses activities related to identifying and analyzing radiation problems for potential coverage by standards and guidelines, supporting technical review of EIS's, assessing the radiological quality of the environment, and executing EPA radiological emergency response responsibilities. It also includes environmental monitoring, laboratory analysis of environmental samples, development of monitoring and analytical procedures, special monitoring studies, the evaluation of data and subsequent preparation of reports.

Technology Assessment

This program includes activities related to: (1) providing engineering assessment of the impact of developing radiation technology on environmental radiation levels; (2) providing sound technological bases for EIS review; (3) providing data and information for setting technologically feasible standards and guidelines; (4) reviewing generic and programmatic environmental impact statements; and (5) exercising EPA responsibilities in assessing Federal facilities radiation control activities.

MONITORING AND ANALYSIS

1979 Accomplishments

In 1979, obligations totalled \$1,689,000, of which \$351,100 was for contract support. Field studies and evaluations were conducted to provide exposure information on a variety of airborne radionuclide sources which might be regulated under the Clean Air Act. Specific sources studied include coal fired electric generating plants, uranium fuel cycle facilities and radiopharmaceutical manufacturers. Monitoring and analytical support was also provided to the mill tailings effort and the Florida Phosphate Guidance. A pilot study was initiated to identify radon levels in public drinking water. The operation of the Environmental Radiation Ambient Monitoring System (ERAMS) was continued, the national radium repository was maintained and additional radium sources were collected. One major unplanned activity in 1979 was participation in the Federal response to Three Mile Island. This involvement included the deployment of field personnel, the provision of laboratory and analytical service and the calculation of dose estimates used by Federal and State officials.

1980 Program

In 1980, the Agency has allocated a total of \$3,805,900 and 67 permanent workyears to this program, of which \$2,430,900 is for the Salaries and Expenses appropriation and \$1,375,000 is for extramural purposes under the Abatement, Control and Compliance Appropriation. During 1980, monitoring and analytic support to the Clean Air Act is being continued with particular emphasis placed on large scale coal combustion and on resource extraction and processing facilities. 1980 will see a major expansion of efforts to determine the nature and magnitude of the health risk associated with indoor radon exposure. The radon in drinking water pilot study will be completed with a total of 19 States surveyed and an average of 35 water supplies sampled per state. EPA's radiological emergency response capability will be expanded through the acquisition of additional monitoring equipment. Operation of the EPA Environmental Radiation Ambient Monitoring system will continue. The radium repository will be maintained and additional sources collected. A limited amount of laboratory and analytical support will be provided to States with special radiological problems.

The net increase of \$433,300 results from several actions. An increase of \$80,500 results from the cost of October 1979 pay raise and is included in a proposal supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,500. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$36,900 to this activity.

A reprogramming of \$409,700 was made within this media from radiation state program support to eliminate the vague distinction between work which is initiated by EPA in identifying actual or potential environment hazards and provide continuing assessments of risks associated with exposures to radiation from work performed in response to requests from Federal agencies, regional offices, States or localities.

A reprogramming of \$18,500 was made to the air media to air emission testing, analysis and data support/preproduction compliance to support the fuel economy program.

1981 Plan

The Agency requests a total of \$4,395,800 and 67 permanent workyears for this program, of which \$2,495,800 is for the Salaries and Expenses appropriation and \$1,900,000 for Abatement, Control and Compliance. Support to regulatory efforts will continue to be a major role for this program element with support to the Clean Air Act Regulations taking the lead. The investigation of emissions from large scale coal combustion and resource extraction facility will be continued, and some work covering other Clean Air Act sources initiated.

The indoor radon investigation initiated in 1980 will also be continued and a measurement program for radon in drinking water, growing out of the 1980 pilot study, will be conducted. Continued emphasis will be placed upon technical support to the regions and States in the development, review and testing of radiological emergency response plans. The Environmental Radiation Ambient Monitoring system will be expanded by bringing all 65 air sampling stations into full time operation. The radium repository will continue to be maintained and new sources collected.

TECHNOLOGY ASSESSMENT

1979 Accomplishments

1979 obligations of \$1,689,000 included \$346,400 in contract support. Studies were continued on control technologies available to manage radioactive sources under the provisions of the Clean Air Act. Assessments of problems associated with shallow land and ocean disposal of low level waste were continued and the major technology assessment needed for the high level waste standards was completed. Other 1979 activities included EIA Review.

1980 Program

Un 1980, the Agency has allocated a total of \$2,951,400 and 39 permanent workyears to this program, of which \$1,416,800 is for the Salaries and Expenses appropriation and \$1,534,600 is for extramural purposes under the Abatement, Control and Compliance appropriation. The major 1980 activity for this program element is the assessment of control technology needs for the development of Clean Air Act and radioactive waste standards. Clean Air Act efforts will focus primarily on coal combustion and resource extraction. Activities in support of waste standards will address low level land and ocean disposal, waste packaging, and transuranic waste disposal. EIS review will continue at a reduced level.

1980 Explanation of Change from Budget Estimate

The net increase of \$11,400 results from several actions. An increase of \$53,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,500. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in decrease of \$22,500 to this activity.

A reprogramming of \$18,500 was made to the air media to emission testing, analysis and data support to support the fuel economy program.

1981 Plan

The Agency requests a total of \$2,527,300 and 39 permanent workyears for this program, of which \$1,365,000 is for the Salaries and Expenses appropriation and \$1,162,300 for the Abatement, Control and Compliance appropriation. In 1981, the focus of the Clean Air Act regulatory efforts will broaden to a wider variety of sources. Many of these sources will require the determination of the best available control technology for a variety of radionuclides. The analyses of control technologies for these sources will constitute the major activity of this program element in 1981. The review of EIS's will continue at the 1980 level.

RADIATION

Radiation Program Implementation

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Radiation</u>			
State Program Support:			
Salaries and Expenses.....	...	...	...
Abatement, Control and Compliance.....	...	...	...
Regional Program Implementation:			
Salaries and Expenses.....	\$601	\$597	-\$4
Abatement, Control and Compliance.....	...	...	...
Total:			
Salaries and Expenses.....	601	597	-4
Abatement, Control and Compliance.....	...	...	...
Grand Total.....	601	597	-4

Radiation Program Implementation

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Radiation</u>					
State Program Support:					
Salaries and Expenses...	\$342	\$310	...	...	...
Abatement, Control and Compliance.....	...	100	...	...	...
Regional Program Implementation:					
Salaries and Expenses...	553	589	\$610	\$601	-\$9
Abatement, Control and Compliance.....	21	10	...	...	...
Total:					
Salaries and Expenses...	895	899	610	601	-9
Abatement, Control and Compliance.....	21	110	...	...	...
Grand Total.....	916	1,009	610	601	-9
<u>Permanent Positions</u>					
State Program Support...	10	5	...	...	...
Radiation Program Implementation.....	15	12	16	16	...
Total.....	25	17	16	16	...
<u>Full-time Equivalency</u>					
State Program Support...	11	8	...	...	...
Radiation Program Implementation.....	18	18	18	18	...
Total.....	29	26	18	18	...

Budget Request

The Agency requests a total of \$601,200 and 16 permanent workyears for 1981
A decrease of \$9,100. The full request is within the Salaries and Expenses appropriation.
The decrease in funds reflects a reduction in regional travel.

Regional Program Implementation

This subactivity includes activities related to EPA's regional offices including:
reviewing routine environmental impact statements (e.g., for light-water reactors and
uranium mining and milling); providing the public with technical information; providing
direct assistance to State and local governments with special radiation problems of a
short term nature; and the reviewing and testing of State emergency response plans.

1979 Accomplishments

In 1979, obligations totalled \$573,700, with no contract support. Accomplishments included the review of draft and final EIS's by the regional offices; technical assistance to States on emergency response plans, and providing radiological information to the public. Other regional activities included assistance to the water program on radionuclides in drinking water and investigations of special radiation problems, such as abandoned waste dumps and tailings from radium processing.

1980 Program

In 1980, the Agency has allocated a total of \$610,300 and 16 permanent workyears to this program, all for Salaries and Expenses.

The major emphasis for the 1980 regional program is technical assistance to States in the area of emergency response planning. EPA will help States in the development of plans and will formally review these plans along with the NRC and other Federal agencies. In 1980, regional programs will continue to review EIS's and conduct other activities but at a reduced rate to allow for the expanded emergency preparedness program.

1980 Explanation of Change from Budget Estimate

The net increase of \$11,000 results from several actions. An increase of \$24,600 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs supplies and expenses resulted in a decrease of \$2,600 and \$400, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$2,600 to this activity.

Regional reprogrammings were made between media to support projected costs based on 1979 actual expenditures to pesticides use management (\$6,700); from noise regional program implementation (\$6,000); from NEPA compliance/municipal waste facility construction (\$7,200); to environmental emergency response and prevention (\$19,600); and to personnel management (\$100).

1981 Plan

The Agency requests a total of \$601,200 and 16 permanent workyears for this program, all of which is for the Salaries and Expenses appropriation. In 1981, the emphasis will remain on radiological emergencies response plans. However, with more plans completed and approved the testing of these plans will receive greater attention, since testing of plans on a regular basis provides the best chance for their successful execution in time of emergency. Other activities in 1981 will include assisting in the implementation of standards under the Uranium Mill Tailing Radiation Control Act and Federal Guidance for the clean-up of plutonium contaminated lands. In addition, the review of EIS's and Section 309 actions, assistance to the drinking water and solid waste program, and technical assistance to States will continue as in 1980.

State Program Support

1979 obligations totalled \$341,700; in 1980 this program was merged with the radiation monitoring and analysis activity.

1980 Explanation of Change from Budget Estimate

The decrease of \$409,700 resulted in a reprogramming within the radiation media to monitoring and analysis to eliminate the vague distinctions between work which is

Noise

NOISE

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$4,575	\$4,548	-\$27
Abatement, Control and Compliance.....	8,352	8,352	...
Total.....	12,927	12,900	-27
<u>PROGRAM HIGHLIGHTS</u>			
Environmental Noise Strategies and Standards:			
Salaries and Expenses.....	1,900	1,890	-10
Abatement, Control and Compliance ...	4,353	4,353	...
Noise Program Strategies Implementation:			
Salaries and Expenses.....	1,959	1,946	-13
Abatement, Control and Compliance.....	3,774	3,774	...
Total:			
Salaries and Expenses.....	3,859	3,836	-23
Abatement, Control and Compliance.....	8,127	8,127	...
Total, Abatement and Control Program....	11,986	11,963	-23
Noise Enforcement:			
Salaries and Expenses.....	716	712	-4
Abatement, Control and Compliance.....	225	225	...
Total, Enforcement Program.....	941	937	-4

NOISE

	Actual 1979	Budget Estimate 1980 (dollars	Current Estimate 1980 in thousands)	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
<u>Appropriation</u>						
Salaries and Expenses...	\$4,055	\$12,778	\$4,923	\$4,575	-\$348	
Abatement, Control and Compliance.....	6,712	175	8,151	8,352	+201	
Total.....	10,767	12,953	13,074	12,927	-147	
Permanent Workyears.....	90	97	105	99	-6	
Full-time Equivalency...	130	178	175	153	-22	
Outlays.....	9,293	10,320	10,900	11,000	+100	
Authorization Levels....	19,000	*	*	*		

*Authorization pending.

PROGRAM HIGHLIGHTS

Environmental Noise

Strategies and Standards:

Salaries and Expenses..	1,572	6,162	1,817	1,900	+83	N-8
Abatement, Control and Compliance.....	3,892	...	4,276	4,353	+77	

Noise Program Strategies

Implementation:

Salaries and Expenses..	1,803	5,612	2,188	1,959	-229	N-12
Abatement, Control and Compliance.....	2,540	175	3,573	3,774	+201	

Total:

Salaries and Expenses..	3,375	11,774	4,005	3,859	-146	
Abatement, Control and Compliance.....	6,432	175	7,849	8,127	+278	

Total, Abatement and

Control Program.....	9,807	11,949	11,854	11,986	+132	
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Noise Enforcement:

Salaries and Expenses..	680	1,004	918	716	-202	N-19
Abatement, Control and Compliance.....	280	...	302	225	-77	

Total, Enforcement

Program.....	960	1,004	1,220	941	-279	
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	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
(dollars in thousands)						
<u>Permanent Positions</u>						
Environmental Noise Strategies and Standards.....	36	35	37	37	...	N-8
Noise Program Strategies Implementation.....	41	39	47	43	-4	N-12
Total, Abatement and Control Program.....	77	74	84	80	-4	
Noise Enforcement, Total Enforcement Program...	19	23	21	19	-2	N-19
<u>Full-time Equivalency</u>						
Environmental Noise Strategies and Standards.....	47	52	52	52	...	N-8
Noise Program Strategies Implementation.....	58	87	84	66	-18	N-12
Total, Abatement and Control Program.....	105	139	136	118	-18	
Noise Enforcement, Total Enforcement Program....	25	39	39	35	-4	N-19

OVERVIEW AND STRATEGY

Consistent with the policy set forth in the Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978, the overall objective of the noise program is to achieve an environment free from noise which jeopardizes public health or welfare. The 1978 Act provides the opportunity for a more effective and efficient approach to the noise abatement problem than was offered by the 1972 Act alone. In particular, assistance to State and local governments has been strengthened. In addition, the 1978 Act provides for the design and management of a noise health effects program.

Under the authorities of the legislation, EPA is required to regulate the noise emissions from newly manufactured products identified as major sources of noise (other than aircraft). Emission standards must also be set for in-use equipment of interstate motor carriers and in-use equipment and facilities of interstate rail carriers (i.e., on equipment presently in-use). Noisy products and products sold to control noise may be regulated to require labeling and thus aid consumers in product selection. EPA also must provide both financial and technical assistance to State and local governments in developing programs for noise control.

EPA also has the responsibility to coordinate Federal noise related research and control activities. Furthermore, the legislation allows EPA to designate products with low noise emissions for preferential Federal purchase, thus bringing added marketplace pressure to bear on the development of quieter equipment.

The noise program has placed emphasis on control by regulations of noise from surface transportation and construction types of equipment. Six promulgations of regulations on these types of equipment are to be made in 1980 (four relate to court ordered revisions of the Interstate Rail Carrier regulation). The regulation development work planned for 1981 is almost exclusively on these types of equipment.

Effective State and local noise control programs are essential if the Nation is to reduce noise to levels commensurate with the protection of public health and welfare. Consequently, EPA conducts a program of technical and financial assistance to both State and local governments. This program serves to complement the Federal noise regulatory development program which relates primarily to newly manufactured rather than in-use products.

In both 1980 and 1981, EPA is emphasizing assistance to those State agencies which in turn will provide extended technical assistance to communities within their jurisdictions. Ten university-based technical assistance centers also will assist communities, as will the Each Community Helps Others (ECHO) program. The ECHO program uses local agency volunteer noise experts to assist other communities with EPA paying out-of-pocket expenses but not salaries.

Through these various types of assistance it is expected that there will be a substantial increase in the number of jurisdictions having active programs over the next 5 to 10 years. Such programs should emphasize abatement of area noise problems from vehicles, from stationary sources (fence line standards), and construction site noise. Noise abatement planning (zoning and land use planning) and public information are additional key functions.

Fiscal year 1979 saw a renewed emphasis placed on the coordination of Federal noise control efforts with joint demonstrations of abatement techniques and attention to the linking of Federal programs which can assist in obtaining urban noise control. These efforts are continuing in 1980 and 1981. Investigations of the health effects of noise (with emphasis on the non-auditory effects) are being expanded in 1980 and will be maintained during 1981. Both the Federal coordination and health effects investigations will assist future decision making by State and local officials as well as future EPA regulatory efforts.

The EPA noise enforcement program is responsible for Federal enforcement under the Noise Control Act of 1972, Section 6, new product noise standards and Section 8, informational labeling requirements applicable to new products. The main emphasis of the program in 1980 and 1981 will be the continued enforcement of the new product regulations through production verification and selective enforcement audits. Enforcement activities will also include continued development of enforcement strategies and regulations for other Section 6 and Section 8 products and a minimal level of guidance and assistance to State/local noise enforcement programs.

Purpose of Abatement and Control Program

The basic objective of the noise abatement and control program is to promote an environment for all Americans free from noise that jeopardizes their health and welfare. This objective is pursued through four major program thrusts as detailed in the Noise Control Act of 1972, and amended by the Quiet Communities Act of 1978. First, emission standards and/or labeling regulations are promulgated on selected products; second, State and local noise control efforts are strengthened through the provision of technical assistance and limited financial assistance through cooperative agreements; third, Federal activities relating to noise research and abatement and control are coordinated; and fourth, investigations on noise effects and abatement and control technology are continued.

noise and the subsequent development of emission regulations for newly manufactured products. These standards are intended to protect the public health and welfare through the application of the best available noise control technology, taking into account the cost of compliance. Regulations requiring the labeling of products by manufacturers will be established for some products which emit noise capable of adversely affecting the public health and welfare. Labeling will also be required for products which are sold on the basis of their effectiveness in reducing noise.

Technical assistance as well as limited financial assistance is provided to other Federal agencies and to State and local governments for the development and implementation of noise control programs. Assistance is given to State and local communities to establish in-use enforcement programs for noise sources.

Technical assistance is provided in the form of direct guidance to State and local agencies on how to carry out environmental assessment in order to define noise problems and to other Federal agencies whose programs and activities have noise control implications. Noise abatement and control is characterized under the following subactivities:

Noise Strategies and Standards

This subactivity includes: (1) the establishment of noise emission standards for newly manufactured products; (2) the establishment of noise labeling requirements for newly manufactured consumer products; (3) the establishment of regulations requiring labeling for noise protection and control devices; (4) investigations into the human health and welfare effect of noise; (5) coordination of Federal research on noise; and (6) the demonstration of control technologies that are in direct support of regulations.

Noise Program Strategies Implementation

This subactivity includes activities related to the implementation of regulatory requirements for which the Federal government has primary responsibility (i.e., the control of noise emissions at Federal facilities and review of EIS's for their noise impact), and the overall coordination of all Federal programs for noise abatement and control. Also included is technical and financial assistance in the development and improvement of State and local noise control programs, including but not limited to consultation with States and localities on specific noise abatement problems, and the provision of financial assistance through cooperative agreements for noise control program initiation, transportation and stationary source planning, and noise control demonstrations.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1980 Noise Program.....	\$13,074
Salaries and Expenses.....	-348
This decrease relates primarily to the reduction of 22 workyears.	
Abatement, Control and Compliance....	+201
This increase will provide increased support to State programs under the noise control implementation and evaluation activity.	
1981 Noise Program.....	12,927

SUMMARY OF BUDGET ESTIMATES1. Summary of Budget Request

An appropriation of \$12,927,000 is requested for 1981. This request, by appropriation account, is as follows:

Salaries and Expenses.....	\$4,575,800
Abatement, Control and Compliance.....	8,351,200

This request represents a decrease of \$148,200, reflecting a decrease of \$348,500 related to the reduction of 22 workyears. An increase of \$200,700 in extramural funds for the noise control implementation and evaluation activity will support continuing attention to State and local program development with emphasis on State programs which will provide assistance to local communities, and to the provision of technical support through the Technical Assistance Centers, ECHO programs, and demonstration programs. The environmental noise strategies and standards activity is increased by \$76,600 and the noise enforcement activity is decreased by \$77,000, each reflecting a change in extramural support.

2. Changes from Original 1980 Budget Estimate

Changes from the budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$12,953
Congressional decrease to travel.....	-24
Proposed pay raise supplemental Reprogramming for authorized workyears.....	+184
Miscellaneous reprogrammings...	+58
	-97

Current 1980 estimate.....	13,074
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reduction of \$24,000 to the noise media.

The proposed supplemental for partial funding of the October 1979 pay raise will increase this media by \$184,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$58,000 to the noise media.

Miscellaneous reprogrammings were made primarily to cover projected costs based on 1979 expenditures: to the air media, \$130,400; to the pesticides media, \$6,000; to water quality, \$5,300; to drinking water, \$1,300; to radiation, \$6,000; from solid waste, \$18,200; and from management and support, \$34,600.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980 (in thousands)	Estimate 1981 (in thousands of dollars)
Prior year obligations.....	\$10,768	\$13,283
Congressional change.....	-24	...
Proposed pay raise supplemental.....	+184	...
Reprogramming for authorized workyears.....	+58	...
Miscellaneous reprogrammings.....	-97	...
Change in amount of carryover funds available.....	+28	-209
Program change.....	+1,900	-147
Change in rate of obligation.....	+465	-160
Total estimated obligations.....	13,283	12,767
(From new obligation authority).....	(13,074)	(12,767)
(From prior year funds).....	(209)	(...)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The changes discussed in the previous paragraph -- congressional, pay raise supplemental, authorized workyears, and reprogrammings -- account for a net increase of \$121,000.

The amount of carryover funds to be obligated in 1980 is \$209,000, an increase of \$28,000 over the 1979 level. In 1981, it is estimated that there will be no carryover funds, resulting in a decrease of \$209,000 from the 1980 level.

The program change in 1980 was previously estimated to increase obligations by \$1.9 million; the decrease of budget authority in 1981 will result in a reduction of \$147,000 to obligations.

The rate of obligation was slightly slower than anticipated in 1979; therefore an increase of \$465,000 is projected. The 1981 rate will then level off with a decrease of \$160,000.

NOISE

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>PROGRAM LEVELS</u>					
Review production verification reports	1065	880	880	1244	+364
Monitor production verification tests	8	27	27	62	+35
Monitor Selective Enforcement Audit tests	11	20	20	37	+17
Conduct production verification tests	...	8	8	12	+4
Conduct Selective Enforcement Audit tests	...	2	2	3	+1
Inspect manufacturer's records	18	39	39	122	+83
Provide Enforcement Guidance re: State/ local Enforcement procedures	...	2	2	3	+1
Develop State/local Enforcement procedures	1	2	2	4	+2
Conduct site comparison tests	6	10	10	19	+9
Number of S/L noise programs that were assisted	30	5	30	12	-18

NOISE

Environmental Noise Strategies and Standards

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
(dollars in thousands)					
Noise Standards Develop- ment:					
Salaries and Expenses..	\$882	\$3,564	\$1,014	\$1,233	+\$219
Abatement, Control and Compliance.....	2,620	...	2,561	2,382	- 179
Noise Control Technology Assessment and Criteria Development:					
Salaries and Expenses	690	2,598	803	667	- 136
Abatement, Control and Compliance.....	1,272	...	1,715	1,971	+ 256
Total:					
Salaries and Expenses..	1,572	6,162	1,817	1,900	+ 83
Abatement, Control and Compliance.....	<u>3,892</u>	<u>...</u>	<u>4,276</u>	<u>4,353</u>	<u>+ 77</u>
Grand Total.....	5,464	6,162	6,093	6,253	+ 160
<u>Permanent Positions</u>					
Noise Standards Develop- ment.....	18	21	22	22	...
Noise Control Technology Assessment and Criteria Development.....	<u>18</u>	<u>14</u>	<u>15</u>	<u>15</u>	<u>...</u>
Total.....	36	35	37	37	...
<u>Full-time Equivalency</u>					
Noise Standards Develop- ment.....	25	28	24	24	...
Noise Control Technology Assessment and Criteria Development.....	<u>22</u>	<u>24</u>	<u>28</u>	<u>28</u>	<u>...</u>
Total.....	47	52	52	52	...

Budget Request

The agency requests a total of \$6,252,300 and 37 permanent workyears for 1981, an increase of \$159,100 from 1980. Included in this total is \$1,900,100 for the Salaries and Expenses appropriation and \$4,352,200 for the Abatement, Control and Compliance appropriation, with increases of \$82,500 and \$76,600 respectively. This program is mandated by the Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978, and will provide improved criteria for regulations development as well as overall support for State and local

NOISE

Environmental Noise Strategies and Standards

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Noise Standards Development:			
Salaries and Expenses.....	\$1,233	\$1,227	-\$6
Abatement, Control and Compliance...	2,382	2,382	...
Noise Control Technology Assessment and Criteria Development:			
Salaries and Expenses.....	667	663	-4
Abatement, Control and Compliance..	1,971	1,971	...
Total:			
Salaries and Expenses.....	1,900	1,890	-10
Abatement, Control and Compliance...	4,353	4,353	...
Grand Total.....	6,253	6,243	-10

Program Description

This program focuses on the development and promulgation of emission and labeling regulations that will reduce harmful noise emissions from new products. These regulations are developed through the gathering and analysis of data on noise and its health effects to determine exposure criteria and levels of noise reduction required for abatement options and for specific regulatory actions. Evaluations of private and public sector technology development are performed to determine best available technology, and assessments of economic, environmental and health data are made to ascertain the costs and benefits of regulation. This program also includes conduct of a noise health and welfare effects investigation program.

Noise Standards Development

The objective of noise product regulation is to effectively regulate products which are major contributors to environmental noise exposure. Such regulation is necessary to the achievement of overall environmental noise control goals of reducing environmental levels below Ldn 75 dB as soon as possible and ultimately below Ldn 65 dB.

Sections 6 and 8 of the Noise Control Act require the Environmental Protection Agency to develop and promulgate regulations for control of noise from products which are major noise sources through the use of noise emission limitations and/or noise labeling requirements for newly manufactured products. The analysis leading to and supporting these regulations includes the preliminary investigation of potential products for regulation, economic and technological feasibility and the evaluation of health, welfare, and other benefits derived from specific product regulation. Other activities include the preparation of necessary background and supporting material, such as EIS's and economic assessments, for the promulgation of standards.

Noise Control Technology Assessment and Criteria Development

The objective of this activity is to provide support to EPA for noise product regulation and State and local control efforts through investigations and documentation of noise health effects and availability of noise control technology. This also includes overall strategy development for national noise control efforts.

Specific activities include the development of health and welfare criteria for the assessment of general exposure to noise; the assessment of the environmental, economic, social and health impacts of noise abatement options; and the assessment of advanced and/or future noise control technology for the development and evaluation of noise abatement options, including coordination and evaluation of noise research and development conducted by other Federal agencies. Other activities encompass the development of an overall noise control strategy and subsequent substrategies, and the continuation of the noise health effects program.

NOISE STANDARDS DEVELOPMENT

1979 Accomplishments

1979 resources included approximately \$2,620,400 in contract support. These funds were used for the development of noise emission and labeling regulations and for studies for products which may require future regulation or labeling. Major accomplishments for 1979 included: promulgation of two labeling actions (general provisions and Hearing Protectors); an emission regulation for truck-mounted solid waste compactors; and proposal of the court-ordered Interstate Rail Carrier revision. In addition, developmental work was carried out which will lead to the promulgation of emission regulations for railroad facilities (4 source standards in 1980 and a property line standard in 1981), buses, motorcycles, and low noise emission products. Work was continued on noise source studies on guided mass transit, portable air compressors, chain saws, mufflers, construction equipment, and motorcycles. (These studies will be completed in 1980)

In 1980, the Agency has allocated a total of \$3,575,400 and 22 permanent workyears to this program, of which \$1,014,300 is for the Salaries and Expenses appropriation and \$2,561,100 is for extramural purposes under the Abatement, Control and Compliance appropriation.

The 1980 program provides for the promulgation of emission regulations for motorcycles and buses. Other regulatory activities include promulgation of the court-ordered Interstate Rail Carrier revision (4 source standards); promulgation of a regulation for Low Noise Emission products; initiation of work on revision of medium/heavy duty truck and Interstate Motor Carrier regulations, light duty vehicles (tentatively a labeling action), and tires (labeling); and continuation of candidate selection studies for household and consumer products. In addition, six noise source studies begun in previous years are being completed.

1980 Explanation of Change from Budget Estimate

The net increase of \$11,400 results from several actions. An increase of \$30,800 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,900. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$17,500 to this activity.

1981 Plan

The Agency requests a total of \$3,614,600 and 22 permanent workyears for this program, of which \$1,232,900 is for the Salaries and Expenses appropriation and \$2,381,700 is for the Abatement, Control and Compliance appropriation. During 1981, regulatory activities will include promulgation of a property line standard for the court-ordered Interstate Rail Carrier revision, and the proposal of a labeling regulation for a yet to be selected consumer product. Work will continue on development of final regulation for Wheel and Crawler Tractors. Work will also continue on a proposal of revision of the medium/heavy duty truck and Interstate Motor Carrier regulations, as well as developmental work for a proposal of labeling regulations for light duty vehicles and tires. The candidate selection studies for product labeling will also be continued.

NOISE CONTROL TECHNOLOGY ASSESSMENT AND CRITERIA DEVELOPMENT

1979 Accomplishments

1979 resources included approximately \$1,271,800 in contract support. These funds were used for technology research demonstrations, development of information on health and welfare effects of noise (both auditory and non-auditory) and development of noise abatement substrategies.

Major accomplishments in 1979 included a report on the University of Miami study which related noise to a 30 percent increase in blood pressure of the primates under study. Other health effects activities included an MIT workshop on noise cardiovascular effects and the completion of four reports designed to improve the understanding of the effects of noise.

Also during 1979, health and welfare assessments were carried out for regulatory actions under development, and a simplified version of the "levels" document was completed. This document will be used by State and local governments and others who lack specific noise expertise in the health effects of noise.

Technology research projects were continued on quiet trucks (the first three trucks are undergoing noise reduction modification, with operational testing to begin in 1980) and on internal combustion engines and tires.

During 1979, five joint technology demonstrations with other government agencies were begun or were in process. These included quiet propeller, construction site, highway construction, shipyard machinery and electric generating plant projects.

1980 Program

In 1980, the Agency has allocated a total of \$2,517,800 and 15 permanent workyears to this program, of which \$803,300 is for the Salaries and Expenses appropriation and \$1,714,500 is for extramural purposes under the Abatement, Control and Compliance appropriation.

During 1980, work is continuing on the quiet truck, internal combustion engine and tires technology demonstration studies. Technology demonstrations on general construction site and quiet propellers is being completed; three others ongoing in 1979 are continuing. Also, during 1980, the technology assessment will begin on advanced design engines and cooling systems.

In addition, a multiyear technology plan and technology assessment of government/industry construction equipment is being completed. The noise health effects program is continuing, with seven research reports expected to be completed. These reports will (1) improve methodology for assessing health and welfare impact of noise, (2) improve the definition of noise, (3) provide support for regulations development and reports to Congress; and (4) overall support for State and local programs.

Eight auditory/non-auditory health effects studies are in process with three completions anticipated. This includes completion of the 3rd year report of the University of Miami Primate Study. In addition, three national assessments of noise impacts are underway, with two completions expected. On-going support is being provided to other Federal agencies in establishing health and welfare impacts of noise. In addition, an updated report on Federal research in noise effects is being issued.

1980 Explanation of Change from Budget Estimate

The net decrease of \$79,800 results from several actions. An increase of \$33,000 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,400. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$111,400 to this activity.

1981 Plan

The Agency requests a total of \$2,637,700 and 15 permanent workyears for this program, of which \$667,200 is for the Salaries and Expenses appropriation and \$1,970,500 is for the Abatement, Control and Compliance appropriation.

The quiet engine demonstration, heavy and medium truck demonstration, quiet tire demonstration, and a quiet cooling system demonstration will continue based on methods to quiet engines on vehicles as determined in the technology assessments. The following interagency demonstrations to determine techniques and technologies for abating noise will be completed: industrial machinery (with Navy); electric generating power plant noise (with TVA); and highway construction site (with FHWA).

The noise health effects research program for 1981 includes the completion of five studies on auditory and non-auditory health effects. The non-auditory effects of noise are not well understood (including the contribution to heart disease) and may have serious public health implications. The University of Miami primate study on the cardiovascular effects of noise will be completed and a retrospective epidemiological analysis will be initiated in 1981. Other animal studies will begin to examine cardiovascular dynamics and biomedical changes. A major sleep study will be started primarily to examine the health consequences due to noise disrupted sleep. Also, community survey data will be acquired to more accurately relate human response to construction site noise.

NOISE

Noise Program Strategies Implementation

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Noise Control Implementation and Evaluation:					
Salaries and Expenses.....	\$993	\$4,392	\$1,262	\$1,032	-\$230
Abatement, Control and Compliance.....	2,083	...	3,120	3,321	+201
Federal Agency Coordination:					
Salaries and Expenses.....	297	672	277	289	+12
Abatement, Control and Compliance.....	379	...	400	400	...
Noise Regional Program Implementation:					
Salaries and Expenses.....	513	548	649	638	-11
Abatement, Control and Compliance.....	78	175	53	53	...
Total:					
Salaries and Expenses.....	1,803	5,612	2,188	1,959	-229
Abatement, Control and Compliance.....	2,540	175	3,573	3,774	+201
Grand Total.....	4,343	5,787	5,761	5,733	-28
<u>Permanent Positions</u>					
Noise Control Implementation and Evaluation.....	20	16	25	22	-3
Federal Agency Coordination..	8	9	8	8	...
Noise Regional Program Implementation.....	13	14	14	13	-1
Total.....	41	39	47	43	-4
<u>Full-time Equivalency</u>					
Noise Control Implementation and Evaluation.....	31	52	53	37	-16
Federal Agency Coordination..	9	12	8	8	...
Noise Regional Program Implementation.....	18	23	23	21	-2
Total.....	58	87	84	66	-18

NOISE

Noise Program Strategies Implementation

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Noise Control Implementation and Evaluation:			
Salaries and Expenses.....	\$1,032	\$1,025	-\$7
Abatement, Control and Compliance...	3,321	3,321	...
Federal Agency Coordination:			
Salaries and Expenses.....	289	287	-2
Abatement, Control and Compliance....	400	400	...
Noise Regional Program Implementation			
Salaries and Expenses.....	638	634	-4
Abatement, Control and Compliance....	53	53	...
Total:			
Salaries and Expenses.....	1,959	1,946	-13
Abatement, Control and Compliance....	3,774	3,774	...
Grand Total.....	5,733	5,720	-13

Budget Request

The Agency requests a total of \$5,733,500 and 43 permanent workyears for 1981, a decrease of \$28,300 and 4 permanent workyears from 1980. Included in this total is \$1,959,600 for Salaries and Expenses and \$3,773,900 for Abatement, Control and Compliance with a decrease of \$229,000 and an increase of \$200,700, respectively. The net decrease results from a decrease in salaries and expenses attributable to a reduction of 16 workyears and a partially compensating increase in abatement, control and compliance resources. The program addresses the mandate of the Quiet Communities Act of 1978 and will encourage State and local governments to develop or improve their noise control programs.

Program Description

This program provides technical and financial assistance to States and localities in the development and implementation of noise control programs. Effective State and local noise control programs are essential if the Nation is to reduce noise to levels commensurate with the protection of public health and welfare. In recognition of this need, the Noise Control Act, as amended by the Quiet Communities Act, calls for EPA to conduct technical and financial assistance programs to State and local governments. The objective of the assistance program is to substantially increase the number of communities having effective noise control programs with special emphasis on lessening the impact of noise from motor vehicles (motorcycles, trucks, autos). Assistance is also provided in the areas of stationary source control (fence line standards), construction site noise control, noise abatement planning (zoning, land use planning, airport planning), and public information.

This program also includes the implementation of regulatory requirements for which the Federal Government has primary responsibility (i.e., the control of noise emissions at Federal facilities and review of EIS's for noise implications, and the overall coordination of all Federal programs for noise abatement and control. The objective of this program is to bring the major noise authorities of other Federal agencies to bear on the noise problem in a total national effort. Included are such agencies as the Federal Highway Administration, the Federal Aviation Administration, the Urban Mass Transit Administration, the Department of Housing and Urban Development, and the Department of Defense.

Noise Control Implementation and Evaluation

The Noise Control Act, as amended by the Quiet Communities Act of 1978, directs the Environmental Protection Agency to deliver assistance to States and localities in order to encourage the development of effective noise control, including encouragement of State and local actions to complement EPA's noise emission regulations. One of the objectives of this program is to have in place, by 1985, at least 400 active local noise control programs covering 72 million people and 40 active State programs. The local programs may cover one or all of the noise program components identified above depending on local need. The goal of 400 operational noise programs is targeted to cities with populations over 25,000 since noise problems tend to be greater in more highly populated areas. However, smaller cities that are part of larger urban aggregations are also included in some instances since they share "urban" characteristics. In addition, some smaller communities may have particular problems which will require regulatory actions and EPA assistance. EPA has an additional goal of insuring that 300 of these programs have components to control motor vehicles noise. Effective State and local programs are needed to complement EPA regulations for major sources of noise. This will include State and local enforcement of in-use controls which supplement EPA's manufacturing controls, and assistance in enforcement of the Federal anti-tampering provision.

programs for State and local use. Special emphasis is placed on helping States initiate programs to assist local communities start noise control programs and to strengthen existing local programs. Other EPA assistance includes the Each Community Helps Others (ECHO) program, development of State and local program "tools", e.g., model laws and codes, administration of the noise control demonstration and assistance program, and technical assistance centers located at ten universities.

Federal Agency Coordination

The activities of this program are directed toward assuring that Federal Government responsibilities for noise control are met. Such activities include assisting other Federal agencies to consider and include where appropriate, noise abatement and control practices in their programs and comply with Federal, State, interstate, and local requirements; coordinating noise control programs carried out by Federal agencies; monitoring the progress of other Federal facilities' noise abatement activities; and reviewing Federal environmental impact statement insofar as their noise impacts are concerned. Particular attention is given to carrying out the President's Urban Noise Initiative.

In the aviation area, the EPA will continue to review Federal Aviation Agency actions and make further recommendations concerning aviation noise. This includes tracking FAA follow-up to regulations previously recommended by EPA. Special emphasis will be placed on more stringent standards for new design aircraft and on airport planning and compatible land use.

Noise Regional Implementation

The regional offices occupy a key role in the development of effective State and local programs.

Specifically, regional offices provide the focal point for interaction with State and local governments, and the development of State and local government capabilities to implement noise abatement activities. As such, they provide general technical support, as well as regional coordination and support of national public awareness programs, demonstration projects and regulations development. In addition, the regions will have a larger role in administering the financial assistance program for State and local noise control.

NOISE CONTROL IMPLEMENTATION AND EVALUATION

1979 Accomplishments

1979 resources included \$2,083,400 in extramural support. These funds were used for the development and delivery of both technical and financial assistance (cooperative agreements) to State and localities and for demonstration projects with other Federal agencies.

During 1979, EPA continued to deliver technical assistance to State and localities in developing noise control programs. Delivery mechanisms included the ECHO program (a volunteer program where local noise control experts assist other communities one or two days a month with EPA paying out of pocket expenses); State assignees, temporary government employees serving in State governments to assist in the development of noise control programs; LISTEN-a computer program service which processes attitudinal/physical survey data for States and localities; Senior Environmental Employee Program; and community noise counselors. Other activities included the continuation of the Quiet Communities Program (QCP). In Allentown, Pa., the first QCP, an ordinance was passed and is currently being enforced. Also, during 1979, two new QCP's were started in Spokane, Washington; and Kansas City, Missouri. The QCP program is a research experiment and is designed to develop and demonstrate the best available techniques for noise

ADDITIONAL EFFORTS included the development and implementation of general public information and education programs concerning noise abatement and control, as well as support of airport noise abatement planning programs in communities. The Philadelphia airport study was begun (a joint EPA/FAA airport study required by Section 8 of the Quiet Communities Act of 1978).

A major accomplishment during 1979 was the development of an implementation plan for the award of several types of grants: State and local start-up, transportation planning, demonstration and Technical Assistance Centers, as mandated by the Quiet Communities Act of 1978. In implementation of this plan, during 1979, 38 cooperative agreements were awarded (including State ECHO) to States and localities and 10 to universities (for the establishment of Technical Assistance Centers).

It is anticipated that these cooperative agreements will greatly enhance EPA's ability to meet its goal of at least 400 active local programs covering 72 million people and 40 active State noise control programs in place by 1985.

1980 Program

In 1980, the Agency has allocated a total of \$4,382,700 and 25 permanent workyears to this program, of which \$1,262,400 is for the Salaries and Expenses appropriation and \$3,120,300 is for extramural purposes under the Abatement, Control and Compliance appropriation.

In 1980 the cooperative agreement program begun in 1979 is continuing with funding generally comparable to that available in 1979. This program includes financial assistance to States and localities for program starts; urban demonstrations as addressed in the President's Urban Noise Initiatives Program, surface transportation noise control demonstrations; and support for the Regional Noise Technical Assistance Centers. Assistance to airports for noise control planning will continue and the study of the Philadelphia International Airport, as mandated by the Quiet Communities Act, will be completed.

In 1980, the EPA-run ECHO program is being maintained, and States are being assisted in initiating ECHO programs of their own. The QCP program will be continued in Spokane and Kansas City and a reassessment of Allentown (the first QCP city) will be undertaken.

Also, a manual on vehicles noise enforcement will be started. Projects to mitigate aviation noise through assistance to airports in noise control planning and operations will be carried out.

Also, in 1980, the Senior Environmental Employee program, LISTEN, the State assignee program, and the noise counselor program will continue. In addition, general public information and education programs will be developed, and training of State and local noise control officers will be carried out.

The monitoring phase of the National Noise Assessment, a requirement of the Quiet Communities Act of 1978, will begin.

1980 Explanation of Change from Budget Estimate

The net decrease of \$9,100 results from several actions. An increase of \$52,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$1,400. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$21,400 to this activity.

and data support preproduction compliance to support the fuel economy program. A reprogramming of \$35,000 was made from the Management and Support media to reflect the transfer of an employee from the Management Information and Data Systems Division.

1981 Plan

The Agency requests a total of \$4,353,100 and 22 permanent workyears for this program, of which \$1,032,100 is for the Salaries and Expenses appropriation and \$3,321,000 for the Abatement, Control and Compliance appropriation.

In 1981, continuing attention will be given to State and local program development with emphasis on State programs which will provide assistance to local communities, and to the provision of technical support through the Technical Assistance Centers, ECHO programs, and demonstration programs. Sixteen (16) States are expected to have assumed responsibility for running the ECHO Program by the end of the fiscal year. Demonstrations will focus on (1) testing control techniques in the area of motor vehicle, highway noise, and construction site noise for use by States and localities in noise program development; and (2) urban initiative demonstrations, (e.g., neighborhood self help program and soundproofing and weatherization program). The financial assistance program to States, localities and Technical Assistance Centers will be funded at a level comparable to 1980.

The QCP Program in Spokane and Kansas City, Senior Environmental Employee program, community noise counselors, and LISTEN (computer program) will also continue. 1981 will also see the development of general public information and education programs and training of State and local noise control officials. A manual on vehicle noise enforcement, begun in 1980, will be completed. Airport noise abatement projects will be continued.

The National Noise Assessment begun in 1980 will continue. This assessment, a requirement of the Quiet Communities Act of 1978, is critical to establish a noise baseline against which to measure the problem in the future. It will also provide input into the definition of the extent of control needed through EPA regulations and State and local efforts.

FEDERAL AGENCY COORDINATION

1979 Accomplishments

1979 resources included \$378,700 in contract support. These funds were used to support interagency agreements with other Federal agencies. The purpose of this activity is to carry out noise control demonstration and test techniques, and incorporate the results of these demonstrations into the appropriate program of Federal agencies. Another benefit of this activity is that EPA funds are enhanced by contributions from other participating agencies. During 1979, this type of activity included the following demonstrations: off-road vehicles; highway noise mitigation; Bus Retrofit; Bus Transit Mall planning and design (planning and design phase completed); hearing conservation (model hearing conservation program).

1980 Program

In 1980, the Agency has allocated a total of \$677,400 and 8 permanent workyears to this program, of which \$277,400 is for the Salaries and Expenses appropriation and \$400,000 is for extramural purposes under the Abatement, Control and Compliance appropriation. These resources will be used to continue and complete funding for interagency agreements begun in earlier years to carry out noise abatement demonstrations.

construction through other Federal agencies will be carried out. These are: off-road vehicles; highway noise mitigation; Bus Transit Mall planning and design; Bus retrofit; and hearing conservation. Reports are being issued in 1980 on off-road vehicles, and Bus Transit Mall planning and design. These reports describe the control techniques and results obtained. The EPA and the agencies involved will work together to insure that successful techniques will be applied elsewhere in the Federal and private sectors as a results of this documentation. EPA also intends to integrate these demonstration efforts into its interagency urban noise control program which was begun in 1979. The EPA has set up an interagency task force to insure that noise control is an integral part of the Administration's urban initiative. Also, in 1980, EPA will develop data on noise of road surface materials (tire/road interaction) with Federal Highway Administration.

EPA will also continue to review FAA activities concerning aviation noise abatement.

1980 Explanation of Change from Budget Estimate

The net increase of \$5,400 results from several actions. An increase of \$11,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$700. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$5,000 to this activity.

1981 Plan

The Agency requests a total of \$689,100 and 8 permanent workyears for this program, of which \$289,100 is for the Salaries and Expenses appropriation and \$400,000 for the Abatement, Control and Compliance appropriation. In 1981, special emphasis will be placed on the development of information and potential recommendation to the FAA of more stringent standards for new design aircraft and on airport planning and compatible land use. Also, updated reports from the Interagency noise R&D panels will be published: Surface Transportation, Machinery and Construction Equipment, Aviation, and a listing of current government research. A variety of technology demonstrations will be underway including a quiet house demonstration, Transit Mall Planning and design, highway noise, tire/road interaction study, and reports on diagnostic inspection programs and joint-use airports.

NOISE REGIONAL PROGRAM IMPLEMENTATION

1979 Accomplishments

In 1979, a total of \$591,400 was obligated, of which \$78,000 was for extramural purposes. Regional accomplishments in 1979 included major involvement in the implementation of the various cooperative agreements with State and local governments and the establishment of Technical Assistance Centers. Also, in 1979, the regions provided oversight of the Quiet Communities Program (one in Allentown, Pa., and two additional ones added in 1979 - Spokane, Washington, and Kansas City, Missouri). Other activities carried out included the review of EIS's, the holding of noise abatement workshops for State and local officials, equipment loans, the providing of direct technical assistance to local communities and public education on noise abatement and control. Regional review of Federal facilities, to assure compliance with noise regulations was also provided. In addition, the regions acted as project managers for the ECHO and State assignee programs in their specific regions.

1980 Program

In 1980, the Agency has allocated a total of \$701,700 and 14 permanent workyears

with key State and local agencies. The regions will also continue to administer the technical assistance program to State and local governments with emphasis on the development of the Technical Assistance Centers and State-run ECHO programs so that these programs can serve as the technical assistance delivery mechanism to States and localities. They will also continue to manage QCP experiments in two communities (Spokane and Kansas City), continue to manage the ECHO program, and will assist some States in taking over the EPA ECHO program in their states. The equipment loan program and EIS reviews will be continued as will noise control workshops and on-site visits.

1980 Explanation of Change from Budget Estimate

The net decrease of \$21,500 results from several actions. An increase of \$22,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$4,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$17,300 to this activity.

Reprogrammings in order to support costs projected on the basis of 1979 actual expenditures resulted in regional transfer to water quality municipal waste treatment construction (\$5,300); to pesticides use management (\$6,000); to Management and Support personnel management (\$400); to drinking water underground injection control program (\$1,300); to air quality management implementation (\$56,400); to radiation program implementation (\$6,000); and from solid waste hazardous waste management regulatory stratospheric implementation (\$18,200).

1981 Plan

The Agency requests a total of \$691,300 and 13 permanent workyears for this program, of which \$638,400 is for the Salaries and Expenses appropriation and \$52,900 is for the Abatement, Control and Compliance appropriation.

1981 will see a continuation of 1980 activities, with emphasis on the development and strengthening of the Technical Assistance Centers and a projected 16 State-run ECHO programs so that these programs can more rapidly serve as the mechanisms for providing technical assistance.

The regions will also be responsible for administering the cooperative agreement program. They will manage the QCP program (2 cities), review EIS's, run the equipment loan program and conduct noise control workshops.

NOISE

Noise Enforcement

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$716	\$712	-\$4
Abatement, Control and Compliance...	225	225	...
Total.....	941	937	-4

NOISE

Noise Enforcement

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and Expenses.....	\$680	\$1,004	\$918	\$716	-\$202
Abatement, Control and Compliance...	<u>280</u>	<u>...</u>	<u>302</u>	<u>225</u>	<u>-77</u>
Total.....	960	1,004	1,220	941	-279
<u>Permanent Positions</u>	19	23	21	19	-2
<u>Full-time Equivalency</u>	25	39	39	35	-4

Budget Request

The Agency requests a total of \$941,200 for 1981, a decrease of \$279,000 from 1980. Included in this total is \$716,100 and 19 permanent workyears for Salaries and Expenses and \$225,100 for Abatement, Control and Compliance, with a decrease of \$202,000 and \$77,000, respectively.

Program Description

The long-range goals and major objectives of the noise enforcement program are to assure that manufacturers distribute products in commerce that comply with Sections 6 and 8 (new product noise emission standards and information labeling requirements respectively) of the Noise Control Act of 1972. Additionally, assistance is given to State/local governments in the development of effective noise enforcement program. The program works to integrate Federal, State, and local noise enforcement activities into a coordinated national program to reduce levels of environmental noise and to ensure in-use compliance of regulated products subject to an applicable standard under Section 6 or 3 of the Act.

1979 Accomplishments

The 1979 resources included \$279,500 for contracts which were used to conduct surveillance testing of in-use regulated portable air compressors and trucks; technical support for the manufacture, distribution, and operation of both compressors and trucks; and for State and local enforcement guidance.

In 1979, the primary emphasis of the noise enforcement program was enforcement of the standards for portable air compressors and medium and heavy-duty trucks. Records of 18 major truck and compressor manufacturers were inspected. Enforcement actions were initiated against two manufacturers for producing portable air compressors that did not comply with the noise emission standards.

Enforcement activities that were conducted in 1979 included the review of 1,065 production verification reports, the monitoring of eight production verification tests and 11 selective enforcement audits, the conducting of six test site comparison studies, and the conducting of 1,056 surveillance tests. Enforcement assistance and guidance was provided to 30 state and local noise enforcement programs and one State/local enforcement procedures package was developed. Enforcement sections of the general labeling provisions and of the labeling

requirement for hearing protectors were promulgated in 1979. In addition, six technical studies and six special investigations were conducted.

FY 1980 Plan

In 1980, the Agency has allocated a total of \$1,220,200 to this program, of which \$918,100 is for the Salaries and Expenses appropriation and \$302,100 is for extramural purposes under the Abatement, Control and Compliance appropriation. Extramural funds will be used to support the State/local noise enforcement effort; evaluate and summarize production verification reports; acquire products for investigative testing; provide for engineering and technical support services; continue surveillance testing of in-use regulated compressors and trucks; and initiate surveillance testing of hearing protectors.

Current operations of the noise enforcement program include continued enforcement of Section 6 new product noise emission standards for portable air compressors and medium and heavy duty trucks; initiate enforcement of Section 8 labeling requirements for hearing protectors; continued assistance and guidance to State and local noise enforcement programs; and continued development of enforcement strategies for additional Section 6 standards and Section 8 labeling requirements.

Planned noise enforcement activities include: review of 880 production verification reports; monitor and conduct 27 production verification and 20 selective enforcement audit tests; inspection of 39 compressor and truck manufacturers' records and facilities; develop a guidance manual for State/local prosecutors for use in enforcement of noise control ordinances; provide assistance to 30 State/local noise enforcement programs; conduct 1,000 surveillance tests; conduct 10 site comparison tests; and conduct nine special investigations and seven technical studies.

1980 Explanation of Changes from Budget Estimate

The net increase of \$216,400 results from several actions. An increase of \$34,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$14,800. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$196,300 to this activity.

1981 Plan

The Agency requests a total of \$941,200 for this program, of which \$716,100 is for the Salaries and Expenses appropriation and \$225,100 for the Abatement, Control and Compliance appropriation. Extramural funds will be used to provide assistance and guidance to State and local noise enforcement programs. Additionally, funds will be used to continue the surveillance testing of in-use compressors and trucks and will be initiated for buses.

These resources will allow the Agency to review 1,244 manufacturers' noise production verification reports, to monitor and conduct 74 production verification tests and 37 selective enforcement audits, and to conduct 122 investigations of manufacturers' records to insure that only complying products are distributed in commerce. A program to ensure compliance with the Section 8 labeling requirements for hearing protectors is continued. Also, as necessary, EPA will conduct investigations of alleged noncompliance, prepare administrative hearings. EPA will correlate manufacturers' noise testing facilities with its facility located at Sandusky, Ohio. The development of enforcement strategies and attendant regulations will continue in accordance with the schedule of controlled products developed by the Office of Noise Abatement and Control.

Assistance and guidance to State and local noise enforcement programs will be provided in two ways: (1) to individual programs that request assistance and guidance on specific issues and problems, and (2) by the development of training and guidance for State and local noise enforcement. Additionally, guidance on field enforcement of the Federal labeling requirements will be prepared and distributed to State and local noise enforcement programs to ensure that the national Federal labeling program is successful in providing consumers with the noise-generating or noise reducing properties of the products labeled under the Noise Control Act.

During 1981, the major activities of the noise enforcement program will be to:

- Review 1244 production verification reports;
- Monitor 62 production verification tests;
- Conduct 12 production verification tests;
- Monitor 37 selective enforcement audits;
- Conduct 3 selective enforcement audits;
- Conduct 122 inspections of manufacturers' records;
- Conduct 19 site comparison tests;
- Develop 4 State/local enforcement procedures;
- Provide 3 State/local enforcement guidance packages;
- Assist 12 State/local noise enforcement programs;
- Conduct 8 special investigations;
- Prepare 8 technical studies;
- Review 210 labeling verification reports;
- Monitor 10 labeling verification tests; and
- Monitor 6 compliance audit tests.

Interdisciplinary

INTERDISCIPLINARY

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$11,875	\$11,812	-\$63
Research and Development.....	13,816	13,816	...
Abatement, Control and Compliance....	1,550	1,550	...
Total.....	\$27,241	\$27,178	-63
<u>PROGRAM HIGHLIGHTS</u>			
Health and Ecological Effects:			
Salaries and Expenses.....	3,118	3,101	-17
Research and Development.....	2,114	2,114	...
Participatory Research:			
Salaries and Expenses.....	3,433	3,417	-16
Research and Development.....	11,312	11,312	...
Monitoring and Technical Support:			
Salaries and Expenses.....	2,478	2,467	-11
Research and Development.....	390	390	...
Total:			
Salaries and Expenses.....	9,029	8,985	-44
Research and Development.....	13,816	13,816	...
Total, Research and Development Program.....	22,844	22,800	-44
Environmental Impact Statements:			
Salaries and Expenses.....	2,152	2,138	-14
Abatement, Control and Compliance...	1,400	1,400	...
Energy Review and Permitting:			
Salaries and Expenses.....	694	689	-5
Abatement, Control and Compliance...	150	150	...
Total:			
Salaries and Expenses.....	2,246	2,227	-19

INTERDISCIPLINARY

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$11,875	\$11,812	-\$63
Research and Development.....	13,816	13,816	...
Abatement, Control and Compliance.....	1,550	1,550	...
Total.....	\$27,241	\$27,178	-63
<u>PROGRAM HIGHLIGHTS</u>			
Health and Ecological Effects:			
Salaries and Expenses.....	3,118	3,101	-17
Research and Development.....	2,114	2,114	...
Participatory Research:			
Salaries and Expenses.....	3,433	3,417	-16
Research and Development.....	11,312	11,312	...
Monitoring and Technical Support:			
Salaries and Expenses.....	2,478	2,467	-11
Research and Development.....	390	390	...
Total:			
Salaries and Expenses.....	9,029	8,985	-44
Research and Development.....	13,816	13,816	...
Total, Research and Development Program.....	22,845	22,801	-44
Environmental Impact Statements:			
Salaries and Expenses.....	2,152	2,138	-14
Abatement, Control and Compliance...	1,400	1,400	...
Energy Review and Permitting:			
Salaries and Expenses.....	694	689	-5
Abatement, Control and Compliance...	150	150	...
Total:			
Salaries and Expenses.....	2,846	2,827	-19

INTERDISCIPLINARY

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u> (dollars in thousands)	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>	<u>Page</u>
Salaries and Expenses.....	\$9,247	\$16,763	\$13,957	\$11,875	-\$2,002	
Research and Development...	12,812	9,939	11,012	13,816	+2,804	
Abatement, Control and Compliance.....	3,186	1,400	1,372	1,550	+178	
Total.....	\$25,245	\$28,102	\$26,341	\$27,241	+\$900	
Permanent Workyears.....	219	266	260	250	-10	
Full-time Equivalency.....	279	383	366	353	-13	
Outlays.....	20,124	44,200	22,000	23,200	+1,200	
Authorization Levels.....	46,285	*	*	*		

* Authorizations are contained within amounts authorized for the 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. In 1980 and 1981, authorizations have been proposed for the Research and Development activities.

PROGRAM HIGHLIGHTS

Health and Ecological						I-7
Effects:						
Salaries and Expenses...	1,739	3,370	3,654	3,118	-536	
Research and Development	5,295	1,729	1,462	2,114	+652	
Anticipatory Research:						I-11
Salaries and Expenses...	3,143	9,425	5,189	3,433	-1,756	
Research and Development	6,014	7,458	9,550	11,312	+1,762	
Monitoring and Technical						I-20
Support:						
Salaries and Expenses...	2,032	1,815	2,858	2,478	-380	
Research and Development	1,503	752	...	390	+390	
Total:						
Salaries and Expenses...	6,914	14,610	11,701	9,029	-2,672	
Research and Development	12,812	9,939	11,012	13,816	+2,804	
Total, Research and Development Program	19,726	24,549	22,713	22,844	+131	
Environmental Impact						I-25
Statements:						
Salaries and Expenses...	2,332	2,153	2,256	2,152	-104	
Abatement, Control and Compliance.....	3,186	1,400	1,372	1,400	+28	

Appropriation	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
(dollars in thousands)						
Energy Review and Permitting:						I-30
Salaries and Expenses...	...	...	...	694	+694	
Abatement, Control and Compliance.....	...	...	...	150	+150	
Total:						
Salaries and Expenses...	2,332	2,153	2,256	2,846	+590	
Abatement, Control and Compliance...	3,186	1,400	1,372	1,550	+178	
Total, Abatement and Control Program	5,518	3,553	3,628	4,396	+768	
<u>Permanent Positions</u>						
Health and Ecological Effects.....	36	59	66	66	...	I-7
Anticipatory Research	69	85	78	58	-20	I-11
Monitoring and Technical Support.....	40	24	38	36	-2	I-20
Total, Research and Development....	145	168	182	160	-22	
Environmental Impact Statements.....	72	76	77	77	...	I-25
Energy Review and Permitting.....	...	...	...	13	+13	I-30
Total, Abatement and Control Program	72	76	77	90	+13	
<u>Full-time Equivalency</u>						
Health and Ecological Effects.....	46	120	106	106	...	I-7
Anticipatory Research.	89	118	114	81	-33	I-11
Monitoring and Technical Support.....	59	58	63	61	-2	I-20
Total, Research and Development....	194	296	283	248	-35	
Environmental Impact Statesments.....	85	87	82	79	-3	I-25
Energy Review and Permitting.....	...	...	...	26	+26	I-30
Total, Abatement and Control Program	85	87	82	105	+23	

OVERVIEW AND STRATEGY

Many environmental problems can be approached directly through specific media programs, but effective management sometimes requires cutting across the usual media lines. Often the problem, skill, or technique involved is not readily assignable to a specific media, and an interdisciplinary approach is required. This interdisciplinary approach is consistent with the original concerns of the Agency: the need for an integrated organization to regulate pollution in all media and to assure that control measures applied to one media do not adversely impact other media. EPA employs this intermedia approach in several research and development programs where the problems, tools, and results are multidisciplinary in nature and must be coalesced into an integrated program. This concept is also applied to those areas of the environmental impact statement program where the identification of cross-cutting impacts is important. The workforce development program has been included due to its role in promoting the development of a national multidisciplinary environmental workforce. Similarly, a program of energy review and permitting has been included due to the need for a flexible multidisciplinary approach in assuring that the rapid development of new energy facilities is accomplished in an environmentally sound manner.

Research and Development

Anticipatory Research -- This program was first identified as a separate effort in 1978 to (1) identify and characterize emerging environmental problems before crises arise, (2) provide a commitment of support to important long-term studies which may require several years to complete, and (3) support the development of new knowledge about fundamental environmental principles and concepts. The results of these programs are intended to provide the scientific foundation for future applied work and to provide the scientific information necessary for future regulatory actions. The program has been divided into three functional components: (1) Innovative Research--to provide opportunities for scientists with unique ideas, (2) Center Support Research--to manage and provide long-term support for basic studies in key mission research areas (e.g., epidemiology, intermedia transport studies, and ground water research), and (3) Special Programs--to investigate emerging interdisciplinary problems. Included in this third activity are programs dealing with acid rain, carcinogens, environmental benefits, biological monitoring and integrated assessment of emerging or latent environmental problems.

Scientific Assessment -- This program can be functionally divided into two major components: comprehensive criteria development/effects assessment and special health risk analysis. Under the health risk component are the reproductive, carcinogenic, and exposure activities. The reproductive assessment activity was initiated to develop and refine methodology for the evaluation of mutagenic risk, which is an emerging health effect of increasing concern to the Agency. The mutagenic emphasis is part of a comprehensive plan to strengthen the Agency's assessment capability in reproductive effects. The exposure assessment activity, likewise, develops and refines methodology and guidelines for conducting exposure analyses; exposure data is often a key factor influencing the outcome of the Agency's risk assessments and selection of subsequent regulatory options. The responsibility for developing Agencywide guidelines for health risk analysis has been placed in this program to assure that consistent approaches are developed for assessing pollutant impacts across all media and pollutants.

The criteria development/effects assessment program integrates experimental results, across all media lines, to produce comprehensive evaluations of pollutants' effects on human health. This information represents the end-point of the R&D process and is used as scientific criteria for the Agency's regulatory decision making. This program represents a significant commitment by the Agency to assure that research results are used in a timely fashion within the regulatory development process.

Technical Information -- The objectives of the program are to ensure that the products of ORD's activity is to provide central quality control to assure that the products of ORD's research are documented, packaged and disseminated in a cost-effective manner to environmental officials and others who need the information both within and outside of EPA. The technical information program also provides ORD with the information systems necessary to effectively plan and manage EPA's research program. These systems provide ORD and EPA management with timely and accurate data on the status of ORD's 3,000 - plus active research projects.

Environmental Workforce Development Program -- This program provides agency-wide coordination and review of environmental workforce activities. It assures the development of a stable workforce of trained personnel to perform environmental management and protection functions, and uses EPA resources in conjunction with training programs of other Federal agencies.

Environmental Impact Statements -- The National Environmental Policy Act 1969 requires Federal agencies to prepare environmental impact statement (EISs) on major actions significantly affecting the quality of the human environment. This EIS requirement applies to new source discharge permits issued by EPA. Section 309 of the Clean Air Act requires that EPA review proposed actions of other Federal agencies to assure that they do not adversely affect the quality of the environment.

Energy Review and Permitting -- The Agency has developed this program to support the President's plan for accelerated energy development. The intent of this program is to ensure that the development of new energy facilities proceeds without unnecessary delay and without damage to the environment. Most new energy facilities will require EPA issued permits or an environmental review from EPA. The Agency is committed to processing applications from critical energy facilities as expeditiously as possible. The already increasing number of new energy facilities, along with the compressed time schedules imposed by the Energy Mobilization Board, will require increased effort from EPA's regional offices for environmental impact statement preparation and review, permitting, and related modelling and monitoring. Because of the many uncertainties connected with the energy development program, it is impossible to predict which offices in which regions will best be able to use these resources. For this reason, the Agency has grouped these activities together in the interdisciplinary media.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1980 Interdisciplinary Program.....	\$26,341
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Salaries and Expenses.....	-2,082
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This net decrease reflects a shift of funds for extramural purposes from scientific assessments, technical information, and anticipatory research, within the Research and Development program. An increase is provided for the energy review and permitting program.

Research and Development.....	+2,804
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The net increase in extramural funds is primarily due to the transfers from salaries and expenses as reflected above.

(in thousands of dollars)

Abatement, Control and Compliance.....	+178
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The increase is for extramural funding related to the energy review and permitting program, with a slight increase requested for NEPA compliance/EIS preparation.

1981 Interdisciplinary Program.....	27,241
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SUMMARY OF BUDGET ESTIMATE

1. Summary of Budget Request

An appropriation of \$27,240,600 is requested for 1981. This request, by appropriation, is as follows:

Salaries and Expenses.....	\$11,874,400
Research and Development.....	13,816,200
Abatement, Control and Compliance..	1,550,000

This represents an increase of \$899,800 over the 1980 interdisciplinary program. An increase of \$844,200 is requested for the energy review and permitting program in order to provide additional resources to the Agency's regional offices to be used for the preparation and review of environmental impact statements and the issuance of permits for new energy facilities. The regions will also use these resources for related monitoring and modelling activities. A net increase of \$55,600 results from minimal changes to each of subactivities within this media: monitoring and technical support (+\$9,900); anticipatory research (+\$5,800); health and ecological effects (+\$115,600); and EIS statements (-\$75,700).

2. Changes from Original 1980 Budget Estimate

Changes from the budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$53,102
Congressional changes:	
Travel.....	-28
ADP.....	-6
Supplies and expenses.....	-2
Anticipatory research.....	-2,000
Integrated environmental assistance...	-25,000
Reprogramming for authorized workyears..	-227
Miscellaneous reprogrammings.....	+104
Proposed pay raise supplemental.....	+398
Current 1980 estimate.....	26,341

The Congress made several reductions which resulted in decreases to this media: a reduction of \$2 million each to travel and to supplies and expenses resulted in a decrease of \$28,000 and \$2,000, respectively. A reduction of \$1 million to ADP costs decreased this media by \$6,000. The anticipatory research program was reduced by \$2 million. The integrated environmental assistance program was not funded, with a decrease

to cover authorized workyears resulted in a decrease of \$227,000 to this media. The proposed supplemental to partially fund the October 1979 pay raise increases the intermedia by \$398,000.

Miscellaneous reprogrammings were made to the Pesticides media (\$50,000); to the toxic substances media (\$5,600); from the drinking water media (\$5,600); to the water quality media (\$20,700); to the air media (\$87,400); and from the management and support media (\$261,200).

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980 (in thousands of dollars)	Estimate 1981 (in thousands of dollars)
Prior year obligations.....	\$25,244	\$26,601
Congressional changes.....	-404	...
Effect of reprogrammings.....	-123	...
Pay raise supplemental.....	+398	...
Change in amount of carryover funds available.....	-1,514	-260
Program increase.....	+3,000	+900
Total estimated obligations.....	26,601	27,241
(From new obligation authority).....	(26,341)	(27,241)
(From prior year funds).....	(260)	...

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The congressional changes discussed in the previous section, with the exception of integrated environmental assistance grants, result in a decrease of \$404,000 to obligations. Since the integrated grant program was new, there would be no adjustment to make to prior year obligations. The reprogrammings and pay raise supplemental result in a change in obligations of -\$123,000 and +\$398,000, respectively.

The amount of carryover funds to be obligated in 1980 is \$260,000, a decrease of \$1,514,000 from the 1979 level. In 1981, no obligations are estimated in carryover funds, a decrease of \$260,000 from the 1980 level.

The increase in budget authority in 1980 was previously estimated at \$3 million; in 1981, it is estimated that the program change will increase obligations by \$900,000.

INTERDISCIPLINARY

Health and Ecological Effects

Original Estimate 1981	Revised Estimate 1981	President's Reduction
(dollars in thousands)		

Appropriation

Scientific Assessment:

Salaries and Expenses.....	\$3,118	\$3,101	-\$17
Research and Development.....	<u>2,114</u>	<u>2,114</u>	<u>...</u>
Total.....	5,232	5,215	-17

Health and Ecological Effects

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
		(dollars in thousands)			
<u>Appropriation</u>					
Scientific Assessment:					
Salaries and Expenses..	\$1,739	\$3,370	\$3,654	\$3,118	-\$536
Research and Development.....	5,295	1,729	1,462	2,114	+652
Total.....	7,034	5,099	5,116	5,232	+116
<u>Permanent Positions</u>					
Scientific Assessment....	36	59	66	66	...
<u>Full-time Equivalency</u>					
Scientific Assessment....	46	120	106	106	...

Budget Request

The 1981 budget request for the scientific assessment program is \$5,231,600 and 66 permanent workyears. Included in this total is \$3,117,400 for the Salaries and Expenses appropriation and \$2,114,200 for extramural purposes under the Research and Development appropriation; a decrease of \$536,400 and an increase of \$652,000 respectively. This request represents a net increase of \$115,600 which will be used to expand reproductive effects assessment efforts.

Program Description

The scientific assessment program provides the Agency's regulatory programs with a centralized capability for evaluating information on health and ecological effects from exposure to pollutants and estimating the level of health risk involved. The program reviews, upon request, known information about pollutant effects, interpreting this information and producing scientific data summaries for subsequent risk assessment or other regulatory decision making. The hazard assessment portion of the program will be responsible for maintaining consistency and quality among the risk assessments prepared throughout the Agency. The program establishes, as needed, agencywide guidelines for health and risk analysis. The program will also conduct risk assessments and prepare health and environmental effect criteria documents for Agency regulatory activities in addition to reviewing completed assessments from other offices within EPA for conformance to Agency guidelines. Typical outputs from the scientific assessment program include: reviews, guidelines, health criteria documents, aquatic effects criteria documents, health assessments, reports on special health/exposure situations and both preliminary and full risk assessments dealing with the carcinogenic potential, as well as mutagenic toxicity.

1979 Accomplishments

During 1979, obligations totaled \$7,033,700. This included \$1,739,000 for in-house expenses and \$5,294,700 for extramural expenses.

In April of 1979, the Agency established the Office of Health and Environmental Assessment (OHEA) to expand its health-related scientific assessment capability. OHEA combined the previously existing Criteria and Effects Assessment Program for Air Quality and the Carcinogen Assessment Group (CAG) with new programs in criteria and effects assessment for water quality, reproductive effects risk assessment and exposure assessment.

The Carcinogen Assessment Group conducted risk assessments on potential carcinogens for the major Agency regulatory offices. Included were assessments for 2,4,5-Trichlorophenol, cresols, lindane, etc. The risk assessments for 2,4,5-T and lindane led respectively, to an emergency suspension and limited usage restrictions. The Group has also reviewed assessments for other Agency program offices and acted in a health policy advisory capacity to the Agency.

The Reproductive Effects Assessment Group drafted and circulated within EPA an initial set of guidelines and procedures for conducting risk analysis of mutagenic toxicity. After review and possible revision these guidelines will be adopted for agencywide usage.

An agencywide work group was convened to assist in the development of guidelines and methodologies for exposure assessment to coincide with the establishment of the Exposure Assessment Group. The development of these guidelines for agencywide use serves as a quality control mechanism for the Agency and will enhance uniformity and consistency in the application of scientific information for exposure analysis.

The Environmental Criteria and Assessment Office which supports the Agency's air regulatory program issued an air quality criteria document on carbon monoxide. This report is required under Section 109 of the Clean Air Act.

The Environmental Criteria and Assessment Office supporting the water and hazardous materials regulatory program issued draft water quality criteria for the 65 NRDC consent decree water pollutants. The office also started the evaluation of public comments on these criteria.

1980 Program

In 1980, the Agency has allocated a total of \$5,116,000 to this program, of which \$3,653,800 is for salaries and expenses and \$1,462,200 is for extramural purposes.

The Carcinogen Assessment Group will provide assistance to virtually every regulatory office within the Agency. It will perform a combination review or new risk analysis for the pesticides program for 18 potential carcinogens and testify at the Science Advisory Panel public hearings on those pesticides reviewed. The Group will provide the air program with 45 preliminary risk assessments and eight full summary risk assessments and will review five oncogenic risk evaluations for the maximum contaminant level program in the drinking water program. The Carcinogen Assessment Group will also review for the Toxic Substances Office three premanufacturing risk assessments and two assessments for existing chemicals. Two special assessments will be developed to address pressing carcinogenic issues for the regions and/or Office of General Counsel. The specific pollutants to be evaluated will be provided by the program offices to address their most pressing needs.

The Reproductive Effects Assessment Group will finalize the development of Agency guidelines and procedures for conducting risk analyses of mutagenic toxicity which was initiated in 1979 and will also review 8 mutagenicity evaluations prepared by regulatory offices within the Agency.

The Exposure Assessment Group will continue the development of guidelines for conducting exposure analyses as well as review up to three exposure situations which have been proposed by the regulatory offices.

The Environmental Criteria and Assessment Office (air) will complete two air criterion reports on sulfur oxides and nitrogen oxides, eight health assessments documents on arsenic, asbestos, methylene chloride, fluorocarbon 113, trichloroethylene, methyl chloroform, acrylonitrile and vinylidene chloride, and one special report on acid rain.

The Environmental Criteria and Assessment Office (water) will complete the final criteria documents for the 65 water pollutants which were in public comment phase in 1979. They will also prepare 113 summary health effects reports in support of the unexpected needs of the Agency's solid waste program. Health summaries will also be prepared for 11 301g pollutants to address Agency enforcement needs in developing scientific criteria for waste permit waivers. Activity will be initiated to develop water quality criteria for eight new pollutants.

1980 Explanation of Change from Budget Estimate

The net increase of \$17,000 results from several actions. An increase of \$100,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and resulted in a decrease of \$7,100. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$76,400 to this activity.

1981 Plan

The Agency requests a total of \$5,231,600 and 66 permanent workyears for development of scientific criteria and the assessment of health effects. Approximately \$2,114,200 is for extramural purposes and \$3,117,400 for the Salaries and Expenses appropriation. These figures represent an increase of \$652,000 and a decrease of \$536,400, respectively. The net increase of \$115,600 will be used to provide additional funds for the expansion of reproductive effects assessment activities.

The Carcinogen Assessment Group will operate at a level similar to 1980 with a moderate shift in emphasis from performing risk assessments to the review and oversight of assessments performed elsewhere in the Agency. At the request of the pesticides program, the Group will perform a combination review or new risk analysis for eight potential carcinogens, perform pre-Rebuttable Presumption Against Registration (pre-RPAR) and rebuttal reviews for five potential carcinogens, and prepare pathological slide reviews for three. The Group will provide the air program with 45 Type I assessments for eight potential carcinogens, develop summary risk assessments for eight water pollutants identified by the water office, and review five oncogenic risk evaluations for the maximum contaminant level drinking water program. Three premanufacturing risk assessments and two assessments for existing chemicals will be reviewed for the toxic substances office. Two special assessments will be developed for the Regions and/or Office of General Counsel.

The Reproductive Effects Assessment Group will continue to develop and refine methodology and policy for the evaluation of mutagenic risk, initially drafted in the latter part of 1979. The Group will perform eight mutagenicity evaluations: three for pesticide programs, three for air programs, and two for the water quality criteria program. The Group will also initiate the development of guidelines for teratogenicity.

The Exposure Assessment Group will develop second generation methodology and guidelines for conducting exposure analyses. Since the use of exposure data is often a key factor in influencing the outcome of the Agency's risk assessments and subsequent regulatory decisions, the first programmatic goal is to achieve a uniform approach to exposure analysis through the development of agencywide guidelines. In addition to developing these guidelines and providing technical consultation to the program offices, the Exposure Assessment Group will review two to three exposure situations which have been prepared by the regulatory offices.

The Environmental Criteria and Assessment Office (air) will operate at a level similar to that of 1980, completing two health assessments and three hazardous pollutant assessments begun in 1980. Work will be initiated on five new hazardous pollutant assessments, two new criteria reports, and two special reports on background issues concerning air quality problems.

The Environmental Criteria and Assessment Office (water) will complete the revision of eight water quality criteria documents begun in 1980 and begin development of water quality criteria for eight new pollutants. These documents will include assessments of both human health effects and aquatic effects. The office also expects to prepare health summaries to support program needs in the hazardous materials program.

INTERDISCIPLINARY

Anticipatory Research

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$3,433	\$3,417	-\$16
Research and Development.....	<u>11,312</u>	<u>11,312</u>	<u>...</u>
Total.....	14,745	14,729	-16

INTERDISCIPLINARY

Anticipatory Research

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
		(dollars in thousands)			
<u>Appropriation</u>					
Salaries and Expenses...	\$3,143	\$9,425	\$5,189	\$3,433	-\$1,756
Research and Development.....	6,014	7,458	9,550	11,312	+1,762
Total.....	9,157	16,883	14,739	14,745	+6
<u>Permanent Positions....</u>	69	85	78	58	-20
Full-time Equivalency...	89	118	114	81	-33

Budget Request

The Agency requests a total of \$14,745,200 and 58 permanent workyears for 1981, an increase of \$5,800 and a decrease of 20 permanent workyears from 1980. Included in this total is \$3,433,200 for the Salaries and Expenses appropriation and \$11,312,000 for extramural purposes under the Research and Development appropriation, with a decrease of \$1,756,100, and a \$1,761,900 increase respectively. The decrease in the Salaries and Expenses appropriation reflects the transfer of 20 permanent workyears from anticipatory research to other Agency programs. As a result, some freshwater fate studies, marine science and cancer research will be conducted extramurally; this change is reflected by the increase in the Research and Development appropriation.

Program Description

The National Academy of Sciences and the Office of Technology Assessment have previously expressed concern over the lack of long-term fundamental and anticipatory research in EPA. In addition, Public Law 95-155, Section 6(b) of the Research and Development Act of 1978 contains a congressional request for EPA to examine alternative approaches for conducting long-term environmental research, recognizing the need to insulate such activities from the Agency's day-to-day regulatory pressures. The anticipatory research program was initiated as the key mechanism by which the Agency addresses these concerns and takes action. The program is designed to give EPA an opportunity both to get ahead of problems and to improve the basic quality of environmental science. To achieve these ends, the program was organized in 1979 into three components with the following purposes:

The Center Support Research Program provides long-term support for exploratory research in key areas in regard to EPA's mission. Centers and their programs will have a multimedia orientation to supplement EPA's research capability, and will serve as a resource to all EPA laboratories whose activities are related to the Center objectives. The intent of EPA in employing the Center mechanism is to integrate and build upon the expertise and resources of existing institutions. Support for only moderate increases in staff facilities and equipment is provided.

range impacts or applicability. This component of the program facilitates a systems planning approach for identifying fundamental and long-term research needs as related to EPA's overall mission.

The Strategic Assessment and Special Studies provides research and development planning information on future environmental trends and problems. Activities include: (1) Producing an annual Environmental Outlook report intended to provide a comprehensive overview of the environmental future; (2) Conducting small-scale mini-assessments of future environmental concerns to determine whether they are likely to become problems in the future; and (3) Developing a system of environmental indicators and indices for detecting and measuring changes in environmental quality and establishing outreach mechanisms for tapping both expert knowledge and public perceptions.

In addition, special studies are conducted (a) on problems that have been identified, but which require further exploratory research and (b) in order to produce information on the environmental futures of a particular region, industry, economic sector, or resource. Current activities of this component are aimed at: (1) understanding the contribution of environmental carcinogens in all media to the incidence of cancer in the general population; (2) conducting a national assessment of the problems associated with acid rain; (3) developing methodologies for assessing environmental benefits of pollution control activities; and (4) exploring the utility of bioindicators as a forecasting tool in the monitoring of pollution trends.

1979 Accomplishments

During 1979, obligations totaled \$9,156,800. Included in this total are \$3,142,700 for salaries and expenses and \$6,014,100 for extramural research activities. Specific accomplishments include the following:

Center Support Research Program--Three institutional centers were established to conduct long-term exploratory research. Their activities are detailed below:

- Epidemiology Research Center - Located at the University of Pittsburgh, the center is responsible for fundamental research to develop new methodologies and improved statistical techniques. The Center also explores potential correlations between environmental pollutants and diseases such as cancer, emphysema, and hypertension. The center is intended to enhance EPA's capability to analyze the increasingly complex data and long-term problems of pollution impacts on man.
- Advanced Control Technology Research Center - Located at the University of Illinois, Urbana, this Center will focus on developing an understanding of the basic chemical, biological, and physical processes which limit our ability to improve our treatment techniques. This center provides stable support for the long-term exploratory research necessary to produce basic knowledge to improve the effectiveness of future treatment technologies.
- Groundwater Research Center - This center was established at a consortium of universities: the University of Oklahoma State University, and Rice University. This center will support fundamental and long-term research on ground water characteristics in soils and subsoils profiles. The center works in conjunction with EPA's Robert S. Kerr Environmental Research Laboratory to examine the Garber-Wellington aquifer in Oklahoma.

Innovative Research Program -- The inhouse innovative research program was initiated in 1979. The program allowed for the funding of six unique, exploratory research projects including a study to measure the mobilization of soil components by acid precipitation and an effort to develop a new infrared spectroscopic method for analysis of trace hazardous air pollutants. Participation in the highly competitive project selection process included eleven of the Agency's research laboratories.

Strategic Assessment and Special Studies -- Prepared the Environmental Outlook forecast and assessment of the environmental outlook from the present to the year 2000. The Environmental Outlook was used to support preparation of the Research Outlook 1980 report. In addition, special studies were conducted in the following areas:

Acid Rain: The anticipatory research acid rain program served as an integral component of the President's acid rain program. During 1979, the program:

- Expanded studies of the environmental effects of acid rain on aquatic and terrestrial ecosystems in the northeast United States; the effects of acid rain on the growth yield and quality of 21 economically important crops were studied under both laboratory and field conditions.
- Initiated an exploratory study of the impact of acid rain on the lakes of the Boundary Water Canoe Area.
- Established management system of storage and retrieval of acid deposition data for all Federal monitoring networks.
- Completed analysis of available EPA/National Oceanic and Atmospheric Administration/World Meteorological Organization monitoring data which have contributed to recently initiated efforts to assess the global impacts of acid rain.
- Applied Euromap transport model to the study of sulfate deposition in the eastern United States and Canada.

Biomonitoring: Mussel Watch, a program to monitor chemical residues in the biota of the Nation's coastal waters:

- Completed data collection for two additional years; analysis of the data will be completed in early 1980.
- Completed facilities for storing environmental specimens at the National Bureau of Standards for a pilot specimen banking research effort.

Cancer:

- Developed a county level data base containing air quality information cancer mortality and morbidity rates, socio-economic, demographic, meteorologic, and migration information for the continental United States, for the analysis of the associations between cancer incidence and environmental quality.
- Completed a study which compares the cancer mortality rates in counties where production of certain organic chemicals occurs with the rates found in counties where such production does not exist.

in furthering our understanding of the relationship between cancer incidence in the general population and exposures to environmental carcinogens.

- Developed methods for utilizing certain species of fish to monitor, biologically, the presence of carcinogens in the marine environment by actual observation of cellular proliferation disorders in these species.

Environmental Benefits:

- Produced an interim report on the national health benefits of reduced air pollution and the overall benefits of such reductions in the Los Angeles Basin. This report suggests (1) that the health quantifiable benefits resulting from cleaning up air pollution particles are greater than the costs of controlling all air pollutants from stationary sources, (2) that the likely economic benefits of air quality improvements are much greater than previously thought, (3) that many such economic benefits previously thought non-measurable can be measured, and (4) that aesthetic benefits, such as improved visibility, and reduced illness dominate other air pollution economic control benefits as opposed to previous emphasis on reduced mortality.

1980 Program

In 1980, the Agency has allocated a total of \$14,739,400 to this program, of which \$5,189,300 is for the Salaries and Expenses appropriation and \$9,550,100 for extramural purposes under the Research and Development appropriation.

Center Support Program: In 1980 four additional Centers will be established in the following areas:

- Ultimate Waste Elimination Research Center - Present control methods result in generation of solid or liquid wastes which are disposed of by land application, burial, or well injection. These practices provide only temporary storage with great potential for future contamination of air and water. This center will focus on process changes leading to clean technologies and innovative recycle-reuse methods.
- Intermedia Transport Research Center - This center will focus on defining the chemical and physical processes which govern the exchange of pollutants at the air-land and air-water interfaces. Emphasis will be on the movement of toxic chemicals and trace elements which are little understood, and on determining how temperature, humidity, vegetation growth, and other factors influence the pollutant deposition processes; and on determining whether chemicals purposefully placed on the land by man are entrained into the atmosphere.
- Ecosystems Research Center - Decisions on protecting the environment have been based largely upon data from individual biological species or individual physical/chemical processes. Usually, little or no pertinent information has been available from the level of the biological community or ecosystem. Among the key questions to be addressed are: (a) Are there systems level functions which are critical to the maintenance of desirable ecosystems or communities? (b) Can an ecosystem's "condition" be usefully estimated by describing only its physical and chemical characteristics? (c) Are there inherently stable or unstable states for ecosystems relating to their value for man?

marine sciences research center will address effective measurement and assessment of the health of marine ecosystems and the significant sources, pathways and processes which influence exposure of man or marine ecosystems to toxic substances. Two of the key questions which the center will address are: (1) How can we effectively measure and assess the state of health of marine ecosystems that we believe are under stress? (2) What are the significant sources, pathways and processes influencing exposure of man or marine ecosystems to toxic substances?

Innovative Research -- The 1980 program will initiate four unique research projects including an effort to develop an innovative means for complete reuse of the paper industry process water, and a study of the physical-chemical properties of estuaries which affect the distribution of suspended matter. Proposals have been received from ten of the Agency's research laboratories for consideration in the highly competitive selection process. In 1980, the program will:

- Continue the development and testing of microcosms for the freshwater and marine environments. New efforts will be initiated to test the utility of deployable sensors for freshwater and marine environmental monitoring.
- Initiate the extramural component of the innovative program. Several areas of research have been selected as themes for this first year's effort, including efforts to explore the effects of pollution on terrestrial wildlife, studies of the impact of pollution on the aged, and investigation of the potential environmental risk of the rapidly developing biotechnology industry. A workshop of key experts will be sponsored in 1980 to develop the research agenda necessary to begin elucidating the environmental hazards posed by potential applications of applied genetic technology.

Strategic Assessment and Special Studies: In 1980, the program will:

- Complete a survey of the current state-of-the-art for environmental forecasting. This survey will provide a framework for improvement of such capabilities.
- Complete a major review and revision of current environmental data and assessment tools to improve environmental outlook reports.
- Conduct 10-12 mini-assessments of selected future environmental concerns such as biotechnologies, latent problems (i.e., hidden problems such as Love Canal), natural hazards, and materials substitution to determine if further research is warranted;
- Complete projects initiated in 1979 by the National Academy of Sciences and Citizens Futures Groups in Iowa and Illinois to provide EPA expert advice and citizen perceptions about future environmental problems.
- Complete an integrated environmental assessment of Regions IV and VI.

be published. Other 1980 activities include:

- Available methods for analyzing dry deposition will be compared, protocols for strict quality assurance will be developed for the networks involved with the historical water supply study, and studies of deposition will be expanded to other parts of the country;
- The Euromap transport model will be expanded to examine new energy scenarios with emphasis placed on nitric acid.
- Maps of sensitive areas will be expanded and improved, the Boundary Waters Canoe Area Study to include the Wisconsin area, the scope of acid rain upon the drinking water systems and impacts of nitric acid on important crops.

Biomonitoring:

- The Mussel Watch Program will monitor a limited number of geographical sites identified as being "hotspot areas", to fully characterize seasonal monthly variations. In addition, pilot biomonitoring efforts will be initiated on a limited geographical basis for both the fresh-water and the terrestrial media.

Cancer:

- An extensive integrated exposure assessment study will be conducted within a geographic area known to exhibit a high incidence of cancer mortality. This stage of the cancer field program will be aimed at determining and defining the existence of potential exposure gradients to environmental carcinogens within the area. A second field effort will be continued in the Houston area and will study cancer incidence and the possible associations with the area's chronic air pollution problem.

Dry Scrubbers:

- A complete 30-day evaluation of coal-limestone pellets will be undertaken. The pellets could substantially reduce the environmental control costs associated with industrial coal usage. The spray dryer sulphur dioxide control process, at pilot and full scale, will be evaluated. This process offers a near term technology to lower the sulphur dioxide control technology costs. Finally, small scale testing of simultaneous dry sulfur dioxide and nitrogen oxides control based upon simultaneous coal-limestone combustion will be initiated.

Environmental Benefits:

- Publication of the final results of a 3-year study of air pollution benefits is planned. This study will include a comparison of the economic costs and benefits of air pollution control in the Los Angeles Basin and the results of further research using a microepidemiological approach, to determine the economic benefits of reducing illness due to air pollution.

- Major reports are expected on the economic benefits of water pollution control, improved visibility in the Western National Parks, and on improved air quality in San Francisco.

1980 Explanation of Change from Budget Estimate

The net decrease of \$2,143,600 results from several actions. An increase of \$145,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs, \$1 million ADP costs and anticipatory research resulted in a decrease of \$5,500; \$6,300 and \$2 million, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$197,300 to this activity.

A transfer of \$50,000 was made to the pesticides media and \$30,000 to the toxic substances media to cover personnel reassignments of individuals with special capabilities as a result of the abolishment of the Criteria Development and Special Studies Division.

1981 Plan

The Agency requests a total of \$14,745,200 and 58 permanent workyears for this program, of which \$3,433,200 is for the Salaries and Expenses appropriation and \$11,312,000 for extramural purposes under the Research and Development appropriation. The net increase of \$5,800 reflects the transfer of 20 permanent workyears to other programs and the shift of their related dollars to the extramural component of the anticipatory program. Expected activities in 1981 include:

Research Center Support Program

- The program will continue to support the seven research centers established in 1979 and 1980. No new centers are planned. Research will stress stable exploratory projects and the mutually beneficial exchange of EPA and academic, scientific and technical personnel.
- The Groundwater Center will shift its research activities from a regional emphasis, i.e. the Garber-Wellington Aquifer in Oklahoma, to the generic concerns for groundwater resources across the country.
- The Epidemiology Center will initiate long-term cohort studies of chronic disease development and the Advance Control Technology Center will be applying fundamental knowledge gained in the laboratory to the more difficult and persistent pollution control problems, such as removal of low molecular weight organic toxicants from drinking water.
- The Waste Elimination Research Center will begin scaled-up demonstrations of exploratory production, recycle, and reuse process.

- The Intermedia Transport Research Center will continue efforts initiated in 1980 to further understand air/land and air/water interface interactions.
- The Integrated Ecosystem Research Center will be field testing exploratory, simplified ecosystems models.

Innovative Research Program

- In-house and extramural efforts will be expanded to support unique ideas for addressing long-term problems. This program is designed to take advantage of the vast number of talented researchers, both within the Agency and in the academic community. Results of previous projects and workshops conducted in 1980 to define exploratory research areas will be employed to determine specific projects to be undertaken. Current interests for exploratory projects are: (1) spearheading efforts to identify and quantify behavioral toxic effects; (2) assessing the effect of toxic chemicals on our Nation's soils; and (3) investigating the potential environmental problems of disposing of the sulfur extracted by coal cleaning processes and coal-burning scrubbers.

Strategic Assessment and Special Studies:

- Efforts to develop a system of environmental indicators and indices for projecting and evaluating future environmental changes will be continued.
- An Environmental Outlook 1981 report to provide information on the environmental future will be produced.
- Mini-assessment problem identification and definition reports will be produced.
- Mini-assessments of toxics identified by the environmental outlook activity will be initiated.
- Outreach activities for obtaining expert opinions and citizens perceptions about future environmental problems will be continued.

In addition, special studies will continue in:

Acid Rain

- The 1981 program will place emphasis on the effects of both the nitric and sulfuric components of acid rain on important crops.
- The northeastern section of the United States will be subjected to extensive study as a highly sensitive and impacted area. Here, studies will investigate the effects of acid rain on this region's aquatic, forest, and agricultural ecosystems.

- A fourth nationwide collection and analysis effort will be conducted in the Mussel Watch Program. This fourth collection effort will be aimed at discovering any trends in the marine concentrations of compounds found during quantitative analysis. The pilot freshwater and terrestrial biomonitoring efforts will be extended to nationwide coverage, thus providing a means for "hotspots" identification in these media.

Cancer

- The cancer field program will enter a phase in which studies will be conducted to assess the exposure of individuals in a community to environmental carcinogens. This objective will be achieved by the use of personal atmospheric monitors, household tap water monitoring, personal activities modeling, body burdens analyses and other exploratory individual exposure assessment techniques. A comprehensive epidemiology case study will also be conducted in the area; due to the latency in the expression of the cancerous disease state, a retrospective exposure model will be employed to assess historical exposures of the population to carcinogens. Existing methods to monitor subtle health and biological changes resulting from environmental carcinogens will also be field tested.

Dry Scrubbers

- The spray dryer sulfur dioxide control program will conduct a test using high sulfur coals. This technology could be a low-cost alternative to conventional wet flue gas desulfurization processes.

Environmental Benefits

- The program will continue to emphasize the development and demonstration of new methodologies and data for determining the economic benefits of controlling air and water pollution. These methodologies and data will be used for both benefit-cost analysis of individual EPA regulatory decisions and comparisons of relative program level benefits. Particular emphasis will be placed on better methodologies and data for recreational and option value benefits for water pollution control.

INTERDISCIPLINARY

Monitoring and Technical Support

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
			(dollars in thousands)		
Technical Information:					
Salaries and Expenses	\$1,766	\$1,815	\$2,590	\$2,266	-324
Research and Development.....	1,501	752	...	390	+390
Environmental Work					
Force and Development:					
Salaries and Expenses	267	...	268	212	-56
Research and Development.....	2	...	...	...	...
Total:					
Salaries and Expenses..	2,033	1,815	2,858	2,478	-380
Research and Development.....	<u>1,503</u>	<u>752</u>	<u>...</u>	<u>390</u>	<u>+390</u>
Grand Total.....	3,536	2,567	2,858	2,868	+10
<u>Permanent Positions</u>					
Technical Information...	32	24	30	30	...
Environmental Work					
Force and Development..	<u>8</u>	<u>...</u>	<u>8</u>	<u>6</u>	<u>-2</u>
Total.....	40	24	38	36	-2
<u>Full-time Equivalency</u>					
Technical Information...	50	59	54	54	...
Environmental Work					
Force and Development..	<u>9</u>	<u>...</u>	<u>9</u>	<u>7</u>	<u>-2</u>
Total.....	59	59	63	61	-2

INTERDISCIPLINARY

Monitoring and Technical Support

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Technical Information:			
Salaries and Expenses.....	\$2,266	\$2,256	-\$10
Research and Development.....	390	390	...
Environmental Work Force and Development:			
Salaries and Expenses.....	212	211	-1
Research and Development.....	...	...	...
Total:			
Salaries and Expenses.....	2,478	2,467	-11
Research and Development.....	390	390	...
Grand Total.....	2,868	2,857	-11

Budget Request

The Agency requests a total of \$2,867,300 and 36 permanent workyears for 1981, of which \$2,477,300 is for the Salaries and Expenses appropriation and \$390,000 for extramural purposes under the Research and Development appropriation. This is a decrease of \$380,100 and a increase of \$390,000, respectively. Included in the net increase of \$9,900 is a decrease of \$55,700 and 2 permanent workyears that will reduce activities in the environmental workforce program.

Program Description

The monitoring and technical support program is comprised of two components: the technical information program and the national workforce development program.

The technical information/technology transfer program provides the means by which information developed by EPA's research efforts is made available, in usable form, to those who need it both within the Agency and throughout the public and private sectors. This program manages and provides quality control over the publication and distribution of scientific, technical and executive summary documents. This program also provides a central source of information on EPA's research, and responds to information requests. Specialized publications and symposia are produced, at the request of the EPA Regions and program offices, and targeted at those audiences which must have this information in order to implement environmental regulations. The program also supports the congressionally-mandated Small Wastewater Flows Information Clearinghouse and the annual EPA Research Outlook (5-year plan) and Research Highlights reports. Finally, this program provides the management information systems and data control functions necessary to track EPA's 2,500 active research projects.

The national workforce development program provides/agencywide coordination and management overview of the Agency's environmental workforce development policies, program and activities with other Federal agencies (Department of Labor, Department of Education, National Science Foundation and the Tennessee Valley Authority). Training and educational assistance programs have been developed to aid State and local environmental agencies in meeting their workforce needs.

TECHNICAL INFORMATION

1979 Accomplishments

During 1979, obligations totaled \$3,267,200. Included in this total was \$1,765,700 for salaries and expenses and \$1,501,500 for extramural activities. Specific accomplishments include the following.

In 1979, in response to Section 1040 of the Clean Water Act Amendments of 1977, a major new research grant was awarded to create and support the Small Wastewater Flows Information Clearinghouse. The Clearinghouse provides information on pollution control alternatives for rural areas. In addition, a system was established to collect, provide quality control for, and allow the automated retrieval of, detailed information on EPA's thousands of active research projects. This system, together with links between it and the EPA's other systems and links with EPA's 15 field laboratories, is building bridges between ORD's various operating units and assuring the timely and accurate flow of information. During 1979, this system has significantly improved the Agency's ability to respond to the rapidly changing information needs of the regulatory process.

tions and manuals for its user community. More than 100,000 publication requests were fulfilled. Centralized tracking was imposed to control all conference and symposia funded by the Office of Research and Development. The Research Highlights, Research Outlook, Program Guide and Publications Bibliography were also produced, along with a manual on sludge control. Symposia on innovative/alternative municipal wastewater treatment and on industrial waste water pretreatment were conducted.

1980 Program

In 1980, the Agency has allocated a total of \$2,589,400 to this program, all of which is for Salaries and Expenses.

In 1980, a major change will be implemented in the way EPA research information is managed. Under the new policy, the technical information program will function as a centralized technical communications service organization. Most of the products of EPA's research - from journal articles to executive summaries - will be available through one location. Quality control over, and distribution of, research information will be functions of the technical information program. Most of the specialized communications packages to be produced will be done at the request of, and funded by, EPA regulatory program offices, the Regions, and other user groups. A centralized capability will be maintained to assure the quality and cost-effectiveness of the design manuals, symposia, summary reports and other technology transfer activities used to communicate the latest technological information to State and local officials, environmental managers and the design/engineering community.

In addition to fulfilling such congressionally-mandated requirements as the Small Wastewater Flows Information Clearinghouse, the EPA Research Outlook (5-year plan) and Research Highlights, the Technical Information Program will produce a publications bibliography, a program guide, and several other reports and Research Summaries which will provide information on a wide range of EPA research activities in a succinct and useful format. Most of these activities will be supported by the Research Committees and program offices.

The ability of EPA to provide timely information on the status of its 2,500 active research projects will be further improved through closer linkages between the project tracking system and EPA's 15 research laboratories nationwide. An experiment will determine the feasibility of automated direct input of updated information into this system.

1980 Explanation of Change from Budget Estimate

The net increase of \$22,400 results from several actions. An increase of \$51,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$5,500. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$23,200 to this activity.

1981 Plan

The Agency requests a total of \$2,655,000 and 30 permanent workyears for this program, of which \$2,265,000 is for the Salaries and Expenses appropriation and \$390,000 is for extramural activities under the Research and Development appropriation.

reimbursed by the client offices for any extramural costs incurred. The technical information program assures the quality of, access to, and control over the research information produced by EPA.

The technical information program will continue to support the congressionally-mandated Small Wastewater Flows Information Clearinghouse and the EPA Research Outlook (5-year plan), Research Highlights, Program Guide and other overview documents. The program will build upon 1980 experience and complete efforts to link all of EPA's research facilities into a central research project status reporting system. Such a linkage will mark the final step in creating a mature project tracking system - an effort initiated in 1977. The system tracks resource status and program progress for EPA management and the ORD Research Committees.

ENVIRONMENTAL WORK FORCE DEVELOPMENT

1979 Accomplishments

During 1979, obligations totaled \$268,200. Included in this total was \$266,600 for salaries and expenses and \$1,600 for extramural purposes. Specific accomplishments include the following:

- Completion of the National Environmental/Energy Workforce Assessment.
- Negotiation and implementation of seven interagency agreements designed to support employment and training programs for Senior Americans; Indians; disadvantaged and unemployed individuals.
- Chairing and providing staff support for the EPA Environmental Workforce Coordinating Committee.

1980 Program

In 1980, the Agency has allocated a total of \$268,000 to this program, all for salaries and expenses. Specific outputs will include:

- Expansion of the Senior Environmental Employment Corps to 25 States.
- Completion of the Environmental State Agency Resource Guidebook.
- Establishment of a multiprogram center for environmental learning at a university.
- Completion of a community waste water treatment demonstration training project.
- Development of a program of Research Apprenticeships for Minority High School students.

1980 Explanation of Change from Budget Estimate

The net increase of \$268,000 results from several actions. An increase of \$10,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$700. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$4,700 to this activity.

A reprogramming of \$262,700 was made due to the reorganization of the Environmental Workforce Coordination.

The Agency requests a total of \$212,500 and six permanent workyears, all under the Salaries and Expenses appropriation. This represents a decrease of \$55,700 and two permanent workyears as a result of decreased emphasis on the assessment of Agency needs in certification for environmental occupations in radiation, hazardous waste management, noise and integrated pest management.

Major activities and outputs in 1981 will include:

- Providing Agency overview and a report on environmental workforce development activities.
- Providing staff support to the Assistant Administrator for Research and Development on environmental workforce issues and activities.
- Maintaining liaison with other Federal agencies on environmental training activities.
- Developing standardized methods to project future environmental workforce needs.
- Providing technical guidance to program and regional offices on external workforce resources, e.g., Senior Environmental Employment Corps.
- Conducting a national conference on Senior Environmental Employment Corps.
- Concluding interagency agreements with selected Federal agencies for training environmental workers.

INTERDISCIPLINARY

Environmental Impact Statements

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
EIS Review (Air):			
Salaries and Expenses.....	\$504	\$501	-\$3
EIS Review (Water)			
Salaries and Expenses.....	1,330	1,321	-9
New Source EIS Preparation:			
Salaries and Expenses.....	318	316	2
Abatement, Control and Compliance.....	1,400	1,400	...
Total:			
Salaries and Expenses.....	2,152	2,138	-14
Abatement, Control and Compliance.....	1,400	1,400	...
Grand Total.....	3,552	3,538	-14

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
EIS Review (Air):					
Salaries and Expenses...	\$615	\$453	\$475	\$504	+\$29
EIS Review (Water):					
Salaries and Expenses...	1,301	1,364	1,430	1,330	-100
New Source EIS Preparation:					
Salaries and Expenses...	416	336	351	318	-33
Abatement, Control and Compliance.....	3,186	1,400	1,372	1,400	+28
Total:					
Salaries and Expenses...	2,332	2,153	2,256	2,152	-104
Abatement, Control and Compliance.....	3,186	1,400	1,372	1,400	+28
Grand Total.....	5,518	3,553	3,628	3,552	-76
<u>Permanent Positions</u>					
EIS Review (Air).....	18	17	18	18	...
EIS Review (Water).....	41	47	47	47	...
New Source EIS Preparation	13	12	12	12	...
Total.....	72	76	77	77	...
<u>Full-time Equivalency</u>					
EIS Review (Air).....	21	22	18	19	+1
EIS Review (Water).....	49	53	52	48	-4
New Source EIS Preparation	15	12	12	12	...
Total.....	85	87	82	79	-3

Budget Request

The Agency requests a total of \$3,552,300 for 1981, a decrease of \$75,700 from 1980. Included in this total is \$2,152,300 for Salaries and Expenses and \$1,400,000 for Abatement, Control and Compliance, representing a decrease of \$104,100 and an increase of \$28,400 respectively, from 1980. During 1981, program activities will focus on the review of other Federal agency environmental impact statements (EISs), regulations and other proposed actions, and the preparation of new source EISs and findings of no significant impact.

Program Description

Section 309 of the Clean Air Act requires the Agency to review and comment in writing on the environmental impact of any matter contained in any legislation, proposed regulation, or EIS of other Federal agencies. The review activity of EPA consists of reviews of other Federal agency EISs and actions, pre-EIS liaison, draft EIS review, draft EIS follow-up, final EISs review, final EIS follow-up, technical assistance, and referrals to the Council on Environmental Quality.

The National Environmental Policy Act (NEPA) requires that all agencies of the Federal Government prepare detailed EISs on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. The new source NEPA compliance activity at EPA includes complete environmental reviews, preparation of either an EIS or finding of no significant impact, evaluation of alternatives to proposed actions, and mitigation measures to prevent adverse environmental impacts.

EIS REVIEW (AIR)

1979 Accomplishments

Increased efforts were directed toward improving the effectiveness and timeliness of reviews. Major emphasis was placed on EPA assistance to other Federal agencies in order to integrate effective environmental planning with basic programmatic decision-making processes and prevent costly and avoidable error in the planning and execution of public projects. Emphasis was also placed on predraft impact statement liaison (scoping) as required by the new Council on Environmental Quality regulations. EIS review guidelines for nuclear power plants and forest and coastal zone management plans were drafted. Approximately 1,500 draft and final EISs as well as 100 proposed Federal agency regulations and other proposed Federal actions, were reviewed for impacts on a media.

1980 Program

In 1980, the Agency has allocated a total of \$475,300 to this program, all of which is for Salaries and Expenses.

No significant change in the EIS review activity from the current year is anticipated. The major emphasis will be on scoping for early identification of significant environmental issues. It is anticipated that approximately the same number of EISs, proposed Federal agency regulations, and other proposed Federal actions will be reviewed in 1980 as in 1979. EPA's EIS/309 review manual will be revised to conform to the new Council on Environmental Quality's (CEQ) regulations. Work will begin on revising the draft EIS review guidelines on nuclear power plants to conform to the new CEQ regulations and Nuclear Regulatory Commission's NEPA regulations. Work will also begin on revising EIS review guidelines for forest and coastal zone management plans and preparing a staff educational program on these guidelines.

1980 Explanation of Changes from Budget Estimate

The net increase of \$22,000 results from several actions. An increase of \$18,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$2,500 to this activity. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$34,000 to this activity.

Regional office reprogrammings resulted in transfers between media with a net increase to this activity of \$76,300; the media contributing to this net increase are drinking water (\$5,600); water quality (\$41,700), toxic substances (\$11,500), interdisciplinary (\$20,200), and air (-\$2,700). Finally, a transfer was made within the regions to air stationary source enforcement, \$104,700, to reflect the transfer of the Federal facilities monitoring and compliance function which is more appropriately identified with enforcement activities.

1981 Plan

The Agency requests a total of \$504,300 for this program, an increase of \$29,000, all of which is for Salaries and Expenses.

The major emphasis will continue to be the reviews and scoping. Technical guidelines on nuclear power plants will be finalized.

EIS REVIEW (WATER)

1979 Accomplishments

Increased efforts were directed toward improving the effectiveness and timeliness of reviews. Major emphasis was placed on EPA assistance to other Federal agencies in order to integrate effective environmental planning with basic programmatic decision-making processes and prevent costly and avoidable error in the planning and execution of public projects. Emphasis was also placed on predraft impact statement liaison (scoping) as required by the new Council on Environmental Quality regulations. EIS review guidelines for nuclear power plants, and forest and coastal zone management plans were drafted. Approximately 1,500 draft and final EISs, as well as 100 proposed Federal agency regulations and other proposed Federal actions, were reviewed for impacts on all media.

1980 Program

In 1980, the Agency has allocated a total of \$1,429,700 to this program, all of which is for Salaries and Expenses.

No significant change in the EIS review activity from 1979 is anticipated. The major emphasis will be on scoping for early identification of significant environmental issues. It is anticipated that approximately the same number of EISs, proposed Federal agency regulations, and other proposed Federal actions will be reviewed as in 1979. EPA's EIS/309 review manual will be revised to conform to the new Council on Environmental Quality's (CEQ) regulations. Work will begin on revising the draft EIS review guidelines on nuclear power plants to conform to the new CEQ regulations and Nuclear Regulatory Commission's NEPA regulations. Work will also begin on revising EIS review guidelines for forest and coastal zone management plans and preparing a staff educational program on these guidelines.

travel costs and supplies and expenses resulted in a decrease of \$5,000 and \$100, respectively. An overall reprogramming through the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$63,500 to this activity.

Regional office reprogrammings resulted in transfers between media with a net increase to this activity of \$32,100; the media contributing to this net increase are air (\$20,000), water quality (\$20,000), toxic substances (\$10,100), interdisciplinary (-\$16,500), and management and support (-\$1,500). Finally, a transfer was made within the regions to water quality enforcement to reflect the transfer of the Federal facilities monitoring and compliance function which is more appropriately identified with enforcement activities, \$82,700.

1981 Plan

The Agency requests a total of \$1,330,000 for this program, a decrease of \$99,700, all of which is for Salaries and Expenses.

The major emphasis will continue to be the reviews and scoping. Technical guidelines on nuclear power plants will be finalized.

NEW SOURCE EIS PREPARATION

1979 Accomplishments

Almost \$3.2 million of the 1979 resources was used for extramural funding. A total of 16 EISs and environmental studies was initiated on new source water projects. Technical guidelines on four industries were finalized and two industrial guidelines were drafted. EPA's new National Environmental Policy Act (NEPA) regulations implementing the new Council on Environmental Quality's (CEQ) regulations were proposed in the Federal Register in June 1979. Two areawide studies on coal mining and energy-related industries were completed. Seven areawide studies on surface coal mining were initiated to determine the need for either site specific EISs or special National Pollutant Discharge System (NPDES) permits as outlined under the proposed memorandum of understanding between EPA and the Department of Interior, Office of Surface Mining.

1980 Program

In 1980, the Agency has allocated a total of \$1,723,000 to this program, of which \$351,400 is for Salaries and Expenses and \$1,371,600 is for extramural purposes under the Abatement, Control and Compliance appropriation.

One or two States may assume the NPDES program; however, they are not expected to be States with any significant new source construction activity. Technical guidelines on six industries will be finalized and five other drafted. The memorandum of understanding between EPA and Department of Interior, Office of Surface Mining, determining whether site specific or areawide NPDES permits may be issued on surface coal mining will be signed. Technical guidelines for assessing induced growth of new source industries will be drafted. Approximately 12 EISs and environmental studies are expected to be initiated in 1980.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$13,000 results from several actions. An increase of \$13,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$1,400 and \$1,600, respectively. An overall reprogramming throughout the Agency to provide sufficient workyears resulted in a decrease of \$22,600 to this activity.

Regional office reprogrammings resulted in transfers between media with a net decrease of \$600 to this activity; the media contributing to this net decrease are air (-\$3,700), water quality (\$300), and toxic substances (\$2,800).

1981 Plan

The Agency requests a total of \$1,718,000 for this program, of which \$318,000 is for the Salaries and Expenses appropriation and \$1,400,000 for the Abatement, Control and Compliance appropriation.

Approximately the same number of EISs and environmental studies are expected to be initiated as in 1980. Technical guidelines on five industries will be finalized. Technical guidelines for assessing induced growth of new source industries will be finalized.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Energy Review and Permitting:					
Salaries and Expenses..	...	...	...	\$694	+\$694
Abatement, Control and Compliance.....	...	...	...	150	+150
Grand Total.....	...	...	...	844	+844
<u>Permanent Positions.....</u>	...	...	...	13	+13
<u>Full-time Equivalency....</u>	...	...	...	26	+26

Budget Request

The Agency requests \$844,200 and 13 permanent work-years for the new budget subactivity of energy-related environmental review and permitting. Included in this total are \$694,200 for Salaries and Expenses and \$150,000 for Abatement, Control and Compliance.

Program Description

EPA has developed the energy review and permitting program in response to the President's plan for accelerated energy development. The Agency's regional offices have already reported an increase in the number of smaller energy-related facilities, such as coal mines and power plants. Any of these new energy facilities may require EPA issued permits governing air emissions or effluent discharges, with accompanying modelling and monitoring requirements. The Agency may also be required to prepare or review an environmental impact statement for any of these new facilities.

The Agency expects the rate of energy development to further accelerate in the next several years, as synthetic fuels are commercialized. Not only will EPA have to process more permit applications, but it will have to comply with the accelerated time-schedules imposed by the Energy Mobilization Board. EPA's job will be complicated by the fact that environmental effects of synthetic fuels are not well known.

The Agency's regional offices will use the resources in this program element for various energy-related activities. The Agency will use some of the resources in this program element to fund an increase in permit issuance for PSD, NPDES, and RCRA, and related activities such as making best available control technology determinations and reviewing monitoring systems.

Some of the resources will be devoted to preparation and review of EISs. In order to expedite the environmental review process, the Agency intends to participate in the early stages of the preparation of environmental impact statements by other agencies. EPA's cooperative role should aid in early identification and resolution of problems that could otherwise delay permit issuance.

INTERDISCIPLINARY

Energy Permitting and Review

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Energy Review and Permitting:			
Salaries and Expenses.....	\$694	\$689	-\$5
Abatement, Control and Compliance.....	150	150	...
Grand Total.....	844	839	-5

program elements. However, the Agency cannot predict at this time which offices in which regions will require additional resources for energy review and permitting. Therefore, in order to provide EPA management maximum flexibility, these activities have been grouped together in this new program element.

1979 Accomplishments

During 1979, the Agency began work on consolidating the various permitting and environmental review requirements applicable to energy facilities. No resources were specifically identified in this activity.

1980 Program

In 1980, the Agency will continue to examine ways in which to expedite environmental review and permitting for energy projects. Special priority will be placed on processing energy project permit applications. No resources are specifically identified in this activity.

1981 Plan

In 1981, the Agency expects to handle energy project permits and environmental reviews in accordance with the requirements of the Energy Mobilization Board. The Agency will probably have the lead role in preparing and following up on EISs for five critical energy facilities, and have a cooperating role in the preparation of 35 EISs. The cooperative role taken by EPA to expedite the environmental review process is expected to account for a majority of the resources requested in this program element. Additionally, the regional offices will provide assistance in the scoping phase of any energy EIS to expedite issue identification and resolution.

Because of the many uncertainties connected with the accelerated energy development, the Agency cannot specify at this time how the regions will best be able to use these resources to expedite permit issuances. The resources in this program element may be used for reviewing monitoring systems, making best available technology determinations, assessing the impact of emissions and effluents, or providing technical assistance to State and local governments.

A major feature of EPA's permitting strategy for synthetic fuels will be the formation of a special technical assistance team. This team will consist of experts from relevant disciplines (e.g., engineers, modelling specialists) drawn as necessary from any EPA office, to supplement the limited synthetic fuels expertise available in most EPA regional offices. This specialized team is expected to increase the quality of work performed on each project and yield economies of operation to the Agency.

Toxic Substances

TOXIC SUBSTANCES

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$33,570	\$33,406	-\$164
Research and Development.....	26,216	26,216	...
Abatement, Control and Compliance.....	46,216	46,216	...
Total.....	\$106,002	\$105,838	-164
<u>PROGRAM HIGHLIGHTS</u>			
Health and Ecological			
Effects.....			
Salaries and Expenses.....	\$8,371	8,343	-28
Research and Development.....	23,505	23,505	...
Industrial Processes:			
Salaries and Expenses.....	614	611	-3
Research and Development.....	1,158	1,158	...
Monitoring and Technical			
Support:			
Salaries and Expenses.....	1,694	1,686	-8
Research and Development.....	1,553	1,553	...
Total:			
Salaries and Expenses.....	10,679	10,640	-39
Research and Development.....	26,216	26,216	...
Total, Research and Development Program.....	36,895	36,856	-39
Toxic Substances Strategies:			
Salaries and Expenses	20,180	20,071	-109
Abatement, Control and Compliance.....	43,735	43,735	...
Total, Abatement, and Control Program.....	63,915	63,806	-109

Original Estimate 1981	Revised Estimate 1981	President's Reduction
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(dollars in thousands)

Appropriation

Toxic Substances

Enforcement:

Salaries and Expenses.....

\$2,711	\$2,695	-16
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Abatement, Control and

Compliance.....

2,481	2,481	...
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Total, Enforcement Program.....

5,192	5,176	-16
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TOXIC SUBSTANCES

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>	<u>Page</u>
			(dollars in thousands)			
Salaries and Expenses.....	\$18,376	\$33,501	\$29,553	\$33,570	+\$4,017	
Research and Development..	12,848	24,650	19,892	26,216	+6,324	
Abatement, Control and Compliance.....	30,307	45,165	45,201	46,216	+1,015	
Total.....	\$61,531	\$103,316	\$94,646	\$106,002	+\$11,356	
Permanent Workyears.....	377	723	657	743	+86	
Full-time Equivalency.....	474	769	765	854	+89	
Outlays.....	\$47,278	\$70,400	\$79,200	\$90,200	+\$11,000	
Authorization Levels.....	30,482	*	*	*		

* Authorization pending.

PROGRAM HIGHLIGHTS

Health and Ecological Effects:						TS-9
Salaries and Expenses...	\$2,504	\$7,305	\$6,475	\$8,371	+\$1,896	
Research and Development	11,542	22,092	17,138	23,505	+6,367	
Industrial Processes:						TS-25
Salaries and Expenses...	260	642	414	614	+200	
Research and Development	200	1,100	1,234	1,158	-76	
Monitoring and Technical Support:						TS-28
Salaries and Expenses...	1,210	1,380	1,168	1,694	+526	
Research and Development	1,106	1,458	1,520	1,553	+33	
Total:						
Salaries and Expenses...	3,974	9,327	8,057	10,679	+2,622	
Research and Development	12,848	24,650	19,892	26,216	+6,324	
Total, Research and Development Program.....	16,822	33,977	27,949	36,895	+8,946	
Toxic Substances Strategies						TS-34
Salaries and Expenses...	12,148	21,403	19,041	20,180	+1,139	
Abatement, Control and Compliance.....	29,302	44,140	43,712	43,735	+23	
Total, Abatement and Control Program.....	41,450	65,543	62,753	63,915	+1,162	

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>	<u>Page</u>
(dollars in thousands)						
Toxic Substances Enforcement:						TS-46
salaries and Expenses...	2,254	2,771	2,455	2,711	+256	
Abatement, Control and Compliance.....	1,005	1,025	1,489	2,481	+992	
Total, Enforcement Program	3,259	3,796	3,944	5,192	+1,248	
Permanent Positions						
Health and Ecological Effects.....	45	59	65	118	+53	TS-9
Industrial Processes.....	8	12	11	11	...	TS-25
Monitoring and Technical Support.....	19	21	22	26	+4	TS-28
Total, Research and Development Program.....	72	92	98	155	+57	
Toxic Substances Strategies, Total Abatement and Control Program.....	313	553	486	502	+16	TS-34
Toxic Substances Enforcement, Total Enforcement Program	48	78	73	86	+13	TS-46
Full-time Equivalency						
Health and Ecological Effects.....	58	94	85	137	+52	TS-9
Industrial Processes.....	7	14	14	14	...	TS-25
Monitoring and Technical Support.....	30	29	29	33	+4	TS-28
Total, Research and Development Program.....	95	137	128	184	+56	
Toxic Substances Strategies, Total Abatement and Control Program.....	309	550	555	575	+20	TS-34
Toxic Substances Enforcement, Total Enforcement Program	70	82	82	95	+13	TS-46

OVERVIEW AND STRATEGY

The Toxic Substances Control Act (TSCA) establishes a program with the objectives of insuring that adequate data are developed with respect to the effects of chemical substances and mixtures on health and the environment and that those chemicals which present an unreasonable risk of injury to health or the environment are regulated to reduce that risk. The Act's coverage is broad, encompassing nearly 47,000 chemicals currently in commerce, with several hundred additional new chemicals introduced each year. About 115,000 manufacturers and processors are subject to the Act.

Act are those to: (a) require testing of chemicals and submission of reports of existing information by industry and review these and other data to determine chemical hazards; (b) review and act on new chemical and significant new use notifications by industry and control the manufacturing, processing, distribution, use, and disposal of existing chemicals that pose unreasonable risks to health and the environment; (c) enforce these statutory and regulatory programs; and (d) conduct research and development to support the implementation of the law.

There was a limited organizational and conceptual base upon which to build the toxic substances program when the law was first enacted. Consequently, the first years of implementation have had the foundation development for program operation as a major accomplishment. We have established and continued staffing the organization to carry out the program. At the same time we have arrived at the initial approaches to many basic program functions and have taken selected actions where warranted.

Some of the major base programs put in place include a hierarchical scheme of test standards and its use for chemical test regulations; a multi-stage assessment process for reviewing suspect chemicals to determine potential risks; the first control regulations on chemicals posing unreasonable risks; the premanufacture review program with the initial regulations, forms and other supporting documents; basic data management facilities and operations; approaches for using reporting requirements for information gathering; and mechanisms for setting priorities for action, enforcement policies and procedures for inspections, hearings, penalties, emergency actions, and imports; reorientation of existing research to toxic substances; and a basic plan for toxic substances research.

Significant program accomplishments over the last year specifically include the first proposed test standards--oncogenicity and other chronic effects as well as a standard for good laboratory practices concerning health effects testing, and additional standards for acute and subchronic toxicity, mutagenicity, teratogenicity, reproductive effects and metabolism studies; assessments at various stages for approximately 45 chemicals including two indepth assessments and one regulatory assessment for asbestos; final PCB ban regulations, a program for voluntary control of asbestos in school ceilings and a development plan for a possible asbestos regulatory action; proposed rules and interim policies and procedures for premanufacture notification, review of the first 11 new chemicals, and a discussion paper on premanufacture testing policy; the initial TSCA chemical inventory publication; nearly 300 substantial risk notice reviews; industry assistance to 1,300 calls and 4,000 requests for documents per month; public participation grants in three regions; and cooperative agreements with five states. Inspections for compliance with existing PCB and chlorofluorocarbon regulations have been conducted and enforcement actions taken on violations. A research program designed to meet the needs of the regulatory program has been established and is now being implemented.

The 1980 and 1981 toxic substances programs reflect increasing program activities and accomplishments. Many aspects of foundation-building will continue at least into 1980, but more experience and more extensive implementation will cause an appreciable increase in associated program outputs. Output levels in program areas begun in 1979 will continue to grow and accomplishments will expand into additional areas such as test rules, reporting and recordkeeping requirements, and significant new use rules.

In 1980, the Agency will make program operations more comprehensive. Because many elements of the toxic substances program are interrelated, their implementation must be carefully balanced and staged. In order for the overall program to continue operation in future years, we must start now to implement certain long lead time activities. The time required successively to implement testing requirements, have industry develop the data, evaluate the potential hazards, and take appropriate control action for particular chemicals may extend over several years. In addition, the program has been operating on an established information base carried over from previous years. This backlog of

information is being rapidly used up and must be replenished. For these reasons, in 1980 the activities continuing to receive greater emphasis are those that establish an adequate information and assessment base upon which to take actions now and in the future under TSCA and other toxics-related programs. The Agency will emphasize development of rules to obtain testing data upon which to make chemical assessments in support of regulatory and other actions. Additionally, EPA will stress development of reporting and record-keeping rules to obtain existing information to support these actions. Also, priority will be placed on making the premanufacture review program fully operational, in order to obtain and review information on new chemicals and take action on those that may be hazardous prior to their release into the environment. The Agency will begin to increase the emphasis on control of existing chemicals which are identified as hazardous through our assessment process. The Agency will conduct health and environmental effects assessments, monitoring, information management, economic impact analyses, and other activities to support these high priority programs.

In 1981, EPA will emphasize full operation of all major program components. There will be a balanced emphasis on regulation of new and existing chemicals based upon the information base established in 1979 and 1980. We will continue to place high priority on full operation of the premanufacture review program. Development of additional control actions for existing chemicals will also have high priority, and nonregulatory approaches, such as information dissemination and informal discussion, will be used when appropriate to effect protection from potential risks. Developing testing rules and information requirements to obtain data to support assessment and regulation will continue. Other support activities will be conducted as required to accomplish these high priority programs. As the Act requires, the program will rely extensively on other programs and agencies to take action when appropriate, and to establish coordinated approaches to problems.

The toxic substances enforcement program, operating in partnership with the Agency's toxic substances regulatory program, seeks to protect public health and the environment from unreasonable risks posed by chemical substances through the enforcement of the Toxic Substances Control Act and its established regulations. More specifically, the enforcement program concentrates its efforts on the enforcement of those regulatory provisions which (1) prevent or abate public health and environmental threats from chemical contamination, particularly in emergency situations; (2) assure that data used to make regulatory judgments are accurate, comprehensive, and timely; and (3) monitor compliance with existing standards to determine that regulated chemicals are manufactured, handled, and used in accordance with the law.

The enforcement program, moreover, establishes distinct but complementary roles for both the headquarters and regional components of the program. The headquarters function includes the responsibilities to: coordinate enforcement response to emergency situations; provide enforcement representation in and support to the TSCA regulatory development process; design, implement, and oversee inspection, compliance monitoring, and enforcement policies, strategies and procedures; develop, implement, and exercise enforcement remedies upon the detection of violations; assist and support regional personnel in case development and prosecution, conduct inspection, and compliance monitoring. The regional function is to: carry out enforcement response in emergency situations; conduct inspection and compliance monitoring activities in support of all established rules and regulations; and impose appropriate enforcement remedies in all instances of violation through the initiation and prosecution of enforcement actions. As the universe of enforceable rules and regulations expands, the regional office role will grow in size and importance.

EPA's research program in support of TSCA will focus on developing improved rapid, reliable, and cost-effective techniques to be used for predicting transport, transformation, exposure concentration and adverse deleterious effects on human health and the environment resulting from exposure to toxic substances. In 1981, EPA will be accelerating the development and validation of new and promising research techniques for screening toxic substances. Further research will be done in predicting, measuring and determining the significance of exposure to commercial chemicals, with the ultimate goal of preventing or reducing adverse human health effects.

EPA research will provide techniques for evaluating the environmental hazards of toxic substances in support of Sections 4, 5 and 10 of TSCA. This research program consists of four major components: (1) a comprehensive program to develop methodologies for measuring environmental parameters for transport and transformation of toxic chemicals to be used in developing models for exposure assessment, protocols for testing and rapid screening of toxic compounds; (2) an extensive field program to determine actual exposures and provide an extensive data base for the validation and/or improvement of predictive models; (3) a concentrated effort to develop microcosms/laboratory ecosystems as tools in improving our ability to predict the movement of chemicals through the environment; and (4) a set of targeted research efforts to determine biotic exposure to toxic chemicals in the environment.

Research will also be focused on developing advanced, cost-effective methodologies for defining the transport, transformation and bioaccumulation of toxic chemicals in the food chain system. These methodologies, in turn will result in testing protocols for toxic substances and procedures for estimating toxic exposure concentrations as needed to implement Sections 4 and 5 of TSCA. During 1981, the major focus will be on validation of models for exposure assessment, standardization of testing protocols and development of predictive techniques for screening toxic chemicals.

Necessary research will be conducted to develop measurement methods for identification and quantification of trace level toxic substances in the environment. Present measurement techniques for toxics in the environment are not adequate. Also, research will be expanded to develop methods for measuring toxic chemicals in sediments, marine plants and in the air. These methods are needed in measuring exposure concentration, monitoring chemicals, designing control techniques and in enforcing regulations.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1980 Toxic Substances Program.....	\$94,646
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Salaries and Expenses.....	+4,017
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The net increase will allow expanded development of testing requirements and conduct of assessments; ongoing control regulation development; enforcement of new TSCA regulations; continuation in implementing an integrated approach to assessing total human exposure to and adverse health effects from toxics substances.

Research and Development.....	+6,324
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The increase will provide for the continuation of obtaining scientific data, evaluation, and lab work on effects, exposure, and test methods in support of the development of test standards and the conduct of risk assessments.

Abatement, Control
and Compliance.....

+1,015

The increase will provide primarily for the
establishment of a pilot State cooperative
enforcement grant program.

1981 Toxic Substances Program.....

106,002

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of \$106,002,400 is requested in 1981. This request, by appropriation account, is as follows:

Salaries and Expenses.....	\$33,571,200
Research and Development.....	26,215,600
Abatement, Control and Compliance....	46,215,600

This request represents an increase of \$11,356,300 over the 1980 level.

Under the Salaries and Expenses appropriation, an increase of \$1.1 million will allow expanded development of testing requirements and conduct of assessments to provide an adequate information base needed for present and future action. An increase of \$.5 million will permit ongoing control regulation development and allow for the program review of and action on new chemical notification to be fully operational. An increase of \$.3 million reflects support for the enforcement of new TSCA regulations anticipated in 1981. An increase of \$2.6 million will provide for the continuation in implementing an integrated approach to assessing total human exposure to and adverse health effects from toxic substances. The data will provide support to the Office of Pesticides and Toxic Substances in developing test standards, testing rules, and conducting risk assessments. An offsetting decrease of \$.3 million represents a reduction in printing costs associated with reproducing a supplemental manufacturers and processors inventory list rather than fully reprinting the original five volumes. An additional decrease of \$.3 million reflects a decrease in regional responsibility and subsequent activities.

An increase of \$1 million is for the establishment of a pilot State cooperative enforcement grant program under the Abatement, Control and Compliance appropriation.

An increase of \$6.3 million to the Research and Development appropriation will provide for the continuation of obtaining scientific data, evaluation and laboratory work on effects, exposure and test methods in support of the development of test standards and the conduct of risk assessments. This increase will: (1) permit greater emphasis on the development of chemical testing protocols for absorbed-dose determination methods and risk assessment methods, as well as a method for extrapolating effects observed in animals to humans; (2) initiate a major ecological research program on aquatic toxicology as it relates to the development of assays at the cellular and community levels; (3) expand the development of monitoring methods for estimating human exposure to ambient toxics present in the environment; (4) expand development and validation of multi-media mathematical models for toxic chemicals; (5) expand efforts to define rate parameters for transformation processes of toxic chemicals; (6) expand development of microcosms for screening validation of models; and (7) expand efforts to predict the concentration of toxic chemicals in the food chain models.

Changes from the budget are as follows:

	(in thousands of dollars)
Original 1980 estimate.....	\$103,316
Congressional decreases:	
Salary costs.....	-2,000
ADP.....	-65
Travel.....	-138
Supplies and expenses.....	-12
Health and ecological effects.....	-5,000
Reprogramming for salary costs.....	-2,569
Proposed pay raise supplemental.....	+811
Miscellaneous reprogramming.....	+303
Current 1980 estimate.....	94,646

The Congress reduced Agency travel costs by \$2 million, of which \$138,000 is applicable to the toxic substances media. ADP costs were reduced by \$1 million, resulting in a \$65,000 decrease. Supplies and expenses were reduced by \$2 million, of which \$12,000 is within this media. A reduction of \$5 million was made to the health and ecological effects activity. Finally, salary costs projected for 1980 were reduced by the Congress by \$2 million.

An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$2,569,000 to the toxic substances media.

A supplemental appropriation is proposed to partially fund costs of the October 1979 pay raise, of which \$811,000 is for the toxic substances media. Miscellaneous reprogrammings to this media resulted in a net increase of \$303,000.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980 (in thousands of dollars)	Estimate 1981
Prior year obligations.....	\$61,531	\$93,398
Effect of congressional changes.....	-4,231	...
Effect of pay raise supplemental.....	+811	...
Effect of reprogrammings.....	-2,266	...
Change in amount of carryover funds available.	-4,447	+437
Program increase.....	+42,000	+10,856
Total estimated obligations.....	93,398	104,691
(From new obligation authority).....	(88,379)	(99,235)
(From prior year funds).....	(5,019)	(5,456)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The congressional changes discussed in the previous section are expected to result in a decrease of \$4,231,000 to obligations. The proposed pay raise supplemental to partially fund the October 1979 pay raise will increase obligations by \$811,000. The reprogrammings to fund authorized workyears will decrease obligations by \$2,569,000; miscellaneous reprogrammings will increase obligations by \$303,000.

The amount of carryover funds to be obligated in 1980 is \$5,019,000, a decrease of \$4,447,000 from the 1979 level. In 1981, it is estimated that \$5,456,000 of carryover funds will be obligated, an increase of \$437,000 over the 1980 level.

PROGRAM LEVELS

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
Test Standards Initiated, proposed, Final.....	9	37	21	27	+6
Testing Rules Proposed...	...	9	3	3	...
Detailed Evaluation of New Chemicals.....	1	...	15	16	+1
Preliminary Assessments of Existing Chemicals..	310	375	333	333	...
Final Risk Assessments of Existing Chemicals..	1	10	2	4	+2
Control Actions on Existing Chemicals proposed.....	...	6	3	4	+1
New Chemicals Processed..	11	400	400	400	...
Actions Taken on New Chemicals.....	...	9	15	16	+1
Recordkeeping and Reporting Rules Proposed.....	...	...	13	9	-4
Recordkeeping and Reporting Rules Promulgated.....	...	...	9	11	+2
Major Literature Searches, Monitoring and Computer Support Contracts in Place.....	5	...	7	8	+1
Regional Public Participation Programs Supported.....	3	...	3	...	-3
Inspections Under Section 4.....	...	...	...	134	+134
Inspections Under Section 5.....	...	5	...	188	+188
Inspections Under Section 6.....	679	594	594	952	+358
Inspections Under Section 8.....	...	43	50	55	+5
Inspections Under Section 12.....	...	...	...	60	+60
Inspections Under Section 13.....	...	...	...	260	+260

TOXIC SUBSTANCES

Health and Ecological Effects

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Health Effects:			
Salaries and Expenses.....	\$3,765	\$3,675	-\$10
Research and Development.....	12,473	12,473	...
Ecological Effects:			
Salaries and Expenses.....	3,141	3,130	-11
Research and Development.....	8,158	8,158	...
Transport and Fate:			
Salaries and Expenses.....	1,362	1,356	-6
Research and Development.....	1,655	1,655	...
Atmospheric Modification - Health/Ecological Effects:			
Salaries and Expenses.....	193	192	-1
Research and Development.....	<u>1,219</u>	<u>1,219</u>	<u>...</u>
Total:			
Salaries and Expenses.....	8,371	8,343	-28
Research and Development.....	<u>23,505</u>	<u>23,505</u>	<u>...</u>
Grand Total.....	31,876	31,848	-28

TOXIC SUBSTANCES

Health and Ecological Effects

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980 (dollars in thousands)	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Health Effects:					
Salaries and Expenses....	\$1,309	\$2,879	\$3,319	\$3,675	+\$356
Research and Development.	8,522	12,146	9,189	12,473	+3,284
Ecological Effects:					
Salaries and Expenses....	382	3,179	2,131	3,141	+1,010
Research and Development.	779	7,223	5,224	8,158	+2,934
Transport and Fate:					
Salaries and Expenses....	590	883	879	1,362	+483
Research and Development.	1,323	1,683	1,464	1,655	+191
Stratospheric Modification - Health/Ecological Effects:					
Salaries and Expenses....	223	364	146	193	+47
Research and Development.	918	1,040	1,261	1,219	-42
Total:					
Salaries and Expenses....	2,504	7,305	6,475	8,371	+1,896
Research and Development.	11,542	22,092	17,138	23,505	+6,367
Grand Total.....	14,046	29,397	23,613	31,876	+8,263
<u>Permanent Positions</u>					
Health Effects.....	28	26	24	46	+22
Ecological Effects.....	7	20	25	44	+19
Transport and Fate.....	10	13	13	25	+12
Stratospheric Modification, Health Effects.....	1	...	3	3	...
Total.....	46	59	65	118	+53
<u>Full-time Equivalency</u>					
Health Effects.....	28	48	30	52	+22
Ecological Effects.....	10	24	28	46	+18
Transport and Fate.....	14	18	24	36	+12
Stratospheric Modification, Health Effects.....	5	3	3	3	...
Stratospheric Modification, Ecological Effects.....	1	1	...	...	...
Total.....	58	94	85	137	+52

generation testing rules and regulations pertaining to screening techniques for health and ecological effects; (2) provide analyses for transport and fate of ambient pollutants; (3) determine the ambient presence of selected toxic substances; (4) recommend alternative manufacturing process options for the processing and/or production of potentially hazardous or toxic materials; (5) provide a broad spectrum of technical expertise and specialized equipment to Agency operating programs.

Most of the 1980 research activities to support the Toxic Substances Control Act (TSCA) will continue into the future. Increases in 1980 expanded base programs, and provided for the Agency's Public Health Initiative (PHI), the first toxic substances research program that assesses the environmental pathways of toxics and integrated this data with human exposure and adverse health effects.

Budget Request

The Agency requests a total of \$31,876,600 and 118 permanent workyears for 1981, an increase of \$8,263,400 and 53 permanent workyears, of which \$8,371,600 is for the Salaries and Expenses appropriation and \$23,505,000 is for extramural purposes under the Research and Development appropriation; an increase of \$1,896,100 and \$6,367,300, respectively. The net change combines several significant increases. They are: \$3,640,300 and 22 permanent workyears to increase development of chemical testing protocols to develop absorbed-dose determination methods, risk assessment methods, and a method for extrapolating effects observed in animals to humans; \$940,000 and 19 permanent workyears to initiate a major ecological research program on aquatic toxicology as it relates to the development of assays at the cellular and community level; \$500,000 to expand work on the development of monitoring methods for estimating human exposure to ambient toxics present in the environment; \$1,000,000 to expand efforts on multimedia mathematical models for toxic chemicals; \$1,000,000 for the development of microcosms for screening and validation of models; and \$500,000 to accelerate investigations of food chain models. Additionally, \$673,300 and 12 permanent workyears will be utilized to expand activities pertaining to defining rate parameters for transformation processes of toxic chemicals.

Program Description

The toxic substances health program will focus primarily on the development of screening techniques and protocols to predict nervous system damage, reproductive effects and birth defects; predictive methods for determining the extent of human exposures to toxic substances; and evaluate methods for determining the impact of exposure to toxic chemicals on human. The program has long-term goal of developing new and improved techniques for rapid, reliable, and economical screening of toxic substances. These screening techniques will provide less expensive methods to be used by manufacturers to predict the carcinogenic, mutagenic, teratogenic, and other deleterious effects on humans resulting from exposure to chemical substances. Considerable emphasis will be placed on completing promising testing protocols for immediate use while searching for life systems which may provide new and more sensitive biological indicators.

The ecological effects program is designed to develop cost-effective and reliable test methods and protocols for defining adverse effects of toxic chemicals to animals and ecosystems. A major component, initiated in 1980, developed methodologies for defining human exposure to toxic chemicals. The information generated in this program is needed in defining exposure and adverse effects of toxic chemicals to humans and the environment. Exposure and effects data are used in hazard risk assessment under Sections 4 and 5 of TSCA.

predicting transport and transformation of toxic chemicals in the environment. One of the major goals of this program is to develop cost-effective test methods and predictive models for defining exposure concentration of toxic chemicals. Transport and fate research is especially designed to aid in implementing Section 4 and 5 of TSCA.

HEALTH EFFECTS

1979 Accomplishments

The 1979 obligations were \$9,830,600, of which \$1,308,900 was for salaries and exposures and \$8,521,700 was for extramural activities. Accomplishments under this program include:

- Completion of studies which demonstrated the feasibility of using a new hemoglobin binding procedure to analyze blood for the presence and level of toxic substances to determine the human absorbed dose of an offending chemical.
- Completion of test protocols for determining how cancer is induced and promoted in liver cells.
- Demonstration of the SENCAR (Sensitive to Carcinoma) mouse as a sensitive test systems for use in short-term carcinogenesis assay.
- Development of a modified mouse lymphoma bioassay system which more adequately quantifies cellular mutational events.
- Development of a computerized system for storage of microbial mutagenesis data which is readily available for use in risk assessment.

1980 Program

In 1980, the Agency has allocated a total of \$12,508,000 to health effects research of which \$3,319,300 is for the Salaries and Expenses appropriation and \$9,188,700 is for extramural purposes under the Research and Development appropriation.

The 1980 program focuses on developing specific research data needed in the development of guidelines and standards required under the Toxic Substances Control Act (TSCA). This focus is directed toward selecting and validating known techniques for screening broad ranges of chemical types and large numbers of individual chemical substances so that functional testing protocols can be developed. There is emphasis on accelerating development of the most promising techniques from the research and development state to practical utility and on new initiatives in research designed to protect public health. Approximately one-third of the toxic health research program relates to the public health initiative (PHI) which will develop new methodology in neurotoxicology and behavioral short-term screening, evaluate human exposure through development of tests for absorbed dose, and develop bioassay methods which will assist in improving the understanding of human risk assessment. The first three of the following items describe the major elements of the PHI.

- Neurotoxicology and behavioral effects programs will develop short-term testing methods using identification of specific biological change to screen for the effects of toxicants upon the functional and structural integrity of the nervous system.
- Development and validation of methods, including absorbed-dose determinations, to assess chemical exposure levels in human groups and individuals.
- Development of bioassay systems (for use in assessing human risk from chemical substances) will provide rapid, inexpensive methods for predictive evaluation.

Industrial uses and other chemical use conditions. Emphasis will be placed on human reproductive effects.

- Reproduction and teratology research will define screening methodology to determine potential perinatal and early prenatal adverse responsiveness to manufactured chemicals by offspring which occur during pregnancy and early infancy.
- Carcinogenesis, mutagenesis and other toxicological assessment and methodology development and validation. This will include research on fibrous amphiboles, toxic metabolic interaction of chemicals, genotoxicity indicators, and the SENCAR laboratory mouse for use in risk assessments.
- Risk assessment research will include use of information on biological action and activity of chemical substances and a study of the relative importance of uneven numbers of chromosomes in genetically mediated disease.
- Technical assistance will provide scientific support on TSCA regulatory activities to the Office of Testing and Evaluation under the Office of Pesticides and Toxic Substances, and other Agency organizations.
- Long-term, low dose toxicity studies performed for EPA by the National Center for Toxicological Research. The center will assist in the development of toxicological procedures applicable to chemical testing. This program includes a rotenone carcinogenesis bioassay, the development of the protocol for an additive risk evaluation of four carcinogens in drinking water, an aromatic amine evaluation program, a study using lindane as a model compound to obtain information pertaining to species selection in conducting carcinogenesis bioassays, and technical support for cancellation hearings for the pesticide Silvex.

1980 Explanation of Change from Budget Estimate

The net decrease of \$2,517,000 results from several actions. An increase of \$26,600 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$2,000 and \$2,000, respectively. The Congress also reduced toxic substances health and ecological effect activities by \$5 million, which resulted in a decrease of \$2 million to this activity. An overall reduction to salary costs resulted in a decrease of \$381,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$188,600 to this activity.

A transfer of \$30,000 was made from the interdisciplinary media from anticipatory research and development to cover personnel reassignment of individuals with special capabilities as a result of the abolishment of the Criteria Development and Special Studies Division.

The Agency requests a total of \$16,148,300 and 46 permanent workyears for this program, of which \$3,675,300 is for Salaries and Expenses and \$12,473,000 is for extramural activities under the Research and Development appropriation, an increase of \$356,000 and 22 permanent workyears and \$3,284,300, respectively. These expanded resources will permit still greater emphasis on development of chemical testing protocols for absorbed-dose determination methods, risk assessment methods, as well as a method for extrapolating effects observed in animals to human. The increase also reflects a redirection within the Agency of certain resources (formerly carried in the pesticides research account) relating to development of testing methodologies which may apply to toxic substances other than pesticides. For example, the same analytical techniques and equipment used to evaluate pesticide levels in the environment have been recently used to evaluate levels of PCBs in the environment. The increased concern about toxic chemical effects on the nervous system results in the need to accelerate the development of verified neurotoxicological protocols. Recent experience relating to increased abortion rates and children with birth defects have provided the impetus for increased research relating to reproductive and teratological effects.

Adequate testing of chemical substances requires that a battery of different tests be derived to assess the potential effects of a given substance on all of the biological systems important to human health. For this reason, the program will continue to emphasize faster, more accurate, and less expensive techniques.

This program, much of which had its origin in the 1980 Public Health Initiative, will include the following efforts:

- The neurotoxicology program will define the effects of toxicants on the integrity of the nervous system using a variety of measurable biological changes to indicate that a toxic effect has occurred. Short-term testing procedures will be developed, defined, and validated to provide rapid screening procedures for complex neurobiological interactions. One benefit of this program will be the generation of a data base sufficient to ascertain the validity of short-term testing procedures. This research will include such things as evaluation of electrophysiological procedures, development of automated analysis for nerve tissue, correlation of reproductive behavior with reproductive development, measurement of alterations in other specific behaviors, development of a reliable technique for determination of electrical potentials emitted from nerves, development of techniques in the use of test tube cell culture taking tissue derived from the nervous system for a bioassay of neurotoxic responses, determination of effects on neuroendocrine function and development, and evaluation of effects on sensory thresholds.
- Human exposure research will provide development and validation of human exposure assessment methods to enable a closer, quantitative correlation between the environmental levels and the effects of toxic chemicals. This research will include development and validation of methodology for determining presence and internal-dose of a chemical using hemoglobin alkylation, development of DNA damage in human lymphocytes as indicators of carcinogen exposure, and identification of populations exposed to chemical carcinogens which could be observed to validate internal dose indicators.
- A risk assessment program will evaluate relationship and usefulness of short-term predictive bioassay procedures to quantitatively assess hazards of human exposure toxicants. Development of protocols for risk assessment from short and long-term studies is the defined goal. Research will include determination of the relationship between potency in short-term and long-term bioassays, calibration of test tube human cell systems for the prediction of genetic damage in the human, evaluation of the SENCAR mouse as a rapid quantitative carcinogenesis risk assessment method, and detection and quantitation of chemicals in cells of

terrible effects of toxicants on man. The assessment of exposure of an offspring during pregnancy and early infancy to toxicants will permit a better understanding of adverse effects and will provide an adequate data base upon which short-term testing procedures may be built. This research will include determination of effects of fetal development, assessment of perinatal toxicity in mammalian species, development of teratology bioassays in the test tube and in laboratory animals and studies to determine the susceptibility of spermatogenesis to environmental insult.

- Epidemiological research will assess the impact of manufactured chemicals in industrial areas and other chemical use situations such as the home and public places. Research will include investigation of reproductive dysfunction in human populations, epidemiological studies of selected communities, development and standardization of screening tests for use in epidemiologic studies, and evaluation of the feasibility of cellular genetics studies of spontaneously aborted fetuses as population monitoring systems.
- Bioassay will be developed and validated to address short-term testing procedures useful for predictive evaluations of specific biological changes, such as mutagenesis, carcinogenesis, reproduction effects, teratogenesis and general toxicological effects. Short-term testing of chemicals for known and unknown biological activity will serve as a validation of the procedures, as well as an addition to the data base. This research will include development and validation of several cell culture systems, a short-term assessment of cardiovascular toxicity, human cell interactions, and an evaluation of batteries of tests for mutagenesis and presumptive carcinogenesis. The research will also include development of improved statistical procedures for the analysis of various microbial test systems, methods to assess the effects of toxic substances on the immune system including surveillance against tumor cells, and developmental research on several new and more sensitive screening assays. This effort and the two following account for the remaining 1981 increase.
- Carcinogenesis and mutagenesis research will identify a broad range of test tube and laboratory animal tests to address certain aspects of carcinogenic and mutagenic transformation. These longer term carcinogenesis and mutagenesis programs are designed primarily to provide a firm data base upon which validated short-term bioassays can be based. This longer range and more intensive research employs a variety of disciplines for the broad scientific questions involved. Research will include determination of biochemical indicators of genotoxicity, data validation using computerized information sources and statistical systems for genetic toxicology bioassay, development of potential screening tests for the effects of inhaled toxic substances on enzyme and immune-complex activity, and development and validation assays for serum components associated with altered levels of serum lipids and lipoproteins as indicators of toxicity.
- General toxicology programs address a varied array of biological toxic effects to which humans have been shown to be sensitive. These responses to toxicants need definition. The laboratory animal projects include a variety of routes of administration of toxicants as well as systems upon which they may act (e.g., immune, tissue, cardiopulmonary). An ultimate goal of these and other studies defined below is to determine mechanisms of toxic action from which short-term bioassay procedures may be ultimately derived and from which controls may be addressed to limit exposure. This research will include an evaluation of effects on host defense mechanisms through application of a study of influence on infections, study of developmental toxicity of metabolic patterns in major organs, evaluation of the use of clinical biochemical chemistries to

- All toxic substance health research programs will provide technical assistance and support to the Office of Toxic Substances, the regional offices, and the Office of Enforcement in proposing and evaluating testing standards, evaluating testing data, and in developing symposia and workshops.
- The National Center for Toxicology Research, jointly funded with the Food and Drug Administration, will perform long-term, low-dose toxicity studies on chemical substances of interest to the EPA and will assist in developing methods applicable to a system of chemical screening. Long-term studies of rotenone, lindane, aromatic amines, and the interactive risk of two or more carcinogens in drinking water will continue.

ECOLOGICAL EFFECTS

1979 Accomplishments

During 1979, \$1,161,100 was expended on the ecological effects program, which \$779,300 was for extramural activities and \$381,800 for salaries and expenses. Program accomplishments included the following:

- Round-robin validation of algal assay tests using silver, zinc and pentachlorophenol and fish Daphnia tests for defining acute toxicity of toxic chemicals were completed. The validation was carried out by performing these tests in EPA and non-EPA laboratories. These tests will provide industries with guidance for generating data to support the premarket evaluation of data on new chemicals.
- The work on soil core microcosm for investigating fate and effects of chemicals in soil community was completed. These microcosms will provide data on persistence and movement of toxic chemicals in terrestrial environments and will be used in the development of exposure assessment models.
- A provisional protocol to define the effects of toxic chemicals on seed germination and root elongation and standard testing procedures for embryos and larvae of the Atlantic silverside, Menidia have been developed. These tests are being used in generating data for defining potential hazards associated with toxic chemicals to ecosystems.

1980 Program

In 1980, the Agency has allocated a total of \$7,355,100 to this program, of which \$5,224,300 is for extramural activities under the Research and Development appropriation and \$2,130,800 is for the Salaries and Expenses Appropriation.

The long range goal of the 1980 program is to develop improved, cost-effective and validated methods for defining hazards associated with toxic chemicals to environmental species and the ecosystem. This program includes the public health initiative which is concerned with defining methodologies for assessing exposure of humans to toxic chemicals. Exposure methodologies are needed in order to define exposure levels for use in risk assessment process under Sections 4 and 5 of TSCA. This work will also aid the implementation of the Federal Insecticide, Fungicide and Rodenticide Act, Clean Water Act, Resources Conservation and Recovery Act.

Technical assistance will be provided to the Office of Pesticides and Toxic Substances on complex problems associated with defining ecological effects of toxic chemicals, critical review of Section 4 and Section 5 document of TSCA, participation in rule-making and development of support documents for TSCA rules, and review of

laboratories and in four contractor laboratories. Round-robin testing of chronic and life cycle tests will be accelerated. These tests will include: Midge chronic, Daphnia life cycle, fathead minnow life cycle, Daphnia flow thru life cycle, life cycle for mysids shrimp, embryo/larva test with fathead minnow, chronic test with midge tanytarsus, life cycle tests for fish, polychaetes, and crustaceans. These tests, upon completion, will be incorporated into Section 5 of TSCA test guidelines and will provide guidance to industries performing tests in new chemicals.

The general objective of the public health initiative-environment research program is to develop methodologies for estimating exposure concentration of toxic chemicals to humans and the environment. This program was initiated October 1, 1979. The program consists of the following major components:

- Mathematical models are being developed to predict concentrations of toxic chemicals in air, freshwater, and terrestrial environments. First generation freshwater and air models have been developed for a few chemicals and these models are being validated. The work on model development for terrestrials is being initiated.
- Models are also being developed to predict the toxicity of toxic chemicals based on the structure of the chemical. During the phase of structuring the model, activity development, data on toxicity and physical-chemical constants are being collected. Work is also being initiated to develop the structure-activity concept for predicting environmental persistence (microbial degradation, hydrolysis) of chemicals.
- Laboratory model ecosystems and microcosms are being developed to predict transport and transformation of toxic chemicals in freshwater, marine and terrestrial environments. The microcosms are also being used to validate transport, fate and exposure models.
- Work is being initiated to predict the concentration of toxic chemicals in the food chain. The specific projects include (1) survey of actual field situations in order to determine key species or processes where toxic chemicals have been identified in the food chain, (2) development of a bioaccumulation model for estimating concentration of toxic chemicals in terrestrial plants, birds and animals, and (3) determination of transport parameters for the major aquatic food chain.
- A human exposure monitoring capability within EPA is being established to develop and test methodologies for determining human exposure to toxic chemicals. Plans to develop an integrated program for determining concentration of toxic chemicals in air, water, and food chain systems have been completed. Criteria for selecting toxic chemicals and monitoring locations have been developed and chemicals and locations will be selected shortly.

1980 Explanation of Changes from Budget Estimates

The net decrease of \$3,046,900 results from several actions. An increase of \$36,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$1,000 and \$2,800, respectively. The Congress also reduced toxic substances health and ecological effect activities by \$5 million, which resulted in a decrease of \$3 million to this activity. An overall reduction of salary funds resulted in a decrease of \$211,100. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$124,200 to this activity.

A transfer of \$281,500 was made from other media within the Office of Research and Development as a result of the reorganization of the programmatic functions of the Corvallis and Las Vegas labs after a 1979 RIF. A transfer of \$24,000 was made to management and support to lab support for lab maintenance costs due in part to increasing costs of energy. Finally, a reprogramming of \$2,000 was made to transport and fate within the toxic substances media to help cover the cost of a symposium on the state of the art of the use of lab rate data in predicting environmental fate of new chemicals.

1981 Plan

The Agency requests a total of \$11,299,500 and 44 permanent workyears for this program, of which \$3,141,400 is for the Salaries and Expenses appropriation and \$8,158,100 is for extramural activities under the Research and Development appropriation. This is an increase of \$3,944,400 and 19 permanent workyears over the current level. Several important initiatives are planned in 1981: \$944,400 and 19 permanent workyears will initiate a major ecological research program on aquatic toxicology as it relates to the development of assays at the cellular and community level; \$500,000 will expand ongoing work on the development of monitoring methods for estimating human exposure to ambient toxics present in the environment; \$1,000,000 will expand our efforts to develop and to validate multimedia mathematical models for toxic chemicals; \$1,000,000 will develop microcosms for screening and validation of models; and \$500,000 will expand our efforts to predict the concentration of toxic chemicals in the food chain.

The goals of the 1981 program are to develop test methods for defining toxic effects of chemicals on organisms in the environment and ecosystem and to develop predictive tools and evaluate models for defining exposure concentration of chemicals which are toxic to humans and the environment. Emphasis will be placed on the validation of test methods and models, development of multimedia models, food chain and exposure estimation, and structure-activity concept development for screening of toxic chemicals. The validation of models will be carried out in laboratory microcosms and model ecosystems as well as by field measurements. This research will provide critical methodologies for defining hazard and exposure data for use in the implementation of Section 4 and Section 5 of TSCA. The program also includes the initiation of a major program on aquatic toxicology with the objective of gaining a better understanding of the effect of toxic chemicals on ecosystem species and processes. Specific research is described as follows:

- Continued technical assistance on complex problems associated with defining exposure and ecological effects of toxic chemicals on ecosystem organisms and on ecosystems will be provided to OPTS.
- Round-robin validation of chronic and life cycle toxicity tests will be completed and will be transferred to OPTS for incorporation into TSCA Section 5 and Section 4 guidelines.
- Work on the development of exposure assessment methodology to humans under the public health initiative will continue. Mathematical models developed in 1980 for predicting exposure concentrations in air, freshwater and terrestrial environments will be validated. Attempts will be made to integrate such models for the development of a multimedia model. Work will be initiated on models for marine environments. Validation of models in laboratory microcosms and model ecosystems will be carried out. Methodologies for predicting the effects of toxic chemicals based on structure for one series of chemicals containing different substituents will be developed for predicting acute toxicity to one organism. Structure-activity concept predicting microbial degradation and oxidation/reduction will also continue.

model for one class of toxic chemicals will be completed. The food chain model will also assist in defining body burden. Work on bioaccumulation model development for toxics in aquatic plants and terrestrial species will be continued. Emphasis will be placed on defining transport, uptake and elimination characteristics of toxics and the development of the food chain model.

- Work on measuring ambient concentration of selected toxic chemicals in air, water, soil-sediment and food samples at a selected location will be carried out. Ambient exposure concentration data will be collected to assess the human exposure problem of the toxic chemical. Exposure data will also be analyzed in the light of socio-economic habits of the population group and population at risk estimates will be made. Exposure data will be utilized to validate mathematical models developed under this program for predicting exposure concentration of toxic chemicals.
- Work will be carried out to define criteria and tests to measure ecosystem stress and the capability of the ecosystem to either resist or recover from natural and/or toxic chemical effects.
- Work will be carried out on the research on the development of multiple assays. The work will involve the development of plant assays; development of insect bioassays; development of bioassays dependent upon toxic effects on mycorrhiza-root symbiosis; development of bioassays relating to plant-herbivore and host-parasite interactions; research to determine effects of toxics on predator-prey interactions; and development of bioassays using nematodes. Ecosystem process research will determine key species in a given ecosystem succession scheme and assess toxic impacts on succession sequence and rates; adapt bioassays for nitrogen cycle compounds to multivariate assays for critical terrestrial and aquatic ecosystems.
- Research will be initiated on a major program concerning aquatic toxicology. The research will cover a wide range of aquatic species in a search for unique sensitive end-point response to toxics other than death (e.g., swimming rate, sensitivity to light, etc.) and will include studies on the role of natural variation to chemical response in evaluating end-point phenomena. Toxics of particular interest are organics and petroleum. Research will also be done on the development of in vivo and in situ assays for cytogenetic damage and to determine and repair mechanisms at the cellular level. Research will be initiated to develop marine microcosms and simulation models to determine community altering effects of persistent toxic contaminants, toxic transformation products and metabolites on commonly used food organisms. Research will also continue to provide characterization and determination of toxic effects of compounds giving carcinogenic responses of several concentrations of toxicants in aquatic animals through a geographic area.

TRANSPORT AND FATE

1979 Accomplishments

During 1979, obligations were \$1,913,000, of which \$1,322,800 was for extramural activities and \$590,200 was for in-house costs. During the year:

- The Exposure Assessment Modeling System (EXAMS) was tested in laboratory ecosystems for the pesticide chemical parathion. The EXAMS model is used to estimate ambient concentration of toxic chemicals in aquatic environments. In addition, a user's manual for this model was developed.
- Test protocols were developed for hydrolysis and adsorption of toxic chemicals.

1980 Program

The 1980 resources for transport and fate are \$2,343,400. The resources include \$1,463,900 for extramural activities under the Research and Development appropriation and \$879,500 for the Salaries and Expenses appropriation. These resources are assigned to develop methodologies for predicting transport, transformation, bioaccumulation and exposure of toxic chemicals in air, water, marine, soil, sediments and biota.

The main research objective in 1980 is to develop exposure assessment models for toxic chemicals in multimedia environments and to develop improved protocols for the testing of toxic chemicals. The research involves the characterization of environmental processes; measurement of rate parameters; development of quantitative expressions for environmental process description; determination of persistence of chemicals and identification and quantification of degradation products of toxic chemicals. The environmental process work will be validated in laboratory model ecosystems. The information obtained from the environmental processes work will be used in the development of exposure assessment techniques to be used in the evaluation of the risk which toxic chemicals may produce in humans or the environment. It is anticipated that the above work will also lead to the development of improved testing protocols to be used by the OPTS in the screening of toxic chemicals. Toxic substances and other environmentally significant chemicals to be studied will include priority chemicals identified by the Office of Pesticides and Toxic Substances. Specific research in 1980 includes the following:

- Technical assistance will be provided to the Office of Pesticides and Toxic Substances on complex problems associated with fate, testing, exposure assessment and in the development of test rules for Section 4 and Section 5 of TSCA. This technical assistance will include preparation of support documents for exposure analysis, critical review of Section 4 and Section 5 test rules and review of technical data on Section 5 chemicals.
- Exposure analysis modeling systems (EXAMS) will be refined and validated and a users manual will be prepared. The refined EXAMS will be tested for five chemicals. EXAMS will provide exposure data on toxics to be used in risk assessment under TSCA.
- Methodologies will be developed to define environmental transport and transformation processes including anaerobic degradation, sediment sorption, leaching and photochemical processes. These methodologies will provide rate coefficient data to be used in exposure analysis and testing protocols for screening of toxic chemicals.
- Improved cost-effective and standard methods for the measurement of octanol/water partition coefficients of selected toxic chemicals will be developed. Partition coefficient data provide information on the bioaccumulation potential of toxic chemicals.
- Research will be conducted to develop validated reproducible actual media test systems and protocols for determining the routes, rate and fate of toxic chemicals in estuarine environments. Models will also be modified in order to predict concentration of toxic chemicals in marine animals. These models will provide exposure concentration of toxic chemicals in food chain systems.
- Research on defining the activities and persistence of toxic chemicals in air will be conducted. These studies will provide transfer coefficients to be used in exposure assessment models as well as in models for defining stratospheric ozone depletion.
- Models will be developed to predict fate and behavior of toxic chemicals based

transport and fate tests will be developed. This document will provide guidance to industries in carrying out the testing of new chemicals. Test data generated using the GLP documents will enable the Agency to assess the reliability of the data, which in turn means that the Agency would not have to spend resources to verify data generated by industries on new and existing toxic chemicals.

1980 Explanation of Changes from Budget Estimates

The net decrease of \$222,200 results from several actions. An increase of \$17,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency salary costs resulted in a decrease of \$105,100. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$113,800 to this activity.

A transfer of \$41,000 was made to the management and support media to lab support for lab maintenance costs due in part to increasing costs of energy. A reprogramming of \$20,000 from pesticides-ecological effects (\$5,000), toxic substances-ecological effects (\$2,000), toxic-substances-characterization and measurement methods development (\$1,000), transport fate and effects of energy related pollutants (\$6,000), and atmospheric transportation and transformation of energy related pollutants (\$6,000), to help cover the cost of a symposium on the state of the art of the use of lab rate data in predicting environmental fate of new chemicals.

1981 Plan

The Agency requests a total of \$3,016,700 and 25 permanent workyears for this program, of which \$1,361,900 is for the Salaries and Expenses appropriation and \$1,654,800 is for extramural purposes under the Research and Development appropriation. The increase of \$673,300 and 12 permanent workyears will be used to: (1) expand efforts to define rate parameters for transformation processes of toxic chemicals; (2) develop improved methodologies for describing quantitatively the transport and transformation of toxic chemicals in the environment; (3) develop advanced structure-activity concepts for predicting bioaccumulation and toxicity of chemicals to aquatic animals; (4) develop exposure assessment methodologies and testing protocols to be used in defining risk and hazard associated with toxic substances; and (5) develop the exposure assessment methodology that responds to the need for a precise knowledge of the transport and transformation of toxic substances.

The main research objective in 1981 is to develop standard and improved methodologies for estimating transport and transformation of toxic chemicals in air, water soil, sediments, and biota. The work will involve the investigation of rate parameters of environmental processes, identification of transformation products and the development of quantitative expressions for the description of environmental processes. This information will be used in developing exposure assessment models for toxic chemicals in multimedia environments. After standardization of these methodologies they will be incorporated as protocols in the TSCA testing guidelines for Section 4 and Section 5 rules. Work will also focus on the development of improved structure-activity concepts for predicting transport, fate and toxicity of toxic chemicals to be used in screening premanufacturing data on new chemicals. The information developed under this program will aid the implementation of TSCA directly and other EPA legislations including Federal Insecticide, Fungicide and Rodenticide Act, Clean Water Act, Clean Air Act and Resources Conservation and Recovery Act. Technical assistance to the Office of Pesticides and Toxic Substances will be provided in the preparation of support documents for assessment and testing schemes for use in environmental fate and risk evaluation of chemicals and chemical mixtures; critical reviews of technical documents including chemical evaluation reports, Section 5 testing guidelines and Section 4 tests, standard rules for accuracy, science, logic and technical validity.

A user's manual will be developed for various transport, rate and exposure assessment models to be used by the Office of Pesticides and Toxic Substances in evaluating data on new and existing chemicals.

Soil and sediments from locations of the U.S. will be characterized in terms of organic contents, clay content, exchange capability, etc. The soil and sediment will be tested for adsorption, degradation and leaching. Methods will be developed to predict adsorption on the basis of sediment/soil characteristics.

Work on leaching of toxic chemicals in soil systems will be carried out in order to develop protocols for possible incorporation into testing guidelines. A model ecosystem will be developed to define movement of toxics in a soil matrix. Data will be used to develop mathematical models for defining exposure concentration of toxic chemicals in soils. This model will take into account the soil type, properties of the chemicals and environmental characteristics.

Anaerobic biodegradation of toxic chemicals in aquatic environments will be studied. Emphasis will be placed on defining quantitative expressions for evaluating parameters for environmental transport and transformation processes of toxic chemicals. The lifetime of various chemicals as a function of the nature of the aquatic environment will be calculated and utilized in the development of exposure models. The methodology will be validated for the development of standard protocols to be used in testing guidelines.

Reactivity of toxic chemicals in air will be measured for three toxic chemicals. Reactions will include photolysis and reactions with ozone and nitrogen oxides. Rate constants for the reactions will be measured and will be used in the development of air exposure assessment models. Emphasis will be placed on standardizing the methodology in order to develop cost-effective testing protocols for use in defining persistence under TSCA.

Support documents will be developed for transport and fate tests under TSCA Section 5 testing guidelines. These documents will include limitations on the applicability of the test methods as a function of chemical structure, cost-effectiveness of the test method, and defined boundary conditions. At present, support documents are not available for transport and fate tests.

Work on the development of a good laboratory practice document for certain transport and fate and ecological effects tests will continue. These documents will enable the Agency to provide guidance to industries in obtaining reliable test data on chemicals.

Work on the investigation of kinetics of environmental transport and transformation processes will be expanded. Transport and transformation processes will include microbial degradation, chemical water sediment exchange, chemical reduction in bottom sediments, free radical oxidation, photolysis, plant uptake, bioaccumulation and adsorption/desorption. Emphasis will be placed on defining quantitative expressions for transformation processes and studying the influence of environmental factors on rate processes. It is anticipated that these methods will lead to the development of cost-effective tests for defining the persistence of chemicals for possible use in food-chain models. The models will be validated in watersheds, lakes and wetlands for the Office of Pesticides and Toxic Substances designated toxic chemical.

Work will be expanded to develop advanced and quantitative structure-activity concepts for predicting bioaccumulation and toxicity of chemicals in aquatic animals. The work will involve the application of the Hansch approach and Free-Wilson type structure-activity concepts for screening toxic chemicals. Parameters to be incorporated will include toxic effects (chronic, acute, bioaccumulation), partition coefficients, structural characteristics and environmental processes parameters. Attempts will also be made to test the feasibility of predicting fate and behavior of certain chemicals

STRATOSPHERIC OZONE DEPLETION RESEARCH AND EDUCATION ACT OF 1978
1979 Accomplishments

During 1979, obligations totaled \$1,141,100. Included in this total are \$222,800 for salaries and expenses and \$918,300 for extramural research activities. Specific accomplishments include the following:

- The National Academy of Sciences' state-of-knowledge studies on causes, effects, and alternate controls of stratospheric ozone protection were completed (mandated by PL 95-95). Reports are being prepared for publication.
- The Interagency Committee on Stratospheric Ozone Protection met and coordinated Federal research on stratospheric ozone depletion and identified research priorities. Priority areas are atmospheric science (including instrumentation), health effects, biological effects, and ecological effects.
- Epidemiological studies being conducted throughout the U.S. by the National Cancer Institute on the correlation of non-melanoma skin cancer, ultraviolet-B radiation and life styles, were completed. Preliminary analysis indicates that each one percent decrease in stratospheric ozone results in about a two percent increase in damaging ultraviolet radiation.
- Personal dosimeters were developed for use in studies to correlate exposure to ultraviolet radiation with skin cancer incidence.
- Continuing research provided updated data for use by the National Academy of Sciences and other organizations engaged in making improved integrated assessments of causes, effects, and controls of stratospheric ozone depletion.
- Computer modeling studies were initiated to determine whether ultraviolet-B radiation increases (such as those caused by decreased stratospheric ozone) may augment the generation of photochemical smog; thereby, affecting human health.
- Field experiments were conducted on crop yield and photorepair (an enzymatic mechanism that repairs cell mutations) effects for sensitive crops under varying ultraviolet-B levels. Laboratory experiments examining the effects of ultraviolet-B on photosynthesis were continued.
- Ultraviolet-B marine and freshwater penetration studies were expanded. The specific goal is to determine the effects of increased ultraviolet-B penetration on plankton organisms, northern anchovy and Pacific mackerel, as well as on shrimp and crab larvae in natural waters.
- A ultraviolet-B radiometry calibration and measurement technique was developed in cooperation with the National Bureau of Standards.

1980 Program

In 1980, the Agency has allocated a total of \$1,406,700 to this program, of which \$145,900 is for the Salaries and Expenses appropriation and \$1,260,800 is for extramural purposes under the Research and Development appropriation.

ultraviolet-B radiation to both melanoma and non-melanoma skin cancers; improving measures of the economic and social costs of skin cancers; and continuing to provide updated state-of-the-art knowledge for integrated assessments of causes, effects, and control of stratospheric ozone depletion. These are ongoing research efforts which are planned to extend beyond 1980 and through 1981. To enhance our understanding of the relationship between ultraviolet-B and skin cancer:

- Studies on melanoma (the more fatal type of skin cancer) will be given increased attention.
- Personal dosimeters produced in 1979 will be used in a pilot program to correlate exposure to ultraviolet radiation with skin cancer incidence.
- Ultraviolet-B radiation flux at epidemiological survey sites will be measured and correlated with cloudiness, turbidity, and ozone levels (the radiation reaching the earth's surface induces damage).

In addition:

- Initial model calculations on the connection between ultraviolet-B radiation and photochemical smog will be made based on the previously developed computer model.
- Sensitivity analyses of health damages will continue and economic and social measures of skin cancer costs will be tested. The result of these analyses and related data will be combined to make an integrated assessment of causes, effects, and alternate controls of ozone depletion.
- The Interagency Committee on Stratospheric Ozone Protection will continue to coordinate Federal research on ozone depletion.
- The National Academy of Sciences will publish reports entitled: "Stratospheric Ozone Depletion by Halocarbons Chemistry and Transport" and "Protection Against Depletion of Stratospheric Ozone by Chlorofluorocarbons."
- The second biennial report to Congress on research concerning causes and effects of stratospheric ozone depletion will be completed.

The 1980 program will also include the following projects which focus on improving understanding of the ecological effects of ozone depletion:

- Research to study the role and effects of ultraviolet-B radiation in the photosynthesis process will be initiated.
- Research on the adaptability of plants under field conditions to enhanced ultraviolet-B radiation will be conducted in order to understand why plants are affected to a greater degree in control chambers than in the field.
- Ongoing studies of effects of increased ultraviolet-B radiation on plankton organisms will be completed including an evaluation of the results and their possible value for estimating effects on other marine organisms.
- Final results of studies of ultraviolet-B radiation effects on shrimp and crab larval and on northern Pacific mackerel will be available.
- Research in the role and effects of critical molecular targets of ultraviolet-B radiation will be continued. The results of this research will enhance our ability to predict effects on a range of marine organisms.

the net increase of \$2,700 results from several actions. An increase of \$5,000 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$400. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$2,600 to this activity.

1981 Plan

The Agency requests a total of \$1,412,100 and 3 permanent workyears for this program; of which \$193,000 is for the Salaries and Expenses appropriation and \$1,219,100 is for extramural purposed under the Research and Development Appropriation.

Much of the research conducted by this program is ongoing in nature, taking several years to complete. For this reason, the 1981 research plan is similar to that for 1980. However, each year the projects are carefully monitored and the exact direction is modified. Most of the projects will produce interim results, while the scientific community in general produces new relevant data. This input is combined with changes made in the general thrust of the program and is used to appropriately define the individual projects from one year to the next.

In 1981 the program will:

- Continue to develop accurate measures of the economic and social costs of skin cancer. As this research continues the data base will improve qualitatively and quantitatively.
- Continue to provide the most recent state-of-the-art knowledge on causes, effects, and control of stratospheric ozone depletion to those conducting integrated assessments and to policy and decision-making officials.
- Continue the pilot study using personal dosimeters to test the relationship of ultraviolet-B and skin cancer.
- Continues ongoing studies on ultraviolet-B radiation flux measurements at epidemiological survey sites; data correlation with cloudiness, turbidity, and ozone levels, and development of a forecasting model to project skin cancer incidence and its relationship to ultraviolet-B enhancement.
- Report initial theoretical analyses of the interaction of ultraviolet-B radiation and photochemical smog and initiate smog chamber studies if the theoretical studies so warrant.
- Continue federal research coordination by the Interagency Committee on Stratospheric Ozone Protection.
- Continue studies of the role and effects of ultraviolet-B on photosynthesis with the details of the study being changed based on results obtained in 1980.
- Initiate new studies of ultraviolet-B effects on key marine life forms. The specific target populations and methodologies used in these studies will be based in part on the results of the studies completed in 1980 on plankton organisms, shrimp and crab larval, and mackerel.
- Complete the study on the role and effects of critical molecular targets of ultraviolet-B radiation.
- Prepare the third biennial research report to the Congress in January 1982.

TOXIC SUBSTANCES

Industrial Processes

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Industrial Processes:			
Salaries and Expenses.....	\$614	\$611	-\$3
Research and Development.....	1,158	1,158	...
Grand Total.....	1,772	1,769	-3

Industrial Processes

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
		(dollars in thousands)			
<u>Appropriation</u>					
Industrial Processes:					
Salaries and Expenses..	\$260	\$642	\$414	\$614	+\$200
Research and Develop- ment.....	200	1,100	1,234	1,158	-76
Grand Total.....	460	1,742	1,648	1,772	+124
<u>Permanent Positions.....</u>	8	12	11	11	...
Full-time Equivalency....	7	14	14	14	...

Budget Request

The Agency requests a total of \$1,771,700 and 11 permanent workyears for 1981, an increase of \$123,900 over 1980. Included in this total is \$614,200 for the Salaries and Expenses appropriation and \$1,157,500 for extramural purposes under the Research and Development appropriation; an increase of \$200,200 and a decrease of \$76,300, respectively.

Program Description

The toxics industrial research program is being conducted to directly support the current needs of the Office of Pesticides and Toxic Substances (OPTS). Major objectives of the program include: (1) providing technical assistance relating to toxic identification and quantification for industrial processes and products; (2) evaluating process alternatives in terms of environmental acceptability based on toxic pollutant criteria; (3) defining the occurrence of toxic substances as impurities in commercially available chemicals from a knowledge of process chemistry and waste composition; (4) providing technical assistance in terms of participation in working groups, review of reports, documents, and for the development of expert testimony as required by OPTS; (5) providing perspectives on the occurrence and use of high priority TSCA chemicals for industrial processes; (6) providing information on the availability of substitute chemicals to replace chemicals for which TSCA has mandated a decrease in manufacturing, including information on the economics of substitution; and (7) providing in-plant manufacturing process quality control assessments.

1979 Accomplishments

The 1979 obligations for this program were \$459,900, of which \$259,800 was for in-house costs and \$200,100 was for extramural activities. Specific accomplishments included the following efforts:

An assessment of exposure to asbestos was conducted to develop techniques for sealing friable sprayed-on asbestos coatings in structures, high-vacuum removal of asbestos from building construction sites, and training of local personnel to use asbestos particulate detection methods. The destruction of PCB's (polychlorinated biphenols) in high-efficiency utility boilers was tested and the preparation of protocols and guidelines for this method of destruction was initiated. A related effort was also started to evaluate a catalytic ultraviolet ozonation process of PCB and trichlorobenzene destruction.

- Developed process alternatives. Surveys were conducted on chemical manufacturing process technologies to identify pollutant sources of generic unit processes and to begin developing a basis for comparison of pollutant discharges of alternate processes. The Office of Pesticides and Toxic Substances will utilize this methodology when it is fully developed for premarked notification reviews under TSCA Section 5 and for regulatory options assessment under Section 6.
- Identified toxic product contaminants. As part of the generic unit process technology assessment described above, toxic pollutants that might become product contaminants were identified for use in TSCA Sections 5 and 6 regulatory reviews.
- Participated in working groups/task force. The laboratories and headquarters staff participated in the EPA Dioxin Task Force and prepared reference manuals that define dioxin sources and destruction methods.
- Evaluated chemical uses/substitutions/processes. The generic unit process technology and pollutant assessment work indicated above provided data for the establishment of a predictive model which will lead to identification of potential uses and the associated risks and substitutes and manufacturing processes for new and existing chemicals to be regulated by the Office of Pesticides and Toxic Substances under TSCA Sections 5 and 6 respectively.

1980 Program

In 1980, the Agency has allocated a total of \$1,647,800 to this program, of which \$414,000 is for the Salaries and Expenses appropriation and \$1,233,800 is for extramural activities under the Research and Development appropriation. In 1980, the industrial processes toxics program will:

- Provide technical assistance to identify and assess specified toxic pollutants resulting from industrial processes (i.e., dioxins from chlorophenols production).
- Continue support to the Office of Pesticides and Toxic Substances for specific problems related to asbestos and PCB's regulation.
- Continue development of the chemical manufacturing processes pollutant prediction model. This model identifies predicated pollutants and validates them for 12 generic (unit) manufacturing processes. This model will be used to predict possible toxic pollutants that can be generated by altering the manufacturing process conditions.

- Define alternative processing routes and modifications to minimize public exposure to toxic substances that result from the manufacture of specific high volume halogenated hydrocarbons (e.g., pentachlorophenol). The potential for environmental contamination from these halogenated hydrocarbons is high due to the manufacturing process.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$94,200 results from several actions. An increase of \$11,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency salary costs resulted in a decrease of \$104,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$1,900 to this activity.

1981 Plan

The Agency requests a total of 11 permanent workyears and \$1,771,700 for this program, of which \$614,200 is for the Salaries and Expenses appropriation and \$1,157,500 is for extramural purposes under the Research and Development appropriation.

The 1981 program will continue to emphasize the "new chemical" manufacture pollution predictive model. This model is based on the unit process approach and will provide EPA with a source of industrial information concerning chemicals. For a specific chemical the model will contain information such as the manufacturing process, distribution and use patterns, waste disposal methods, and control options. This information, together with a viable analytical model, will predict human risk as the chemical product moves through commerce. In addition, the program will:

- Expand toxic pollutant identification analyses to include three to seven additional unit processes covering the feedstocks, intermediates and product contaminants.
- Expand "new chemical" manufacture pollution predictive model to identify: (a) anticipated processes involved in manufacture, commercial and consumer use, transportation, and disposal; (b) expected releases associated with the individual processes; (c) quality and quantity of these releases; (d) recommended control methods; and (e) risk analyses relative to feedstocks, by-products, impurities, and degradation products.
- Expand regional technical support to include toxic chemical spills and emergency response techniques.

Monitoring and Technical Support

	Actual 1979	Budget Estimate 1980 (dollars in thousands)	Current Estimate 1980 (dollars in thousands)	Estimate 1981	Increase + Decrease - 1981 vs. 1980
<u>Appropriation</u>					
Characterization and Measurement Methods Development:					
Salaries and Expenses.....	\$152	\$200	\$183	\$381	+\$198
Research and Development.....	445	437	420	574	+154
Technical Support:					
Salaries and Expenses.....	1,058	1,180	985	1,313	+328
Research and Development.....	661	1,021	1,100	979	-121
Total:					
Salaries and Expenses.....	1,210	1,380	1,168	1,694	+526
Research and Development.....	1,106	1,458	1,520	1,553	+33
Grand Total.....	2,316	2,838	2,688	3,247	+559
<u>Permanent Positions</u>					
Characterization and Measurement Methods Development.....	2	3	4	8	+4
Technical Support.....	17	18	18	18	...
Total.....	19	21	22	26	+4
<u>Full-time Equivalency</u>					
Characterization and Measurement Methods Development.....	10	6	6	10	+4
Technical Support.....	20	23	23	23	...
Total.....	30	29	29	33	+4
<u>Budget Request</u>					

The Agency requests a total of \$3,246,700 and 26 permanent workyears for 1981, an increase of \$558,900 and 4 permanent workyears from 1980. Included in this total is \$1,692,600 for the Salaries and Expenses appropriation and \$1,553,100 for extramural purposes under the Research and Development appropriation; an increase of \$525,800 and

TOXIC SUBSTANCES

Monitoring and Technical Support

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Characterization and Measurement			
Methods Development:			
Salaries and Expenses.....	\$381	\$379	-\$2
Research and Development.....	574	574	...
Technical Support:			
Salaries and Expenses.....	1,313	1,307	-6
Research and Development.....	979	979	...
Total:			
Salaries and Expenses.....	1,694	1,686	-8
Research and Development.....	1,553	1,553	...
Grand Total.....	3,247	3,239	-8

\$33,100, respectively. Of this increase, \$357,600 will support the development of a comprehensive program for separation, identification and quantification of toxic chemicals bound to sediments; the development of techniques for measuring exposure levels of toxics in marine animals; and the development of methodologies to identify and measure toxic chemicals in plants. In addition, \$201,300 will be used to augment field validation activities within the technical support program.

Program Description

The characterization and measurement methods development program is designed to provide improved methods for collection, separation, identification and quantification of toxic substances in the environment. The program scope includes air, water, sediment, plants, and marine animals. The 1981 program will expand the work on characterization of toxics in sediments and will initiate activities pertaining to characterization and measurement of toxics in plants and marine animals. These methods are needed in carrying out monitoring, fate, effects, and exposure measurement of toxic chemicals in the environment.

The technical support program assists the Agency's operating programs in meeting the information mandates of the TSCA. Research is conducted to develop and validate field collection and analytical methodologies needed to: (1) fill in gaps in the data base on existing chemicals; (2) assist in the development of appropriate testing protocols and environmental and exposure assessment models; and (3) develop suitable guidelines for the validation and verification of predictive models. The program also provides analytical methods required to enforce existing and planned TSCA regulations; and supporting research to assure that appropriate quality assurance guidelines and protocols are developed and implemented for all TSCA monitoring activities.

CHARACTERIZATION AND MEASUREMENT METHODS DEVELOPMENT

1979 Accomplishments

During 1979, resources totaled \$597,100. Included in this total is \$151,900 for salaries and expenses and \$445,200 for extramural purposes. The accomplishments include:

- Analysis of toxic organic vapors in the Love Canal area. The results have provided an estimate of exposure concentration of toxic chemicals near the Niagara Falls area. Exposure data is needed for risk estimations.
- Evaluation of sampling methods for gaseous atmospheric samples. This has led to the development of an improved automatic gas sampling system.
- Development of a technique based on the application of liquid chromatography/Raman spectrometry for identification of toxic chemicals in water. The technique provides a capability to measure non-volatile organics in surface waters. Non-volatile organics which contribute 80 percent of organic compounds in water are difficult to analyze.

1980 Program

In 1980, the Agency has allocated a total \$602,600 to this program, of which \$183,000 is for the Salaries and Expenses appropriation and \$419,600 is for extramural purposes under the Research and Development appropriation.

identified by the Office of Pesticides and Toxic Substances and other environmentally significant toxic chemicals. Specific research in 1980 is as follows:

- Efforts will continue to develop sampling and analysis methods for toxic organics in air. These methods involve the use of cartridges containing absorbent powders, separation of organic chemicals using columns containing polymer resins and analysis by gaschromatography mass-spectrometry. Various absorbent powders as well as various column and detector systems are being investigated. These methods will be used in the work to measure the exposure concentration of toxic chemicals in air near chemical manufacturing plants.
- Efforts will continue to develop solid polymeric devices for collection of polychlorinated biphenyls (PCBs) from atmospheric samples. The methodology involves the use of sorbents such as XA-D type resins. This method is being used to define exposure concentration of PCBs in the U.S. and be helpful in the regulation of PCBs under TSCA.
- Research is also underway to develop cost-effective detector systems for high pressure liquid chromatography. These detector systems will provide a rapid and inexpensive method for the analysis of new and existing toxic chemicals and will also be used for measuring the exposure concentration and defining the risk of toxics under Section 4 of TSCA.
- Studies to estimate the ambient concentration of asbestos and freon as a result of emission from automobiles are underway. These studies will aid in defining brake drum cleaning methods (such as the wet vacuum method) which control asbestos from worn brake linings. These studies will also aid in defining techniques to recover freon from the air conditioning systems of junked cars.
- Methodologies for the separation and identification of toxic chemicals in the sediment matrix will be developed since adequate methodologies are not presently available. The specific approach in the development of such methods and techniques will involve sampling, extraction of toxics from sediment, separation, identification and quantification using gas-chromatography mass-spectrometry. Initiating this work will develop an inhouse capability for analyzing toxics in sediments and will aid in defining the bio-availability of toxics in aquatic environments.
- In 1980, studies are also being initiated to develop methodologies for measuring toxic impurities of trace levels in commercial toxic substances. Initial work will focus on measuring PCB impurities in oils. These studies will provide methodologies to identify the occurrence of trace level toxic impurities in chemicals used in large quantities. The identification of such trace impurities will enable the Agency to define and reduce potential risk associated with toxics to humans.

1980 Explanation of Change from Budget Estimate

The net decrease of \$34,900 results from several actions. An increase of \$5,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency salary costs resulted in a decrease of \$31,800. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$43,100 to this activity.

A transfer of \$10,000 was made to management and support to lab support for lab maintenance costs due in part to increasing costs of energy. A reprogramming of \$1,000 was made to toxic substances transport and fate to help cover the cost of a symposium on the state of the art of the use of lab rate data in predicting environmental fate of new chemicals. A transfer of \$45,700 was made from the air media, from transport and fate to support a transfer of personnel effected in 1979.

1981 Plan

The Agency requests a total of \$955,200 and 8 permanent workyears for this program, of which \$381,100 is for the Salaries and Expenses appropriation and \$574,100 for extramural purposes under the Research and Development appropriation. With the increase of \$352,600 work will be expanded on the identification of toxics in sediments and initiate work on the characterization of toxics in plants and marine animals.

Work will be initiated on the development of separation, characterization, and quantification methodologies for toxics in air. Emphasis will be placed on the application of these methodologies in the determination of concentration and movement of toxic chemicals in air near chemical manufacturing plants. These studies will be expanded to include gases and toxics adsorbed in particulates. Current methodologies for analysis of toxics in particulates are inadequate. These methodologies will be used by the Office of Pesticides and Toxic Substances and the Office of Enforcement to measure and identify toxics in air, to generate data for model validation, to estimate exposure concentrations of toxics in air, and in developing monitoring networks.

Cost-effective detector systems capable of analyzing wide ranges of toxic chemicals in conjunction with high pressure liquid chromatography will be continued. Emphasis will be placed on the standardization of the detector system for individual toxic chemicals. The work on the separation and characterization of toxics bound to sediments will be expanded. The effect of the nature of sediment and the chemical structure in the development of methodology will be evaluated. Methodology will be standardized for one class of toxic chemicals.

Work on the development of methodologies for identification of PCBs in oils will be continued and oils identified by the Office of Pesticides and Toxic Substances will be examined for possible occurrence of PCBs. These methods will aid in the enforcement of PCB regulations.

Methodologies for determining asbestos concentrations in the air will be developed and will be applied in analyzing environmental samples. Such data will be used in the validation of exposure models and in defining the risk to humans from asbestos. These methods will also aid in the development of technologies to control asbestos in the environment.

Methodologies for separation, identification and quantification of toxic chemicals in plants and marine animals will be developed. These methods will define exposure concentration of toxics for use in the development of food chain models. Our current understanding of food chain toxicity is inadequate and this data is critical to the total human risk assessment of toxic chemicals.

During 1979, obligations totaled \$1,718,900. Included in this total is \$1,057,500 for salaries and expenses and \$661,400 for extramural purposes. In 1979, the program:

- Developed field sampling methodologies and prepared techniques to extend the gas chromatograph and mass spectrometry organic screening capability. Data on 75 to 100 compounds were collected at Houston, Beaumont, Lake Charles, and at sites in New York and New Jersey.
- Concluded controlled laboratory and field studies on fate of the pollutant aryl phosphate. This compound was found to be present beyond the fence line of industrial facilities.
- Expanded Mass Spectra Search Data Bank to include toxic compounds found in air and water.
- Characterized the environmental setting of Beaumont/Lake Charles area using aerial photography and map overlays in support of Region VI, Office of Enforcement, Office of Research and Development and the Industrial Pollutant Fate Study. This data will be used to help define the boundaries of the field study effort.

1980 Program

In 1980, the Agency has allocated a total of \$2,085,200 of which \$984,800 is for the Salaries and Expenses appropriation and \$1,100,400 is for extramural purposes under the Research and Development appropriation. In 1980, the program will:

- Develop and apply field sampling methodology for organic pollutants associated with dye and pigment manufacturers and textile plants.
- Initiate an effort to develop field sampling protocols for the validation of stream models.
- Develop biological screening techniques for Dioxin.
- Develop quality assurance sampling protocol for bulk asbestos.
- Complete design work to streamline Gas Chromatograph/Fourier Transform Infra Red measurement capability in order to increase throughput and reduce costs.

1980 Explanation of Change from Budget Estimate

The net decrease of \$115,300 results from several actions. An increase of \$24,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and salary costs resulted in a decrease of \$4,500 and \$167,000, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$18,700 to this activity.

A transfer of \$50,000 was made from water quality from technical support to provide additional support to the technical support program under the toxic substances activity.

1981 Plan

The Agency requests a total of \$2,291,500 and 18 permanent workyears for this program, of which \$1,312,500 is for the Salaries and Expenses appropriation and \$979,000 for extramural purposes under the Research and Development appropriation. The increase of \$206,300 will be used to augment field validation activities. In 1981, the program will:

- Continue fenceline monitoring studies to develop and apply both Gas Chromatograph and Mass Spectrometry organic screening techniques and non-Gas Chromatograph and Mass Spectrometry techniques.
- Continue field support for model validation, including completion of sampling protocols for validation of stream models.
- Adapt biological monitoring techniques for rapid screening of chemicals.
- Investigate non-reactive, multielement techniques to simplify routine measurement of large numbers of samples.
- Develop quality assurance protocols in support of specific TSCA regulations.
- Develop comprehensive sampling protocols for analyzing asbestos in various products.

Toxic Substances Strategies

	<u>Actual</u> 1979	<u>Budget</u> <u>Estimate</u> 1980	<u>Current</u> <u>Estimate</u> 1980	<u>Estimate</u> 1981	<u>Increase +</u> <u>Decrease -</u> 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Testing and Evaluation:					
Salaries and Expenses..	\$3,592	\$10,387	\$6,106	\$7,241	+\$1,135
Abatement, Control and Compliance.....	13,453	26,258	23,856	23,182	-674
Chemical Control:					
Salaries and Expenses..	2,275	5,773	4,618	5,151	+533
Abatement, Control and Compliance.....	4,406	6,358	6,736	6,733	-3
Information Integration:					
Salaries and Expenses..	5,214	4,023	7,165	6,879	-286
Abatement, Control and Compliance.....	11,437	11,524	13,040	13,740	+700
Toxic Management:					
Salaries and Expenses..	1,033	1,220	1,152	909	-243
Abatement, Control and Compliance.....	40	...	80	80	...
Total:					
Salaries and Expenses..	12,114	21,403	19,041	20,180	+1,139
Abatement, Control and Compliance.....	29,336	44,140	43,712	43,735	+23
Grand Total.....	41,450	65,543	62,753	63,915	+1,162
<u>Permanent Positions</u>					
Testing and Evaluation.	117	243	178	207	+29
Chemical Control.....	76	164	139	147	+8
Information Integration	87	103	128	130	+2
Toxics Management.....	33	43	41	18	-23
Total.....	313	553	486	502	+16
<u>Full-time Equivalency</u>					
Testing and Evaluation.	118	223	201	230	+29
Chemical Control.....	64	149	156	164	+8
Information Integration	89	131	151	153	+2
Toxics Management.....	38	47	47	28	-19
Total.....	309	550	555	575	+20

TOXIC SUBSTANCES
Toxic Substances Strategies

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Testing and Evaluation:			
Salaries and Expenses.....	\$7,241	\$7,197	-\$44
Abatement, Control and Compliance.....	23,182	23,182	...
Chemical Control:			
Salaries and Expenses.....	5,151	5,120	-31
Abatement, Control and Compliance.....	6,733	6,733	...
Information Integration:			
Salaries and Expenses.....	6,879	6,851	-28
Abatement, Control and Compliance.....	13,740	13,740	...
Toxic Management:			
Salaries and Expenses.....	909	903	-6
Abatement, Control and Compliance.....	80	80	...
Total:			
Salaries and Expenses.....	20,180	20,071	-109
Abatement, Control and Compliance.....	43,735	43,735	...
Grand Total.....	63,915	63,806	-109



The Agency requests a total of \$63,915,800 and 502 permanent workyears for 1981, an increase of \$1,162,300 and over 16 permanent workyears for 1980. Included in this total is \$20,181,000 for Salaries and Expenses and \$43,734,800 for Abatement, Control and Compliance, with increases of \$1,139,200 and \$23,100, respectively. These resources will permit expanded development of testing requirements and conduct of assessments to provide an adequate information base for present and future action under the Toxic Substances Control Act (TSCA) and other toxics related programs. The program for review of and action on new chemical notifications will be fully operational. Control actions will be taken on selected chemicals identified as posing unreasonable risks. Required information gathering and management, monitoring, and economics support for these activities will be provided.

Program Description

The toxic substances strategies subactivity is comprised of the testing and evaluation, chemical control, information integration, and toxics management elements. These elements cover the Agency's testing, assessment, new chemical review, existing chemical control, economics, recordkeeping and reporting, data management, monitoring, toxic substances coordination, and industry assistance responsibilities under the Toxic Substances Control Act (TSCA).

Testing and Evaluation - The goals and objectives of the TSCA testing and evaluation program aim to increase efficiency and scientific credibility of toxic substances program assessments and regulations. They are: (1) develop a cost-effective testing scheme for determining experimentally the health and environmental effects of chemicals; related to this goal is the annual review of all test standards for revision as necessary to maintain an up-to-date and comprehensive scheme; (2) obtain test data where required for making evaluations of risk and to assure the quality of data; (3) develop a scientifically sound chemical assessment system; and (4) provide assessments of risk and exposure required to support toxic substances control actions.

A major feature of TSCA is the authority to require industry to test selected chemicals for their possible adverse effects on health and the environment. Adequate test data, currently unavailable for most chemicals, are a prerequisite to the evaluation of a chemical's risk. Such evaluations are needed to define and implement appropriate regulatory actions under TSCA and other statutes aimed at protecting health and the environment.

The testing authority of TSCA is implemented by promulgating rules specifying the chemicals to be tested and the "test standards" that are to be followed in performing the testing. The test standards, which TSCA requires to be reviewed and updated annually, specify the effects to be evaluated and the nature of the tests and test protocols to be followed in so doing. EPA will propose a structure of test standards to be referenced in adopting test rules for specific chemicals. These standards will first be based on existing validated test methods, and then expanded to cover other effects such as neurotoxicity and overall ecosystem impacts. Based upon the required annual review, these test standards will be refined and improved.

Promulgation of test rules applying the relevant test standards to specific chemicals will be done in response to the semiannual recommendations of the TSCA Interagency Testing Committee (ITC) established by Section 4(e) of TSCA, as well as for other chemicals whose needs for testing have been identified through the evaluation process described below. As TSCA requires, within 12 months of receiving recommendations from the ITC, EPA will either initiate rulemaking to require the recommended testing or publish its reasons for not so doing.

Evaluating the hazards associated with production, use, and disposal of chemicals to determine if such activities pose unreasonable risks is the cornerstone of the TSCA program. Certain evaluation efforts, such as evaluating "notices of substantial risk" submitted by industry as required by Section 8(e), evaluating citizen petitions submitted under Section 21, and evaluating notices submitted by industry prior to the manufacture of a new chemical as required by Section 5 are based upon outside input. Other evaluation activities, such as systematic identification and assessment of potentially high-risk existing or new chemicals, are initiated by EPA and are critical to the effective application of TSCA regulatory authorities.

Chemicals of concern identified through review of substantial risk notifications and other sources will be entered into a multistage hazard evaluation process, with a decision being made at the end of each stage whether to continue on to the next, more intensive stage of evaluation. Alternate decisions at a given stage include dropping current consideration because of apparent low hazard potential, subjecting the chemical to testing requirements to fill critical data gaps, or referring the chemical to another program or agency having authority to deal with any apparent hazards. Chemicals having completed all evaluation stages will have received a full evaluation of their sources, exposure potential, and adverse effects, as well as an investigation of their existing regulatory controls and identification of possible control options to reduce health and/or environmental risks associated with their production, use, and disposal. Such evaluations will provide a basis for initiating suitable regulatory actions under TSCA or other relevant authorities.

Chemical Control - The goal of the chemical control program is to protect human health and the environment by controlling new and existing chemical substances that present unreasonable risks of injury to health or the environment. This goal will be accomplished through implementation of the premanufacturing notification, control regulations, and imminent hazard regulatory provisions of TSCA. The major objectives are determination of unreasonable risk based upon evaluation of chemical substances on health, environmental, social, and economic factors; use of the least burdensome type of control (regulatory or nonregulatory) necessary to reduce or prevent unreasonable risk; and provision of all the economic analysis necessary to implement TSCA.

One of the major functions of the chemical control program is to review notices and information regarding the manufacture of new chemicals (i.e., those not listed in the inventory of existing chemicals) and the manufacture or processing of chemicals for significant new uses. This includes review of the notices for compliance with applicable rules and guidelines and for "newness," action on exemption requests, review of data in the notices and information gathered through data systems searches and reporting requirements, determination of unreasonable risks, and taking of appropriate control actions informally, and under TSCA or recommending referrals to other programs within EPA or other Federal, State, and local government entities. Significant new use rules will be established which require notification to EPA of new uses of new or existing chemicals determined to be significant based on exposure and other factors.

unreasonable risk and to limit or control the manufacturing, processing, distribution, use, or disposal of chemicals which pose or may pose unreasonable risks to health or the environment. An additional function is to conduct economic studies to support these actions as well as testing and evaluation, reporting and recordkeeping and to prepare necessary special economic analyses.

Information Integration - The TSCA information integration program is charged with the responsibility to provide a comprehensive program for chemical information collection, storage and retrieval and a cohesive Federal approach to controlling unreasonable risks associated with chemicals. Having these capabilities, it is also charged with providing all information support to the risk assessment, premanufacturing notification review, chemical control and testing programs. Information integration support activities are crucial to promulgating timely and defensible chemical control regulations and testing rules. These objectives are met through programs that: (1) obtain chemical information from industry using recordkeeping and reporting rules promulgated under the authority of Section 8 of TSCA for the use of the toxic substances program and others in assessing and regulating chemical hazards; (2) establish and use information storage and retrieval systems and data bases to serve the information needs of toxic substances and other programs, while maintaining adequate control of chemical information and data to assure the security of confidential business information; (3) analyse and manipulate available chemical data bases to identify and order chemicals of concern to the toxic substances program; (4) provide environmental, human, animal, and biota monitoring and exposure data and analysis to support risk assessments, premanufacturing review, and chemical control activities; (5) provide mechanisms and analytic support for coordinating and integrating the toxic substances program policies and activities with those of other EPA programs, EPA regions, State and local governments, public interest groups, other Federal agencies, and other countries; (6) provide information to assist industry in complying with TSCA provisions and provide feed back from industry regarding TSCA implementation; (7) work toward developing internationally recognized testing protocols, good laboratory practices, and harmonized approaches to regulate toxic chemicals.

Toxics Management - The goals of the regional toxics management program are to implement selected TSCA objectives at the State and local levels, and to provide limited integration support to the Agency's regional implementation of intermedia toxic substances activities. The major objectives and functions to be accomplished are:

- Providing expertise to State and local governments as they implement the Voluntary School Asbestos Program.
- Ensuring the provision of adequate, timely, and responsive information and assistance to the public and industry within the region.
- Facilitating the use of TSCA-gathered and other chemical information by the public, State and local government, labor and industry.
- Providing support to activities aimed at promoting efficient and effective Federal toxic substances programs through cooperation with other Federal agencies at the regional level.

1979 Accomplishments

In 1979, the Agency expended a total of \$17,044,600 for this program, of which \$3,591,700 was for Salaries and Expenses and \$13,452,900 was for extramural purposes. During 1979, EPA made significant progress in implementing the TSCA Section 4 testing program. Two sets of health effects test standards were proposed, covering a wide range of effects (oncogenicity, chronic toxicity, combined oncogenicity/chronic toxicity, acute effects, subchronic effects, mutagenicity, teratogenicity, reproductive effects, and metabolism studies) and Good Laboratory Practices. The first Section 4 test rule was developed and will be proposed in early 1980. This rule will require toxicological health effects testing a number of chemicals recommended by the Interagency Testing Committee (ITC). While testing cannot be required categorically for all new chemicals under Section 4, manufacturers must submit to EPA all test data and other available information on a chemical before it is manufactured. In 1979, the Agency published in the Federal Register a discussion of the pertinent issues involved in developing testing guidelines for new chemicals and a compilation of reference test methods. Based on the comments received, proposed testing guidelines will be issued in 1980.

Multistage assessment processes have been implemented for new chemical and existing chemical evaluations. The premanufacture review program began in 1979, and the testing and evaluation program performed initial risk evaluations on each of the eleven new chemicals received. The existing chemical assessment program was fully operational. The number of Section 8(e) Notices of Substantial Risk received up through the end of 1979 totaled 310. All notices required evaluation and follow-up, with 20-25 percent requiring detailed follow-up. In 1979, eight chemicals reached the more detailed stages of review, with one, asbestos, the subject of a regulatory risk assessment, and another, nitrilotriacetic acid, the subject of a detailed risk assessment.

1980 Program

In 1980, the Agency has allocated a total of \$29,962,400 to this program, of which \$6,106,600 is for Salaries and Expenses and \$23,855,800 is for extramural purposes under the Abatement, Control and Compliance appropriation. Continuing the development of the Section 4 testing program, we plan to propose three testing rules. The first will be the rule which was developed in 1979 for health effects testing. The second will require both health and environmental effects testing of chemicals, and the third will cover environmental effects testing for chemicals covered in the first two health effects testing rules. The Agency also plans to promulgate the first of these testing rules in 1980. The chemicals and categories in each of these testing rules will derive from the Interagency Testing Committee's (ITC) recommendations. We plan to promulgate the nine test standards proposed in 1979 in final form based on comments and public hearings held in October 1979, and to propose 12 additional test standards. Most of the latter will be environmental test standards, to be referenced in the second and third testing rules requiring environmental testing of chemicals in addition to health testing.

Testing and evaluation plans to provide risk assessment support to a fully operational premanufacture review program. Anticipating 400 new chemicals, the following assessments are planned: 392 Initial Reviews, 35 Intermediate Risk Assessments, and approximately 15 Full Risk Assessments in support of either Section 5(e) or Section 5(f) actions (new chemical control actions). We plan to perform 330 preliminary evaluations of existing chemicals, (including Section 8(e) Substantial Risk Notices) and 67 Chemical Hazard Information Profiles (CHIPs). In 1980, 17 chemicals are projected for the detailed review stages. Of these, four will be the subject of regulatory risk assessments, two of which will be the subject of actual proposed regulations in 1980.

The net decrease of \$5,000,000 results from several actions. An increase of \$232,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and salary costs resulted in a decrease of \$39,600 and \$400,000, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$1,513,600 to this activity.

A reprogramming of \$4,961,700 was made within the toxic substances media to information integration to correct the imbalance in resources and outputs between lead programs in testing, new chemical review and control, and existing chemical review and control and the support activities these programs require. These support activities include literature searching, monitoring, data processing and retrieval, document tracing, production and maintenance of the TSCA Inventory and industry assistance.

1981 Plan

The Agency requests a total of \$30,423,600 and 207 permanent workyears for this program, of which \$7,241,500 is for the Salaries and Expenses appropriation and \$23,182,100 for the Abatement, Control and Compliance appropriation. In 1981, the Section 4 testing program will be close to fully operational. The Agency plans to promulgate the second and third testing rules proposed in 1980, and to propose three additional testing rules. These will require both health and environmental testing of chemicals and categories recommended by the Interagency Testing Committee (ITC). The nine test standards promulgated in 1980 will undergo annual review as mandated by TSCA; the 12 test standards proposed in 1980 will be promulgated; and 15 additional test standards will be proposed. This will allow for a comprehensive testing scheme aimed at cost-effectively evaluating a chemical's health and environmental effects. The test standards proposed in 1981 will include important health effects such as neurotoxicity and behavioral effects for which standards were not available initially. They will also include environmental test standards to be used in identifying the ecological effects and environmental fate of chemicals.

In the assessment area, the Agency plans strong programs both for new chemicals and existing chemicals. Anticipating 400 new chemicals, the plan is: 392 Initial Reviews, 26 Intermediate Risk Assessments, and approximately 16 Full Risk Assessments in support of Section 5(e) or Section 5(f) control actions. For existing chemicals, 330 Preliminary Evaluations (including Section 8(e) Substantial Risk Notices) and 67 Chemical Hazard Identification Profiles (CHIPs), 17 detailed reviews, and 4 in-depth risk assessments in support of control regulations will be conducted.

CHEMICAL CONTROL

1979 Accomplishments

In 1979, \$6,681,300 was expended for this program. Of this, \$2,275,100 was expended for salaries and expenses, and \$4,406,200 for extramural purposes. The rules and forms were proposed for the implementation of the premanufacture notification program for new chemicals. Since this program is mandated by TSCA to be in effect 30 days after publication of the Initial Chemical Substances Inventory (published July 1, 1979), interim guidelines were published for operating the premanufacture notification program until final rules and forms are promulgated. In 1979, 11 "new" chemicals were reviewed for their potential health and environmental effects. In addition, during 1979 the roles of other EPA program offices' and Federal agencies' involvement in reviewing premanufacture notices were defined.

For existing chemicals (Section 6), the final rule banning the manufacturing, processing, distribution, and uses of polychlorinated biphenyls was promulgated. A technical assistance program was put in place to provide the technical information needed by school officials to assess and control the potential hazard from sprayed asbestos materials. The technical and economic feasibility of alternatives for the nonaerosol uses of chlorofluorocarbons was investigated. Work was begun on a generic labeling regulation for toxic and hazardous materials. Finally, three additional chemical investigations (asbestos use, dioxins, and benzidine dyes) were initiated.

Economic analysis was provided to support the regulatory activities listed above, to the rulemaking activities under Sections 8(a), 8(c), and 8(d) of TSCA, and to the testing rules under Section 4. A study on the economic costs for options under Section 13 regarding imports was completed and a 2-year study on the use of economic incentives to reduce nonaerosol emissions of chlorofluorocarbons was finished.

1980 Program

In 1980, the Agency has allocated a total of \$11,353,800 to this program, of which \$4,618,100 is for the Salaries and Expenses appropriation and \$6,735,700 is for extramural purposes under the Abatement, Control and Compliance appropriation. These resources will be used for economic analysis, the development of existing chemical control rules, and for support of the new chemical review process.

The final rules and forms for implementing the new chemical review process will be promulgated. Four hundred (400) chemicals are expected to be received and they will be initially screened for hazard based on the notice data. Effects and exposure data will be screened and selected chemicals will be subjected to further assessment. Notices that do not comply with the rules or that have insufficient data will be subject to a prohibition or limitation order pending development of additional information. If an unreasonable risk is determined to exist, an injunction or administrative order banning or controlling the chemical (approximately 15) will be issued within the notice period. Chemicals that do not warrant immediate controls but might do so in the future (e.g., if exposure were to increase) will be the subject of significant new use rules. Arrangements will be made to provide to other offices or agencies information received in premanufacture notices that would be useful to implementing other statutes.

For existing chemicals, a generic labeling rule will be proposed in conjunction with OSHA. Two asbestos rules will be proposed in 1980; one, on the control of asbestos in school building and one, on asbestos use. A regulatory decision on the nonaerosol uses of chlorofluorocarbons will be made and implemented. The requests for exemptions to the PCB rules (mandated by TSCA) will be processed and a rule prohibiting PCBs in food processing plants will be proposed and made final in 1980. Several chemicals or classes of chemicals will be investigated for possible regulatory action in 1981, including 1, 2-dichloroethane and benzene.

Economic analysis will be provided for the premanufacture review program, the regulatory actions on existing chemicals, for the impact of testing regulations, and for information gathering rules under Section 8 of TSCA. Three major economic studies will be started in 1980. They are: (1) testing laboratory availability, (2) a risk-benefit study, and (3) a study on the overall impact of TSCA on the chemical industry.

The net decrease of \$777,600 results from several actions. An increase of \$163,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and salary costs resulted in a decrease of \$30,700 and \$400,000, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$510,600 to this activity.

1981 Plan

The Agency requests a total of \$11,884,000 and 147 permanent workyears for this program, of which \$5,151,000 is for the Salaries and Expenses appropriation and \$6,733,000 for the Abatement, Control and Compliance appropriation. About 400 new chemicals are expected to be reviewed. Data provided from the notice, as well as additional data received from literature searches and reporting, will be used to select chemicals for complete assessments. Of these, 16 may warrant regulatory action and other new chemicals will be subject to significant new use rules (SNURs) or to referrals to other EPA programs or other Agencies.

For existing chemicals, rulemaking will continue on those chemicals selected in 1980. Additional chemicals will be selected for control in conjunction with the risk assessment process and from referrals of additional chemicals which may present an unreasonable risk. The two asbestos rules and the labeling rule proposed in 1980 will be promulgated in 1981. Generic chemical classes will be studied for possible regulatory action including an investigation of solvents.

Economic analyses will be completed for existing chemicals that are being regulated. Analyses will also be conducted on regulations under Section 5, and to support other toxic substances program regulations, including testing guidelines and recordkeeping and reporting. The three studies started in 1980 will be completed and published.

INFORMATION INTEGRATION

1979 Accomplishments

In 1979, the Agency expended a total of \$16,650,600 for this program, of which \$5,214,000 was for salaries and expenses and \$11,436,600 was for extramural purposes. Programs established in 1978 which were maintained and enhanced included Section 8 recordkeeping and reporting, toxic substances integration, public participation, chemical information systems and services, monitoring survey and analysis, and assistance to industry. Program accomplishments in 1979 included:

- Publishing the Inventory of Chemicals in Commerce required by Section 8(b) of TSCA and making it available to the public in hard copy, computer tape, and microfiche form.
- Establishing the support services contracts to conduct materials balances, exposure assessments and statistical design and analysis for chemicals undergoing assessment or subject to regulatory action.
- Continuing to maintain, update and enhance the data base for the Inventory of Chemicals in Commerce.

development.

- Obtaining the concurrence of 24 nations' environmental ministers that chemical control harmonization is the top priority for the Organization for Economic Cooperation and Development (OECD) environment program.
- Developing an outstanding record of information and assistance to industry.
- Supporting three regional pilot programs to foster public participation and establishing a program to encourage public involvement in TSCA rule development..
- Funding toxic substances information programs in five states utilizing the authority of Section 28 of TSCA.

1980 Program

In 1980, the Agency has allocated a total of \$20,205,700 to this program, of which \$7,165,500 is for Salaries and Expenses and \$13,040,200 is for extramural purposes under the Abatement, Control and Compliance appropriation. Information integration will:

- Propose 13 recordkeeping and reporting rules under the authority of TSCA Sections 8, 12, 13 and 20 and promulgate nine rules.
- Establish a capability to analyze available chemical data bases to identify chemicals of concern for testing, risk assessment and regulation.
- Begin to operate three additional modules of the Chemicals in Commerce Information System for health and safety data, pre-manufacturing notification data, and testing data.
- Revise policies and procedures for protection of confidential business data.
- Provide all necessary literature searching, document control and tracking, materials balance studies and exposure assessments to support test rule development, premanufacturing notification review, risk assessment, and chemical control.
- Provide second year funding for three regional public participation programs.
- Provide funding for public involvement in development of three proposed chemical control regulations.
- Begin to operate both the preprototype and the prototype of the interagency Chemical Substances Information Network (CSIN).

authority of Section 28 of TSCA.

- Reach agreement with OECD members on consistent test methodologies for chemicals in commerce, a common base set of data to be generated for new chemicals, and the general principles of good laboratory practices to assure data quality.
- Publish the Revised Inventory of Chemicals in Commerce.

1980 Explanation of Change from Budget Estimate

The net increase of \$4,659,200 results from several actions. An increase of \$158,800 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and salary costs and \$1 million to ADP costs resulted in a decrease of \$29,700, \$200,000, and \$60,000, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$171,600 to this activity.

A reprogramming of \$4,961,700 was made within the toxic substances media from testing and evaluation to correct the imbalance in resources and outputs between lead programs in testing, new chemical review and control, and existing chemical review and control and the support activities these programs require. These support activities include literature searching, monitoring, data processing and retrieval, document tracking, production and maintenance of the TSCA Inventory and industry assistance.

1981 Plan

The Agency requests a total of \$20,618,800 and 130 permanent workyears for this program, of which \$6,879,100 is for the Salaries and Expenses appropriation and \$13,739,700 is for the Abatement, Control and Compliance appropriation. In 1981, the program will:

- Double the number of chemical substances included in the identification component of CSIN and add six major data bases to the system.
- Make CICIS fully operational to provide computer support to assist in TSCA regulatory decision-making.
- Propose nine additional recordkeeping and reporting rules and promulgate 11 rules.
- Continue to analyze available chemical data bases for selecting and ordering chemicals of concern of TSCA.
- Begin several new toxic chemical anticipatory monitoring projects.
- Continue to fully support testing, premanufacturing notification review, risk assessment, chemical control regulation development and recordkeeping and reporting rule development, using information systems and services, monitoring programs and industry assistance.

In 1979, the Agency expended a total of \$1,073,300 for this program, of which \$1,032,900 was for salaries and expenses and \$40,400 was for extramural purposes. The regions have:

- Largely completed defining and refining the appropriate processes for integrating toxic substances activity in the regions.
- The first round of State/EPA cooperative agreement awards under Section 28 of TSCA has been completed; toxic substances staff in three regions are managing these agreements.
- States from nine regions applied for funding in the second round; regional staff provided assistance to applicants.
- The regions have been engaged in a concerted effort to work with State and local health, environmental, and education offices to implement EPA's program to identify and correct asbestos problems in schools.
- Regional staff represent EPA on the Interagency Regulatory Liaison Group and participate actively in several regulatory working groups.
- All regions have established and are operating toxics information activities.
- The regions have also established industry and public assistance programs, including information dissemination and conducting or participating in training sessions directed to specific rules such as premanufacturing notification.

1980 Program

In 1980, the Agency has allocated a total of \$1,231,600 to this program, of which \$1,151,600 is for Salaries and Expenses and \$80,000 is for extramural purposes under the Abatement, Control and Compliance appropriation.

- The most substantial regional efforts will be devoted to the Voluntary School Asbestos Program, to managing the eight State/EPA cooperative agreements awarded in 1979 and 1980, to continued efforts to integrate inter-media regional toxic substances programs, and to industry and public assistance programs.
- TSCA implementation efforts will shift, from regional input to rulemaking, to regional enforcement.
- A major new program will educate various public and private groups as to the availability and utility of several chemical information data bases, and inform regional managers, through analyses of these information sets, of heretofore unsuspected problems -- particularly those unique to the region.

The net increases of \$11,700 results from several actions. An increase of \$45,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$5,800 and \$300, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$3,400 to this activity.

The regional offices reprogrammed funds in order to cover projected costs based on 1979 expenditures, from solid waste, \$30,400; to water quality, \$7,000; to interdisciplinary \$24,400; to management and support, \$11,500; to pesticides, \$21,700; and from toxic substances enforcement, \$3,500.

1981 Plan

The Agency requests a total of \$989,400 and 18 permanent workyears for this program, of which \$909,400 is for the Salaries and Expenses appropriation and \$80,000 is for the Abatement, Control and Compliance appropriation. The 1981 regional toxics management program will be limited to:

- Providing adequate and timely assistance to industry and the public.
- Apprising various public and private groups of the availability and utility of chemical information in most regions through headquarters contractual support.
- Continuing regional participation in the Voluntary School Asbestos Program.
- Management of EPA/State cooperative agreements will become a headquarters responsibility.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
(dollars in thousands)					
<u>Appropriation</u>					
Toxic Substances Enforcement:					
Salaries and Expenses.....	\$2,254	\$2,771	\$2,455	\$2,711	+\$256
Abatement, Control and Compliance.....	1,005	1,025	1,489	2,481	+992
Total.....	3,259	3,796	3,944	5,192	+1,248
<u>Permanent Positions.....</u>	48	78	73	86	+13
<u>Full-time Equivalency.....</u>	70	82	82	95	+13

Budget Request

A total of \$5,191,600 and 86 permanent workyears is requested in 1981 for this program. Included in this total is \$2,710,800 for Salaries and Expenses, and \$2,480,800 for Abatement, Control, and Compliance, with increases of \$256,100 and \$991,700, respectively. These resources are to carry out the enforcement provisions of regulations implementing the Toxic Substances Control Act (TSCA) and to enforce the provisions of the Act. The increase of 13 permanent workyears and \$1,247,800 is necessary because of the increased number of enforceable rules promulgated under the Act which will require enforcement in 1981.

Program Description

The EPA toxic substances enforcement program is administered pursuant to the Toxic Substances Control Act (TSCA). The toxic substances enforcement program is responsible for developing the enforcement provisions of regulations implementing TSCA and for enforcing the Act. The enforcement program assists in the development of regulations to control specific chemical substances and mixtures and to assure the development and submission of reliable data relating to toxic chemicals, and prepares and executes enforcement strategies to implement these regulations.

The toxic substances enforcement program also engages in response to toxic emergencies involving substantial threats to public health or the environment and in taking appropriate action to abate such emergencies, through either legal or administrative proceedings.

A major function of the toxic substances enforcement program is the inspection of chemical manufacturing, processing, and distribution facilities whose activities are regulated under the Act and its implementing regulations. Inspections of such facilities lead to prosecutions of violators discovered during the inspections. Violators may be prosecuted either through administrative civil proceedings or by judicial proceedings in which a court may impose a number of civil or criminal sanctions.

TOXIC SUBSTANCES

Toxic Substances Enforcement

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Toxic Substances Enforcement:			
Salaries and Expenses.....	\$2,711	\$2,695	-\$16
Research and Development.....	2,481	2,481	...
Total.....	5,192	5,176	-16

Resources for this program were \$3,259,400. Contracts in the amount of \$1,005,100 were established for inspection support, sample chemical analysis, and revisions or additions to inspector, attorney, and case proceedings manuals. In 1979:

- Interim enforcement strategies were completed for Section 4 (testing), Section 5 (new chemicals), Section 8 inventory, Section 8(c), Section 8(e), and for the CFC ban and the PCB ban regulations.
- A final overall TSCA enforcement strategy was developed, as was a final PCB marking and disposal regulation enforcement strategy.
- Assistance was provided to the Office of Toxic Substances in the development of new regulations.
- Regulatory audiences affected by all new TSCA regulations were identified, and inspection procedures and regional implementation guidance for new regulations were developed.
- An interim penalty policy was completed, draft consolidation rules of practice were prepared, and a draft PCB inspection manual was completed.
- Assistance was provided in developing health effects standards, good laboratory practices for health effects, draft ecological effects test standards, and inspection procedures for ecological effects testing under Section 4.
- Program staff also participated in the PCB exemptions hearings, participated in the preparation of numerous imminent hazard cases involving illegal disposal, handling, or treatment of chemical substances, conducted inspections of CFC manufacturers, initiated investigations and prosecuted cases under Sections 6, 8(e), and 17, and assisted the regions in developing and prosecuting enforcement cases.
- The regional staff responded to emergency incidents, inspected PCB and CFC establishments, conducted compliance monitoring activities under the Section 8(a) inventory provisions, investigated instances of noncompliance with Section 8(e) substantial risk notification, and developed and prosecuted enforcement cases upon detection of violations.

1980 Program

1980 resources for this program are \$3,943,800 and 73 permanent workyears, of which \$2,454,700 is for Salaries and Expenses and \$1,489,100 is for extramural purposes under the Abatement, Control and Compliance appropriation. Contract funds amounting to \$1,396,600 will be used for laboratory sample analyses, inspectional support, and development and revision of enforcement strategies.

The 1980 toxic substances enforcement program will continue to have as its first priority at both headquarters and the regional offices the initiation of enforcement actions in emergencies involving substantial threats to public health, safety, and the environment. Important headquarters activities include the development of a final penalty policy and completion of final enforcement strategies for the PCB ban and the CFC ban regulations, Section 4 (testing), Section 5 (new chemicals), Section 8 inventory, Section 8(c), and Section 8(e). Final consolidated rules of practice and a final PCB

6 chemical control regulations including PCB marking and disposal, PCB ban, and CFC ban, and 50 inspections of facilities subject to the requirements of Section 8. As appropriate rules are developed and become enforceable for Section 4, Section 5, Section 12, and Section 13 additional inspections will be conducted under those sections. Enforcement cases will be developed and prosecuted as appropriate upon the detection of violations.

1980 Explanation of Change from Budget Estimate

The net increase of \$148,200 results from several actions. An increase of \$82,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million each to Agency travel costs and supplies and expenses resulted in a decrease of \$24,700 and \$11,100, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$116,600 to this activity.

The regional offices reprogrammed funds to cover projected costs based on 1979 expenditures from water quality, \$4,900; to drinking water, \$12,900; to management and support, \$3,500; and to toxic substances management, \$3,500.

1981 Plan

A total of \$5,191,600 and 86 permanent workyears is requested for this program in 1981, of which \$2,710,800 is for the Salaries and Expenses appropriation and \$2,480,800 for the Abatement, Control and Compliance appropriation. The overall increase of 13 permanent workyears and \$1,247,800 is necessary because of the increased number of enforceable rules promulgated under the Act requiring enforcement in 1981. Approximately \$1,426,000 is designated for contracts and will include laboratory analyses of samples, inspectional support, and development and revision of enforcement strategies. Pilot cooperative enforcement grants account for \$1 million of the increase.

In 1981, the toxic substances enforcement program again will have as its first priority the initiation of enforcement actions in emergencies involving substantial threats to public health, safety, or the environment. Headquarters staff will be responsible for the management and execution of national programs to implement and enforce Section 4 testing regulations, Section 5 new chemicals regulations, Section 6 chemical control regulations (PCBs, CFCs, and others in place by 1981, including asbestos and generic labeling), Section 8 reporting regulations, Section 12 export requirements, and Section 13 import requirements. Headquarters will also provide enforcement participation in regulation development directed by the Office of Toxic Substances, and for support to the regional offices in the development and prosecution of enforcement cases. Under Section 4, headquarters staff will conduct 55 laboratory audit inspections and will initiate appropriate enforcement cases, and in selected criminal cases and appealed civil cases, headquarters staff will also participate directly in case prosecution. The establishment and management of a national contract for inspection and sample analysis functions will be a headquarters responsibility, as will the audit and evaluation of the national toxic substances enforcement program. Technical support will be provided to the regional offices in major enforcement cases. Toxics Enforcement Policy Statements (TEPS) will be developed and published to alert the public to major enforcement policy determinations. Finally, a program of developing pilot cooperative enforcement grants with selected States will be developed and implemented. Present plans envision grants with about six States, based upon the presence of regulated chemical industries, especially those related to PCBs, and the existence of appropriate State statutory authority. A total of \$1,000,000 in 1981 resources has been designated for this purpose.

of facilities subject to Section 6 chemical control regulations, including requirements relating to PCB marking and disposal, PCB ban, CFC ban, asbestos, labeling, and other enforceable rules as they are developed. The regions will conduct 79 good laboratory practices (GLP) and test rules inspections for Section 4 testing regulations, 188 inspections under Section 5 new chemicals regulations, 55 inspections under Section 8 reporting requirements, 460 Section 12 export inspections, and 260 Section 13 import inspections. In all cases, enforcement actions will be initiated as appropriate. Regional staff will assist headquarters in the development of pilot State grants. Voluntary compliance with statutory requirements on the part of industry will be stressed through contracts with State enforcement personnel and affected industry representatives.

Energy

ENERGY

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$10,722	\$10,678	-\$44
Research and Development.....	96,877	96,877	...
Total.....	\$107,599	\$107,555	-44
<u>Program Highlights</u>			
Fuel Processing, Preparation and Advanced Combustion:			
Salaries and Expenses.....	2,762	2,750	-12
Research and Development.....	15,775	15,775	...
Oil Extration:			
Salaries and Expenses.....	1,057	1,052	-5
Research and Development.....	1,920	1,920	...
Environmental Assessment of Conventional and Advanced Energy System:			
Salaries and Expenses.....	1,645	1,638	-7
Abatement, Control and Compliance.....	10,306	10,306	...
Fuel Gas Sulfur Oxide Control:			
Salaries and Expenses.....	368	366	-2
Research and Development.....	3,146	3,146	...
Nitrogen Oxide Control:			
Salaries and Expenses.....	1,514	1,508	-6
Research and Development.....	10,970	10,970	...
Flue Gas Particulate Control:			
Salaries and Expenses.....	1,129	1,125	-4
Research and Development.....	6,911	6,911	...
Transport, Fate and Effects of Energy Related Pollutants:			
Salaries and Expenses.....	902	900	-2
Research and Development.....	13,765	13,765	...

ENERGY

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
Atmospheric Transport and Transfor- mation of Energy Related Pollutants			
Salaries and Expenses.....	225	\$224	-1
Research and Development.....	7,395	7,395	...
Measurement Systems and Instrumenta- tion Development for Energy Related Pollutants:			
Salaries and Expenses.....	974	970	-4
Research and Development.....	8,444	8,444	...
Health Effects of Energy Related Pollutants:			
Salaries and Expenses.....	146	145	-1
Research and Development.....	18,245	18,245	...
Total:			
Salaries and Expenses.....	10,722	10,678	-44
Research and Development.....	96,877	96,877	...
Grand Total.....	107,599	107,555	-44

ENERGY

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980	Page
(dollars in thousands)						
<u>Appropriation</u>						
Salaries and Expenses.....	\$10,142	\$11,078	\$11,489	\$10,722	-\$767	
Research and Development.....	102,446	91,383	89,875	96,877	+7,002	
Total.....	112,588	102,461	101,364	107,599	+6,235	
Permanent Positions....	185	140	153	150	-3	
Full-time Equivalency..	271	265	259	251	-8	
Outlays.....	107,000	125,000	104,000	105,000	+1,000	
Authorization Levels...	Authorization is contained within the Federal Water Pollution Control Act and the Clean Air Act. Authorization levels for these Acts are shown under the water quality and air media descriptions.					
<u>Program Highlights</u>						
Fuel Processing, Preparation and Advanced Combustion:						E-13
Salaries and Expenses.....	\$1,889	\$2,055	\$2,863	\$2,762	-\$101	
Research and Development.....	10,707	11,089	9,959	15,775	+5,816	
Fuel Extraction:						E-18
Salaries and Expenses.....	1,061	1,100	1,074	1,057	-17	
Research and Development.....	2,567	1,933	1,971	1,920	-51	
Environmental Assessment of Conventional and Advanced Energy System:						E-22
Salaries and Expenses.....	1,519	1,688	1,670	1,645	-25	
Research and Development.....	15,762	11,706	11,738	10,306	-1,432	

(dollars in thousands)

Flue Gas Sulfur Oxide Control:						E-30
Salaries and Expenses.....	238	329	334	368	+34	
Research and Development.....	2,816	1,560	1,457	3,146	+1,689	
Nitrogen Oxide Control:						E-33
Salaries and Expenses.....	1,717	1,518	1,758	1,514	-244	
Research and Development.....	12,162	12,297	11,823	10,970	-853	
Flue Gas Particulate Control:						E-36
Salaries and Expenses.....	723	883	1,099	1,129	+30	
Research and Development.....	8,669	7,117	6,712	6,911	+199	
Transport, Fate and Effects of Energy Related Pollutants:						E-39
Salaries and Expenses.....	1,230	1,299	894	902	+8	
Research and Development.....	14,908	13,349	14,439	13,765	-674	
Atmospheric Transport and Transformation of Energy Related Pollutants:						E-43
Salaries and Expenses.....	632	375	201	225	+24	
Research and Development.....	8,030	7,239	6,968	7,395	+427	
Measurement Systems and Instrumentation Development for Energy Related Pollutants:						E-48
Salaries and Expenses.....	1,024	1,062	972	974	+2	
Research and Development.....	6,862	7,475	7,276	8,444	+1,168	

	Actual 1979	Estimate 1980	Estimate 1980	Estimate 1981	Decrease - 1981 vs. 1980	Page
(dollars in thousands)						
Health Effects of Energy Related Pollutants:						E-53
Salaries and Expenses.....	109	769	624	146	-478	
Research and Development.....	19,963	17,618	17,532	18,245	+713	
Total:						
Salaries and Expenses.....	10,142	11,078	11,489	10,722	-767	
Research and Development.....	102,446	91,383	89,875	96,877	+7,002	
Grand Total.....	112,588	102,461	101,364	107,599	+6,235	
<u>Permanent Positions</u>						
Fuel Processing, Preparation and Advanced Combustion....	36	47	48	48	...	E-13
Fuel Extraction.....	21	22	21	19	-2	E-18
Environmental Assessment of Conventional and Advanced Energy Systems.....	25	20	24	24	...	E-22
Flue Gas Sulfur Oxide Control.....	6	5	5	5	...	E-30
Nitrogen Oxide Control.	30	23	22	20	-2	E-33
Flue Gas Particulate Control.....	14	13	15	15	...	E-36
Transport, Fate and Effects of Energy Related Pollutants....	10	3	3	4	+1	E-39
Atmospheric Transport and Transformation of Energy Related Pollutants.....	33	3	3	3	...	E-43
Measurement Systems and Instrumentation Develop- ment for Energy Related Pollutants.....	8	1	10	10	...	E-48
Health Effects of Energy Related Pollutants.....	2	3	2	2	...	E-53
Total.....	185	140	153	150	-3	

Full-time Equivalency

Fuel Processing, Preparation and Advanced Combustion.....	61	72	66	66	...	E-13
Fuel Extraction.....	36	32	35	31	-4	E-18
Environmental Assessment of Conventional and Advanced Energy Systems.....	39	33	32	32	...	E-22
Flue Gas Sulfur Oxide Control.....	7	7	7	7	...	E-30
Nitrogen Oxide Control..	40	36	33	30	-3	E-33
Flue Gas Particulate Control.....	17	22	22	22	...	E-36
Transport, Fate and Effects of Energy Related Pollutants.....	28	16	17	17	...	E-39
Atmospheric Transport and Transformation of Energy Related Pollutants.....	14	7	7	7	...	E-43
Measurement Systems and Instrumentation Develop- ment for Energy Related Pollutants.....	25	34	34	33	-1	E-48
Health Effects of Energy Related Pollutants.....	4	6	6	6	...	E-53
Total.....	271	265	259	251	-8	

OVERVIEW AND STRATEGY

For urgent economic and security reasons, the Nation has embarked upon a major effort to reduce its dependence upon scarce fuels, particularly foreign petroleum. The full development and utilization of our domestic energy resources are expected to pose unprecedented problems to the preservation of air and water quality, and to the maintenance of a healthful environment free from hazards of the solid, airborne, and waterborne waste products of domestic energy production and utilization. Foremost among the barriers to reducing successfully our dependence on imported fuels is the requirement for environmental protection.

The Federal Government and private industry are today taking steps that will result in the commitment of billions of dollars to the construction and operation of conventional energy and synthetic fuel production facilities, to methods of enhanced oil recovery, to accelerated development of mining and extraction operations, to other alternative energy options, and to innovative processes for the more efficient end use of domestic energy supplies. The formation of the Energy Mobilization Board, steps toward a

synthetic fuels corporation, new energy price and tax policies, and actions in the major energy industries all compel the Federal Government to make prompt and far-reaching decisions regarding environmental control technology and standards. These decisions are of immediate and urgent concern to State and local governments nationwide. 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 made compatible with environmental protection.

Program Responsibilities

The Environmental Protection Agency (EPA) has the statutory responsibility to protect the environment in the course of the national program to develop and use the Nation's domestic energy resources to lessen our reliance on imported energy sources. Research and development programs in support of that requirement are mandated by the Clean Air Act, the Federal Water Pollution Control Act, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act. Energy development and utilization cut across virtually every aspect of industrial, utility, commercial, and residential activity and thus require an exceptionally strong technical and policy basis for effective and equitable regulatory action. The energy-related environmental activities described in this summary form the technical foundation for actions to protect the environment simultaneously with domestic energy development and utilization. They thus represent the basis for Federal environmental policy, which will be implemented by all agencies of the Federal Government.

Furthermore, EPA has the responsibility to review and coordinate the research activities of other Federal agencies with respect to the environment, as they pursue their individual missions contributing to progress toward the national energy goals.

Program Goals

The goals of the energy research and development program are: (1) to provide, sound data necessary for the Agency to establish effective and practical environmental regulations and incentives in extraction, processing and utilization of energy resources, and (2) to provide pollution control options, as soon as practicable, for those extraction, processing and utilization practices which may cause significant health and ecological damage.

The research program on the environmental impacts of energy supply and utilization is integrated with the Agency's operating programs. The resources of this program are specifically used to prepare the information that will be required for writing or implementation at least five major regulations. This information includes:

- The engineering performance and costs of control options for SO_x, NO_x and particulate matter to be used in establishing the New Source Performance Standards for industrial boilers.
- Emission factors for some particulate matter from energy and industrial sources. The Agency is reviewing the National Ambient Air Quality Standard for total suspended particulate matter and may modify the standard to apply to fine or respirable particles. Information on emission factors and control capabilities will be prepared and issued for the development of State Implementation Plans for the attainment of such a future standard.

- Data on the costs and capabilities of technology for disposing of high volume solid wastes, i.e., ashes, and desulfurization sludges from energy technologies, to be used in establishing performance standards for disposal of hazardous wastes under the Resource Conservation and Recovery Act.
- Data on the costs and capabilities of control measures for air or water pollutants and solid waste. This information will be used to prepare guidance documents for synthetic fuel and other alternative energy production facilities. These documents will give industry and permitting officials the information required to make decisions within the time schedules imposed by the Energy Mobilization Board.

Several severe problem areas have been identified. Synthetic fuels from coal and oil shale undergo cleaning, gasification, liquefaction, and other processing techniques which can generate new pollutants whose effects are not known and must be defined. For example, coal gasification processes are known to generate carcinogenic materials which may be released into the environment. There are potential cumulative chronic health and ecological effects of pollutants from new and emerging energy sources, such as advanced combustion systems and geothermal facilities. The increased use of coal and oil shale in semiarid western areas raises serious questions about the restoration of mined lands and the degradation of available ground and surface water resources. The expanded interest in off-shore oil may increase the environmental problems associated with petroleum extraction, transportation and refining.

Information on the costs and capabilities of control alternatives must be developed. Some of the areas in which information is lacking include: (1) the effectiveness of mining and reclamation measures in controlling air and water pollution and restoring land productivity, (2) the characterization of toxic materials from combustion or fuel processing operations, (3) the behavior, persistence and fate of air and water pollutants released from energy production, (4) understanding of cumulative regional environmental impacts of energy development and the costs of control programs for mitigation, and (5) the characterization of the nature, the effects on human health, and the paths through environmental media, of hazardous wastes generated in energy production, and usage.

Other research requirements include: better control strategies for the oxides of nitrogen and sulfur, and better definition of their effects on the ecology of streams and lakes and soil leaching; determining the effects due to increased domestic coal use for synthetic fuels and combustion on visibility and productivity of strip mined land; definition of hazards from organic carcinogens and other toxic substances in air and water, and in solid waste (covered by Section 3004 of the Resource Conservation and Recovery Act), together with control strategies. Improving our knowledge of the behavior and effects of coal pollutants is necessary for rational Federal decisions on acceptable development levels and required control measures.

The available options for controlling nitrogen oxide emissions from stationary sources are not presently capable of halting national emissions growth. Current New Source Performance Standards, based upon best demonstrated control technology, have led to coal nitrogen oxide emissions limitations that are still more than twice those for oil, and three times those for natural gas. The research program to modify combustion techniques, which includes the development and demonstration of new burner designs, can reduce coal combustion emissions to levels comparable to those from oil and gas. This program will also support the development of new source pollution standards for industrial boilers and for steam-electric utilities.

EPA coordinates the efforts of 17 Federal organizations under the auspices of Interagency Energy/Environment Program. Each of the participating Federal agencies has its own charge--management of Federally-owned resources, management of Federal lands, the development of new fuel sources or cycles, energy conservation, etc. This coordinated effort develops information on the environmental effects of energy development, for use by all of the participating agencies. The Interagency Energy/Environment Program managed by EPA assures that all Federal programs are supported adequately by a well tailored and coordinated environmental research program. EPA management of this interagency program reduces duplication in separate agency research programs, and assures comprehensive coverage of all important environment/energy questions. The results of the multiagency research program are disseminated through a system of publications, joint conferences and symposia supported by EPA's Office of Environmental Engineering and Technology. This Office also conducts an annual review of the Department of Energy (DOE) research and development programs under Section 11 of the Federal Non-nuclear Research and Development Act, to insure adequate consideration of environmental requirements.

EPA's energy research and development program is conducted with Federal laboratory employees and through extramural grants or private contractor projects managed by EPA research staff. The approach is to: (1) conduct environmental assessments of emerging energy extraction, processing and utilization techniques to identify new pollutants and to determine their potential and ecological effects; (2) develop an adequate scientific basis for effective and practical 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 has particular expertise; and (5) assess the adequacy of existing control technologies.

The energy research and development program is reviewed within EPA's joint research planning and zero based budgeting procedures. The Agency has research coordinating committees to review research activities so that they can be directed for effective support of regulatory programs. The activities on inhalable particulates were included in the control, transport and health effects purview of the research coordinating committee on Gaseous and Fine Particulates Pollutants. Research on cooling tower blow down and discharges from ash and sludge pond was reviewed in the coordinating committee in support of effluent guidelines. Nitrogen Oxide control was reviewed by the Oxidant Research Committee. Finally, a new energy research committee will be formed to assure coordination of energy related environmental research activities across all media.

Budget Request

The Agency requests a total of \$107,598,600 for 1981, an increase of \$6,234,200 from 1980. Of this total, \$10,720,200 is for Salaries and Expenses and \$96,878,400 for Research and Development with a decrease of \$768,900 and an increase of \$7,000,100, respectively. In addition, the Agency is requesting 150 permanent workyears, a decrease of 3 from 1980.

implications and effects of the Nation's energy development efforts. This energy/environment research and development program involves 17 Federal agencies. A comprehensive plan to classify program content and resources has been developed to assure that the entire range of Federal energy/environment research and development programs is woven together into a manageable frame work. This plan identifies research areas by the type of energy resource, the processes in obtaining and using the energy, and the scientific disciplines required for research on environmental impacts. The program also includes the development of pollution options for conventional energy systems and the assessment of the environmental problems or advantages of new energy technologies being developed by the Department of Energy.

In addition to its activities with other agencies, EPA conducts, within its own laboratories, a widely diversified program. The interagency program uses several mechanisms to minimize duplication of effort by involved Federal agencies. The use of "pass through" funding allows EPA to reimburse other Federal agencies for performing research in areas where they have expertise, for EPA's priority programs. Reviews are conducted and program planning documents are updated annually as basis for managing pass-through funds. EPA management of the interagency program ensures comprehensive coverage of environmental concerns.

The program is divided into two broad segments. The health and ecological effects program; that is, the research activities associated with the behavior and effects of energy related pollutants once they are in the environment. The control technology program is designed to provide information on the types and quantities of pollutants released by energy supply activities and to develop or stimulate the development of control options where necessary. The control technology program consists of six subprograms -- fuel processing, preparation and advanced combustion; fuel extraction; environmental assessments of conventional and advanced energy systems; flue gas sulfur oxide control; nitrogen oxide control; and flue gas particulate control. The health and ecological effects research program has four subprograms--the transport, fate and effects of pollutants on organisms and ecosystems; atmospheric transport and transformation of energy related pollutants; measurement systems and instrumentation development; and health effects of energy related pollutants.

The specific objectives of the program's major components are discussed below:

Fuel Processing, Preparation and Advanced Combustion -- This program participates in the development of advanced technologies for fossil fuel processing by providing environmental assessments, bench-scale research, technology assessments and guidance in process control technology. This program works in close cooperation with the Department of Energy process development and environmental programs to identify and quantify all residuals from fluidized bed combustors, synthetic fuels from coal processes, oil shale development, and coal cleaning. Comprehensive environmental assessments will be performed for these technologies to identify potential environmental problems and corresponding means for control.

Fuel Extraction -- The energy resource extraction program deals with environmental quality problems associated with the technologies and processes for obtaining fuels; oil or natural gas extraction; oil shale development; 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, including 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 document the technical/operational feasibility and the cost effectiveness of environmental control options.

Environmental Assessment of Conventional and Advanced Energy Systems -- Research in this program is designed to assess environmental risks, conduct bench-scale systems and/or control technology research and identify environmentally, socially, and economically acceptable alternatives for modified conventional energy systems, advanced energy supply concepts, and energy conserving techniques. The programs, which will assist EPA in selecting policies and in setting environmental standards, conducts comprehensive environmental assessments of energy systems. These integrated technology assessments quantify the cost/risk/benefit tradeoffs of energy systems and pollution control alternatives. A comprehensive assessment of unregulated or regulated residuals from conventional combustion sources is one major project of this program. Other environmental assessments included in this program will examine: industrial energy conservation, wastes as fuels, solar energy, energy-related solid and waterborne residuals, geothermal energy, waste heat recovery, and advanced energy cycles.

Flue Gas Sulfur Oxide Control -- This program develops and evaluates alternative technologies for the removal of sulfur oxide emissions from flue gas at electricity generating plants and industrial boilers. The aim of the program is to develop technical data on which EPA can establish emission standards for sulfur-emitting sources. Efforts are underway to evaluate existing sulfur oxides removal installations, to assess impacts of flue gas desulfurization (FGD) technology, and to assess the applicability of FGD technology to industrial boilers and other sulfur oxide sources.

Nitrogen Oxide (NO_x) Control -- The purpose of this program is to develop the best practicable technology for the control of NO_x emissions from the leading categories of stationary sources and diesel engines. Stationary source categories include utility boilers, commercial/industrial boilers, residential heating systems, stationary engines, and advanced combustion processes. Advanced combustion processes such as advanced coal burner systems are being studied and fundamental engineering and analytical support studies are also being conducted to evaluate the potential of these advanced methods for NO_x emission control and energy conservation. The research on controlled combustion also includes fuel conditioning for sulfur oxide removal.

Flue Gas Particulate Control -- This program identifies and develops effective practicable technology to control aerosol emissions. Major research efforts in the program are: assessment and improvement of conventional systems (electrostatic precipitators, scrubbers, or fabric filters) for abating aerosol emissions; exploration of new and improved methods of control; and bench-scale investigation of specific control methods for major problem sources (low sulfur coal combustion, new fuels, power production, and selected industrial processes).

Transport, Fate and Effects of Energy Related Pollutants on Organisms and Ecosystems -- Research efforts in this program develop the ecological data on fresh water, marine, estuarine and terrestrial ecosystems to obtain reliable estimates of the risk associated with accelerated development and utilization of domestic energy resources. In addition, water transport and fate research will emphasize the biological accumulation of pollutants and the transfer of pollutants and end-products through trophic levels. This work is accomplished by the Department of Energy, Department of the Interior, National Institute of Environmental Health Sciences, National Oceanic and Atmospheric Administration, Tennessee Valley Authority, U.S. Department of Agriculture and Environmental Protection Agency with funds made available to the Federal Interagency Energy/Environment Program. The various participating agencies have an array of technical expertise covering many disciplines.

Additionally, it covers the physical and chemical changes that the pollutants undergo during their transport. Emphasis in air transport research is on the conversion of sulfur and nitrogen oxides, chiefly from coal burning power plants, to sulfates and nitrates. Formation and transport of photochemical oxidants from various energy sources is also emphasized.

Measurement Systems and Instrumentation Development -- The purpose of this activity is to focus and coordinate the research and development on energy-related measurements and instrumentation which are being performed by the Department of Energy, National Aeronautics and Space Administration, National Bureau of Standards, National Institute of Occupational Safety and Health, National Oceanic and Atmospheric Administration and the Environmental Protection Agency. This program develops monitoring and measurement technology and obtains environmental data needed to support the Agency efforts in: visibility protection; acid rain and fine particulate pollution abatement; assessment of the danger to living coral communities represented by offshore oil and gas drilling; and, the determination of the correlation between fixed station monitoring data and actual human exposure to energy-related pollutants.

Health Effects of Energy-Related Pollutants -- The purpose of this activity is to provide a coordinated effort in the energy-related health effects research undertaken by the Department of Energy, National Institute of Environmental Health Sciences, National Institute of Occupational Safety and Health, and the Environmental Protection Agency with the funds made available to the Interagency Energy/Environment Program. The objective of this activity is the development of energy-related health data which will permit reliable estimates of risk to human health associated with increased development and utilization of domestic energy resources. The health effects program examines possible chronic toxic effects of pollutants through a coordinated program of epidemiological, clinical and toxicological studies, and through the development and use of rapid and sensitive bioscreening methodologies.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1980 Energy Program..... \$101,364

Salaries and Expenses..... -767

The decrease is primarily in the health effects and nitrogen oxide control activities.

Research and Development..... +7,002

The increase is comprised of a major initiative in the synthetic fuels area and an increase in the dry scrubber sulfur oxide control program.

1981 Energy Program..... 107,599

1. Summary of Budget Request

An appropriation of \$107,598,600 is requested for 1981. Included in this total is \$96,878,400 for Research and Development and \$10,720,200 for Salaries and Expenses, with an increase of \$7,003,100 and a decrease of \$768,900, respectively. This represents a net increase of \$6,234,200 over 1980.

An increase of \$5,714,900 is requested for Fuel Processing. The increased resources will be used to provide additional support to promote the commercialization of an environmentally acceptable synthetic fuels industry as outlined in the President's National Energy Plan of May 7, 1979. An increase of \$1,722,900 is requested in sulfur oxide control in order to accelerate the dry sulfur oxide control program.

The other control technology programs will be decreased by a net of \$2,392,600. Of this amount, the environmental assessment of conventional and advanced energy systems will be decreased by \$1,457,200 and the evaluation of alternative mining practices and oil spill clean-up work will be decreased by \$68,200. NO_x control will be decreased by \$1,096,700 and particulate matter control alternatives will be increased by \$229,500.

The program for determining the health and environmental impacts of energy development will be increased by a net of \$1,189,000. Of this amount, the measurement systems and instrumentation program will be increased by \$1,169,800; studies of the health effects of energy related pollutants will be increased by \$234,500; and work on atmospheric transport and fate of energy related pollutants will be increased by \$450,700. The non-atmospheric transport, fate, and effects of energy-related pollutants will be decreased by \$666,000.

2. Changes from Original 1980 Budget Estimate

Changes from the budget are as follows:

	<u>(in thousands of dollars)</u>
Original 1980 estimate.....	\$102,461
Congressional reduction to travel.....	-38
Proposed supplemental for pay raise.....	+280
Reprogramming for salary costs.....	-1,251
Miscellaneous reprogrammings.....	-88
Current 1980 estimate.....	101,364

The congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$38,400 to the energy media.

An increase of \$280,600 results from the partial funding of the October 1979 pay raise which is included in a proposed supplemental appropriation.

An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$1,250,800 to this media. Miscellaneous reprogrammings within the Office of Research and Development resulted in a decrease of \$88,000 to the energy media.

	Estimate 1980	Estimate 1981
	(in thousands of dollars)	
Prior year obligations.....	\$112,589	\$101,423
Effect of congressional changes.....	-38	...
Proposed pay raise supplemental.....	+280	...
Reprogrammings.....	+1,339	...
Change in amount of carryover funds available.....	-422	-59
Program decrease.....	-9,500	+4,904
Change in rate of obligation.....	-147	...
Total estimated obligations.....	101,423	106,268
(From new obligation authority).....	(101,114)	(106,018)
(From prior year funds).....	(309)	(250)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The changes discussed in the previous section on travel, pay raise supplemental, and reprogrammings resulted in a decrease of \$38,000, an increase of \$280,000, and a decrease of \$1,339,000, respectively.

The amount of carryover funds to be obligated in 1980 is \$309,000, a decrease of \$422,000 from the 1979 level. In 1981, it is estimated that \$250,000 will be obligated from carryover funds, a decrease of \$59,000 from the 1980 level.

The decrease originally estimated due to the change in budget authority in 1980 resulted in a decrease of \$9.5 million in obligations. The increase in budget authority in 1981 results in an increase to obligations of \$4.9 million.

Fuel, Processing, Preparation and Advanced Combustion

Original Estimate 1981	Revised Estimate 1981	President's Reduction
<u>(dollars in thousands)</u>		

Appropriation

Salaries and Expenses.....	\$ 2,762	\$ 2,750	-\$12
Research and Development.....	<u>15,775</u>	<u>15,775</u>	<u>...</u>
Total.....	18,537	18,525	- 12



Fuel, Processing, Preparation and Advanced Combustion

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
			(dollars in thousands)		
Salaries and Expenses...	\$1,889	\$2,055	\$2,863	\$2,762	-\$101
Research and Development.....	<u>10,707</u>	<u>11,089</u>	<u>9,959</u>	<u>15,775</u>	<u>+5,816</u>
Total.....	12,596	13,144	12,822	18,537	+5,715
<u>Permanent Positions.....</u>	36	47	48	48	...
<u>Full Time Equivalency.....</u>	61	72	66	66	...

Budget Request

The Agency requests a total of \$18,537,300 for 1981, an increase of \$5,714,900 from 1980. Included in this total is \$2,762,400 for Salaries and Expenses and \$15,774,900 for Research and Development, with a decrease of \$100,400 and a increase of \$5,815,300, respectively. The increase in resources will be used to provide additional support for characterizing emissions and effluents from the production and use of synthetic fuels and from the evaluation of pollution control technology necessary to assure the commercialization of an environmentally acceptable synthetic fuels industry.

Program Description

The President's National Energy Plan calls for the increased use of the Nation's major energy reserves, namely coal and oil shale, in an environmentally acceptable manner. The following three types of processes are designed to meet this objective: fluidized bed combustion, coal cleaning, and synthetic fuel generation from coal (liquefaction and gasification) and oil shale (liquefaction).

Fluidized Bed Combustion (FBC) has the potential for burning coal in a less costly, cleaner and more efficient manner than conventional combustion. Coal cleaning is a control alternative which will be potentially less costly than other sulfur dioxide control alternatives, but has limited application depending on the sulfur content of the coal and its end use. Chemically Active Fluidized Bed (CAFB), a combination of coal gasification and on-site combustion of low BTU gas, allows for use of coal in an environmentally acceptable manner in boilers previously using scarce natural gas resources. The synthetic fuels from coal and oil shale provide scarce liquid and gaseous fuels from our more plentiful energy resources. The National Energy Plan calls for the production of 2 million barrels per day of synthetic fuels by 1990. All of our activities are geared toward assuring the development of these processes in an environmentally acceptable manner.

The program includes the characterization of effluents and emissions, assessment of related environmental impacts, and development and evaluation of necessary pollution control technology for various fuel production processes. The major outputs of this program are three basic documents. They are the Standard Support Plan (SSP), the Environmental Assessment Report (EAR), and the pollution control guidance document (PGD). The SSP consists of a schedule of our activities in a broad technological area (e.g., synfuels from coal) in support of standard setting, and a brief description of the technology and of areas of environmental concern. The EAR is process specific (e.g., Lurgi process for high BTU coal gasification) and describes the process and its present and future develop-

The users of our reports include EPA program offices which use them for standard setting; the EPA regional offices which use them for permitting of large synfuel facilities; industry, who uses them for an early indication of needed control technology to avoid costly retrofits; and other government agencies (e.g., DOE, TVA) that are developing and commercializing synfuel facilities.

1979 Accomplishments

In 1979, obligations included \$1,889,100 for salaries and expenses and \$10,706,900 for extramural purposes. Significant accomplishments include the following:

Synthetic Fuels

- Completed draft of Standard Support Plan for synfuels from coal.
- Completed an Environmental Assessment Report (EAR) for the SRC (solvent refined coal) liquefaction process.
- Completed an EAR for the Lurgi high BTU coal gasification process.
- Completed EARs for Wellman-Galusha and Willputte-Chapman low BTU coal gasification processes.
- Completed lysimeter study on Paraho retorted spent shale.
- Completed trace metals study of oil shale processing.
- Completed overview of oil shale technology development.
- Studied revegetation of spent oil shale.
- Started-up the chemically active fluidized bed (CAFB) demonstration facility at San Benito, Texas.

Fluidized Bed Combustion

- Evaluated fluidized bed combustion (FBC) waste disposal methods based on experimental units.
- Completed comprehensive analysis on the pressurized FBC miniplant, with and without sorbent regeneration.
- Evaluated FBC solid residue in accordance with proposed regulatory procedures (tentatively found not to be hazardous).

Coal Cleaning

- Completed environmental base line testing at Homer City, Pennsylvania, coal cleaning site.
- Developed resource and process assessment model for evaluating desulfurization potential of U.S. coal reserves.

\$2,002,000 is under the Salaries and Expenses appropriation and \$3,000,000 is for environmental purposes under the Research and Development appropriation. For 1980, the total allocation is divided among the various sub-programs areas as follows:

Coal Cleaning.....	\$ 1,213,000
Fluidized Bed Combustion.....	4,268,200
Chemically Active Fluidized Bed.....	657,000
Biomass Conversion.....	197,000
Synthetic Fuels from Coal.....	4,517,200
Synthetic Fuels from oil shale.....	1,970,000
Total Fuel Processing.....	<u>12,822,400</u>

During 1980, EPA will be conducting major environmental assessment and control technology evaluation efforts in coal gasification, coal liquefaction, and oil shale processing. Fluidized bed combustion, coal cleaning and chemically active fluidized bed processes are also being environmentally evaluated. These efforts will provide a data base and recommendations for the Agency's standard setting offices. Planned activities include:

Synthetic Fuels

- Developing methods for sampling, analysis and continuous monitoring of emissions to quantify total organics from synthetic fuel processes.
- Characterizing toxics and determining inorganic and organic compounds from coal liquefaction and gasification technologies.
- Completing a pollution control guidance document (PCGD) for low BTU coal gasification.
- Continuing detailed characterization of Lurgi Kosovo high BTU coal gasification facility.
- Completing an Environmental Assessment Report (EAR) for the H-coal (hydrocarbor coal) liquefaction process.
- Expanding the data base on the sulfur compound control technology for coal gasification processes.
- Completing EAR for low BTU coal gasification process.
- Evaluating air pollution control technologies for in-situ coal gasification.
- Monitoring groundwater from in-situ oil shale processes.
- Analyzing air and water emissions from abandoned oil shale process sites.
- Analyzing Navaho oil shale reserves to identify trace elements.
- Completing a Standard Support Plan for oil shale.
- Conducting process evaluation and environmental assessment of chemically active fluidized bed process.

Georgetown University fluidized bed combustor (FBC) and updating the data base for standard setting.

- Investigating the mechanism of NOx formation in FBC process.
- Completing Standard Support for FBC.

Coal Cleaning

- Conducting testing (screening) at 5 coal cleaning plants to characterize effluents.

1980 Explanation of Changes from Budget Estimate

The net decrease of \$321,600 results from several actions. An increase of \$79,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation, a congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$12,300. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$238,400 to this activity.

A reprogramming of \$150,000 was made within the energy media to environmental assessment of conventional and advanced energy systems to support the Office of Solid Waste in developing regulations for power plant ash and sludge.

1981 Plan

The Agency requests a total of 48 permanent workyears and \$18,537,300 for this program, of which \$2,762,400 is for the Salaries and Expenses appropriation and \$15,774,900 is for the Research and Development appropriation. This represents an increase of \$5,714,900 over 1980. The increased resources will be used to provide additional support for characterizing emissions/effluents from, and evaluating pollution control technology necessary to assure the commercialization of, an environmentally acceptable synthetic fuels industry. The President's National Energy Plan of May 7, 1979, calls for an ambitious energy strategy, including the production of 2.0 million barrels per day in synthetic fuels in 1990. The national energy strategy requires that synthetic fuels production be conducted in an environmentally acceptable manner.

The Environmental Protection Agency (EPA) will accelerate its Research and Regulatory program to accelerate the regulatory process so as to parallel the commercialization of this synthetic fuel industry. This Agency will complete the pollution control guidance documents (PCGD) for synthetic fuels, such as oil shale, indirect and direct coal liquefaction and high and low BTU coal gasification in 1981. These documents will provide environmental guidance, including estimates of process effluent/emissions as well as recommended pollution control technology. In accordance with our proposed regulatory process, legally binding emission/effluent limitations will be established sometime after 1982.

In order to meet these objectives, emission/effluent characterization studies must be conducted and control technology must be evaluated to support EPA standard setting offices. In order to expedite the commercialization effort, the EPA regions must also be supported technically to evaluate synthetic fuel facility design and review permit application. The program plans provide for:

and direct coal liquefaction, oil shale processing and fluidized bed combustion (FBC). These PCGDs will provide pollution control guidance to developers and environmental officials to expedite the permitting process and ensure environmental protection.

- Completion of Environmental Assessment Reports (EAR) for low BTU coal gasification industrial Fluidized Bed Combustion (FBC).
- Conducting bench scale wastewater treatment studies on gasifier effluents.
- Supporting EPA regions to evaluate facility design and review applications in the area of coal gasification and liquefaction and oil shale processing.
- Evaluation of pilot control technology of sulfur control at Occidental oil shale site for EPA Region VIII.
- Comparison of near term synthetic fuels technologies as to cost of control, efficiency and environmental impact.
- Continuation of indepth environmental assessment and control technology evaluation of synthetic fuels technologies in support of standard setting offices.
- Expansion of bioassay testing of oil shale processes.
- Development of disposal and treatment techniques for spent shale from oil shale surface retorting.

Fluidized Bed Combustion

- Conducting long term environmental testing at Georgetown University FBC plant.

Coal Cleaning

- Conducting environmental assessment testing including long term monitoring at Homer City, Pa., and two additional physical coal cleaning plants.
- Conducting study of the geological determinants of sulfur variability in Upper Freeport coal seam for Homer City, Pa., coal cleaning site.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
(dollars in thousands)					
<u>Appropriation</u>					
Salaries and Expenses...	\$1,061	\$1,100	\$1,074	\$1,057	-\$17
Research and Development	2,567	1,933	1,971	1,920	-51
Total.....	3,628	3,033	3,045	2,977	-68
<u>Permanent Positions.....</u>	21	22	21	19	-2
<u>Full-time Equivalency...</u>	36	32	35	31	-4

Budget Request

The Agency requests a total of \$2,977,100 for 1981, a decrease of \$68,200 from 1980. Included in this total is \$1,056,800 for the Salaries and Expenses appropriation and \$1,920,300 for the Research and Development appropriation, with a decrease of \$16,900 and \$51,300, respectively. The overall decrease of \$68,200 reflects an increase of \$200,000 to support work on unconventional gas extraction and a decrease of \$268,200 to reduce work on the impact on coal mining and land reclamation as well as work on oil spill clean up.

Program Description

The fuel extraction program operates under the authorities of the Clean Air Act, the Federal Water Pollution Control Act, the Safe Drinking Water Act, the Resource Conservation and Recovery Act, and the Toxic Substances Act, as well as the Surface Mining Control and Reclamation Act of 1977. Research and development activities are directed toward the abatement of all types of pollution caused by fuel extraction (oil, gas and coal) and related transportation activities. The major program areas include environmental assessments of problems related to eastern surface mines, eastern underground mines, treatment of mine drainage, western coal mines, oil shale, uranium, transportation of fuels, solid waste from mining and oil spill control. Control techniques for enhanced oil recovery are also included.

1979 Accomplishments

The 1979 obligations included \$1,060,800 for salaries and expenses and \$2,567,500 for extramural activities. The major emphasis of the 1979 program was placed on problems associated with active mining, especially on newly emerging extraction efforts, while minimum efforts on abandoned mines were continued to keep abreast of the latest reclamation and restoration techniques. In addition, the assessment, development and demonstration of equipment and methods to control and clean up spills of oil on land and water continued. In 1979, we:

Fuel Extration

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 1,057	\$ 1,052	-\$5
Research and Development.....	1,920	1,920	...
Total.....	2,977	2,972	- 5



operations.

- Prepared a User's Manual for pre-mining planning of eastern surface coal mining.
- Prepared a User's Design Manual for the treatment of acid mine drainage.
- Determined the adverse environmental effects of solid wastes from active and abandoned surface and underground mines.
- Developed a manual on environmentally acceptable techniques for the protection, clean-up, and restoration of ocean, estuarine, inland and marsh shorelines impacted by oil spills.
- Evaluated several oil spill control systems at EPA's Oil and Hazardous Material Simulated Environmental Test Tank (OHMSETT).

1980 Program

In 1980, the Agency has allocated a total of \$3,045,300 to this program, of which \$1,073,700 is for Salaries and Expenses and \$1,971,600 is for extramural purposes under the Research and Development appropriation.

During 1980, the fuel extraction program will continue activities in two major groupings - mining and oil and gas production, including oil spills.

The mining activities include environmental assessments and control technology development for mining in general, including areas such as tailings ponds, eastern surface coal mining, eastern underground coal mining, treatment of mine drainage, western surface coal mining and solid waste from mining.

The oil and gas production activities include environmental assessments and control technology for oil spill control and cleanup; shoreline protection and restoration; off-shore/on-shore oil and gas production and oil/water separation.

In 1980, we will:

- Continue efforts in environmental assessment of toxic pollutants, problem definition and control technology development for the extraction, and handling of energy resources, including coal, oil, and natural gas. Work will be in support of program and agency needs, regional needs, and special requests from local, State and Federal agencies.
- Produce User Manuals to summarize and describe previously verified environmental control and abatement procedures relating to coal extraction, and handling in the United States (both surface and underground operations).

personnel, as well as their industry counterparts, will use this information in responding to oil spills.

- Initiate new development in the area of shoreline protection and restoration following oil spills. Hardware and techniques will be used by Regional personnel responsible for oil spill cleanup and will assist them in developing decisions on the best available approaches for given spill circumstances.
- Continue assessment of available control technology in support of the Effluent Guidelines Division to ascertain the best available technology and develop data in support of the new source performance standards for offshore and onshore oil and gas production facilities. Levels of treatment will then be established based on realistic information on technology available to the oil and gas producing industries.
- Initiate development of guidelines for the installation and operation of oil/water separators to meet the best available technology and new source performance standards.
- Develop equipment and techniques to contain and control oil spills under cold climate conditions. A cold climate spill response capability (presently nonexistent) is necessary to cope with the increasing number of oil spills occurring under cold weather conditions.

1980 Explanation of Changes from Budget Estimates

The net increase of \$12,300 results from several actions. An increase of \$32,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$4,400. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$16,000 to this activity.

1981 Plan

The Agency requests a total of 19 permanent workyears and \$2,977,100 for this program, of which \$1,056,800 is for the Salaries and Expenses appropriation and \$1,920,300 for the Research and Development appropriation. This represents decreases from 1980 of 1 permanent workyear and \$68,200, due to a decrease in the work on assessing the environmental impact of coal mining and land reclamation, as well as a decrease in work on oil spill cleanup.

The 1981 plan for the fuel extraction research program is to assess, develop, and verify control technology for solid fuel, oil and gas extraction which will assure that the recovery of the Nation's fuel reserves is conducted in an environmentally acceptable manner. To this end, equipment, methods, and technology are assessed and developed to prevent, control, and abate the discharge of environmental pollutants from both point and nonpoint sources. Pollution sources include facilities for extraction, production, storage, and transportation of coal, oil shale, uranium, oil and gas. Both normal operations and accidental spills are examined.

extraction and handling of energy resources, increasing recovery of shale, oil and gas, for both traditional and advanced recovery techniques. These methods involve in-situ mining and leaching, underground retorting, and tertiary oil and gas recovery as well as more conventional mining methods. Oil spill control and clean-up are also included.

- Report on the nature of pollutants produced during the mining, handling, and solid waste disposal phases of the leading conventional and in-situ processes for recovery of oil from shale.
- Complete an assessment report of western coal development on surface and groundwater contamination.
- Evaluate control technology for pollutants such as acid drainage and heavy metals released during extraction processes.
- Develop additional techniques for oil spill prevention, response, cleanup and disposal.
- Report on methods to recover uranium utilizing solution mining techniques in an environmentally acceptable manner.
- Report on environmental pollution potential of enhanced (tertiary) oil and gas recovery methods.
- Initiate environmental assessments for the extraction of unconventional gas from tar sands, Devonian shale, coal seams and heavy oil.

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Estimate 1980</u>	<u>Estimate 1980</u>	<u>Estimate 1981</u>	<u>Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
Salaries and Expenses..	\$ 1,519	\$ 1,688	\$ 1,670	\$ 1,645	-\$25
Research and Development.....	15,762	11,706	11,738	10,306	-1,432
Total....	17,281	13,394	13,408	11,951	-1,457
<u>Permanent Positions....</u>	24	20	24	24	...
<u>Full Time Equivalency..</u>	39	33	32	32	...

Budget Request

The Agency requests a total of \$11,950,500 for 1981, a decrease of \$1,457,200 from 1980. Include in this total is \$1,644,700 for the Salaries and Expenses appropriation and \$10,305,800 for extramural activities under the Research and Development appropriation with decreases of \$25,600 and \$1,431,600, respectively. This reduction in resources results from (1) a decision to eliminate biological and chemical assay testing from environmental assessments and (2) a reduction in coal-oriented integrated technology assessments (ITAs).

Program Description

This program includes environmental assessments of conventional combustion in industrial and electric utility and industrial power production, as well as assessments of energy conservation, solar energy, and geothermal energy systems. The program also makes integrated technology assessments. The industrial and utility conventional combustion program emphasizes the characterization and quantification of the air, water, and land pollution potentials, and the assessment of control techniques for criteria and noncriteria residuals. Major efforts are being directed toward the development of procedures for disposal of fly ash and flue gas desulfurization sludges. Integrated technology assessments provide an analysis of the environmental, economic, and social impacts of alternative energy supply using both local and regional scenarios. The conservation and advanced systems studies provide assessments of the environmental and economic impact of energy conservation and of advanced energy systems, including solar, geothermal, and biomass systems. These environmental assessments are detailed characterizations of the air emissions, water effluents and solid wastes released to the environment from energy sources. These assessments anticipate the severity of associated environmental risks, provide preliminary targets for emission limitation goals, and assess the ability of existing control methods to attain these goals. The program also incorporates limited efforts in pollution control development and evaluation.

1979 Accomplishments

In 1979, obligations totalling \$17,280,700 included \$1,519,100 for salaries and expenses and \$15,761,600 for extramural purposes.

ENERGY

Environmental Assessment of Conventional and Advanced Energy Systems

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 1,645	\$ 1,638	-\$7
Research and Development.....	10,306	10,306	...
Total.....	11,951	11,944	- 7



During 1979:

- The impacts anticipated from increased energy development in the Western U.S. were documented (final report).
- A new regional air quality modeling capability was applied to problems of long-range transport of air pollutants and acid rain.
- The secondary benefits of emission control systems used to meet NSPS for utility boilers were catalogued.
- Emission factors and health impacts data for non-criteria pollutants on the PSD (prevention of significant deterioration) list were prepared.
- Pollutants from several resource recovery facilities were characterized.
- The waste disposal problems facing the electric utility industry were assessed.
- The technical, economic, and viability of innovations applied at the first solar-assisted wastewater treatment plant received preliminary evaluation.
- The ability of technology to remove hydrogen sulfide from geothermal-powered electricity generating facilities was demonstrated, although continued developmental work is required.

1980 Program

In 1980, the Agency has allocated a total of \$13,407,700 to this program, of which \$1,670,300 is for the Salaries and Expenses appropriation and \$11,737,400 is for extramural purposes under the Research and Development appropriation. The allocation of 1980 funds in the Environmental Impacts of Conventional and Advanced Energy Systems Program is as follows:

Conventional Combustion Solid and Liquid Wastes.....	\$ 3,450,000
Conventional Combustion Environmental Assessment.....	3,400,700
Energy Conservation and Advanced Systems.....	2,990,000
Integrated Technology Assessment.....	<u>3,567,000</u>
Total.....	\$13,407,700

1980 Explanation of Changes from Budget Estimate

The net increase of \$13,700 results from several actions. An increase of \$43,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$4,600. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$425,200 to this activity.

and advance combustion, \$150,000; energy nitrogen oxide control, \$150,000; and energy-flue gas particulate control \$100,000, to provide support to the office of Solid Waste in developing regulations for power plant ash and sludge.

1981 Plan

The Agency requests a total of \$11,950,500 for this program, of which \$1,644,700 is for the Salaries and Expenses appropriation and \$10,305,800 is for the Research and Development appropriation. The allocation of 1981 funds is as follows:

Conventional Combustion Solid and Liquid Wastes.....	\$ 3,193,000
Conventional Combustion Environmental Assessment.....	3,221,500
Energy Conservation and Advanced System.....	2,758,000
Integrated Technology Assessment.....	<u>2,778,000</u>
Total.....	\$11,950,500

Support for this program will be reduced by \$1,457,200 from the 1980 level. This largest part of this reduction is in coal-related modeling work in the Integrated Technology Assessment program. The balance of the reduction is in characterization studies of health and environmental impact in each of the other three program areas.

Conventional Combustion Solid and Liquid Wastes

The overall objective of this activity is the identification, characterization, and assessment of liquid and solid effluents (including waste heat) from electricity generating facilities, and the development, where appropriate, of control technology for the environmentally acceptable disposal of these effluents. The efforts in this activity are designed to identify potential environmental effects and to define and reduce the costs of power plant waste disposal options.

Primary emphases in this activity are to develop the data required to promulgate effluent guidelines required by the Federal Water Pollution Control Act and to provide the background information required to promulgate regulations required by the Resource Recovery and Conservation Act for the disposal of wastes generated by the utility industry.

1979 Accomplishments

The total allocation for this area for 1979 was \$3,327,700. The major accomplishment during 1979 was the completion of an assessment of waste disposal problems facing the electric utility industry. This assessment showed that the industry must be encouraged to reduce the quantities of waste generated and that greater utilization of these wastes is possible.

1980 Program

The total allocation for this program area for 1980 is \$3,450,000. These funds will be utilized primarily to provide direct support to EPA regulatory offices. This support consists of:

- Obtaining and analyzing sufficient data for the promulgation of guidelines or regulations for the storage, treatment and disposal of flue gas desulfurization scrubber wastes from coal-fired steam electric generators.
- Performing pilot-plant evaluations of the technical and economic feasibility zero discharge of ashes for coal-fired power plants.

1981 Plan

The total request for this program area in 1981 is \$3,193,000. These funds will be utilized to complete the acquisition of the data required to promulgate the regulations for liquid and solid waste from coal-fired steam electric generators. This work had been planned for completion in 1980. Due to changed and additional technical requirements, the information needs will be met in 1981.

The information provided will be as follows:

- A characterization of fly ash alone and fly ash/sludge mixtures to determine if different disposal techniques are required for each of the two situations.
- An examination of disposal techniques used by private industry for fly ash only and fly ash and sludge.
- An evaluation of the effects of promising disposal techniques on groundwater and surface waters.
- An evaluation of the costs of promising fly ash/sludge disposal techniques and of the economic impacts of these on the utility industry.

In addition, the program will provide engineering support for the preparation of revised effluent guidelines for the steam-electric industry.

Conventional Combustion Environmental Assessment

The objective of the program is the comprehensive assessment of the environmental, economic, and energy impacts of multimedia emissions of pollutants from stationary industrial, utility, residential, and commercial conventional combustion processes. Primary emphases of the program are identifying and evaluating (1) the relationships between various emissions and residuals from conventional combustion, (2) multi-pollutant synergistic impacts, (3) cross-media impacts, (4) environmental impact tradeoffs as relative emission levels of individual pollutants are adjusted by control systems, and (5) unregulated pollutant emissions, impacts, and control methods. The program seeks to integrate information and data from various environmental efforts (e.g., the SO_x, NO_x, etc. R&D programs) into a systematic, coordinated, environmental assessment structure.

1979 Accomplishments

The total allocation for this program area for 1979 was \$4,509,000. Major outputs included the following:

- Preparation of five issue papers examining emissions from conventional combustion sources: (1) hazardous emissions from distillate, fired heating units, (2) primary sulfate emissions from coal and oil combustion, (3) emissions from waste co-firing with fossil fuels, (4) trace metals from fossil fuel combustion, and (5) polycyclic organic matter (POM), including dioxin, from combustion sources.

combustion emissions, including volatile organics emissions from utility boilers, and emission factors and health impacts data for non-criteria pollutants on the Prevention of Significant Deterioration (PSD) list.

- Preparation of a report assessing secondary benefits of emission control systems used to meet New Source Performance Standards (NSPS) for utility boilers.
- Seven reports describing field test results of combustion modification technology to reduce emission levels.
- Preparation of a report cataloging emission rates of criteria pollutants and POM from fireplaces and woodburning stoves (indications: possible significant rates of CO, POM, other organics).

1980 Program

The total allocation for this program is \$3,400,700. The program includes the following:

- Completing characterization of emissions from all conventional combustion categories to provide a comprehensive data base for use in estimating environmental impacts and in evaluating alternative controls.
- Providing bioassay results on conventional combustion residuals to identify the presence of significant levels of potentially toxic, carcinogenic, and hazardous pollutants.
- Supporting the Agency's study of the extent of dioxin and other POM formation in combustion processes.
- Completing initial field studies and assay tests on hazardous organic (POMs, etc.) emissions from distillate-fired heating units.

1981 Plan

The total allocation for this program in 1981 is \$3,221,500. The transition of the program focus from data base development and special studies to one which concentrates on analyses of high priority issues identified in earlier work or by regulatory offices will be complete. The major emphasis of the program will be on the characterization and environmental assessment of high molecular weight organics (including dioxins and other POMs) from major combustion sources (including utility boilers, industrial boilers, and residential furnaces).

Energy Conservation and Advanced Energy System

The general objectives of this program are to (1) assess developing environmental issues associated with energy conservation methods and advanced energy systems and (2) develop pollution control technologies for resource recovery, energy-conserving industrial processes, advanced energy conversion cycles, and advanced energy systems--solar and geothermal energy. Technologies are under development by the Department of Energy, the Department of Housing and Urban development, and other agencies in these areas. Outputs will support these interagency working groups--the interagency Geothermal Coordinating Council, the interagency Task Force on Energy Conservation in Industry, as well as EPA regulatory responsibilities, by assuring the environmental compatibility of techniques and technologies in each subject energy area.

The total allocation for this program area in 1979 was \$4,038,000. The major accomplishments include the following:

- Characterized emissions from five resource recovery facilities.
- Commenced construction of a mobile pyrolysis demonstration unit capable of converting agricultural wastes into useful char and oil.
- Joined with DOE in an analysis of the environmental ramifications of the Minneapolis/St. Paul district heating demonstration.
- Completed a preliminary evaluation of the technical, economic, and energy viability of innovations applied at the first solar assisted wastewater treatment plant.
- Continued evaluations of H₂S removal technologies for geothermal-powered electricity generating facilities.
- Continued studies of the indoor air pollution ramifications of energy-conserving building designs.

1980 Program

The total allocation for this program area in 1980 is \$2,990,000. The major planned activities are:

- Performing tests to determine operational and environmental effects of combusting hazardous wastes with refuse-derived fuels and/or coal in incinerators and boilers.
- Continuing studies of the Minneapolis/St. Paul cogeneration system, industrial conservation studies, and "wastes as fuel" pollutant characterization and control technology performance studies.
- Continuing an evaluation of techniques to seal up sprayed asbestos materials in buildings which otherwise create a cancer risk in indoor environments; producing instructional films and other educational materials describing sealing and/or removing asbestos materials in buildings.
- Initiating (with DOE, industry, and EPA regulatory offices) revision of the pollution control guidance document reviewing and updating emission characteristics data, controls performance data, and pollution control guidance for geothermal energy systems.
- Completing evaluation of the leading technology for removal of H₂S from geothermal streams.
- Completing evaluation of the first solar-assisted, energy-conserving wastewater treatment plant.
- Completing assessment of the potential environmental effects of high rates of solar energy system application on ambient air quality in three AQCRs.

1981 Plan

The total request for the program area in 1981 is \$2,758,000. The major work areas for this program planned in 1981 include:

- Continued assessment of hazardous air pollutant emissions and of control capabilities for municipal and hazardous waste combustion.
- Continued assessment of the relative contributions of indoor and outdoor sources of hazardous air pollutants to indoor levels.
- Characterizing geothermal solid waste (sludges, drains, muds, etc.) and assessing the capabilities of disposal options.
- Preparing a manual for wastewater treatment plants on how to incorporate solar energy systems and energy conserving designs into new facilities.

Integrated Technology Assessment

The overall objective of the integrated technology assessment (ITA) program is to identify environmentally, socially, and economically acceptable alternatives for meeting national energy objectives, and to assist in the selection of "optimum" policies for the attainment of associated environmental quality goals. This objective will be met by:

- Performing studies to evaluate the cost/risk/benefit trade-offs of energy production and pollution control alternatives.
- Conducting technology assessments which evaluate alternative energy technologies and approaches for implementing energy development, preventing environmental damage, and securing related benefits.
- Identifying gaps in present research programs and indicating new priority research topics which must be addressed in order to support direct Agency responsibilities.

1979 Accomplishments

The total allocation for this program area in 1979 was \$5,406,000. Accomplishments include:

- Completion of the comprehensive final report on the Technology Assessment of Western Energy Resource Development. The study examined a wide range of potential impact of proposed rapid energy development and explored policy options for mitigating these impacts.
- Development of regional air quality modeling capabilities and application to long-range air pollutant transport problems, notably in the Ohio River Basin and across the U.S. - Canada border.
- Completion of a Congressionally-mandated review of Federal non-nuclear energy research focusing primarily on the management process by which environmental concerns are considered in technology research decisions. A report outlining recommended improvement in the process was proposed.
- Completion of detailed analysis of utility New Source Performance Standards, designed to present the critical uncertainties which will influence utility costs, coal choices and pollution control measures for possible to alternative standards.

- completion of Technology Assessment Modeling Project (TAMP) projections of future national and regional economic activity, and environment residuals resulting under alternate assumptions. Projections are used as an aid in environmental research planning, as an input to the Agency's Environmental Outlook and Research Outlook reports.

1980 Program

The total allocation in 1980 is \$3,567,000. In 1980, the Ohio River Basin Energy Study will be completed. In addition, program plans include:

- Performing congressionally-mandated analyses of the environmental and conservation aspects of Federal non-nuclear research programs. The 1980 analyses will focus primarily on conservation and solar energy programs.
- Continuing refinement and application of regional air quality modeling capabilities with particular attention to the impact of long range transport of air pollutants on acid precipitation problems.
- Exercising of the Technology Assessment Modeling Project (TAMP) capabilities and electric utility and regional air quality models to develop alternative strategies for reducing acid precipitation problems and to determine the economic costs of such strategies.
- Assessing and beginning the development of a model capable of assisting in the analysis of alternative regulatory strategies for promoting industrial coal use and controlling the environmental effects of coal burning.

1981 Plan

The total request for this program is \$2,778,000. The program will include:

- Performing analyses of Federal non-nuclear energy research programs and publishing the annual Report to Congress based on the findings of the analyses.
- Completing a comparative analysis of economic competitiveness and environmental effects of emerging pollution control technologies for sulfur and nitrogen emissions.
- Providing projections of trends in economic activity and environmental residuals as input to the Agency's Environmental Outlook and Research Outlook Reports.
- Completing development of the ITA coal supply model linking major producing mine units with major coal burning facilities.
- Completing analysis of alternative strategies for mitigating acid precipitation problems and the cost associated with each strategy.

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
Salaries and Expenses...	\$238	\$329	\$334	\$368	+\$34
Research and Development.....	<u>2,816</u>	<u>1,560</u>	<u>1,457</u>	<u>3,146</u>	<u>+1,689</u>
Total.....	3,054	1,889	1,791	3,514	+\$1,723
<u>Permanent Positions.....</u>	6	5	5	5	...
<u>Full-time Equivalency.....</u>	7	7	7	7	...

Budget Request

An appropriation of \$3,513,500 is requested for 1981, of which \$367,500 is for the Salaries and Expenses appropriation and \$3,146,000 is for the Research and Development appropriation representing an increase of \$34,000 and \$1,688,900, respectively, above the 1980 level. The increased level of resources will be used to obtain long term performance and economic data from commercially operated, full scale spray dryer SO₂ control systems, and to demonstrate the effectiveness of adipic acid as an additive to increase lime/limestone flue gas desulfurization reliability.

Program Description

This program includes development of sulfur oxide pollution control technology for electric utility and industrial power generation. Major efforts are directed toward developing the technical and economic data base required to support EPA regulatory and enforcement activities; towards improving FGD (flue gas desulfurization) system reliability and reducing operating and capital costs; and transferring the technological innovations to the public sector.

1979 Accomplishments

In 1979, obligations included \$237,700 for inhouse expenses and \$2,816,400 for extramural activities, totaling \$3,054,100.

Accomplishments in 1979 included the following:

- Compliance testing was completed at the dual alkali FDG installation at Louisville Gas and Electric's Cane Run No. 5 and the long term test program was initiated.
- The Fourth International Symposium on Flue Gas Desulfurization was held with 1,000 people in attendance.
- The evaluation of dry sulfur oxide control processes on low-sulfur coal fired utility and industrial boilers was initiated. Final negotiations were completed to begin the full scale demonstration of adipic acid modified limestone wet scrubbing.

ENERGY

Flue Gas Sulfur Oxide Control

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 368	\$ 366	-\$2
Research and Development.....	3,146	3,146	...
Total.....	\$3,514	\$3,512	- 2



In 1980, the Agency has allocated a total of \$1,750,000 to this program of which \$333,500 is under the Salaries and Expenses appropriation and \$1,457,100 is for extramural purposes under the Research and Development appropriation.

The 1980 program is intended to complete the evaluation of the dual alkali FGD process; to continue to exploit the recent breakthroughs in dry SO₂ control; to maintain the technology transfer efforts; and to coordinate the EPA's flue gas desulfurization efforts with the Department of Energy. Specific planned accomplishments include:

- Complete the dual alkali evaluation program at Louisville Gas and Electric. The final report will provide an evaluation of performance and economic factors using lime and limestone as a regenerating reagent.
- Complete the full scale evaluation of performance and economics of adipic acid modified limestone wet scrubbing. Special attention will be given to reliability and economic impacts.
- Initiate pilot scale evaluation of two dry SO₂ control technologies; spray dryers and macholite injection into the flue gas.
- Complete the review of the state of the art of dry SO₂ control technologies which have the potential to lower the cost of control and reduce the energy penalty associated with SO₂.

1980 Explanation of Changes from Budget Estimates

The net decrease of \$98,400 results from several actions. An increase of \$8,100 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$2,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$104,500 to this activity.

1981 Plan

The Agency requests five permanent workyears and \$3,513,500 for this program, of which \$367,500 is for the Salaries and Expenses appropriation and \$3,146,000 is for the Research and Development appropriation. The increase in funding of \$1,722,900 will allow for the expansion of the dry scrubber SO₂ control program to gather long term performance data and engineering/economic analyses of full scale spray dryer SO₂ control technology on utility and industrial boilers. In addition to an expanded dry SO₂ control program, the increased level of resources will be used to demonstrate a reliable continuous pollutant monitoring system for FGD equipped boilers and to demonstrate the performance of adipic acid on a non-compliance FGD system.

Specific planned accomplishments are:

- Conduct long-term performance monitoring of a full-scale, spray dryer SO₂ control system on a utility boiler burning western, low-sulfur coal. This project output will provide national data for the Congressionally mandated four year review of the recently revised Standards of Performance for Utility Boilers.
- Conduct long-term performance monitoring of a full-scale, spray dryer SO₂ control system on an industrial boiler burning eastern, low sulfur coal. The project outputs would corroborate the projected economic savings which are associated with the spray dry technology.

assessment includes conventional lime/limestone wet scrubbers, adipic acid modified limestone wet scrubbing, dual alkali wet scrubbing, and dry SO₂ control processes. This study would support the review of utility boiler regulations scheduled for 1983.

- Conduct long-term performance monitoring of a full scale demonstration of adipic acid modified limestone wet scrubbing of a noncompliance flue gas desulfurization system. The data would provide needed full scale testing of this economical alternative to lime/limestone wet scrubbing to achieve compliance with the recently revised utility boiler SO₂ regulations. This technology offers the promise of a more reliable SO₂ control than conventional wet scrubbers.

ENERGY

Nitrogen Oxide Control

	<u>Original Estimate 1981</u>	<u>Revised Estimate 1981</u>	<u>President's Reduction</u>
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 1,514	\$ 1,508	-\$6
Research and Development.....	10,970	10,970	...
Total.....	12,484	12,478	- 6



ENERGY

Nitrogen Oxide Control

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
			(dollars in thousands)		
<u>Appropriation</u>					
Salaries and Expenses.....	\$1,717	\$1,518	\$1,758	\$1,514	-\$244
Research and Development.....	12,162	12,297	11,823	10,970	-853
Total.....	13,879	13,815	13,581	12,484	-1,097
<u>Permanent Positions</u>	30	23	22	20	-2
<u>Full-time Equivalency</u>	40	36	33	30	-3

Budget Request

The Agency requests a total of \$12,484,200 for 1981, a decrease of \$1,096,700 from 1980. Included in this total is \$1,514,000 for the Salaries and Expenses appropriation, and \$10,970,200 for the Research and Development appropriation, a decrease of \$244,400 and a decrease of \$852,300, respectively. The reduction in resources is possible because funding of the industrial boiler low NOx burner demonstration program has been completed.

Program Description

This program includes nitrogen oxide pollution control research and development relating to emissions of nitrogen oxide from electric utility boilers, industrial boilers, process furnaces, and other stationary sources. Successful conduct of such a program is important since NOx emissions from stationary sources are projected to increase substantially over the next two decades. This is primarily due to the projected increased combustion of coal and the current absence of cost effective NOx control technology. The program focuses upon two major nitrogen oxide control technologies: combustion modification and flue gas treatment. The combustion modification program is divided into technology development and technology application. The smaller flue gas treatment sub-program maintains an awareness of Japanese NOx control technology development and commercial status and involves pilot scale testing of promising concepts applicable to U.S. coals.

1979 Accomplishments

In 1979, obligations included \$1,716,500 for salaries and expenses and \$12,162,400 for extramural purposes for a total of \$13,878,900. In 1979 the Agency:

- Selected two industrial host sites for the demonstration of the low NOx coal burner.
- Demonstrated that NOx emission level from the low NOx coal burner are not affected by multiple burner arrays.

Boilers.

- Initiated field testing at industrial boilers which are equipped with combustion modification technology to determine long term NOx emission levels in support of the Standard of Performance for Industrial Boilers.
- Provided technical support to the regional construction permit programs.
- Initiated bench scale evaluation of low NOx burner design concepts for residual oil and synthetic liquid fuels from coal and shale.

1980 Program

In 1980, the Agency has allocated a total of \$13,580,900 to this program of which \$1,758,400 is for the Salaries and Expenses appropriation and \$11,822,500 is for extramural purposes under the Research and Development appropriation. The major activities planned for 1980 are to continue the development and demonstration of the low NOx coal burner, continue field testing of combustion modification concepts and continue the development of energy efficient NOx control concepts for stationary internal combustion engines and stationary gas turbines. Program activities and planned accomplishments are to:

- Install low NOx coal burners at the industrial host sites and conduct initial performance testing. The program goal is an NOx emission rate of 0.2 pounds per per million BTU (about 80 percent control).
- Select a host site to demonstrate the low NOx coal burner in a utility boiler application.
- Complete the long term NOx monitoring program to establish a data base for the Standard of Performance for Industrial Boilers.
- Complete the pilot scale evaluation of two flue gas treatment processes which are capable of reducing NOx emissions by 90 percent.
- Continue the development of low NOx emission systems for residual oil and synthetic liquid fuels from coal and shale.
- Initiate the demonstration of "dry" NOx control technology for stationary gas turbines. The dry NOx control is more fuel efficient than the current state-of-the-art "wet" NOx control.
- Initiate the evaluation of the potential for combined SOx/NOx control based upon the addition of limestone to the coal prior to combustion in the low NOx burner. This process could lower SOx control costs by 50 percent.

1980 Explanation of Changes from Budget Estimates

The net decrease of \$234,100 results from several actions. An increase of \$40,800 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs results in a decrease of \$6,000. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$118,900 to this activity.

A reprogramming of \$150,000 was made within the energy media to energy - environmental assessment of control and advanced energy systems to support the Office of Solid Waste in developing regulations for power plant ash and sludge.

1981 Plan

The Agency requests a total of \$12,484,200 for this program, of which \$1,514,000 is for the Salaries and Expenses appropriation and \$10,970,200 is for the Research and Development appropriation. This represents a total decrease of \$1,096,700 from the 1980 level. The reduced level of resources is due to completion of the funding for the industrial boiler low NOx coal burner demonstration program.

Major activities planned for 1981 are to continue the low NOx coal burner demonstration program, to develop NOx control concepts for synthetic liquid fuels, and to evaluate NOx control technologies for stationary internal combustion engines and gas turbines. In addition the following are planned:

- Installation and initial performance testing of the low NOx coal burner at a utility boiler host site.
- Demonstration of the effectiveness, economics, and energy impacts of NOx control for industrial, stoker fired boilers.
- Development of low NOx burners for heavy oil fired field steam generators which are used in the recovery of the recently deregulated heavy oils.
- Prototype evaluation of NOx control technology for stationary internal combustion engines.
- Development of low NOx burners for the combustion of high nitrogen synthetic liquid fuels.
- Continuation of the development of simultaneous SOx/NOx control through lime-stone addition to the coal fed to the low NOx coal burner. This technology has the potential for 90 percent SO₂ reduction and 85 percent NOx reduction at significant capital and annual cost savings.

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
(dollars in thousands)					
Salaries and Expenses	\$723	\$883	\$1,099	\$1,129	\$30
Research and Development.....	<u>8,669</u>	<u>7,117</u>	<u>6,712</u>	<u>6,911</u>	<u>+199</u>
Total.....	9,392	8,000	7,811	8,040	+229
<u>Permanent Positions....</u>	14	13	15	15	...
<u>Full Time Equivalency..</u>	17	22	22	22	...

Budget Request

The Agency requests a total of \$8,040,000 for 1981, an increase of \$229,500 from 1980. Included in this total is \$1,128,600 for the Salaries and Expenses appropriation and \$6,911,400 for the Research and Development appropriation, with an increase of \$30,100 and \$199,400, respectively. This increase in resources will be used to provide additional support to determine inhalable particulate matter emission factors.

Program Description

The goals of this program are to assess and develop technology for the control of emissions of particulate matter, particularly those that affect human health and welfare.

More specifically, its objectives are to:

- Assess and improve the effectiveness of conventional particulate control technology to meet existing and proposed particulate emission regulations.
- Ensure that technology is available to permit increased use of low sulfur western coals without exceeding existing and proposed particulate emissions standards.
- Characterize inhalable particulate emissions from stationary and fugitive sources to support the Agency target to set an ambient standard by 1982-1983.
- Develop and evaluate improved inhalable particulate matter control technology for stationary and fugitive emission sources.

1979 Accomplishments

In 1979, obligations included \$723,400 for salaries and expenses and \$8,668,500 for extramural purposes, for a total of \$9,391,900. In 1979 the Agency:

- Initiated a field sampling program to characterize inhalable particulate matter (IPM) emissions from industrial sources to support the standard setting effort.
- Converted the existing fine particulate emissions data bank to cover the inhalable particulate size range, which allowed the Agency to make the initial identification of various emission factors for stationary sources.

ENERGY

Flue Gas Particulate Control

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 1,129	\$ 1,125	-\$4
Research and Development.....	6,911	6,911	...
Total.....	8,040	8,036	- 4



conditioning additives. This provided the Office of Enforcement a basis for establishing an interim particulate emission compliance policy.

- Established the technical feasibility of augmenting electrostatic precipitator (ESP) performance by using a low cost precharger device. This device is suitable for new or retrofit applications and meets the revised particulate New Source Performance Standard (NSPS) for utility boilers.
- Developed data on costs, performance and impacts of conventional particulate control devices to support the proposed NSPS for Industrial Boilers.
- Completed an initial assessment of the potential of dust trapping devices to control diesel exhaust particulate emissions in support of the Agency effort to set a new standard in 1982.
- Jointly conducted a workshop on particulate control with the Republic of West Germany, and a symposium on "Particulate Control and Measurement" with the Soviet Union. Conducted the Third International Conference on all aspects of particulate control, measurement, effects and standards.
- Demonstrated the feasibility of using felt filter baghouses for industrial boiler flue gas cleaning applications.
- Completed Phase I evaluation of baghouse usage on a large low-sulfur coal utility boiler. This technology is finding increased applications in low-sulfur coal burning utilities.
- Completed a demonstration of a condensation scrubber application on an iron cupola using 30 percent less energy than a comparable conventional scrubber.

1980 Program

In 1980, the Agency has allocated a total of \$7,810,500 to this program of which \$1,098,500 is for the Salaries and Expenses appropriation and \$6,712,000 is for extramural purposes under the Research and Development appropriation. The 1980 program will expand efforts to characterize and develop control technology for fugitive dusts in urban areas exceeding national and State limits for ambient particulates. Additionally, program activities and planned accomplishments are to:

- Continue the characterization of inhalable particulate matter from priority emission sources. This activity is part of the Agency strategy to establish emission factors to guide States in their implementation plans to control ambient levels of inhalable particulate matter.
- Initiate long term evaluation of baghouse applications on large, low-sulfur coal utility boilers to form a basis for New Source Performance Standards revisions in the mid-1980's.
- Complete evaluation of full scale baghouse for low sulfur coal utility boilers.
- Continue second phase of electrostatic precipitator (ESP) precharger development and evaluation program.
- Complete the assessment of flue gas conditioning agents as a means to improve ESP performance for low sulfur coal fly ash, and initiate non-additive means to improve in-use ESP performance.

urban fugitive dusts to provide State Implementation Plans (SIP) guides in non-compliance areas.

- Continue transfer of particulate control technology via sponsorship of conferences and issuance of technical reports.

1980 Explanation of Change From Budget Estimates

The net decrease of \$189,500 results from several actions. An increase of \$25,900 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$4,000. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$111,400 to this activity.

A transfer of \$100,000 was made within the energy media to environmental assessment of conventional and advanced energy systems to support the Office of Solid Waste in developing regulations for power plant ash and sludge.

1981 Plan

The Agency requests a total of \$8,040,000 for this program, of which \$1,128,600 is for the Salaries and Expenses appropriation and \$6,911,400 is for the Research and Development appropriation. This represents increases of \$30,100 and \$199,400, respectively. The increase in resources will be used to provide additional support to determine inhalable particulate matter emission factors. During 1981, efforts will support the agency regulatory program. In 1981, the program objectives are to:

- Complete the characterization of inhalable particulate matter emissions from important sources. This information is required by the Air Program Office to allow selection of appropriate control technology for an ambient inhalable fine particulate standard.
- Continue evaluation of a prototype electrostatic precipitator (ESP) precharger for enhancing particulate control of low-sulfur coal fly ash.
- Continue technology research to control the impacts of fugitive dusts on urban areas with special emphasis on non-compliance areas.
- Initiate control technology assessments and development efforts to minimize particulate (fugitive and dusted) emissions from the production and use of synfuels.
- Determine capability of FGD scrubbers for particulate removal to meet the recently promulgated New Source Performance Standard for utility boilers.
- Continue ESP research on reentrainment, turbulence and flue gas additives as they affect equipment performance.
- Continue research on condensation aerosols and filter design fundamentals.
- Transfer technology on inhalable particulate matter control through the sponsorship of workshops, international conferences and technical reports.

ENERGY

Transport, Fate and Effects of Energy Related Pollutants

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 902	\$ 900	-\$2
Research and Development.....	13,765	13,765	...
Total.....	14,667	14,665	- 2



Transport, Fate and Effects of Energy Related Pollutants

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and					
Expenses.....	\$1,230	\$1,299	\$894	\$902	+38
Research and					
Development.....	14,908	13,349	14,439	13,765	-674
Total.....	16,138	14,648	15,333	14,667	-666
<u>Permanent Positions</u>	10	3	3	4	+1
<u>Full-time Equivalency</u>	28	16	17	17	...

Budget Request

The Agency requests a total of \$14,667,300 for 1981, a decrease of \$666,000 from 1980. Included in this total is \$902,200 for Salaries and Expenses and \$13,765,100 for Research and Development, with an increase of \$7,600 and a decrease of \$673,600, respectively. This decrease results from a reprogramming of the water transport and fate research program into this program element in 1980 which is not carried forward into the 1981 program.

Program Description

The Energy Transport, Fate and Effects Program assesses the effects of present and proposed energy-related activities on aquatic and terrestrial ecosystems. The program is interagency in structure, utilizing the scientific expertise and facilities within six Federal agencies. Through this structure, an environmental research program of national scope has been established to include: (1) the evaluation of the impact of offshore oil and gas extraction activities, (2) an analysis of the transport, fate and effects of energy-related pollutants in marine and freshwater environments, (3) the development of techniques to mitigate adverse environmental impacts from mining operations, (4) the assessment of the effects of atmospheric pollutants, including acid rain, on aquatic and terrestrial systems, (5) the identification of the ecological hazards associated with new energy technologies, and (6) the development and validation of test methodologies to evaluate the environmental effects of energy related chemicals.

1979 Accomplishments

In 1979, this program utilized \$16,138,000, of which \$1,229,900 was for salaries and expenses and \$14,908,100 was for extramural purposes. The accomplishments for 1979 include the following:

- Contributed to the data base involving the effects of ozone and sulfur oxides on agricultural and natural ecosystems.
- Demonstrated that: (1) the fate of halogens released into the marine environment is different from freshwater fate, (2) biocides used in cooling waters result in halogenated organic compounds in marine environment, and (3) many compounds formed are toxic.
- Completed field research involving the impact of coal-fired power plants on grassland

- Developed procedures to characterize chemical properties of mine spoils and overburden material in the Western United States.
- Developed rapid, reliable and cost effective methods for inventorying and characterizing wildlife habitats.
- Determined the MATC (Maximum Allowable Toxicant Concentration) for hydrocarbons and other energy-related discharges on components of marine and freshwater ecosystems.
- Provided to the Office of Surface Mining (DOI) and Office of Solid Waste (EPA), acute and chronic effects data involving the effects of leachates from coal spoils on aquatic organisms.
- Developed microcosm capabilities to simulate the chemistry and biology of New England Coastal Areas.
- Develop field evaluation and simulation techniques to assess the impact of sulfur dioxide on terrestrial systems.

1980 Program

In 1980, the Agency allocated a total of \$15,333,300 to this program, of which \$894,600 is for the Salaries and Expenses appropriation and \$14,438,700 is for extramural purposes under the Research and Development appropriation. Program activities and planned accomplishments for 1980 include:

- Initiate the assessment of the effects of Chemical discharges from offshore oil and gas extraction and to characterize exploration on marine ecosystems.
- Evaluation of acute and chronic effects of consent decree pollutants on organisms in marine and freshwater environments.
- Determination of the effects of atmospheric pollutants, including acid precipitation, on aquatic and terrestrial ecosystems.
- Further evaluation of the effects of biocides in cooling systems on aquatic environments.
- Identification of techniques to prevent adverse environmental impacts from surface mining operations.
- Identification of ecological effects of discharges and emissions from emerging energy technologies such as coal gasification and liquefaction.
- Development and validation of cost-effective test methods to evaluate the effects of energy-related chemicals.
- Development of land suitability criteria in support of the Federal coal leasing program.

1980 Explanation of Changes from Budget Estimate

The net increase of \$685,300 results from several actions. An increase of \$15, results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$300,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$72,700 to this activity.

funds to cover authorized workyears resulted in a decrease of \$72,700 to this activity.

A reprogramming of \$202,000 was made within the energy media from measurement systems and instrumentation development for energy related pollutants to allow additional research pertaining to oil shale engineering technology. A reprogramming of \$570,000 was made within the energy media from atmospheric transportation and transformation of energy related pollutants (\$370,000) and energy-health effects (\$200,000) in order to more appropriately reflect the aquatic transport activities. A transfer of \$6,000 was made to the toxic substances media to transport and fate to help cover the cost of a symposium on the state of the art of the use of lab rate data in predicting environmental fate of new chemicals. A transfer of \$20,000 was made to the water quality media to marine ecological effects for a contract to plan a research program to integrate the physical, chemical transport models with the ecological fate models.

1981 Plan

The Agency requests a total of \$14,667,300 for this program, of which \$902,200 is for the Salaries and Expenses appropriation and \$13,765,100 for the Research and Development appropriation. The net decrease of \$666,000 results from a reprogramming of water transport and fate research into this program element in 1980 that will not be carried into the 1981 program. Planned activities for 1981 include the initiation and continuation of research projects as follows:

- Characterize composition, determine biological fate, and evaluate acute chronic effects of discharges from offshore oil and gas drilling activities.
- Determine acute and chronic effects and bioaccumulation rates of petroleum hydrocarbons and other energy-related pollutants for marine and fresh water environments.
- Determine the fresh water biological effects of energy-related pollutants from conventional coal-fired power plants, new energy demonstration projects (FBC) and associated solid waste control installations.
- Determine and assess the effects of acid precipitation on aquatic and terrestrial ecosystems in the United States. This task will be a part of the National Acid Rain Research Program.
- Refine and develop models for predicting the effects of air emissions from coal-fired power plants on fish, wildlife and their habitats, with emphasis on Class I Areas.
- Initiate research to determine the impact of atmospheric emissions from new energy technologies (pyrolysis of biomass, fluidized bed combustion, and coal gasification) on terrestrial systems.
- Determine the fate and chronic effects of gaseous pollutants, and both dry and wet deposition of particulates, singly and in mixture, on important crop, grass-land, and forest species of western and eastern regions of the United States.
- Determine the fate of trace metals (Hg, Cd, etc.) that result from coal combustion and their chronic effects on important crop and forest species.

- document register
- Prepare handbooks for mine reclamation covering soil and water management and revegetation activities in arid and semi-arid areas of the United States.
 - Develop reclamation and revegetation techniques to minimize the transport of radioactive materials from uranium mine tailings.
 - Identify sources, transport mechanisms, and fate of mercury and selenium associated with coal mining in the Northern Great Plains, and assess the contamination of fish by these elements.
 - Assess the environmental impacts on surface and ground water resources that would result from increased utilization of ground water heat pumps and the commercialization of oil shale operations.
 - Develop rapid, reliable, and economical test methodologies involving populations and communities, to evaluate the ecological effects of energy-related toxic substances on biological processes of plants and animals.
 - Assess the long-term consequences of energy pollutant induced stresses on fish populations and fishing yields.
 - Assess the biological impact of diverting water for energy use, with emphasis on arid and semi-arid portions of the United States.

ENERGY

Atmospheric Transport and Transformation of Energy Related Pollutants

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 225	\$ 224	-\$1
Research and Development.....	7,395	7,395	...
Total.....	\$7,620	7,619	- 1



Atmospheric Transport and Transformation of Energy Related Pollutants

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and Expenses.....	\$632	\$375	\$201	\$225	+\$24
Research and Development.....	8,030	7,239	6,968	7,395	+427
Total.....	8,662	7,614	7,169	7,620	+451
<u>Permanent Positions.....</u>	33	3	3	3	...
<u>Full-time Equivalency...</u>	14	7	7	7	...

Budget Request

The Agency requests a total of \$7,619,900 for 1981, an increase of \$450,700 from 1980. Included in this total is \$224,600 for the Salaries and Expenses appropriation and \$7,395,300 for the Research and Development appropriation, with increases of \$23,600 and \$427,100, respectively. The increase results from a reprogramming of the water transport and fate research program into this program element in 1980.

Program Description

This program characterizes energy-related pollutants, assesses their impact on man and the environment and develops predictive models of their transport, transformation and dispersion in air. Emissions into the air from coal-, oil-, and gas-fired power plants and from advanced energy technology development, such as coal liquefaction and gasification, oil shale extraction, and geothermal energy exploitation are examined. The transformation program then examines the interactions of these primary source pollutants with ambient air, water vapor, rain, ice, and solar irradiation.

1977 Accomplishments

In 1979, the program utilized \$8,662,300, of which \$632,100 was devoted to inhouse expenses and \$8,030,200 to extramural activities.

In 1979, the formerly DOE funded and managed Multistate Atmospheric Power Production Pollution Study (MAP3S) was transferred to EPA under this program element. MAP3S goals and approaches were redefined with the primary objective being to define the relationships between emissions of air pollutants, their deposition, and the chemical quality of precipitation. The tasks of this project are distributed among 3 DOE-related laboratories - Argonne (ANL), Brookhaven (BNL), and Pacific Northwest (PNL), with a rotating technical

- Completion of regional-scale trajectory models, including transport, transformation, and wet and dry deposition. These models will be used for long-range impact analysis.
- Formulation of regional scale deposition velocity map for use in dry deposition modeling for SO₂ and sulfate.
- Developed a model for sulfate scavenging (absorption by cloud droplets) which allows estimation of acidic deposition as a function of storm type and precipitation rate.
- It was shown that monthly average sulfate concentrations in precipitation were remarkably constant over the eastern United States, and the pH of rainfall was near 4.0. The concentration of nitrate in precipitation was relatively constant over the year, with maximum relative concentration in winter when it may contribute up to half of the acidity.
- Project VISTTA (Visibility and Interstate sulfur Transport and Transformation in the Atmosphere) showed that power plant plumes in the western arid regions could be followed to 100km distances, due to the presence of particulates. Little secondary particulate formation occurred along the plume trajectory. Once the plume mixed with background air, however, the rate of sulfate formation increased and the particle size increased into a range that effectively scatters light. Thus, while SO₂ removal will not reduce plume blight, it will help to control regional haze.
- Both source emissions and ambient air quality were measured at the Lurgi gasifier at Kosovo, Yugoslavia. The plant was found to emit significant amounts of toxic organic pollutants which may pose a health hazard. Samples were collected continuously in May 1979 at five sites near the gasifier. Thirty organic compounds in the following five classes have been identified to date in the ambient Kosovo air and related to the gasifier: (1) CHO compounds (Phenols and Furans), (2) CHS Compounds (Mercaptans and Thiophenes), (3) CHN Compounds (Pyridines and Pyrroles), (4) Aromatic Compounds (Benzene to 5-ring polycyclics), and (5) Aliphatic Hydrocarbons (C₉-C₂₀). Quantitative data analysis is in progress and will be reported shortly.
- TVA studied sulfur oxide transformation in both scrubbed and unscrubbed plumes. Results indicated that the rate of both sulfate and nitrate transformation were not significantly different for scrubbed and unscrubbed plumes (1%/hr., 3-4%/hr., respectively). Both of these rates varied during the day, the afternoon rates being double those of the morning.

In 1980, the Agency has allocated a total of \$7,169,200 to this program, of which \$201,000 is for the Salaries and Expenses appropriation and \$6,968,200 for extramural purposes under the Research and Development appropriation. Program activities and planned accomplishments include:

- Further restructuring of project MAP3S to meet the redefined objectives. The MAP3S acid deposition network of nine stations (seven of which are presently still funded by DOE) will become an integral part of the National Acid Deposition Network (NADN). Its major function, however, will remain storm/event sampling in order to validate specific source/receptor relationships by trajectory modeling.
- Complex terrain model development. A planning workshop brought to light that: (1) physical dispersion of air pollutants over flat topography can be modeled reliably, (2) the traditional approach to complex terrain modeling - a geographically dense measurement network in a real-world complex terrain situation followed by back calculation modeling - has always failed to produce a reliable model, (3) even the simplest terrain situation - a conical hill on a flat plain - is not understood. Accordingly, a back-to-basics approach to complex terrain model development was adopted. In 1980 the physical dispersion phenomena associated with a plume impinging on a simple hill on a flat plain will be measured.
- The 1980 field study of Project VISTTA will obtain data on the composite plume originating at the Four Corners Area (AZ, CO, NM, UT). Intensive field measurements which employ ground, airborne and satellite-borne instrumentation, will be made to obtain data on the physical and chemical constituents contributing to visibility impairment. The data will be used to develop optical modules of pollutant dispersion models.
- Construction will be completed on the TVA smog chamber. The chamber will be tested at a coal fired power plant to provide data for atmospheric transformation studies. Then the chamber will be transported to new energy technology sites for in-situ transformation studies of emissions from such facilities.
- A 30-day study using a mobile ground or aerial laboratory will be performed at the Lurgi Coal Gasification Plant at Kosovo, Yugoslavia, to further investigate the transport and transformation of organic aerosols and gases emitted by the gasifier.

1980 Explanation of Changes from Budget Estimates

The net decrease of \$444,800 results from several actions. An increase of \$6,500 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$67,300 to this activity.

A reprogramming of \$370,000 was made within the energy media to transport, fate and effects of energy related pollutants in order to more appropriately reflect the aquatic transport activities.

A transfer of \$8,000 was made to the air media to transport and fate to support the effort to integrate the MAP3S program within one activity.

A transfer of \$6,000 was made to the toxic substances media to transport and fate to help cover the cost of a symposium on the state-of-the-art of the use of lab rate data in predicting environmental fate of new chemicals.

1981 Plan

The Agency requests a total of \$7,619,900 for this program, of which \$224,600 is for the Salaries and Expenses appropriation and \$7,395,300 for the Research and Development appropriation. The net increase of \$450,700 will be allocated to increase research on energy-related pollutant transport and transformation modeling, and on atmospheric effects, such as acid deposition and visibility impairment in Federal Class I areas. The 1981 plan will also place an increased emphasis on environmental problems associated with synfuels. Planned activities for 1981 include:

- A continuation of the complex terrain model development effort initiated in 1980. This is an effort to provide the Office of Air Quality Standards (OAQPS) with a practical, flexible, computerized model of criteria pollutant dispersion from variable height stacks in complex terrain (mountains, valleys, land-sea interface) for prediction of air quality impacts from existing and new power plants.
- Modeling and field validation of pollutant dispersion on a regional scale (0-1000 km). This is an effort to predict air quality impact from single or aggregate power plants in an entire region of the United States, such as the Ohio Basin, the Northeast, or the Great Lakes areas. Energy-related air pollution effects, such as fine particulates formation, acid rain and visibility deterioration encompass a wide area and are not localized to the source. The mechanisms which govern the primary pollutant dispersion on a wide scale must be understood, and the chemical transformations which may lead to fine particulate (and thus, visibility deterioration) and acid rain formation. Recommendations will be formulated for feasible control strategies to alleviate or mitigate visibility impairments and acid rain.
- The studies of plumes resulting from coal-fired power plant emissions (Project VISTTA), initiated in 1979, will be concluded with the determination of the governing mechanisms that may cause visibility deterioration in the Western Class I areas. The pollutant dispersion modeling effort will focus on aerosol formation which causes visibility impairment (haze). This effort is concentrated in the western energy regions, currently undergoing intensive energy development.

particulates and through scavenging by clouds will be initiated. Several lab and field studies will be conducted in academic institutions (through the new ORD Grants Office), NOAA/Environmental Services Research Laboratory and TVA to provide the basic physical and chemical parameters which are necessary for model development of pollutant transport and transformation. Particular emphasis will be put on elucidation and quantification of phenomena associated with transport and transformation of pollutants from new energy technologies, such as coal liquefaction and gasification, oil shale extraction, geothermal sources, and biomass combustion.

Measurement Systems and Instrumentation Development
for Energy-Related Pollutants

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
<u>Appropriation</u>					
Salaries and Expenses.....	\$1,024	\$1,062	\$972	\$974	+\$2
Research and Development.....	6,862	7,475	7,276	8,444	+1,168
Total.....	7,886	8,537	8,248	9,418	+1,170
<u>Permanent Positions....</u>	8	1	10	10	...
<u>Full-time Equivalency..</u>	25	34	34	33	-1

Budget Request

An appropriation of \$9,417,900 is requested for 1981, an increase of \$1,169,800 over 1980. Included in this total is \$973,800 for the Salaries and Expenses appropriation and \$8,444,100 for the Research and Development appropriation, which will be used for a new program in exposure monitoring to determine the correlation between fixed station air pollution monitoring data and actual human exposure to energy-related pollutants.

Program Description

Most of the reserve energy resources of this nation are located in the relatively pristine western states. This program is directed toward identifying and quantifying ambient pollutants associated with energy activities and toward development of pollutant measurement capabilities. The objectives of the program are to determine actual human exposure to energy-related pollutants and to compare this data to fixed station network data; to establish a baseline of environmental data so that the multimedia impact on environmental quality from anticipated energy development can be quantitatively established; and to develop validated sampling and analytical methods and procedures to ensure a measurement capability for pollutants from emerging energy technologies.

1979 Accomplishments

In 1979, this program utilized \$7,886,100 of which \$1,023,600 was for in-house expenses and \$6,862,500 was for extramural activities.

ENERGY

Measurement Systems and Instrumentation Development for Energy-Related Pollutants

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 974	\$ 970	-\$4
Research and Development.....	8,444	8,444	...
Total.....	9,418	9,414	- 4



Current standards address the major pollutants - SO_x , NO_x , particulates, etc. - but results from characterization studies show that a large variety of hazardous substances are emitted in small amounts. The monitoring equipment provided by this program is used to identify and measure both the hazardous substances that originate from energy-related facilities and the secondary pollutants that arise when these primary emissions either decompose by interaction with sunlight or react with other substances in the environment. In many cases, secondary pollutants can be more hazardous than primary pollutants. Of course, primary hazardous pollutants can also be rendered relatively innocuous after a very short residence time in the environment. The information from this monitoring program will enable the EPA to establish regulations that provide an adequate margin of safety, where the hazard posed by a pollutant so warrants, while avoiding unnecessary or overly stringent controls. Among the 1979 accomplishments are:

- In a 30-day continuous monitoring program nearly 80 percent of ambient sulfate and 50 percent of total suspended particulate matter in the vicinity of an oil-fired power plant were found to be attributable to the plant.
- A computer system for the processing of multispectral scanner imagery (obtained by aerial photography) of coal strip mines was demonstrated. This advanced remote sensing technology is used to assess environmental impact.
- Potential ground water pollution sources from oil shale development were identified and ranked; a compendium report on oil shale technology was published; and ground water was monitored for pollution from western coal strip mining.
- Instruments for measuring visibility-related variables were evaluated for use in a report to Congress on visibility.
- The correlation of various visibility measurement techniques was determined by monitoring for one year.
- Data from the EPA/National Park Service 14-station visibility-monitoring network in Western Class I Areas was obtained by monitoring for one year. Visibility apparently rises and falls simultaneously over broad areas of the west, suggesting that the sources of visibility impairing pollution are so remote that their pollution is dispersed uniformly over wide geographical areas.
- The relationships between human perception and the various measurable visibility parameters were documented.
- The five year baseline study of air quality in Western Energy Resources Development Area was completed. Future deterioration of air quality resulting from accelerated energy developments such as oil shale retorting and coal gasification can be documented by comparison with this 5-year data base.
- High molecular weight and potentially carcinogenic organics in the C10-C20 range, including alkylbenzenes, alkyl naphthalenes, and anthracenes were found in plume aerosols emitted from in-situ oil shale burn (Occidental Oil Co. near Grand Junction, Colorado). Inorganics and organics were identified using XRF and GC/MS techniques, respectively. Because of the reducing nature of the burn, sulfur species were identified including H_2S , mercaptans, etc.

The most important reactions identified have been the Fe and Mn system, $\text{SO}_2 + \text{O}_3$, and $\text{SO}_2 + \text{NO}_2$.

- 903 filters collected in 1975 from 42 urban sites in 33 States were analyzed for organic and graphitic carbon. Graphitic carbon constitutes 5 to 15% of the particulate mass, which is comparable to the amount of sulfate present. The major source is most likely the combustion of hydrocarbon fuels.
- A method for accurate determination of gas phase sulfuric acid from stationary sources was developed by Brookhaven National Labs with EPA funding.
- The correlation between visible plume opacity and boiler operating parameters was determined for oil fired boilers.
- A 40-station fine particulate network in the Western Energy Research Development Area was established.

1980 Program

In 1980, the Agency has allocated a total of \$8,248,100 to this program, of which \$972,200 is for the Salaries and Expense appropriation and \$7,275,900 is for extramural purposes under the Research and Development appropriation. Program activities and planned accomplishments for 1980 include:

- Aerial sampling to characterize the plume of an in-situ coal gasification plant is being undertaken. Aerosol chemical composition will be determined by x-ray fluorescence and gas chromatography/mass spectroscopy.
- Aerial sampling to determine the impact of aerosol sulfate/nitrate formation from western power plants equipped with dry scrubbers is being performed.
- Studies of the effect of metal catalysts on sulfate formation rate due to oxidation of SO_2 by O_3 and H_2O_2 in water are being conducted. The effect of NH_3 and HNO_3 vapor concentrations on ammonium nitrate aerosol formation will be determined in a laboratory study using a flow reactor.
- Secondary organic and inorganic pollutant assessment of advanced fossil fuel technologies will be performed. A flow reactor will be used to simulate the atmospheric transformation of emissions from oil shale, coal gasifier, and coal liquifier processes. Sample aerosol products will be tested for bioactivity.
- Interpretation of aerial photography of the Powder River Basin coal strip mines and oil shale site imagery to assess rehabilitation efforts will be carried out.
- An updated procedures manual on overhead multispectral scanner monitoring of western coal strip mines for environmental impact assessment will be published.
- Monitoring programs for coal strip mining and in-situ oil shale retorting is being designed, with reports on ground water monitoring of (1) oil shale development, (2) active coal strip mines, (3) western reclaimed coal strip mines, and (4) municipal pollution associated with coal strip mining.

- Western regional visibility monitoring network will be expanded to 18 stations. An analysis of the first year of data in terms of regional trends and synoptic meteorology will be performed.
- A symposium on visibility impact, measurement, and analysis is being sponsored.
- The capability to represent measured or derived visibility data in pictorial form using automated image processing equipment and software is being developed.
- Studies of primary sulfate and nitrate emissions to quantify the effect of widespread switching of fuels from pulverized coal to residual oil are being conducted.
- The capabilities of existing satellite systems are being evaluated; e.g., Synchronous Meteorological Satellite/Geostationary Orbiting Earth Satellite (SMS/GOES) to identify and monitor polluted air masses.
- The applicability of various remote sensing technologies (Laser Absorption Spectrometry (LAS), High Spectral Resolution LIDAR (HSRL), and UV Differential Absorption LIDAR (UV-DIAL)) to near term scientific investigation of regional air pollution problems will be demonstrated.
- The Brookhaven Emission Characterization System (BECS) will be expanded to include characterization of trace organic emissions.
- An assessment of the exposure of the Texas Flower Gardens coral reefs to discharges from oil and gas drilling mud components will be made. In 1980, the dispersion and the chemical nature of drilling mud components and degradation products will be determined. This will be accomplished using a shipboard acoustic backscatter system to track the discharge plumes and to guide sampling. The Texas Flower Gardens are the most northerly known coral reefs, perched at the edge of the outer continental shelf 100 miles from Houston.

1980 Explanation of Changes from Budget Estimates

The net decrease of \$288,900 results from several actions. An increase of \$24,300 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$2,000. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$94,200 to this activity.

A transfer of \$15,000 was made to the water quality media to transport and fate for a contract to plan a research program to integrate the physical, chemical transport models with the ecological fate models. A reprogramming of \$202,000 was made within the energy media to transport, fate and effects energy related pollutants to allow additional research pertaining to oil shale engineering technology.

The Agency requests a total of \$9,417,900 for this program, of which \$913,800 is for the Salaries and Expense appropriation and \$8,444,100 is for the Research and Development appropriation. The program contains a major new project, namely exposure monitoring, that will be funded by the net increase of \$1,169,800. This project will determine the degree of correlation between fixed station monitoring network data and actual human exposure to energy-related pollutants. Other major objectives for the 1981 program include:

- Detailed emissions characterization of volatile organics emitted from secondary energy sources such as refuse combustion and synthetic fuels usage will be made. Preliminary data indicate the presence of toxic and carcinogenic chlorinated aromatics in emissions from certain refuse energy conversion plants.
- A comprehensive summary report on passive remote sensing (photography and multispectral scanning) technology for assessing the environmental impact of energy resource recovery activities will be produced.
- Field verification of ground water monitoring guidelines for western energy resource recovery areas will be undertaken.
- A national network of regionally representative visibility monitoring stations (approximately 15-20) per recommendation of the Subcommittee for Visibility Research (SCVR) will be established.
- The fine particulate monitoring program will be expanded to examine organic fraction of particulate loading in the Western Energy Resource Development Area.
- The National Data Management System for visibility-related data will be developed.
- Aerosol formation rates in a dry scrubber plume will be determined to assess the potential impact on visibility in the midwest, where many power plants will control SO₂ emission with dry scrubbers.
- The enhancement or inhibition of the SO₂ oxidation which is caused by catalytic metal ions and dissolved oxidants will be determined.
- Organic aerosol formation in plumes from advanced energy sources will be determined. This effort will include aerial sampling of the TOSCO in-situ oil shale retort at Tract C-a, which is near Grand Junction, Colorado. Aerosol samples will be collected and analyzed by gas chromatography/mass spectrometry to determine plume organic species and their transformation rates.
- Feasibility studies for equipping future satellites with instruments sensitive to polluted air masses will be conducted. These systems will provide invaluable data for prediction of elevated pollution episodes.
- Second generation High Spectral Frequency LIDAR System for atmospheric pollution transformation studies will be fabricated.
- Exposure assessment at the Texas Flower Gardens coral reefs will be continued. The results of this work will be combined with those of a parallel effort to assess the effects of drilling platform discharges on coral reef biotic species. The combined output will be an assessment of the total hazard posed by oil and gas drilling in the vicinity of this fragile and valuable coral ecosystem.

ENERGY

Health Effects of Energy Related Pollutants

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
<u>Appropriation</u>			
Salaries and Expenses.....	\$ 146	\$ 145	-\$1
Research and Development.....	18,245	18,245	...
Total.....	18,391	18,390	- 1



Health Effects of Energy Related Pollutants

<u>Appropriation</u>	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
		(dollars in thousands)			
Salaries and Expenses	\$109	\$769	\$624	\$146	-\$478
Research and Development.....	<u>19,963</u>	<u>17,618</u>	<u>17,532</u>	<u>18,245</u>	<u>+ 713</u>
Total.....	20,072	18,387	18,156	18,391	+ 235
<u>Permanent Positions....</u>	2	3	2	2	...
<u>Full-time Equivalency..</u>	4	6	6	6	...

Budget Request

The Agency requests a total of \$18,390,900 for 1981, an increase of \$234,500 over 1980. The increased resources in 1981 will be used in the funding of a newly initiated human health (epidemiological) study. Included in this total is \$145,600 for the Salaries and Expense Appropriation and \$18,245,300 for the Research and Development Appropriation, with a decrease of \$478,500 and an increase of \$713,000, respectively.

Program Description

The interagency Health Effects Research Program is dedicated to improving the ability to estimate the long-term adverse health impacts of energy-related pollutants that can ensue as a consequence of implementing a particular energy policy. Of major concern are those health effects that may result from long-term, low-level exposures and that are manifested only after a long time period, i.e., carcinogenicity, teratogenicity, mutagenicity, and dysfunctions of the cardiopulmonary, neurobehavioral, reproductive, hepatic, hematopoietic, renal and immune systems.

The necessary data are obtained through a coordinated program of epidemiological, clinical and toxicological studies, and through the development and use of rapid and sensitive bioscreening methodologies. Research in these disciplines is directed through six themes which collectively develop the data base necessary to reduce the uncertainties in the estimates of risk to human health. The objectives of these themes, all of which address only energy-related pollutants, are as summarized below:

- Determine the health effects of criteria and non-criteria pollutants generated by fossil fuel combustion.
- Develop and validate bioassay screens and predictor test protocols for the identification and characterization of hazardous energy-related pollutants.
- Determine the health hazards of drinking waters contaminated by leachates from the solid waste generated by fossil fuel combustion.
- Ascertain the toxicity of particular (e.g., cadmium) energy-related pollutants when exposure is concurrent with other environmental stressors.

- Determine the occupational health hazards of advanced fossil fuel energy cycles: coal gasification, coal liquefaction, oil-from-shale.

1979 Accomplishments

In 1979, the program utilized \$20,071,800 of which \$109,200 was for inhouse expenses and \$19,962,600 was for extramural expenses. Specific accomplishments include:

- Implementation of several assays--including DNA damage/repair, lymphocyte cytotoxicity, and rabbit alveolar macrophage--in the screening of energy-related effluents and emissions.
- Development of a series of bioassay protocols for use in evaluation of mixed effluent streams.
- Development of a repository for energy-related materials; samples are available to investigators conducting biological experiments designed to screen for or assay potentially toxic materials.
- Co-sponsorship of a workshop on Health and Environmental Effects of Coal Technologies.
- Completion of a number of final reports defining the toxicity of energy-related agents.

1980 Program

In 1980, the Agency allocated a total of \$18,156,400 to this program, of which \$624,100 is for the Salaries and Expenses Appropriation and \$17,532,300 is for extramural purposes under the Research and Development appropriation. Planned activities for 1980 are to:

- Perform epidemiological studies in several areas where the general population is exposed to elevated levels of photochemical oxidants and other air pollutants.
- Perform an epidemiological study in an area such as El Paso where short-term high-level excursions of SO₂ and particulates are observed.
- Perform a series of clinical studies with human subjects (healthy and diseased) to determine the effects of exposures to sulfates and sulfuric acid mists, ozone, and NO₂, both singly and in various combinations.
- Perform relative health risk assessments for new energy technologies such as fluidized bed combustion, with reference to conventional coal combustion.
- Develop assay procedures which complement liver "enzyme island assay" methodologies; develop procedures to screen samples that are potentially hazardous to tissues such as skin from the fossil fuel cycle.
- Perform an epidemiological study with populations identified as exposed to waterborne agents from fossil fuel energy production or use.
- Evaluate the utility of a variety of proposed methods for recovering and concentrating trace quantities of waterborne energy-related pollutants in sufficiently large quantities for performing short-term in vivo animal tests as well as in vitro bioassays.

function of various animal models resulting from chronic inhalation exposures to combinations of flyash, criteria pollutants (e.g., O₃, SO₂, NO₂) and non-criteria energy-related agents (e.g., aldehydes, sulfates, nitrates).

- Determine reproductive capacity of animals exposed to mutagenic pollutants during gestation.
- Continue development of sensitive reliable, and accurate quantitative techniques for the identification of hazardous wastes; evaluate the correlation of short-term tests with chronic health impacts; improve short-term test procedures and dosimetric techniques for evaluation of body burdens; improve models for animal data interpretation and extrapolation.
- Determine the spectrum of responses (e.g., oncogenicity, renal toxicity, neurological potentiation, nutrition interference) from simultaneous exposure to cadmium and other substances.
- Perform epidemiological and industrial hygiene studies to assess the occupational health and safety hazards associated with the disposal of hazardous waste from energy-related industries.
- Develop a program to improve estimates of risks/health impacts to occupational groups in advanced fossil fuel industries; emphasis is to be on skin and pulmonary cancer, and reproductive and neurobehavioral dysfunction.
- Perform an evaluation of federally sponsored coal gasification, coal liquefaction, and shale oil products and residuals utilizing both in vivo and in vitro bioassay protocols.

1980 Explanation of Changes From Budget Estimate

The net decrease of \$230,600 results from several actions. An increase of \$4,700 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation, a congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$100. An overall reprogramming throughout the agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$2,200 to this activity.

A reprogramming of \$200,000 was made within the energy media to transport, fate and effects of energy related pollutants in order to more appropriately reflect the aquatic transport activities. A transfer of \$33,000 was made to the Water Quality media to transport and fate for a contract to plan a research program to integrate the physical, chemical transport models with the ecological fate models.

1981 Plan

The Agency requests a total of \$18,390,900 for this program, of which \$145,600 is for the Salaries and Expenses appropriation and \$18,245,300 for the Research and Development appropriation. The net increase of \$234,500 will be used in a newly initiated human health (epidemiological) study which is the second activity described below. Planned activities are to:

- Continue support during the second year of a 5-year epidemiological study of the health status of populations in several locales where the air quality regulations for ozone, SO₂, NO_x, total suspended particulates and nonmethane hydrocarbons have been exceeded individually and/or in combination.
- In addition to the above, initiate a 5-year epidemiological study at a new locale anticipated to be the site of a new energy facility in order to establish the

to several combinations of criteria pollutants (SO₂, TSP, NO₂) and non-criteria pollutants (sulfates, nitrates).

- Initiate the assessment of risks to human health arising from fugitive emissions from operation of a coal gasification facility as compared to a conventional coal combustion facility.
- Support the second year of a series of animal model chronic exposure inhalation toxicology studies including various combinations of criteria and non-criteria pollutants, ultimately simulating the exposure regimen found in several epidemiological studies.
- Continue the assessment of risks to human health arising from inhalation of organic coated fly ash from fluidized bed combustion, as compared to risks from fly ash emitted from conventional coal combustion.
- Assess the risks of reproductive defects in worker and general populations that may result from environmental exposures to airborne and water-borne agents from the complete conventional coal production and use cycle.
- Improve methods for evaluation of body burdens of energy-related hazardous materials and techniques for evaluation of doses and dose rates to the critical organs/targets.
- Develop models for energy-related agents in various human biological systems (molecules, cells, tissues, fluids, etc.). These models will include the mechanisms of metabolism and incorporation, and the damage and repair processes.
- Develop dose-response models for acute and chronic exposures to mixtures of energy-related agents for biological endpoints of concern (emphasis will be on teratology, reproductive dysfunction, and neurobehavioral dysfunction). Emphasis will be on developing models for population groups at high risk (pre-stressed).
- Evaluate correlations of projected biological effects using available short-term in vitro bioassay tests with results from in vivo chronic exposure tests for mixtures of energy-related agents, including synfuel products and wastes. Mutation, cancer, birth defects, sterility, and dysfunctions of lung, liver, kidney, neuro-behavioral, gastrointestinal and immune systems.
- Increase sensitivity, reliability, accuracy and range of available short-term tests for evaluation of hazardous wastes (mixtures) from energy-related facilities.
- Provide support for repository of energy-related agents which will be made available for biological experimentation regarding bioassay test systems.
- Support the second year of a toxicological study requested by Office of Pesticides and Toxic Substances of the responses from simultaneous exposure to cadmium and other substances.
- Develop alternative methods for recovering trace quantities of energy-related pollutants from drinking water supplies. These trace quantities will be concentrated in forms and quantities sufficient for whole animal toxicology.
- Initiate an analytic epidemiologic study of populations exposed to drinking waters contaminated by fossil fuel energy systems operation-leachates.
- Continue an assessment of the occupational safety and health implications of disposal of hazardous waste from energy-related industries.

Management and Support

MANAGEMENT AND SUPPORT

<u>Original Estimate 1981</u>	<u>Revised Estimate 1981</u>	<u>President's Reduction</u>
(dollars in thousands)		

PROGRAM HIGHLIGHTS

Salaries and Expenses.....	\$219,404	\$214,262	-\$5,142
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	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
Salaries and Expenses...	183,450	187,423	196,490	219,404	+22,914
Permanent Positions.....	2,429	2,541	2,575	2,559	-16
Full-time Equivalency...	2,980	3,327	3,332	3,303	-29
Outlays.....	147,687	178,210	145,639	186,940	+41,301
Authorized Levels.....	24,060	*	*	*	

*Funds were authorized under the Environmental Research, Development, and Demonstration Authorization Act of 1979; this authorization is pending for 1980. Remaining funds are authorized by virtue of the Appropriation Act.

OVERVIEW AND STRATEGY

This media encompasses overall executive direction, management and support for EPA programs at the headquarters and ten regional offices. It covers the program management activities carried out by the following program offices: Office of Water and Waste Management; Office of Air, Noise, and Radiation; Office of Pesticides and Toxic Substances; Office of Enforcement; and Office of Research and Development. These management functions include development of program policies and strategies, planning and monitoring, and review of program performance.

The agency and regional management portion of this media includes those activities which are not directly associated with a given program. Agency and regional management covers the salaries and related expenses of the Administrator and the Regional Administrators, their immediate staffs and the staff offices which report directly to them. It includes those organizations within the Agency which provide central management and administrative services. These central management activities include program planning and evaluation, economic analysis, budgeting and financial management, personnel, contracts and grants management, and other activities required for the effective management of Agency programs. The full cost of these program direction and managerial activities is charged to the Salaries and Expenses appropriation.

The extent of the management and support activities is determined by the programs they serve. As a result, the increases shown under this media are confined to high priority needs or to mandatory increases.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1980 Management and Support Program.....	\$196,490
Management.....	+6,171

The increase is primarily for contracts to assess the economic impact of EPA regulations on major industries, the benefits of major EPA regulations, the energy impact of environmental regulations and the environmental impact of energy legislation.

This increase will primarily cover increased building services costs, additional space costs, a major ADP procurement conducted in accordance with OMB Circular A-109, and regional support costs.

1981 Management and Support Program.....

219,404

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of \$219,403,900 is requested in 1981 under the Salaries and Expenses appropriation. This represents an increase of \$22,913,500 over the 1980 management and support media. This change reflects increases for the Office of Planning and Evaluation, for agencywide support services, and for increased regional management activities.

2. Changes from Original 1980 Budget Estimate

Changes from the budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$187,423
Congressional reductions:	
Travel.....	-335
Salaries and expenses.....	-408
ADP costs.....	-738
Proposed supplemental for October 1979 pay raise.....	+3,587
Reprogramming to support authorized workyears.....	+5,078
Miscellaneous reprogramming actions.....	<u>+1,883</u>
Current 1980 estimate.....	196,490

Congressional changes of \$1,482,300 were made through reductions to Agency travel costs (\$2 million), salaries and expenses (\$2 million), and ADP costs (\$1 million). The proposed supplemental to fund a portion of the October 1979 pay raise will increase this media by \$3,586,400.

An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$5,077,900 to management activities.

pesticides (\$105,000); from toxic substances (\$90,000); from radiation (\$100); to noise (\$34,600); and to interdisciplinary (\$261,200).

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980	Estimate 1981
Prior year obligations.....	\$183,450	\$197,315
Effect of October 1979 pay raise.....	+3,587	...
Reprogramming to cover authorized workyears.....	+5,078	...
Miscellaneous reprogramming.....	+1,883	...
Program increase.....	+12,898	+22,914
Change in amount of carryover funds available.....	-9,581	-825
Total estimated obligations.....	197,315	219,404
(From new obligation authority).....	(196,490)	(219,404)
(From prior year funds).....	(825)	(...)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The effect of the October 1979 pay raise will increase obligations by \$3,587,000. The increase in 1980 budget authority over the 1979 level will increase obligations by \$12.9 million. In 1981, the increase in budget authority will result in an increase of \$22.9 million to obligations.

Reprogramming actions will increase obligations in 1980 by \$6.9 million. The amount of carryover funds to be obligated in 1980 is \$825,000, a decrease of \$9,581,000 from the 1979 level. In 1981, no obligations are expected to occur from carryover funds, a decrease of \$825,000.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
(dollars in thousands)					
Salaries and Expenses:					
Program Management....	\$12,032	\$12,766	\$14,448	\$14,059	-\$389
Agency Management.....	66,923	65,527	71,460	75,821	+4,361
Regional Management...	19,312	19,690	21,442	23,641	+2,199
Total.....	98,267	97,983	107,350	113,521	+6,171
Permanent Positions:					
Program Management....	267	292	300	280	-20
Agency Management.....	1,516	1,572	1,611	1,608	-3
Regional Management...	646	677	664	671	+7
Total.....	2,429	2,541	2,575	2,559	-16
Full-Time Equivalency:					
Program Management....	308	417	424	386	-38
Agency Management.....	1,903	2,103	2,086	2,092	+6
Regional Management...	769	807	822	825	+3
Total.....	2,980	3,327	3,332	3,303	-29

Purpose

This activity provides for centralized program direction and management of the following EPA offices: Research and Development; Water and Waste Management; Air, Noise and Radiation; Pesticides and Toxic Substances; and Enforcement. It also includes direct program support costs incurred at the field offices managed by the Office of Research and Development, the Office of Air, Noise and Radiation, or the Office of Pesticides and Toxic Substances.

Agency and regional management provides executive direction, management, and support for all EPA programs at the headquarters and ten regional offices. It includes those activities which are not directly associated with a given program activity. Agency and regional management encompasses the salaries and related expenses of the Administrator and the Regional Administrators, their immediate staffs, the staff offices which report directly to them, the Office of the Inspector General, and the Office of the General/Regional Counsel. In addition, it includes those organizations within the Agency which provide central management, analytic, and administrative services. These central management activities include program planning and evaluation, economic analysis, budgeting and financial management, personnel, contracts and grants management, and other activities required for the effective management of Agency programs. The full cost of these program direction and managerial activities is charged to the Salaries and Expenses appropriation.

MANAGEMENT AND SUPPORT
MANAGEMENT

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	(dollars in thousands)		
Salaries and Expenses:			
Program Management.....	\$14,059	\$13,983	-\$76
Agency Management.....	75,821	75,457	-364
Regional Management.....	23,641	23,489	-152
Total.....	113,521	112,929	-592



Budget Request

The Agency requests a total of \$14,059,000 for 1981, a decrease of \$388,500 from 1980.

Program Description

This activity provides for the program direction of the following offices: Office of Water and Waste Management, Office of Air, Noise, and Radiation, Office of Pesticides and Toxic Substances, Office of Enforcement, and Office of Research and Development. Specifically, this activity covers the salaries and related expenses for the Assistant Administrators of the aforementioned offices and their immediate staffs. The Office of Research and Development also provides funding for the Minority Institution Research Support Program. This program promotes significant research at minority universities and colleges by awarding research grants to these institutions.

	1980		1981		Change	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
	(dollars in thousands)					
Office of Air, Noise and Radiation.....	51	\$1,995	49	\$2,036	-2	+\$41
Office of Enforcement.....	47	1,999	40	1,675	-7	-324
Office of Research and Development.....	92	4,628	87	4,666	-5	+38
Office of Pesticides and Toxic Substances.....	56	2,915	53	2,669	-3	-246
Office of Water and Waste Management.....	54	2,911	51	3,013	-3	+102
Total.....	300	14,448	280	14,059	-20	-389

The 20 position reduction in 1981 for this activity reflects a shift of staff from central management functions to program activities.

1980 Explanation of Change from Budget Estimate

The net increase of \$1,681,100 results from several actions. An increase of \$478,400 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. A congressional reduction of \$2 million to Agency travel costs resulted in a decrease of \$88,600. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$208,200 to this activity.

A transfer of \$51,800 was made from agency management (Office of Resources Management) to the Office of Research and Development program management. A transfer of \$25,000 was made within the Office of Research and Development from program management to program support for lab maintenance costs due, in part, to increasing costs of energy.

A reprogramming of \$37,000 was made from the Office of Air, Noise, and Radiation program management to the air media to support the fuel economy program. A reprogramming of \$734,000 was made to the Office of Water and Waste Management program management from water quality (\$379,400), from drinking water (\$141,600), and from solid waste (\$213,000), to support projections of current year costs related to authorized workyears.

within the Office of Enforcement to program management, \$225,000, for litigation management support and establishment of a special investigations unit, from air (\$125,000), water quality (\$50,000), and pesticides (\$50,000). A reprogramming was made within the Office of Enforcement to program management, \$50,000, from solid waste to support litigation management associated with imminent hazards under RCRA.

AGENCY MANAGEMENT

Budget Request

The Agency requests a total of \$75,820,600 for 1981, an increase of \$4,361,000 from 1980.

Program Description

The Agency management subactivity provides for agencywide policy direction and management activities and includes the salaries and associated costs for the immediate office of the Administrator, the staff offices which report directly to the Administrator, the Office of the Inspector General, the Office of General/Regional Counsel, and the Office of Planning and Management.

Office of the Administrator/Executive Offices

The Office of the Administrator includes the Administrator and Deputy Administrator and their immediate staffs. The Administrator/Deputy Administrator are responsible for providing policy direction to the Agency and for insuring the implementation of these policies. The staff offices perform a variety of functions which are closely related to the development and implementation of Agency policies and programs. These staff groups are responsible for legislative services and congressional relations, public awareness, international activities, civil rights, liaison with other Federal agencies, coordination of regional operations and relations with State and local governments. The Office of Administrative Law Judges and the Agency's Science Advisory Board are also attached to the Office of the Administrator. The Science Advisory Board consists of a number of expert consultants, supported by a small staff. It provides expert advice to the Administrator on scientific and technical issues.

The Office of the General Counsel provides legal advice and assistance to the Administrator and other Agency components and the Office of the Regional Counsel provides similar services within each of the ten regional offices. The Office of the Inspector General provides independent appraisals of the economy and efficiency of the Agency's programs and financial operations. It also conducts, supervises, and coordinates investigations of alleged violations of EPA regulations and Federal criminal statutes. In addition, it reviews existing and proposed legislation and regulations relating to EPA's programs and operations in order to make recommendations concerning the promotion of economy and efficiency and the prevention and detection of fraud and abuse in EPA's programs.

The 1981 request provides for a net decrease of seven positions and \$70,000 for the Office of the Administrator and the executive offices. This decrease, which is summarized below, reflects a 1 position increase in the Office of Environmental Review to support the Federal Energy Administration Act 5-day reviews and to work with the Endangered Species Committee; and a 5 position increase in the Office of Administrative Law Judges to enable that office to handle a projected increase in hearing caseload in the areas of the Clean Air Act (Section 120), water permits, and Civil Penalty Toxic Substance Control Act (TSCA) cases. The additional resources for the Office of the Inspector General will be used to increase their capability to investigate EPA's construction grants program, and to respond to congressional inquiries made under the

elsewhere in the Agency.

	1980		1981		Change	
	Pos.	Amount	Pos.	Amount	Pos.	Amount
Office of the Administrator.....	46	\$2,045	46	\$2,052	...	+57
Office of Legislation.....	38	1,356	35	1,135	-3	-221
Office of Public Awareness.....	53	3,432	44	3,099	-9	-333
Office of International Activities	24	1,198	22	1,177	-2	-21
Office of Civil Rights.....	31	1,180	29	1,227	-2	+47
Office of Environmental Review....	32	1,199	33	1,220	+1	+21
Office of Regional and Inter- governmental Operations.....	8	447	6	454	-2	+7
Administrative Law Judges.....	16	656	21	670	+5	+14
Science Advisory Board.....	15	806	14	818	-1	+12
Subtotal Administrator/ Staff Offices.....	263	\$12,319	250	\$11,852	-13	-469
Office of the Inspector General...	120	9,672	126	9,956	+6	+284
Office of General/Regional Counsel.....	199	6,597	199	6,710	...	+113
Total Executive Offices.....	582	\$28,588	575	\$28,518	-7	-70
Full-Time Equivalency.....	711		697		-14	

The significant contracts for the staff offices and Office of the Inspector General in 1980 and 1981 are listed below:

Office	1980 (in thousands)	1981 (in thousands)	Change (of dollars)	Purpose
Office of the Administrator.....	99	35	-64	Contract studies on policy and scientific issues of direct interest to the Administrator.
Office of Public Awareness.....	1,108	820	-288	Production and distribution of information/educational material, including publications, films, T.V. and radio announcements; Visitor's Center maintenance; and press office support.

<u>Office</u>	<u>1980</u> (in thousands)	<u>1981</u> (in thousands)	<u>Change</u> of dollars)	<u>Purpose</u>
Office of Environmental Review..	44	44	...	Specialized assistance in the energy area for EIS preparation and review.
Office of Regional and Inter-governmental Operations.....	54	54	...	Contracts for seminars on environmental programs with public interest groups and national organizations representing elected officials of State and local governments.
Office of the Inspector General	4,609	4,772	+163	Contracts with CPA firms and State agencies for the conduct of construction grant audits.

Office of Planning and Management

The Office of Planning and Management (OPM) is responsible for the agencywide management and analysis functions and provides central administrative services for EPA headquarters and the Agency's two largest field installations, located at Research Triangle Park, N.C., and at Cincinnati, Ohio. There are four organizational components within the Office of Planning and Management (OPM). The immediate office of the Assistant Administrator provides overall direction of all OPM activities and carries out the Agency's occupational health and safety program. The Office of Management and Agency Services develops agencywide policies and procedures and provides services in the areas of personnel administration, contracts management, data systems, facilities management and services, security, and management planning and analysis. The Office of Resources Management (ORM) is responsible for developing and coordinating the Agency's zero-based budget formulation and control. In addition, ORM is responsible for the Agency's financial management, program reviews and analyses, and grants administration. The Office of Planning and Evaluation (OPE) provides agencywide economic and policy analysis, program evaluation and manages the review process for standards and regulations.

	<u>1980</u>		<u>1981</u>		<u>Change</u>	
	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>	<u>Pos.</u>	<u>Amount</u>
Office of the Assistant Administrator.....	27	\$1,591	27	\$1,631	...	+\$40
Office of Management and Agency Services.....	671	23,170	675	23,485	+4	+315
Office of Resources Management...	244	9,217	238	9,453	-6	+236
Office of Planning and Evaluation	87	8,894	93	12,734	+6	+3,840
Total.....	1,029	42,872	1,033	47,303	+4	+4,431
Full-time Equivalency.....	1,375		1,395		+20	

of Management and Agency Services reflects reductions in the headquarters personnel, contracts and facilities and support service functions and an increase in funding and personnel to strengthen the management of the Agency's information systems. EPA has had difficulty in formulating regulatory policies among its complex programs because of the lack of effective and integrated information management. Enhanced central management of information resources is essential in order to track the type, source, volume, movement and disposal of hazardous wastes and to integrate the Resource Conservation Recovery Act (RCRA) data with other Agency information systems. The Office of Planning and Evaluation will use additional funds and six positions to analyze the benefits of EPA's regulations; in promoting alternative fuels; to help the regional offices accelerate their processes for awarding permits to energy facilities; and to prepare the "Cost of Clean Air and Water Report" for the Congress.

The major contracts for the Office of Planning and Management for 1980 and 1981 are summarized below:

<u>Office</u>	<u>1980</u> (in thousands	<u>1981</u> of dollars)	<u>Change</u> of dollars)	<u>Purpose</u>
Office of Management and Agency Services.....	770	500	-270	Executive development and training contracts.
Office of Resources Management	1,360	1,207	-153	Contract assistance for the determination of the resource impact of new regulations, such as those covered by the Resource Conservation Recovery Act and Superfund, and of construction grants; development and modification of workload analysis; budget formulation; grants information system modifications; and ORM systems integration.
Office of Planning and Evaluation.....	4,588	8,143	+3,555	Contracts to assess the economic impact of EPA regulations on major industries, the benefits of major EPA regulations, the energy impact of environmental regulations, the environmental impact of energy legislation, and to perform statistical studies.

The net increase of \$4,078,800 results from several decisions. An increase of \$2,288,200 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. Congressional reductions of \$2 million each to Agency travel costs and supplies and expenses and \$1 million to ADP costs resulted in a decrease of \$127,400, \$2,200 and \$3,700, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$4,078,800 to this activity.

A reprogramming of \$2,300 was made to the Office of General/Regional Counsel to support projected costs based on prior year experience. A transfer of \$51,800 was made to the Office of Research and Development program management from the Office of Resources Management. A transfer of \$48,800 was made from water quality effluent standards and guidelines to the Office of International Activities to support an employee transfer.

A transfer of the Environmental Workforce Coordination function from the Office of Environmental Review, \$347,000, was made to the Office of Research and Development interdisciplinary media (\$262,700) and to the Office of Enforcement program management (\$84,300). A transfer of \$81,000 was made to the Office of Management and Agency Services from the uncontrolled hazardous waste sites activity to provide for contracts management requirements in support of the hazardous wastes activity.

A transfer of \$35,000 was made from Office of Management and Agency Services to noise strategies implementation to support an employee transfer.

REGIONAL MANAGEMENT

Budget Request

The Agency requests a total of \$23,641,000 for 1981, an increase of \$2,198,600 from 1980.

Program Description

This subactivity provides for the salaries and related expenses of the Regional Administrators, their immediate staffs and those staff offices reporting directly to them, such as intergovernmental relations, public affairs, and civil rights. In addition, this subactivity includes the region's central management functions including planning and analysis, budgeting, financial management, personnel management and administrative services.

In 1981, the Agency will use 12 additional FTEs to expand its Regional Analytic Centers in two regions and to initiate Regional Analytic Centers in two other regions. These Centers will continue to employ individuals with a high level of management and analytic skills, who will allow the regions to more effectively participate in the agencywide regulatory reform process.

The Agency requests eight more FTEs for its regional personnel organizations in order to reduce processing time and devote more time to labor management relations, thereby improving the overall management effectiveness of the regional offices.

These increases are offset by decreases in FTEs in the regional management, financial management, and administrative services activities.

The net increase of \$1,752,300 results from several actions. An increase of \$819,800 results from the cost of the October 1979 pay raise and is included in a proposed supplemental appropriation. Congressional reductions of \$2 million, each to Agency travel costs and supplies and expenses and \$1 million to ADP costs resulted in a decrease of \$83,700, \$78,800 and \$4,000, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in an increase of \$1,082,100 to this activity.

A reprogramming of \$100,000 was made to regional support to support costs of printing, drafting, mail, and library services previously funded in the management account. A reprogramming of \$116,900 was made from air stationary source enforcement (\$12,600), radiation program implementation (\$100), drinking water enforcement (\$13,500), noise program implementation (\$400), toxic substances enforcement (\$3,500), toxic substances management (\$11,500), water quality enforcement (\$73,800), and interdisciplinary EIS reviews (\$1,500) to support increased regional personnel, financial, and administrative management.

SUPPORT

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
Salaries and Expenses:					
Program Support.....	\$5,139	\$5,762	\$6,534	\$6,338	-\$196
Agency Support.....	71,656	74,761	74,137	87,871	+13,734
Regional Support.....	8,388	8,917	8,469	11,674	+3,205
 Total.....	 85,183	 89,440	 89,140	 105,883	 +16,743

Purpose

Support services consist of a wide assortment of other-than-personnel costs, such as office and laboratory services, building operations and maintenance, communications, facilities lease costs, and central ADP services, which are managed centrally and provide necessary services to the entire Agency. In most instances, these services cannot be directly attributed to a specific organization or program.

PROGRAM SUPPORT

Budget Request

The Agency requests a total of \$6,338,100 for 1981, a decrease of \$196,100 from 1980

Program Description

These costs include support services which are directly incurred to operate the laboratories of the Office of Research and Development, the Office of Pesticides and Toxic Substances, and the Office of Air, Noise, and Radiation. These direct costs consist mainly of laboratory and office services, utilities, building maintenance, and other housekeeping items. The decreasing need for program support funds for the Office of Research and Development in 1981 is due to one-time costs for laboratory renovation that will be incurred during 1980. The program support increases for the Office of Pesticides and Toxic Substances and the Office of Air, Noise, and Radiation are due to projected cost increases for utilities, building operations, and laboratory and office services.

1980 Explanation of Change from Budget Estimate

The net increase of \$772,300 results from several actions. Congressional reductions of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$300 and \$12,400, respectively.

A reprogramming of \$785,000 was made within the Office of Research and Development from other media to support increased lab maintenance costs due in part to increasing costs of energy and the contracts required to replace the services of maintenance personnel.

MANAGEMENT AND SUPPORT

SUPPORT

	Original Estimate 1981	Revised Estimate 1981	President's Reduction
	<u>(dollars in thousands)</u>		
Salaries and Expenses:			
Program Support.....	\$6,338	\$6,338	
Agency Support.....	87,871	83,821	-4,550
Regional Support.....	11,674	11,674	...
Total.....	105,883	101,333	-4,550

Budget Request

The Agency requests a total of \$87,871,000, an increase of \$13,733,500 from 1980.

Program Description

The Agency support subactivity provides general support services to all program operations at EPA headquarters; Research Triangle Park (RTP), North Carolina; and Cincinnati, Ohio. It also includes a number of support activities which serve the needs of all agency programs and which are managed at the headquarters level. The agency support subactivity can be summarized in terms of the following major areas of cost:

Office Services--Common services at the three locations referred to above including laboratory and office supplies, maintenance of office equipment, printing and duplicating, audio-visual equipment and contracts, and motor pool operations.

Building Services--Utilities, local telephone service, building alterations and space relocations, building maintenance contracts, guard and janitorial service, employee health service contracts, and the like for the office and laboratory facilities at the three locations.

Library Services--Books, journals, equipment, and service contracts for the branch libraries at headquarters, Research Triangle Park, and Cincinnati, as well as specialized ADP services, literature searches, technical reports processing and library systems development for the agencywide library system.

Nationwide Costs--All Agency costs for the following support activities: facilities rental and associated costs; payments to the U.S. Postal Service; Federal telecommunications service (FTS), security investigations; reimbursements to the Federal Employees Compensation Fund; payments to the Public Health Service for personnel administration services for commissioned officers assigned to EPA; and contracts which support the Agency's occupational health and safety program.

ADP Technical Support--Contracts for systems development and evaluation and other technical services required to support the Agency's central ADP activities.

ADP Timesharing Services--Central ADP services provided to all Agency programs through timesharing contracts with commercial suppliers or by in-house computer facilities.

The following tabulation is a breakdown of overall costs of providing support services:

	(Dollars in thousands)		
	<u>1980</u>	<u>1981</u>	<u>Change</u>
Office Services.....	\$3,692	\$4,136	+\$444
Building Services.....	12,373	13,295	+922
Library Services.....	1,101	1,246	+145
Nationwide Costs.....	34,916	36,075	+1,159
ADP Technical Support.....	3,584	13,929	+10,345
ADP Timesharing.....	18,471	19,190	+719
Total.....	74,137	87,871	+13,734

increases in the cost of printing and duplicating, expendable office supplies, equipment maintenance, motor vehicle operations, and audio-visual services.

The Building Services increase of \$922,000, is related primarily to increased costs for utilities, telephones, preventive maintenance contracts or other minor services contracts. Most of the cost items under Building Services are for mandatory costs such as telephone and utilities or for contracts to provide essential services such as building and equipment maintenance.

The \$145,000 increase requested for Library Services will cover increases in the cost of scientific and technical publications and support contracts as well as the acquisition of additional materials required by increased program office activity.

The \$1,159,000 increase requested for Nationwide Costs is related primarily to the 1980 annualized costs of additional space which is being leased to accommodate additional Agency personnel authorized in 1979 and 1980, or to replace existing leased space which is inadequate for program purposes. Other minor increases relate to increased mail costs and Federal Telecommunications Services.

The ADP Technical Support increase of \$10,345,000 is to provide for a major ADP procurement, conducted in accordance with OMB circular A-109. A major aspect of the A-109 is the Government funding of competing contractors to develop alternative system concepts for meeting EPA's ADP demands in the 1980's and beyond. Funding of this request will enable four contractors to participate in the competitive process of concept development through systems engineering.

The ADP Timeshare funds provide for operating two large scale central data centers. These centers, accessible through a nationwide telecommunications network, provide computer services for most of EPA. The requested increase of \$719,000 is to offset increasing contractor labor costs, with the level of service remaining approximately the same as FY 1980.

1980 Explanation of Change from Budget Estimate

The net decrease of \$624,100 results from several actions. Congressional reductions of \$2 million to Agency travel costs and \$1 million to ADP costs resulted in a decrease of \$5,600 and \$706,500, respectively. A reprogramming of \$88,000 was made from the uncontrolled hazardous waste sites activity to support the increased nationwide support costs associated with this activity.

REGIONAL SUPPORT

Budget Request

The Agency requests a total of \$11,674,100, an increase of \$3,205,000 from 1980.

Program Description

This activity covers the mandatory support for regional offices including telephone service, guard service, supplies, printing, copying services, rental of office equipment, GSA work orders, and ADP equipment. This activity also provides for other necessary services such as management surveys of equipment utilization library services, and laboratory analyses. Cost increases over the past three years without accompanying budget increases have severely hampered the ability of the regions to provide an adequate level of support services. The requested increase of \$3,205,000 for all 10 regions will provide the funds needed to offset these cost increases and to meet the increased responsibilities of the regions under new legislation such as the Resource Conservation and Recovery Act and the Toxics Substances Control Act.

1980 Explanation of Change from Budget Estimate

The net decrease of \$448,300 results from several actions. Congressional reductions of \$2 million each to Agency travel costs and supplies and expenses and \$1 million to ADP costs resulted in a decrease of \$29,800, \$327,900, and \$11,400, respectively. An overall reprogramming throughout the Agency to provide sufficient salary funds to cover authorized workyears resulted in a decrease of \$291,200 to this activity.

A reprogramming of \$112,000 was made from the uncontrolled hazardous waste sites activity to support the increased regional support costs associated with this activity. A reprogramming of \$100,000 was made from regional management to support costs of printing, drafting, mail, and library services previously funded in the management account.

Buildings and Facilities

There is no change from the budget estimate.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980 (in thousands of dollars)	Estimate 1981 (in thousands of dollars)
Prior year obligations.....	\$1,880	\$1,794
Change in amount of carryover funds available.....	-644	-369
Program increase.....	+253	+1,575
Change in rate of obligation.....	+305	...
Total estimated obligations.....	1,794	3,000
(From new obligation authority).....	(1,425)	(3,000)
(From prior year funds).....	(369)	(...)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The amount of carryover funds to be obligated in 1980 is \$369,000, a decrease of \$644,000 from the 1979 level. In 1981, no carryover funds are expected to be available, thereby reducing obligations by \$369,000.

The increase of 1980 budget authority over the 1979 level will increase obligations by \$253,000; the change in 1981 will increase obligations by \$1,575,000. A change in the rate of obligation in 1980 reflects an increase of \$305,000.

BUILDINGS AND FACILITIES

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(dollars in thousands)				
<u>Appropriation</u>					
Repairs and Improvements	\$1,288	\$1,375	\$1,375	\$3,665	+\$2,290
New Facilities.....	592	50	50	450	+400
Total.....	1,880	1,425	1,425	4,115	2,690

Budget Request

The Agency requests a total of \$4,115,000 for 1981, an increase of \$2,690,000 from 1980.

Program Description

The 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. Payments made for modifications and repairs to leased facilities are covered under the agency support subactivity which is described under the management and support media.

REPAIRS AND IMPROVEMENTS

1979 Accomplishments

The bulk of the repair and improvement projects, which have been completed or are underway, were undertaken to correct health and safety conditions, effect pollution control, or maintain property.

1980 Program

Work on 28 projects at 15 separate locations will be initiated in 1980. These projects, which have a total estimated cost of \$913,000, are needed to correct health and safety deficiencies, pollution abatement, or to prevent serious deterioration to structures. They include hazardous materials storage areas and disposal systems, modifications to ventilating systems, and a specialized laboratory for handling carcinogens. The balance of the 1980 program of \$462,000 will be used to complete construction of projects started in previous years.

1981 Plan

Work will be initiated on a total of 37 separate projects at 18 locations. The projects planned for 1981 include:

	Alarms	3,000
	Pollution Abatement	210,000
	Safety Modification, Support Buildings	10,000
Edison, N.J.	Water Pollution Abatement, Design	10,000
	Fumehood Modifications	20,000
Beltsville, MD.	Fumehood Modifications	20,000
	Ventilation System Modifications	5,000
	Barrier Change Room	5,000
	Ventilation System Modifications	30,000
Newtown, Ohio	Isolation Room Design	50,000
	Fumehood Modifications	20,000
Cincinnati, Ohio	Fumehood Upgrading	200,000
Grosse Ile, Mich.	Fumehood Modifications	20,000
	Fencing Lower Base Property	50,000
Ada, OK.	HVAC Modifications	500,000
	Fumehood Modifications	20,000
Corvallis, Oregon	Hazardous Materials Storage	30,000
	Fire Suppression System	25,000
	Fire Suppression System Design	20,000
	Fumehood Upgrading	50,000
Wenatchee, Washington	Fumehood Upgrading	15,000
	Fire Suppression System	20,000
Denver, Colorado	Modify HVAC (NEIC)	175,000
	Fire Suppression	35,000
	Egress Modifications	40,000
Chicago, Ill.	Fumehood Upgrading	20,000
	Containment Lab	100,000
Gulf Breeze, Fla.	Effluent Treatment System Design	15,000
	Fire Suppression	171,600
Vint Hill, Va.	Pollution Abatement	25,000
Bay St. Louis, Miss.	Fumehood Vent System Modifications	125,000
Manchester, Washington	Install Waste Holding Tank	15,000
Athens, Ga.	HVAC Modifications	800,000
Duluth, Minn.	Pollution Abatement	600,000
	Fire Suppression System	<u>200,000</u>
	Total, Repairs and Improvements	3,664,600

NEW FACILITIES

1979 Accomplishments

A contract was awarded in November 1977 for the construction of the Central Regional Laboratory for Region X. This facility, which is located in Manchester, Washington, was completed for occupancy in July 1979. Design work was initiated in the late summer of 1978, for a Marine Environmental Assessment Laboratory building located at the Environmental Research Laboratory in Gulf Breeze, Florida. This facility will house high-hazard studies related to industrial effluents and energy production and use. Phases 1 and 2 of this 3-phase program are aimed at replacing existing frame structures at the Gulf Breeze installation which are unsafe for high-hazard operations and which cannot be upgraded economically.

1980 Program

A contract for the construction of the Marine Environmental Assessment Facility at Gulf Breeze, Florida was awarded September 30, 1979. Construction was started in November 1979, with completion scheduled for September 1980. Estimated cost for design and construction for the facility is \$1,000,000. Design of the third phase of the Gulf Breeze replacement program - a building which will house shop and storage areas and electric switchgear equipment - will be initiated. Estimated cost of the design is \$50,000.

1981 Plan

Funds in the amount of \$450,000 are requested in 1981 for the construction of the shop and storage building - Phase 3 of the Gulf Breeze building replacement program. Funds for design of this structure were provided in 1980.

Scientific Activities Overseas

PROGRAM HIGHLIGHTS

	<u>Actual</u> <u>1979</u>	<u>Budget</u> <u>Estimate</u> <u>1980</u>	<u>Current</u> <u>Estimate</u> <u>1980</u>	<u>Estimate</u> <u>1981</u>	<u>Increase +</u> <u>Decrease -</u> <u>1981 vs. 1980</u>
		(dollars in thousands)			
Scientific Activities					
Overseas:					
Appropriation.....	\$2,719	\$4,000	...	\$1,000	+\$1,000
Outlays.....	2,260	3,600	1,800	3,000	+1,200
Authorized Levels....	Authorization is by virtue of the Appropriation Act.				

OVERVIEW AND STRATEGY

Scientific Activities Overseas (SAO) are funded from excess foreign currencies accruing to the United States under various programs. The SAO program includes cooperative research and related activities of mutual interest to EPA and the participating SAO countries. These activities serve as a link between EPA and foreign environmental agencies and institutions that have mutual interests in seeking solutions to environmental problems, and enable EPA to capitalize on unique research opportunities without contributing to a balance of payments deficit or to domestic inflation. The SAO program supports the Agency's international goals, and is designed to: (1) augment EPA's multimedia data base, (2) assist in the solution of environmental problems by merging the expertise of U.S. and foreign investigators, (3) extend new technology into a broader world community, (4) assist in meeting EPA international agreements, and (5) develop and/or demonstrate new technologies including sampling, modelling, and control strategies.

SAO projects have encompassed practically all environmental concerns--air, water, solid waste, radiation, toxics, and pesticides, and involve all phases of environmental research activities--identification of pollutants and the development of an effective data base, assessment of pollutants' effects 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 frequently are requested to provide technical comments on the proposals. Official approval is made with the concurrence of the responsible EPA program office, 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 SAO program have significantly enhanced mechanisms to deal with environmental problems.

specific to our global environment.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1980 Scientific Activities Program.....	...
Increase relates to program for India and Pakistan.....	+1,000
1981 Scientific Activities Program.....	1,000

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

An appropriation of \$1 million is requested for the Scientific Activities Overseas activity.

2. Changes from Original 1980 Budget Estimate

The decrease of \$4 million was made by the Congress.

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980 (in thousands of dollars)	Estimate 1981 (in thousands of dollars)
Prior year obligations.....	\$2,719	\$3,204
Change in amount of carryover funds available.....	+485	-3,004
Program increase.....	...	+1,000
Total estimated obligations.....	3,204	1,200
(From new obligation authority).....	(...)	(1,000)
(From prior year funds).....	(3,204)	(200)

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The increase in budget authority requested in 1981 is expected to increase obligations by \$1 million.

The amount of carryover funds to be obligated in 1980 is \$3,204,000, an increase of \$485,000 over the 1979 level. In 1981, only \$200,000 of carryover funds is expected to be available, thereby reducing obligations by \$3,004,000.

	<u>Actual 1979</u>	<u>Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
	(dollars in thousands)				
<u>Program Levels</u>					
SAO Projects.....	7	10	6	6	...
Technology Transfer Seminars.....	...	2	1	1	...
<u>Appropriation</u>					
Burma.....	...	...	...	...	...
Egypt.....	\$1,905	\$2,500	...	...	...
Pakistan.....	...	500	...	\$300	+\$300
India.....	809	1,000	...	700	+700
Tunisia.....	5	...	...	...	...
Reserve.....	...	...	...	...	...
Total.....	2,719	4,000	...	1,000	+1,000

Budget Request

The Agency requests a total of \$1,000,000 for 1981. There were no funds appropriated in 1980. Carryover funds totalling \$3,203,800 will be used and is distributed by country, as follows:

Burma.....	\$10,700
Egypt.....	60,800
Pakistan.....	113,400
India.....	2,444,600
Undistributed.....	574,300
	3,203,800

1979 Accomplishments

- SAO cooperative project reports were published through the EPA and in U.S. scientific journals. Research results shown in the reports are useful to the EPA, environmental decision makers, regulatory officials, and the public and private sectors.
- Initiated seven new projects--three were started in Egypt, four in India.
- Planned a U.S./Indian Binational Workshop on Environmental Pollution. This workshop, sponsored by the Indian Department of Science and Technology, represented continuing efforts in the development of cooperative programs. EPA team members and representatives from Indian governmental offices, research laboratories, universities, and industries identified projects dealing with air pollution, health and ecological effects, and water pollution.

1980 Program

The overall goals of the 1980 program relating directly to environmental problem areas of concern to the EPA include: studies to provide increased capability to evaluate the environmental impact of chemicals, increased activity in the development of waste management technology and in improving capabilities for reuse of limited water resources, the gathering of primary data on health consequences of toxic substances use, the collection of data on oil pollution to permit better clean-up practices, the development of new technology to further reduce the level of industries air pollution, and the demonstration of best available technology for pollution control.

An EPA-Indian workshop was held in India as a follow-up to the 1978 workshop held there. The workshop examined and disseminated the accomplishments of the on-going projects and identified future projects of mutual interest in monitoring, evaluation, prevention, and control of environmental pollutants.

1980 Explanation of Change from Budget Estimate

The reduction of \$4 million resulted from congressional action.

1981 Plan

Cooperative programs will be developed to capitalize on unique control data on health and environmental effects, to collect data needed under EPA's legislation on industrial chemical control, and to improve EPA's ability to measure the effects of human and environmental exposure to commercial chemicals. New programs addressing innovative multi-media treatment control technology, and limited development and demonstration of waste management practices applicable to specific U.S. conditions will be negotiated.

These new programs will focus on the safe application of waste waters, development of waste water management strategies, and research on new control technologies for water as well as for particular industries; studies on toxicity, including the effects of selected commercial chemicals on human health, testing procedures, and tracing the fate of heavy metals and toxic substances in water systems; and finally, the development of sampling techniques for the determination of organic emissions from various processing plants.

INDIA (\$700,000)

U.S. and Indian environmental resources identified during the EPA/India Workshop were brought together through cooperative planning mechanisms developed during the Workshop. SAO projects are being given added support under the aegis of the U.S./India Joint Commission on Science and Technology which meets annually to determine broad areas of cooperation and to stimulate cooperative activities.

Areas of mutual interest under continuing study include the establishment of human and environmental effects of exposure to toxic substances; development of sampling techniques for organic emissions from processing plants, development of waste water management strategy and research on new technologies for the treatment and control of waste water, and a comparison of the fate of toxic substances in fresh water and marine ecosystems.

- Treatment of industrial wastes by physico-chemical methods.
- Studies on utilization of sewage for irrigation and the related environmental and health aspects.
- Monitoring of water pollution by use of biological indicators, coastal and fresh water.
- Methods to improve prediction capabilities of estuarine and coastal waters.

PAKISTAN (\$300,000)

The SAO program in Pakistan is supported through the environmental division within the Ministry of Production, Environment and Urban Affairs. Organizations and universities identified by the Ministry as having resources to support SAO programs have prepared projects for SAO funding. The studies involve highly trained professional and technical staff and give promise of producing data that would be useful to the control and abatement of pollutants.

Ongoing studies include investigations of by-product recovery from industrial waste waters, an assessment of waste waters in small plants, and studies on low cost control technologies for industrial and trade wastes.

New projects will be initiated as follows:

- Studies on low cost control technologies for industrial wastes.
- Development of techniques for the assessment, management and control of marine pollution problems.



U.S Regulatory Council

PROGRAM HIGHLIGHTS

	<u>Actual</u> <u>1979</u>	<u>Budget</u> <u>Estimate</u> <u>1980</u>	<u>Current</u> <u>Estimate</u> <u>1980</u>	<u>Estimate</u> <u>1981</u>	<u>Increase +</u> <u>Decrease -</u> <u>1981 vs. 1980</u>
		(dollars in thousands)			
<u>U. S. Regulatory Council</u>					
Appropriation.....	...	\$3,238	\$3,082	\$3,338	+\$256
Permanent Positions..	...	10	11	11	...
Full-Time Equivalency	...	16	26	26	...
Outlays.....	...	2,600	2,400	2,800	+400

OVERVIEW AND STRATEGY

This appropriation covers the salaries and expenses of the U. S. Regulatory Council and its supporting staff. The Council is composed of the heads of those agencies within the Executive Branch which have regulatory responsibilities. Its purpose is to maintain an overview of Federal regulatory activities; to assist the President in managing them in a coordinated manner so as to limit their adverse impacts on the Nation's economy; and to publish the semiannual Calendar of Federal Regulations. The Regulatory Council is composed of 18 executive agencies and 18 independent agencies. The member agencies are:

Executive Agencies

Administrative Conference of
the United States
Department of Agriculture
Department of Commerce
Department of Energy
Department of Health, Education
and Welfare
Department of the Interior
Department of Justice
Department of Labor
Department of Transportation
Department of Treasury
Environmental Protection Agency
Equal Employment Opportunity
Commission
General Services Administration
National Credit Union Administration
Small Business Administration
United States International Trade
Commission
Veterans Administration
Department of Housing and Urban
Development

Independent Regulatory Agencies

Civil Aeronautics Board
Commodity Futures Trading Commission
Consumer Product Safety Commission
Federal Communications Commission
Federal Deposit Insurance Corporation
Federal Election Commission
Federal Energy Regulatory Commission
Federal Home Loan Bank Board
Federal Maritime Commission
Federal Mine Safety and Health
Federal Reserve System
Federal Trade Commission
Interstate Commerce Commission
National Labor Relations Board
Nuclear Regulatory Commission
Occupational Health and Safety
Postal Rate Commission
Securities and Exchange Commission

included within EPA's overall budget submission.

SUMMARY OF INCREASES AND DECREASES

(in thousands of dollars)

1980 Regulatory Council Program.....	\$3,082
This increase will provide for additional special projects.....	<u>+256</u>
1981 Regulatory Council Program.....	3,338

SUMMARY OF BUDGET ESTIMATES

1. Summary of Budget Request

The U.S. Regulatory Council requests an appropriation of \$3,338,000 to provide for staff salaries, related expenses, contracts, grants, and cooperative agreements.

2. Changes from Original 1980 Budget Estimates

Changes from the budget are as follows:

(in thousands of dollars)

Original 1980 estimate.....	\$3,238
Congressional reduction.....	-200
October 1979 pay raise, proposed supplemental.....	<u>+44</u>
Current 1980 estimate.....	3,082

ANALYSIS OF INCREASES AND DECREASES TO OBLIGATIONS

	Current Estimate 1980	Estimate 1981
	(in thousands of dollars)	

Prior year obligations.....	...	\$3,082
Program increases.....	+\$3,038	+256
Effect of October 1979 pay raise.....	<u>+44</u>	<u>...</u>
Total estimated obligations.....	3,082	3,338
(From new obligational authority).....	(3,082)	(3,338)
(From prior year funds).....	...	...

EXPLANATION OF INCREASES AND DECREASES TO OBLIGATIONS

The 1981 program increase for special projects results in an estimated obligation of \$256,000.

Budget Request

The U. S. Regulatory Council requests a total of \$3,338,000 for 1981, an increase of \$256,000 from 1980. The additional \$256,000 requested by the U. S. Regulatory Council would be used to conduct additional special projects in 1981.

Program Description

The U. S. Regulatory Council was established to provide the President with a complete picture of the regulation development efforts of the various agencies under his direct control, and to help him provide for better management of the Federal regulatory process. The Council, consisting of a small staff of professionals trained in law, economics and the sciences supported by research assistants and clerical personnel, will work in the following areas:

Calendar Development - This will involve refining and maintaining a consolidated calendar, published semiannually, of all major regulatory actions proposed by the member agencies. This calendar will help make it possible to identify the interrelationships among existing and proposed regulations. The Council also publishes supplementary information on special topics such as regulatory initiatives.

Liaison - A substantial amount of effort is spent maintaining liaison with member agencies, interest groups, and the public over the effects of various regulations and the ways in which the Administration is attempting to cope with regulatory problems and reform.

Special Projects - The staff will also undertake a number of special projects aimed at resolving specific regulatory problems. These include:

- Unique short term problems which involve the regulatory activities of member agencies;
- Sector studies which focus on the effect of specific regulations on certain industries, such as the coal, automobile and nonferrous metal industries; and
- Improved techniques for regulatory analysis including cost benefit studies and assessments of innovative regulatory techniques.

1979 Accomplishments

The U. S. Regulatory Council was not funded in FY 1979.

1980 Program

The U. S. Regulatory Council, composed of the heads of the Executive Branch regulatory agencies and certain independent regulatory agencies, will review the cumulative impact of regulations and publish the semiannual Calendar of Federal Regulations, which will identify and coordinate resolutions of inter-Agency regulatory issues.

1980 Explanation of Changes from Budget Estimates

The decrease of \$156,000 results from two actions. First, the Congress reduced the request by \$200,000. Second, a proposed supplemental to cover the October 1979 pay raise, provides an increase of \$44,000.

1981 Plan

The U. S. Regulatory Council will further refine and maintain a semiannual consolidated calendar of all major regulatory actions proposed by the member agencies. The Council will conduct additional special projects to resolve specific regulatory problems. These special projects include:

- (a) Development of an index for the Calendar of Federal Regulations;
- (b) Expansion of the cost-benefit studies now underway on distinct industries affected by regulations;
- (c) Development of an automobile regulatory calendar;
- (d) Initiation of a study of regulations and innovations in science and technology;
- (e) Development of a calendar of regulatory decisions; and
- (f) Expansion of the Innovative Techniques project.

Construction Grants

CONSTRUCTION GRANTS

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
	(in thousands of dollars)				
Appropriation.....	\$4,200,000	\$3,800,000	\$3,400,000	\$3,700,000	+\$300,000
Obligations (Gross)*...	4,256,558	3,600,000	4,800,000	4,500,000	-300,000
Appropriation.....	(4,144,294)	(3,600,000)	(4,643,100)	(4,500,000)	(-143,100)
Contract Authority...	(112,264)	(...)	(156,900)	(...)	(-156,900)
Outlays.....	3,756,079	3,600,000	3,900,000	3,950,000	+50,000
Appropriation.....	(689,781)	(1,260,000)	(1,400,000)	(1,750,000)	(+350,000)
Contract Authority...	(3,066,298)	(2,340,000)	(2,500,000)	(2,200,000)	(-300,000)
Liquidation of Contract Authority.....	1,400,000	1,500,000	1,500,000	1,700,000	+200,000
Authorization Levels.	5,950,000	5,950,000	5,950,000	5,950,000	

*Net obligations in 1979, 1980, and 1981 are \$300 million less each year.

Budget Request

An appropriation of \$3.7 billion is requested for 1981 to continue the municipal construction grants program established under Title II of the Federal Water Pollution Control Act, as amended (FWPCA). An appropriation of \$1.7 billion is also requested for 1981 for the liquidation of contract authority pursuant to authority contained in Section 203 of the FWPCA. Obligations for 1981 are expected to total \$4.5 billion, a decrease of \$300 million from 1980. Outlays will increase by \$50 million in 1981, to a total of \$3.95 billion.

Since last year's budget request there has been a significant increase in actual or projected grant award activity. In last year's request, EPA estimated obligations of \$3.4 billion and \$3.6 billion for 1979 and 1980, respectively. Actual gross obligations for 1979 were \$4.256 billion and the current estimate for 1980 is \$4.8 billion. There were two factors which contributed to these increases. First, Congress did not extend the allotment period during which funds can be obligated from two to three years as requested by EPA, causing several States to move projects into construction to avoid loss of funds to reallocation. Second, EPA has continued to delegate major management responsibilities to State agencies, thus increasing overall program resources with attendant enhancements in project development and processing times.

These significantly increased obligation levels will contribute to reduction of unobligated carryover balances at the end of 1980 by \$1.6 billion below what was estimated at the time of last year's budget submission. With a continued high level of obligations also expected for 1981, EPA projects that carryover balances will be further reduced by another \$500 million by the end of 1981.

Within the constraints of the current method of distributing funds to the States and an appropriation of \$3.7 billion, EPA estimates that in 1981 approximately 17 States and 2 territories will have more projects ready for grant award than available

and population prevents shifting funds from slow-moving into fast-moving States. Accordingly, EPA is studying alternative mechanisms for channeling funds to those States with more high priority projects than available funds, which will result in recommendations to Congress in the near future.

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. In addition, under the State management assistance grant program (Section 205(g) of the Act), up to two percent of the funds provided to each State may be used to fund State management of functions delegated through specifically negotiated agreements, depending on the extent of delegation. Amounts made available for obligation are allotted to each State on the basis of formulas set forth in the Clean Water Act (CWA), and subsequent amendments. Within these allotments, grants are awarded on a priority basis for individual projects. Generally, each project is eligible for 75 percent Federal assistance, although grants may provide up to 85 percent for projects using innovative or alternative technology in treatment facility design. The Clean Water Act of 1977 amended selected portions of the Act, including provisions for a 5-year extension of the funding authorization and a mandate to delegate major portions of the program to the States, but did not substantially alter the basic objectives or intent of the original 1972 Amendments (P.L. 92-500).

Under the current legislation, a 3-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 alternatives, an environmental assessment, an infiltration/inflow evaluation, and an 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 the successful completion of prior steps and the availability of funds. Under the new legislation, upon completion of an approved facility plan, communities of 25,000 or less are eligible for a combined design and construction grant in those cases where total estimated cost of treatment works does not exceed \$2 million (or \$3 million in stipulated "high cost" States). Payments against obligations are made to the grantee as all or portions of each of these steps are completed, usually in the form of progress payments on a monthly basis.

The State management assistance grant program authorizes, at the Administrator's discretion, two percent or \$400,000, whichever is greater, of each allotment to cover the cost of delegation of the construction grants program and (to the extent that funds suffice) the National Pollutant Discharge Elimination System (NPDES) permit, dredge and fill, and Section 208 management programs to the States. The goal of this program is to allow the States, rather than EPA, to assume responsibility for day-to-day management of construction grants activities. The timing and extent of delegation and financial support to each State depends on the State's ability to operate a program that meets the necessary competency requirements and policy direction mandated by the law and EPA objectives. A grant is given to a State when it can show that it is able to assume delegated responsibility for a substantial portion of construction grants program activities.

Long-Term Funding Program

The long range goal of the construction grants program is to eliminate the discharge of untreated or inadequately treated pollutants and thereby help to restore or maintain

the quality of the Nation's waters and protect the health and well-being of the people. The current estimate of the remaining Federal cost of meeting municipal construction needs eligible under the act amounts to approximately \$49 billion in 1978 dollars. With inflation rates now running at 10 percent or more per year, it is unrealistic to assume that all needs can be addressed with appropriation levels likely to be provided to the program in the foreseeable future. It has become increasingly evident that the present method for distributing funds does not necessarily channel funds to the highest priority projects, nor does it realistically correspond to the actual capabilities of many of the States to obligate the money available to them in the annual allotments.

As a consequence, many States have more money available than they can effectively absorb within a defined period, while other States lack sufficient funding to begin construction of urgently needed waste water treatment projects which are already planned and designed. EPA is, therefore, developing a long-term strategy for the program which will recommend the targeting of available funds to the highest priority needs and to those States capable of using grant funds in the immediate future. This strategy will include legislative recommendations which will be forwarded to Congress in the near future.

The program strategy will continue to recognize that there are limited funds available to meet these pollution control needs and that the funds available must go toward assisting municipalities in meeting the most critical needs in the shortest possible time. Accordingly, the major objectives guiding the program over the near term will continue to be the following:

- The funds available must go toward meeting the environmental requirements of the Clean Water Act in an efficient, effective, and timely manner, using stringent cost-effectiveness criteria on a project-by-project basis to ensure the most appropriate use of funds.
- A substantial portion of funds are to be oriented toward innovative and alternative technology leading to more environmentally compatible solutions to waste control, including water and energy conservation, reuse, and reclamation.
- Funds specifically available for State delegation under Section 205(g) of the Act are to be used to maximize State assumption of program activities in the shortest possible time, under specific EPA policy direction and environmental objectives.

EPA has established a detailed review process related to funding of advanced waste treatment projects to ensure that such funding is strictly limited to those situations where both the higher level of treatment is necessary to meet water quality standards and where the advanced treatment will work to meet these higher standards. In accordance with the Conference Report of the 1979 appropriation for construction grants, the EPA Administrator is now reviewing all waste treatment projects more stringent than secondary and with cost greater than \$3 million.

The \$3.7 billion requested for 1981 is needed to ensure that the maximum number of States, under the fixed allotment formula legislated by Congress, receive sufficient funds to continue operations. The impact of a lesser appropriation is threefold:

- An estimated 17 States and 2 territories will obligate all of their available funds during 1981 and another 8 States and 1 territory will be close to using all funds and may have to slow down their programs. An amount appropriated less than \$3.7 billion would further interrupt the operations of these States, thereby penalizing those States progressing fastest toward meeting the goals of the Act.

percent registration time, to eliminate state assumption of costs in a more and planned manner. A lower appropriation would reduce the amounts available for State management assistance and force many States to slow or avoid delegation entirely, which, in turn, would result in increased project delay and force EPA to shoulder tasks not planned for in estimating resource needs.

1979 Accomplishments

During 1979, awards in the construction grants program totalled approximately \$4.256 billion, including 982 Step 1, 818 Step 2 Steps 2 + 3, and 799 Step 3 awards. This level of activity resulted in approximately 11,881 active projects in various stages of planning, design, and construction by the end of 1979. The level of Federal outlays, at \$3.7 billion, was the highest annual total in the history of the program, with 459 Step 3 projects completed during the year.

The 1979 obligation level was \$856 million more than estimated in last year's budget request. The increase occurred because Congress did not extend the allotment period during which funds must be obligated from two years to three years, thus causing several States to speed up their projects to avoid the loss of funds to reallocation. EPA took steps to assure that funds obligated in these States were used on high quality projects. The only State to lose funds to reallocation was Ohio, which lost approximately \$25 million.

Under the Section 205(g) State delegation program, a total of 27 delegation agreements were negotiated and signed, bringing the total number of States with delegation agreements as of the end of 1979 up to 30. A total of \$60 million was obligated in 1979 as these States began to phase into the primary responsibility for the day-to-day management of the program.

1980 Program

A total of \$4.8 billion in gross obligations is projected during 1980. This will fund 3,511 new awards for the planning, design, and construction of treatment facilities. About 11,725 projects will be in various stages of preconstruction or construction activity by the end of the year. Outlay levels will further increase to \$3.9 billion. EPA estimates that a total of 42 States (another 12 in 1980 alone) will receive State management assistance grants, totalling \$61 million for all States.

1980 Explanation of Changes from Budget Estimate

The Congress reduced the budget request by \$400 million, from \$3.8 billion to \$3.4 billion.

1981 Plan

In 1981, gross obligations totalling \$4.5 billion are projected. These obligations will support approximately 2,550 new awards. This represents a decrease over 1980, principally because of the drop in expected numbers of new Step 1 and 2 awards. EPA expects to award State management assistance grants totalling \$70 million to 42 States during the year, an increase of \$9 million over 1980.

The following table summarizes the 1981 program and compares activity levels to the previous two years:

<u>Item</u>	<u>1979</u> <u>Actual</u>	<u>1980</u> <u>Estimated</u>	<u>1981</u> <u>Estimated</u>
Total Gross Obligations.....	\$4.256 billion	\$4.8 billion	\$4.5 billion
New Awards			
Step 1.....	982	807	400
Step 2.....	572	1,193	925
Step 3.....	799	1,156	950
Step 2 & 3.....	246	355	275
Active Projects (All Steps).....	11,881	11,725	11,000
Construction Completions (Step 2 & 3).....	459	1,008	1,200
Total Outlays	\$3.756 billion	\$3.9 billion	\$3.95 billion
State Management Assistance Grants			
Number.....	30	42	42
Amount.....	\$60 million	\$61 million	\$70 million

NOTE: Numbers in this table are updated from output numbers in the President's Budget Appendix.

Within the constraints of the current allotment formula and funding mechanism and a \$3.7 billion appropriation, approximately 17 States and 2 territories will use all of their available funds in 1981. Another 8 States and 1 territory will be close to using all funds and may have to slow down their programs and stretch out their funds into early 1982. It is partly to address the problems faced by these States that EPA is developing a long-term strategy as noted above.

Superfund

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
		(dollars in thousands)			
Appropriation.....	\$250,000	+\$250,000
Outlays.....	45,000	+45,000
Authorization Level				Proposed	

Budget Request

Included in the President's Budget is \$250 million to cover the first year's operation of the Oil and Hazardous Substances Liability Fund. The Administration's proposal, which is currently before the Congress for consideration, addresses the release of oil, hazardous substances, and hazardous wastes into the environment by spills and from inactive and abandoned disposal sites. It establishes a comprehensive and uniform system of notification, emergency government response, enforcement, liability and compensation for such incidents. A detailed budget justification will be presented as soon as the authorizing legislation is passed.

Proposed Legislation

The Administration's proposed legislation would expand both the authorities available to EPA and the source of compensation for activities under these new authorities. Unlike current Section 311 authority, the proposed legislation addresses releases to the environment (water, land, and groundwater) of oil and hazardous wastes from spills from inactive and abandoned disposal sites. In effect, the legislation converts the Section 311(k) fund from an appropriated fund to an expanded fee-based fund and expands eligibility for reimbursement to include costs of spills cleanup, waste site investigations and containment, limited economic damages to property resulting from spills, and all related administrative and management costs. The proposed legislation authorizes the fund to raise \$1.625 billion from appropriations and fees over a 4-year period. (The Section 311(k) fund, in contrast, was established with a \$35 million authorization). The size of the fund and the expanded authorities would enable the government, in advance of judicial action and without delay, to clean up and mitigate problems and later recover the public costs.

Program Description

The estimated size of the problem to be addressed by the "Superfund" is based on studies completed under contract to EPA during late 1978. In the uncontrolled hazardous site program, EPA estimates that there are 30,000 to 50,000 sites containing hazardous wastes, of which 1,200-2,000 may present potentially significant problems. The main emphasis will be to isolate the 400 to 500 most critical problem sites and in association with the States, to fund containment actions (within funding limits), and operate an enforcement/cost recovery program against known responsible parties.

In the emergency spill response program, our studies suggest there will be 3,500 hazardous spills in 1981 with growth to 7,000 by 1984. Oil spills are expected to maintain a level rate of approximately 11,000 for each year, 1981-84. The progress toward addressing the spills problem will be rapid, as much of the infrastructure is already built and the basic regulations and authorities are already in place.

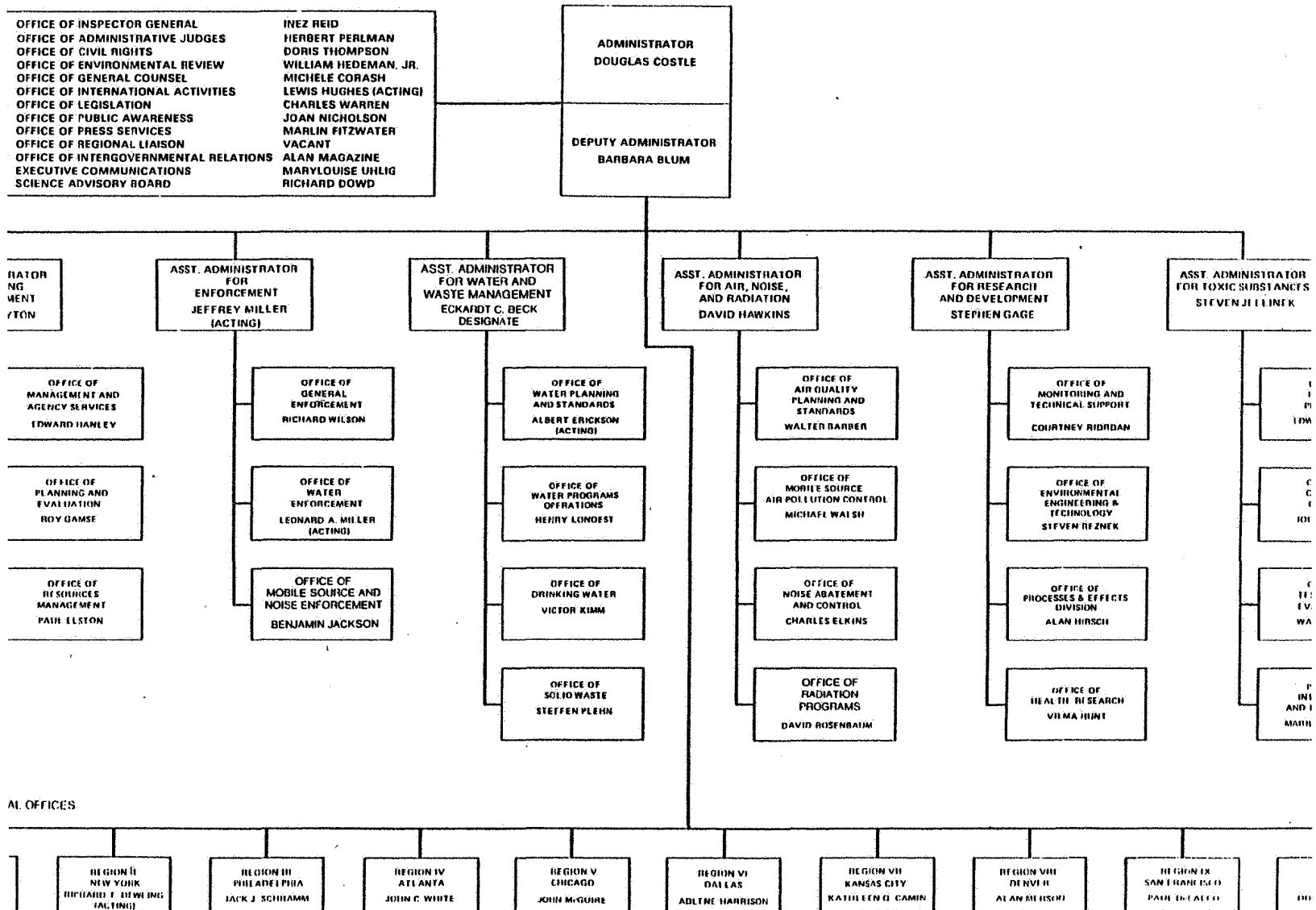
Special Analyses

SPECIAL ANALYSES

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U.S. ENVIRONMENTAL PROTECTION AGENCY



EPA REGIONS
LOCATIONS AND STATES

on I Headquarters, Boston, Massachusetts
Connecticut, Maine, Massachusetts,
New Hampshire, Rhode Island, Vermont

Region VI Headquarters, Dallas, Texas
Arkansas, New Mexico, Texas,
Oklahoma, Louisiana

on II Headquarters, New York, New York
New Jersey, New York, Puerto Rico,
Virgin Islands

Region VII Headquarters, Kansas City, Missouri
Iowa, Kansas, Missouri, Nebraska

on III Headquarters, Philadelphia, Pennsylvania
Delaware, Maryland, Pennsylvania,
Virginia, West Virginia, District of
Columbia

Region VIII Headquarters, Denver, Colorado
Colorado, Montana, North Dakota,
South Dakota, Utah, Wyoming

on IV Headquarters, Atlanta, Georgia
Alabama, Florida, Georgia, Kentucky,
Mississippi, North Carolina, South
Carolina, Tennessee

Region IX Headquarters, San Francisco, California
Arizona, California, Hawaii, Nevada,
American Samoa, Guam, Trust Territories
of Pacific Islands, Northern Mariana
Islands

on V Headquarters, Chicago, Illinois
Illinois, Indiana, Michigan,
Minnesota, Ohio, Wisconsin

Region X Headquarters, Seattle, Washington
Alaska, Idaho, Oregon, Washington

Summary of Resources
(dollars in thousands)

	<u>Actual 1979</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>nd Expenses</u>				
uthority.....	\$452,989	\$521,513	\$562,542	+\$41,029
ons.....	459,485	521,513	562,542	+41,029
.....	425,416	442,275	529,000	+86,725
t Workyears.....	10,086	10,940	11,162	+222
ie equivalency.....	11,964	13,416	13,659	+243
<u>Control and Compliance</u>				
uthority.....	524,481	525,957	555,338	+29,381
ons.....	542,909	559,680	542,931	-16,749
.....	382,882	397,164	406,740	+9,576
t Workyears.....	1	...	...	...
ie equivalency.....	42	72	72	...
<u>nd Development</u>				
uthority.....	221,403	234,574	264,984	+30,410
ons.....	231,621	234,743	263,000	+28,257
.....	225,201	233,600	255,000	+21,400
t Workyears.....	...	...	...	...
ie equivalency.....	...	...	...	...
<u>: Activities Overseas</u>				
uthority.....	2,500	...	1,000	+1,000
ons.....	2,719	3,204	1,200	-2,004
.....	2,260	1,800	3,000	+1,200
<u>and Facilities</u>				
uthority.....	1,172	1,425	4,115	+2,690
ons.....	1,880	1,794	3,000	+1,206
.....	2,367	2,000	2,500	+500

	<u>Actual 1979</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>ction Grants</u>				
t authority.....	\$4,200,000	\$3,400,000	\$3,700,000	+\$300,000
ations.....	4,256,558	4,800,000	4,500,000	-300,000
ys.....	3,756,079	3,900,000	3,950,000	+50,000
<u>Hazardous Liability Fund</u>				
t authority.....	...	...	250,000	+250,000
ations.....	...	...	250,000	+250,000
ys.....	...	...	45,000	+45,000
<u>ons, Research and Facilities</u>				
ations.....	3,742	1,414	800	-614
ys.....	6,156	5,000	3,200	-1,800
ment workyears.....	...	...	...	...
time equivalency.....	...	...	...	...
<u>ng Fund</u>				
ations.....	580	580	580	...
ys.....	39	40	50	+10
ment workyears.....	...	...	...	...
time equivalency.....	...	...	...	...
<u>unds</u>				
t authority.....	...	...	...	...
ations.....	21	25	25	...
ys.....	36	20	20	...
<u>sements</u>				
ations.....	...	...	...	...
ment workyears.....	91	64	64	...
time equivalency.....	101	73	73	...

	<u>Actual 1979</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>tory Council</u>				
et authority.....	...	3,082	3,338	+256
gations.....	...	3,082	3,338	+256
ays.....	...	2,400	2,800	+400
anent workyears.....	...	11	11	...
-time equivalency.....	...	26	26	...
<u>idated Working Fund</u>				
gations.....	...	...	...	...
ays.....	...	10	10	...
<u>Environmental Protection Agency</u>				
et authority.....	5,402,545	4,686,551	5,341,317	+654,766
gations.....	5,499,515	6,126,035	6,127,416	+1,381
ays.....	4,800,436	4,984,309	5,197,320	+213,011
anent workyears.....	10,178	11,015	11,237	+222
-time equivalency.....	12,107	13,587	13,830	+243

1980 Resources
By Media and Appropriation
(dollars in thousands)

*Revised
red mark*

	Salaries & Expenses		Abatement, Control & Compliance	Research & Development	Total	
	Permanent Workyears	Amount			Permanent Workyears	Amount
.....	1,973	\$ 77,186	\$133,775	\$39,529	1,973	\$250,490
Quality.....	3,088	109,860	188,436	39,139	3,088	337,435
ng Water.....	519	19,939	41,164	15,621	519	76,724
Wastes.....	404	15,456	71,859	12,745	404	100,060
ides.....	985	33,722	28,513	5,922	985	68,157
tion.....	215	8,936	7,486	840	215	17,262
.....	105	4,924	8,151	...	105	13,075
Disciplinary.....	260	13,957	1,372	11,012	260	26,341
Substances.....	659	29,554	45,201	19,891	659	94,646
/.....	154	11,489	...	89,875	154	101,364
ement and Support.....	2,578	196,490	...	...	2,578	196,490
Subtotal.....	10,940	521,513	525,957	234,574	10,940	1,282,044
atory Council.....	...	...	...	...	11	3,082
ings and Facilities.....	...	...	...	...	...	1,425
tific Activities Overseas.	...	...	...	...	...	...
ursements.....	...	...	...	...	64	...
Subtotal.....	...	521,513	525,957	234,574	11,015	1,286,551
uction Grants.....	...	...	...	...	...	3,400,000
Total.....	10,940	521,513	525,957	234,574	11,015	4,686,551

2
1987 Resources
By Media and Appropriation
(dollars in thousands)

	Salaries & Expenses		Abatement, Control & Compliance Amount	Research & Development Amount	Total	
	Permanent Workyears	Amount			Permanent Workyears	Amount
.....	1,888	\$ 75,816	\$128,545	\$ 44,109	1,888	\$ 248,470
Quality.....	3,032	112,194	186,932	35,961	3,032	335,087
ng Water.....	538	22,012	44,664	20,229	538	86,905
Waste.....	774	32,895	91,991	22,562	774	147,448
ides.....	914	30,927	39,292	3,780	914	73,999
ion.....	216	8,552	7,797	1,433	216	17,782
.....	99	4,576	8,351	...	99	12,927
disciplinary.....	250	11,874	1,550	13,816	250	27,240
Substances.....	743	33,571	46,216	26,216	743	106,003
.....	149	10,720	...	96,878	149	107,598
ment and Support...	2,559	219,405	...	...	2,559	219,405
Subtotal.....	11,162	562,542	555,338	264,984	11,162	1,382,864
tory Council.....	...	...	...	...	11	3,338
ngs and Facilities.	...	...	...	...	...	4,115
ific Activities	...	...	...	...	...	1,000
seas.....	...	...	...	...	...	...
rsements.....	...	...	...	...	64	...
d Hazardous	...	...	...	...	...	250,000
ility Funds.....	...	...	...	...	...	...
Subtotal.....	11,162	562,542	555,338	264,984	11,237	1,641,317
uction Grants.....	...	...	...	...	...	3,700,000
Total.....	11,162	562,542	555,338	264,984	11,237	5,341,317

Environmental Protection Agency

Total Funds Obligated, 1980
(dollars in thousands)

1980					
	Budget Authority	Unobligated Balance Brought Forward	Anticipated Recoveries	Unobligated Balance Brought <i>Carried</i> Forward	Total Obligations
Development	\$234,574	+\$8,176	+1,000	-\$9,007	\$234,743
.....	39,529 ✓	+2,380	...	-1,914	39,995 ✓
lity.....	39,139 ✓	+618	+1,000	-135	40,622 ✓
Water.....	15,621 ✓	+572	...	-804	15,389 ✓
te.....	12,744 ✓	+419	...	-2,892	10,271 ✓
s.....	5,922 ✓	+245	...	-355	5,812 ✓
.....	840 ✓	+82	...	-244	678 ✓
iplinary.....	11,012 ✓	+327	...	-39	11,300 ✓
stances.....	19,892 ✓	+954	...	-576	20,270 ✓
.....	89,875 ✓	+2,107	...	-2,048	89,934 ✓
t and Support.....	...	+472	...	...	472 ✓
Control and Compliance	525,957	+81,747	+2,000	-50,024	559,680
.....	133,775 ✓	+40,867	...	-1,728	172,914 ✓
lity.....	188,436 ✓	+8,647	+2,000	-23,715	175,368 ✓
Water.....	41,164 ✓	+6,540	...	-3,978	43,726 ✓
te.....	71,859 ✓	+11,445	...	-5,149	78,155 ✓
s.....	28,513 ✓	+4,087	...	-4,879	27,721 ✓
.....	7,486 ✓	+817	...	-137	8,166 ✓
.....	8,151 ✓	+818	...	-610	8,359 ✓
iplinary.....	1,372 ✓	+816	...	-844	1,344 ✓
stances.....	45,201 ✓	+7,357	...	-8,984	43,574 ✓
t and Support.....	...	+353	...	...	353 ✓
Indirect Expenses	521,513	...	...	...	521,513
.....	77,186	...	...	...	77,186 ✓
lity.....	109,860	...	...	...	109,860 ✓
Water.....	19,939	...	...	...	19,939 ✓
te.....	15,456	...	...	...	15,456 ✓
s.....	33,722	...	...	...	33,722 ✓
.....	8,936	...	...	...	8,936 ✓
.....	4,924	...	...	...	4,924 ✓
iplinary.....	13,957	...	...	...	13,957 ✓
stances.....	29,554	...	...	...	29,554 ✓
.....	11,489	...	...	...	11,489 ✓
t and Support.....	196,490	...	...	...	196,490

	1980				
	<u>Budget Authority</u>	<u>Unobligated Balance Brought Forward</u>	<u>Anticipated Recoveries</u>	<u>Unobligated Balance Brought Forward</u>	<u>Total Obligations</u>
ory Council	3,082	...	...	...	3,082
gs and Facilities	1,425	+369	...	...	1,794
ific Activities Overseas	...	+3,204	+200	-200	3,204
ction Grants	3,400,000	+3,992,607	+300,000	-2,892,607	4,800,000
ons, Research and Facilities	...	+914	+800	-300	1,414
otal.....	4,686,551	+4,087,017	+304,000	-2,952,138	6,125,430

Environmental Protection Agency

Total Funds Obligated, 1981
(in thousands of dollars)

	1981				Total Obligations
	Budget Authority	Unobligated Balance Brought Forward	Anticipated Recoveries	Unobligated Balance Carried Forward	
Research and Development	\$264,984	+\$9,007	+1,000	-\$11,991	\$263,000
.....	44,109✓	+1,914	...	-2,390	43,633✓
Quality.....	35,961✓	+135	+1,000	-896	36,200✓
Drinking Water.....	20,229✓	+804	...	-467	20,566✓
Waste.....	22,562✓	+2,892	...	-2,918	22,536✓
Pesticides.....	3,780✓	+355	...	-533	3,602✓
Regulation.....	1,433✓	+244	...	-172	1,505✓
Enforcement.....	13,816✓	+39	...	-33	13,822✓
Control Substances.....	26,216✓	+576	...	-1,204	25,588✓
Compliance.....	96,878✓	+2,048	...	-3,378	95,548✓
Management, Control and Compliance	555,338	+50,024	+2,000	-64,431	542,931
.....	128,545✓	+1,728	+2,000	-3,252	129,021✓
Quality.....	186,932✓	+23,715	...	-30,958	179,689✓
Drinking Water.....	44,664✓	+3,978	...	-5,390	43,252✓
Waste.....	91,991✓	+5,149	...	-7,571	89,569✓
Pesticides.....	39,292✓	+4,879	...	-5,544	38,627✓
Regulation.....	7,797✓	+137	...	-429	7,505✓
Enforcement.....	8,351✓	+610	...	-770	8,191✓
Enforcement.....	1,550✓	+844	...	-849	1,545✓
Control Substances.....	46,216✓	+8,984	...	-9,668	45,532✓
Salaries and Expenses	562,542	...	...	...	562,542
.....	75,816	...	...	...	75,816✓
Quality.....	112,195	...	...	...	112,195✓
Drinking Water.....	22,012	...	...	...	22,012✓
Waste.....	32,895	...	...	...	32,895✓
Pesticides.....	30,927	...	...	...	30,927✓
Regulation.....	8,552	...	...	...	8,552✓
Enforcement.....	4,576	...	...	...	4,576✓
Enforcement.....	11,874	...	...	...	11,874✓
Control Substances.....	33,571	...	...	...	33,571✓
Compliance.....	10,720	...	...	...	10,720✓
Management and Support.....	219,404	...	...	...	219,404

1981

	<u>Budget Authority</u>	<u>Unobligated Balance Brought Forward</u>	<u>Anticipated Recoveries</u>	<u>Unobligated Balance Carried Forward</u>	<u>Total Obligations</u>
ory Council	3,338	...	...	...	3,338
gs and Facilities	4,115	...	...	-1,115	3,000
ific Activities Overseas	1,000	+200	+200	-200	1,200
uction Grants	3,700,000	+2,892,607	+300,000	-2,392,607	4,500,000
ions, Research and Facilities	...	+300	+500	...	800
1 Hazardous Liability Fund	250,000	...	...	...	250,000
otal.....	5,341,317	2,952,138	+303,700	-2,470,344	6,126,811

EPA

Positions By Grade and Average Employment

<u>Grades</u>	<u>Actual 1979</u>	<u>Estimate 1980</u>	<u>Estimate 1981</u>
Executive Level II.....	1	1	1
Executive Level III.....	1	1	1
Executive Level IV.....	6	7	7
Subtotal.....	8	9	9
ES-4.....	185	185	185
ES-3.....	27	27	27
ES-2.....	39	39	39
ES-1.....	41	41	41
Subtotal.....	292	292	292
GS-18.....	1	1	1
GS-17.....	4	3	3
GS-16.....	14	14	14
GS/GM-15.....	477	492	502
GS/GM-14.....	963	993	1,020
GS/GM-13.....	1,532	1,582	1,620
GS-12.....	1,716	1,771	1,810
GS-11.....	1,094	1,128	1,151
GS-10.....	47	47	47
GS-9.....	889	917	936
GS-8.....	190	196	200
GS-7.....	801	825	842
GS-6.....	583	601	614
GS-5.....	849	873	890
GS-4.....	545	563	576
GS-3.....	148	152	154
GS-2.....	22	22	22
GS-1.....	2	2	2
Subtotal.....	9,877	10,182	10,404

<u>Grades</u>	<u>Actual 1979</u>	<u>Estimate 1980</u>	<u>Estimate 1981</u>
Positions established by act of July 1, 1974 (42 U.S.C. 207):			
Assistant Surgeon General, \$25,022 to \$36,468.....	1	1	1
Director Grade, \$19,547 to \$32,040.....	93	93	93
Senior grade, \$14,836 to \$26,143.....	147	147	147
Full grade, \$12,506 to \$21,863.....	42	42	42
Senior assistant grade, \$11,621 to \$18,904.....	17	17	17
Assistant grade, \$10,130 to \$14,026.....	2	2	2
Subtotal.....	302	302	302
Positions established by act of November 16, 1977 (42 U.S.C. 201) compensation for which is not to exceed the maximum rate payable for a GS-18.....			
	30	30	30
<u>Ungraded</u>	189	189	189
Total permanent positions.....	10,698	11,004	11,226
Full-Time Equivalency:			
Permanent.....	10,178	11,015	11,237
Other.....	1,929	2,572	2,593
Total.....	12,107	13,587	13,830

Regulatory Council

	<u>Actual 1979</u>	<u>Estimate 1980</u>	<u>Estimate 1981</u>
GS-17.....	...	1	1
GS/GM-15.....	...	2	2
GS/GM-14.....	...	2	2
GS-12.....	...	1	1
GS-11.....	...	1	1
GS-9.....	...	1	1
GS-8.....	...	1	1
GS-6.....	...	1	1
GS-5.....	...	1	1
Total permanent positions..	...	11	11

RESEARCH AND DEVELOPMENT
Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

	Actual 1979	Current Estimate 1980	Estimate 1981
el Services.....	a/	...	...
bjects:			
avel and transportation of persons.....	a/	...	...
ransportation of things.....	a/	...	...
tandard level user charges.....	a/	...	...
ommunications, utilities, and other rent.....	a/	...	...
rinting and reproduction.....	a/	...	...
ther services.....	168,957	142,916	177,627
upplies and materials.....	a/	...	...
quipment.....	a/	...	...
ands and structures.....	a/	...	...
rants, subsidies, and contributions.....	71,441	80,979	80,873
nsurance claims and indemnities.....	a/	...	...
Total other objects.....	240,398	223,895	258,500
Total obligations.....	240,398	223,895	258,500

ATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1980	Inc Dec 1981
ervices.....	\$168,957	\$181,450	\$142,916	\$177,627	+\$3
e decrease in the 1980 current estimate for this item results from:					
Other contractual services now carried under Salaries and Expenses.					- 1
Congressional reduction for health and ecological effects.....					-
Congressional add-ons for R&D activities.....					+
Congressional reduction for anticipatory research.....					-
Transfer to support other Agency activities' pay costs.....					-
Transfer to other R&D activities for object classes now supported under Salaries and Expenses.....					-
Prorated costs now reflected under Salaries and Expenses.....					- 1
Total.....					- 3

e increase of \$34,711 over the 1980 budget estimate will expand con-
research primarily for hazardous waste, toxic substances , and energy
activities.

ected under "Salaries and Expenses" for comparability.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase Decrease 1981 vs. 1</u>
<u>subsidies, and contributions.....</u>	\$71,441	\$90,000	\$80,979	\$80,873	-\$106

decrease in the 1980 current estimate from the 1980
estimate results from a change in the amount of carryover
originally projected to be carried forward to 1980.

slight decrease in 1981 of \$106 reflects a minor shift from
activities to contractual services.

ABATEMENT, CONTROL AND COMPLIANCE

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

	Actual 1979	Current Estimate 1980	Estimate 1981
Services.....	\$30 ^{a/}	\$34	\$78
Objects:			
Travel and transportation of persons.....	a/	10	10
Transportation of things.....	a/	...	...
Standard level user charges.....	a/	...	...
Communications, utilities, and other rent.....	a/	...	...
Printing and reproduction.....	a/	...	...
Other services.....	182,699	235,108	244,200
Supplies and materials.....	a/	...	...
Equipment.....	a/	...	...
Buildings and structures.....	a/	...	...
Grants, subsidies, and contributions.....	352,915	280,524	298,643
Insurance claims and indemnities.....	a/	...	...
Total other objects.....	535,614	515,642	542,853
Total obligations.....	535,644	515,676	542,931
Data:			
Salary, GS positions.....	\$22,878	\$23,041	\$23,205
Grade, GS positions.....	10.07	9.85	9.85

ON OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
Services.....	\$30	a/	\$34	\$78	+\$44

change in 1980 estimates reflects the transfer of all salary costs except those for State assignees
w Salaries and Expenses appropriation.

increase in 1981 represents increased support to the States.

Reflected under "Salaries and Expenses" for comparability.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
Travel and transportation of persons.....	a/	\$10	\$10	\$10	...

All travel costs are now reflected under the "Salaries and Expenses" appropriation with the exception of travel associated with State assignees, funded by the grants programs.

a/ Reflected under "Salaries and Expenses" for comparability.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
Other services.....	\$182,699	\$267,140	\$235,108	\$244,200	+\$9,092

The decrease in the 1980 current estimate for this object class results from:

Other contractual services now carried under	
Salaries and Expenses.....	-\$5,427
Transfer to support pay costs in other activities.....	-4,167
Shift of funds from contractual services to grants.....	-16,219
Prorated costs now reflected under Salaries and Expenses..	-6,219
Total.....	-32,032

The net increase in 1981 of \$9,092 results primarily from pesticides standards setting and RPAR as well as hazardous waste activities.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
Grants, subsidies, and contributions.....	\$343,636	\$289,955	\$280,524	\$298,643	+\$18,119

The decrease in the 1980 current estimate over the 1980 budget estimate results from:

Congressional decreases to the budget authority for this	
object class.....	-34,400
Shift of funds from contractual services.....	+16,219
Transfer of enforcement grants into this appropriation....	+8,750
Total.....	-9,431

The net increase in the 1981 request results primarily from hazardous waste grants and air control agency grants.

SALARIES AND EXPENSES

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

	Actual 1979	Current Estimate 1980	Estimate 1981
Personnel Services.....	\$290,189	\$332,649	\$357,056
Other Objects:			
21 Travel and transportation of persons.....	15,711	16,119	17,714
22 Transportation of things.....	1,674	1,523	1,655
23.1 Standard level user charges.....	20,302	20,391	21,480
23.2 Communications, utilities, and other rent.....	22,965	28,833	32,606
24 Printing and reproduction.....	8,263	9,517	8,284
25 Other services.....	42,731	78,468	91,260
26 Supplies and materials.....	11,401	15,054	14,637
31 Equipment.....	24,774	16,937	16,628
32 Lands and structures.....	1,103	874	55
41 Grants, subsidies, and contributions.....	501	1,148	1,167
42 Insurance claims and indemnities.....	74	...	...
Total other objects.....	149,499	188,864	205,486
Total obligations.....	439,688	521,513	562,542
Position Data:			
Average salary, GS positions.....	\$ 22,878	\$ 23,041	\$ 23,205
Average grade, GS positions.....	10.07	9.85	9.85

EXPLANATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increas Decreases 1981 vs.
Personnel services.....	\$290,189	\$319,101	\$332,649	\$357,056	+\$24,40
The increase in the 1980 current estimate over the 1980 budget estimate is the result of:					
October 1979 pay raise, pending supplemental to partially fund.....			+\$14,209		
Congressional reduction.....			-2,000		
Amendment for hazardous waste sites.....			+1,339		
Total.....			+ 13,548		

The increase in the 1981 estimate is the result of:

October 1979 pay raise, full year cost.....	+ 8,291
Full workyear funding.....	+ 6,499
Increase in authorized workyears.....	+ 9,617
Total.....	<u>+24,407</u>

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increa Decrea 1981 vs.
<u>Travel and transportation of persons.....</u>	\$15,711	\$17,710	\$16,119	\$17,714	+\$1,59

The decrease in the 1980 current estimate over the 1980 budget estimate is the result of:

Congressional reduction.....	\$-2,000
Amendment for hazardous waste sites.....	+409
Total.....	<u>-1,591</u>

The increase in the 1981 estimate is the result of:

Additional workyears requested.....	+243
Increased travel costs.....	+200
Increased hazardous waste activities requiring travel.....	+1152
Total.....	<u>+1595</u>

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increa Decrea 1981 vs.
<u>Transportation of things.....</u>	\$1,674	\$2,000	\$1,523	\$1,655	+\$132

The decrease in the 1980 estimate results from an adjustment to the budget estimate using 1979 actual costs as a new base.

The slight increase in 1981 results from anticipated costs of shipping of materials.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increa Decrea 1981 vs.
<u>Standard level user charges.....</u>	\$20,302	\$23,563	\$20,391	\$21,480	+\$1,08

The decrease of \$3,172 in the 1980 current estimate from the 1980 budget estimate results from the revised projections of SLUC based on actual facilities usage by personnel in 1979.

The increase of \$1,089 in the 1981 estimate results from the GSA-set increase.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>Communications, utilities, and other rent.....</u>	\$22,965	\$28,100	\$28,833	\$32,606	+\$3,773

The increase of \$733 in the 1980 current estimate over the 1980 budget estimate for this item results primarily from increasing utility costs due to increasing energy costs.

The increase in the 1981 request provides for increasing rental costs of equipment, telephones, mail, and the continuing increase of utility costs.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>Printing and reproduction.....</u>	\$8,263	\$8,550	\$9,517	\$8,284	-\$1,233

The increase of \$967 over the 1980 budget estimate represents an unanticipated increase in printing costs and the additional printing of guidelines and regulations.

The decrease of \$1,233 in the 1981 request represents the nonrecurring workload anticipated in 1980.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase + Decrease - 1981 vs. 1980</u>
<u>Other services.....</u>	\$42,731	\$37,272	\$78,468	\$91,260	+\$12,792

The increase of \$41,196 over the 1980 budget estimate results from:

Costs previously carried under the Abatement and Control and the Research and Development appropriations.....	+20,601
Cost previously prorated for nationwide services that are now reflected only in this appropriation.....	+16,870
Increase reflecting only change in anticipated costs of other contractual services.....	+ 3,725
Total.....	<u>+41,196</u>

The increase requested in 1981 will primarily provide for increased workyears and for planning and evaluation contracts.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Incre Decre 1981 vs</u>
<u>Supplies and materials.....</u>	\$11,401	\$12,400	\$15,054	\$14,637	-\$41

The increase of \$2,654 in the 1980 current estimate from the 1980 budget estimate results from additional expenses anticipated for standards setting, hazardous waste, and toxic substance activities.

The decrease in the 1981 request reflects nonrecurring costs which are anticipated in 1980.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increas Decreas 1981 vs.</u>
<u>Equipment.....</u>	\$24,774	\$20,500	\$16,937	\$16,628	-\$309

The decrease of \$3,563 from the 1980 budget estimate reflects nonrecurring equipment costs which are diverted to other Agency funding.

The decrease of \$309 in the 1981 budget request reflects the continuing action of redirecting nonrecurring costs to other priority costs.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase Decrease 1981 vs.</u>
<u>Lands and structures.....</u>	\$1,103	...	\$874	\$55	-\$819

The increase of \$874 in the 1980 current estimate reflects the modifications, etc., to facilities that are properly funded from this appropriation.

The decrease in the 1981 request reflects the nonrecurring nature of the 1980 costs.

	<u>Actual 1979</u>	<u>Budget Estimate 1980</u>	<u>Current Estimate 1980</u>	<u>Estimate 1981</u>	<u>Increase Decrease 1981 vs. 1</u>
<u>Grants, subsidies, and contributions.....</u>	\$501	\$350	\$1,148	\$1,167	+\$19

The increase of \$798 in the 1980 current estimate reflects increased grant support to public interest groups.

The minor increase in the 1981 request reflects continuing support of these grants.

SCIENTIFIC ACTIVITIES OVERSEAS

Classification by Objects Includes Direct Obligations Only (in thousands of dollars)

	Actual 1979	Current Estimate 1980	Estimate 1981
Other objects:			
Travel and transportation of persons.....	11	15	15
Other services.....	2,708	3,189	1,185
Total, other objects.....	2,719	3,204	1,200
Total, Obligations.....	2,719	3,204	1,200

EXPLANATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase Decrease 1981 vs. 1980
Travel and transportation of persons.....	\$11	\$25	\$15	\$15	...
<p>The decrease of \$10 in the 1980 current estimate reflects the decrease in funding for this activity. No funds were appropriated in 1980; carryover funding only is available.</p>					
Other Services.....	\$2,708	\$3,975	\$3,189	\$1,185	-\$2,004

The decrease of \$786 in the 1980 current estimate reflects the sessional decrease.

The decrease of \$2,004 in the 1981 request reflects the reduced obligations as a result of all carryover funds being obligated in 1980.

REGULATORY COUNCIL

Classification by Objects
Includes Direct Obligations Only
(in thousands of dollars)

	Actual 1979	Estimate 1980	Estimate 1981
Personnel Services.....	...	\$939	\$939
Other Objects:			
21 Travel and transportation of persons.....	...	20	38
23.2 Communications, utilities, and other rent.....	...	74	190
24 Printing and reproduction.....	...	424	651
25 Other services.....	...	1,580	1,450
26 Supplies and materials.....	...	6	23
31 Equipment.....	...	39	47
Total other objects.....	...	2,143	2,399
Total obligations.....	...	3,082	3,338

EXPLANATION OF INCREASES AND DECREASES TO OBJECT CLASSIFICATIONS

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
Personnel services.....	...	\$423	\$939	\$939	...

The increase in the 1980 current estimate reflects funding required to support authorized workyears in 1980.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
Travel and transportation of persons.....	...	\$20	\$20	\$38	+\$18

The increase of \$18 in the 1981 request reflects the funds required to support anticipated travel costs of the Council.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
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ent, communications, and utilities.....	...	\$35	\$74	\$190	+\$116
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The increase of \$39 in the 1980 current estimate reflects a shift of funds from other services to support increasing costs.

The increase in the 1981 request reflects the anticipated increasing costs of rentals and communications.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
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rinting and reproduction.....	...	\$17	\$424	\$651	+\$227
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The increase of \$407 in the current estimate reflects a shift of funds from other services to support anticipated costs of the Council's printing needs.

The increase in the 1981 request reflects the anticipated increasing costs of printing.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
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ther services.....	...	\$2,728	\$1,580	\$1,450	-\$130
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The decrease of \$1,148 in the 1980 current estimate reflects the congressional reduction of \$200 as well as a shift of funds to other object classes to support required costs.

The decrease in the 1981 request reflects the effort to continue to support other object classes with nonrecurring funding.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
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Supplies and materials.....

... \$12 \$6 \$23 +\$17

The decrease of \$6 in the 1980 current estimate reflects a change in the estimate of needs during the first year of operation.

The increase in the 1981 request reflects the increase anticipated to support the staff requirements in a second year.

	Actual 1979	Budget Estimate 1980	Current Estimate 1980	Estimate 1981	Increase + Decrease - 1981 vs. 1980
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Equipment.....

... \$12 \$39 \$47 +\$8

The increase of \$27 over the 1980 budget estimate reflects a change in the estimate of needs with funds transferred from other services.

The increase of \$8 in the 1981 request represents a slight increase for continuing support of the Council.



