Environmental Protection Agency
2007 Annual Performance Plan and Congressional Justification

Table of Contents - Science and Technology

Environmental Protection Agency
FY 2007 Annual Performance Plan and Congressional Justification

APPROPRIATION: Science & Technology
Resource Summary Table
(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology				
Budget Authority / Obligations	$785,903.1	$729,810.0	$788,274.0	$58,464.0
Total Workyears	2,416.1	2,438.1	2,431.6	-6.5

BILL LANGUAGE: SCIENCE AND TECHNOLOGY

For science and technology, including research and development activities, which shall include research and development activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended; necessary expenses for personnel and related costs and travel expenses, including uniforms, or allowances therefor, as authorized by 5 U.S.C. 5901-5902; services as authorized by 5 U.S.C. 3109, but at rates for individuals not to exceed the per diem rate equivalent to the maximum rate payable for senior level positions under 5 U.S.C. 5376; procurement of laboratory equipment and supplies; other operating expenses in support of research and development; construction, alteration, repair, rehabilitation, and renovation of facilities, not to exceed $85,000 per project, [$741,722,000] $788,274,000, to remain available until September 30, [2007] 2008, of which $19,000,000 shall be derived from the Environmental Services fund.

Program Projects in S&T
(Dollars in Thousands)

Program Project	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Air Toxics and Quality				
Clean Air Allowance Trading Programs	$8,476.1	$8,527.0	$9,259.4	$732.4
Federal Support for Air Quality Management	$10,747.8	$10,012.0	$10,272.9	$260.9
Federal Support for Air Toxics Program	$3,040.8	$2,225.0	$2,264.7	$39.7
Federal Vehicle and Fuels Standards and Certification				
Energy Policy Act & Related Authorities Implementation	$0.0	$0.0	$11,400.0	$11,400.0
Federal Vehicle and Fuels Standards and Certification (other activities)	$60,614.9	$58,613.0	$56,924.5	($1,688.5)
Subtotal, Federal Vehicle and Fuels Standards and Certification	$60,614.9	$58,613.0	$68,324.5	$9,711.5

Program Project	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Radiation: Protection	$2,552.0	$2,086.0	$2,054.3	($31.7)
Radiation: Response Preparedness	$2,460.0	$3,468.0	$3,585.9	$117.9
Subtotal, Air Toxics and Quality	$87,891.6	$84,931.0	$95,761.7	$10,830.7
Climate Protection Program				
Climate Protection Program	$20,448.0	$18,648.0	$12,549.6	($6,098.4)
Enforcement				
Forensics Support	$13,377.9	$13,129.0	$13,185.2	$56.2
Homeland Security				
Homeland Security: Critical Infrastructure Protection				
Water sentinel and related training	$0.0	$8,131.0	$41,735.2	$33,604.2
Homeland Security: Critical Infrastructure Protection (other activities)	$17,952.2	$4,262.0	$3,515.8	($746.2)
Subtotal, Homeland Security: Critical Infrastructure Protection	$17,952.2	$12,393.0	$45,251.0	$32,858.0
Homeland Security: Preparedness, Response, and Recovery				
Decontamination	$0.0	$16,868.0	$24,666.7	$7,798.7
Laboratory Security: Preparedness, Response, and Recovery	$0.0	$591.0	$600.0	$9.0
Safe Building	$0.0	$3,722.0	$4,000.0	$278.0
Homeland Security: Preparedness, Response, and Recovery (other activities)	$33,417.3	$14,571.0	$15,231.4	$660.4
Subtotal, Homeland Security: Preparedness, Response, and Recovery	$33,417.3	$35,752.0	$44,498.1	$8,746.1
Homeland Security: Protection of EPA Personnel and Infrastructure	$2,517.6	$2,050.0	$2,079.0	$29.0
Subtotal, Homeland Security	$53,887.1	$50,195.0	$91,828.1	$41,633.1
Indoor Air				
Indoor Air: Radon Program	$696.7	$429.0	$442.2	$13.2
Reduce Risks from Indoor Air	$909.5	$810.0	$828.7	$18.7
Subtotal, Indoor Air	$1,606.2	$1,239.0	$1,270.9	$31.9
IT / Data Management / Security				
IT / Data Management	$4,141.3	$4,173.0	$4,268.0	$95.0
Operations and Administration				

Program Project	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Facilities Infrastructure and Operations	$8,892.1	$8,511.0	$70,239.5	$61,728.5
Pesticides Licensing				
Pesticides: Registration of New Pesticides	$2,473.1	$2,463.0	$2,766.1	$303.1
Pesticides: Review / Reregistration of Existing Pesticides	$2,471.1	$2,480.0	$2,820.4	$340.4
Subtotal, Pesticides Licensing	$4,944.2	$4,943.0	$5,586.5	$643.5
Research / Congressional Priorities				
Congressionally Mandated Projects	$74,485.5	$32,919.0	$0.0	($32,919.0)
Research: Clean Air				
Research: Air Toxics	$14,472.5	$16,226.0	$12,274.2	($3,951.8)
Research: Global Change	$19,395.9	$18,619.0	$17,456.4	($1,162.6)
Research: NAAQS	$63,156.4	$66,777.0	$65,455.6	($1,321.4)
Subtotal, Research: Clean Air	$97,024.8	$101,622.0	$95,186.2	($6,435.8)
Research: Clean Water				
Research: Drinking Water	$46,824.0	$45,170.0	$49,242.5	$4,072.5
Research: Water Quality	$46,243.2	$51,269.0	$56,988.2	$5,719.2
Subtotal, Research: Clean Water	$93,067.2	$96,439.0	$106,230.7	$9,791.7
Research: Human Health and Ecosystems				
Human Health Risk Assessment	$33,247.5	$35,637.0	$34,488.5	($1,148.5)
Research: Computational Toxicology	$12,002.9	$12,327.0	$14,983.1	$2,656.1
Research: Endocrine Disruptor	$12,559.5	$10,494.0	$9,081.2	($1,412.8)
Research: Fellowships	$14,476.8	$11,691.0	$8,383.0	($3,308.0)
Research: Human Health and Ecosystems	$169,805.8	$167,703.0	$161,312.7	($6,390.3)
Subtotal, Research: Human Health and Ecosystems	$242,092.5	$237,852.0	$228,248.5	($9,603.5)
Research: Land Protection				
Research: Land Protection and Restoration	$10,257.6	$11,606.0	$10,552.8	($1,053.2)
Research: Sustainability				
Research: Economics and Decision Science(EDS)	$2,465.6	$2,361.0	$2,494.6	$133.6
Research: Environmental Technology Verification (ETV)	$3,364.9	$2,990.0	$0.0	($2,990.0)
Research: Sustainability	$36,354.6	$25,803.0	$21,404.9	($4,398.1)
Subtotal, Research: Sustainability	$42,185.1	$31,154.0	$23,899.5	($7,254.5)

Program Project	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Toxic Research and Prevention				
Research: Pesticides and Toxics	$28,276.0	$30,357.0	$26,223.7	($4,133.3)
Water: Human Health Protection				
Drinking Water Programs	$3,326.0	$3,092.0	$3,243.1	$151.1
Subtotal, Drinking Water Programs	$3,326.0	$3,092.0	$3,243.1	$151.1

Program Area: Air Toxics and Quality

Clean Air Allowance Trading Programs
Program Area: Air Toxics and Quality
Goal: Clean Air and Global Climate Change
Objective(s): Healthier Outdoor Air; Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$17,513.5	$17,708.0	$19,126.4	$1,418.4
Science & Technology	***$8,476.1***	***$8,527.0***	***$9,259.4***	***$732.4***
Total Budget Authority / Obligations	$25,989.6	$26,235.0	$28,385.8	$2,150.8
Total Workyears	89.2	86.2	92.2	6.0

Program Project Description:

The Clean Air Interstate Rule (CAIR), promulgated on May 12, 2005, uses a multi-pollutant control approach to provide states with a solution to the problem of ozone and fine particulate matter ($PM_{2.5}$) -- pollution that drifts from one state to another. Using a market-based approach, CAIR is projected to achieve the deepest cuts in sulfur dioxide (SO_2) and nitrogen oxides (NO_x) emissions in more than a decade. Reductions in these emissions will reduce $PM_{2.5}$ and lower ozone. EPA's approach builds upon the successful Acid Rain cap-and-trade program created in 1990.

CAIR provides a Federal framework requiring 28 states and the District of Columbia to reduce emissions of SO_2 and/or NO_x. These states contribute significantly to unhealthy levels of fine particles and 8-hour ozone in downwind states. CAIR is an important component of the Administration's plan to help states in the eastern United States meet the national health-based air quality standards. Under CAIR, annual emissions are permanently capped, and there is an additional seasonal NO_x cap for states that contribute significantly to transported ozone pollution.

When fully implemented, CAIR is projected to reduce SO_2 emissions from electrical power generation sources in the covered states by over 70 percent and NO_x emissions by over 60 percent from 2003 levels. CAIR provides incentives for operators of power plants to find the best, fastest, and most efficient ways to make the required emission reductions. It provides incentives to do more as well as serious disincentives for those that do less.

The Clean Air Mercury Rule (CAMR), promulgated on May 15, 2005, is the first-ever Federal rule to permanently cap and reduce mercury emissions from coal-fired power plants. Together CAIR and CAMR are important, complementary components of the Administration's plan to improve air quality. CAMR establishes "standards of performance" limiting mercury emissions from new and existing coal-fired power plants and creates a market-based allowance trading program that will reduce nationwide utility emissions of mercury in two distinct phases. In the first phase cap, which begins in 2010, emissions will be reduced by taking advantage of "co-benefit" reductions—that is, mercury reductions achieved by reducing SO_2 and NO_x emissions

under CAIR. In the second phase, due in 2018, coal-fired power plants will be subject to a second cap, which will reduce emissions to 15 tons upon full implementation.

EPA is responsible for managing the Clean Air Status and Trends Network (CASTNET), a dry deposition monitoring network, as well as for providing operational support for the National Atmospheric Deposition Program (NADP), a wet deposition monitoring network. CASTNET is a national long-term atmospheric deposition monitoring network established in 1987 and serves as the nation's primary source for atmospheric data on the dry deposition component of total acid deposition, rural ground-level ozone and other forms of atmospheric pollution that enter the environment as particles and gases. Used in conjunction with the NADP and other networks, CASTNET long-term datasets and data products are used to help determine the efficacy of national emission control programs through monitoring geographic patterns and temporal trends in ambient air quality and atmospheric deposition in rural areas of the country. Maintaining a robust long-term atmospheric deposition monitoring network is critical for the accountability of the Acid Rain Program as well as other programs for controlling transported air pollutants (NO_x Budget Program, CAIR). These monitoring efforts play a crucial role in the Agency's ongoing assessment activities, including reporting outcomes under the Program Assessment Rating Tool (PART) and the Government Performance and Results Act (GPRA), and fulfilling assessment responsibilities under the US-Canada Air Quality Agreement and Title IX of the Clean Air Act.

FY 2007 Activities and Performance Plan:

The activities listed below for implementation of CAIR/CAMR would also support implementation of Clear Skies or a comparable program, if legislation is passed.

Performance Assessment: In 2005 OMB assessed the Federal NAAQS and Regional Haze programs, and rated them as "Adequate." The NAAQS program sets standards to protect human health and the environment from the effects of air pollution. The Regional Haze program, which addresses some of the same pollutants, improves visibility in areas of special natural, recreational, scenic, or historic value. The program is working on developing a broader, more integrated multiple-pollutant approach in standard-setting and will be working on developing an efficiency measure to show efficiency improvements over time.

- Assist states in CAIR implementation: Provide technical assistance to states in completing and promulgating rules to implement CAIR. Review state plans for CAIR; assist states in resolving issues related to applicability and monitoring as well as provide technical support. CAIR is a complex program that EPA wants to put in place rapidly at the state level to allow sufficient time for industry compliance starting in 2009 (NO_x) and 2010 (SO_2). Provide outreach, allowance trading education, and orientation for states and affected industry.

- Maximize flexibility for affected sources: Develop software that will facilitate optimum trading and efficient, cost-effective program implementation by building on existing Acid Rain electronic allowance trading and emissions reporting systems to support CAIR.

- Provide litigation program support for CAIR: Conduct legal, technical, and economic analyses to support timely implementation of the rule; continue assessing regulatory impacts on the US economy, environment, small business, and local communities. Harmonize Part 75 (Acid Rain Program) provisions with CAIR requirements.

- Develop the operating infrastructure: Effective and efficient operation of the CAIR program depends critically upon further development of the e-GOV infrastructure supporting the Acid Rain electronic allowance trading and emissions reporting systems. Data collection requirements must be determined and operating software and hardware specifications developed. Initial software development should also begin to expand current tracking systems to accommodate CAIR in addition to the Acid Rain Program.

- Develop baselines and prepare to assess program benefits: Establish an integrated assessment program to include enhanced ambient and deposition monitoring, efficiency measures that will include the total cost of the program, and indicators to track health and environmental benefits, as called for by the National Academy of Sciences.

- Ensure the program's credibility and results: Successful trading programs require accurate and consistent monitoring of emissions from affected sources. Propose performance specifications and investigate monitoring alternatives and methods to improve the efficiency of monitor certification and emissions data reporting, especially for sources that are new to market-based control programs.

- Assist states considering regional programs for Electric Generating Units (EGU's) outside of the CAIR region: EPA will work with states to create cap-and-trade programs where they potentially could be more cost-effective than application of Best Available Retrofit Technology (BART).

- Work with states and tribes on implementation of the CAMR: EPA will work with states and tribes on emissions monitoring provisions. Required mercury monitoring and reporting for CAMR begins in 2009. EPA will also assist the states and tribes that elect to participate in the Federally administered interstate CAMR allowance trading program to establish allowance allocations and implement reconciliation procedures.

In FY 2007, the program will continue the refurbishment project to modernize and enhance CASTNET. The program has made progress in evaluating alternative technologies and in procuring new equipment to be deployed at three CASTNET sites in order to test operational performance under realistic field conditions. The upgraded site equipment, reconfigured network and improved geographic coverage will help to ensure its continued viability and to enhance the monitoring capacity to support ongoing and future accountability needs, particularly relating to interstate pollutant transport. The program plans to:

- Complete a pilot phase study to evaluate options for upgrading CASTNET with new advanced measurement instrumentation.

- Select and procure advanced technology monitoring equipment for additional CASTNET sites, extending the pilot technology to a broader representation of field conditions.

- Expand a technology assessment program to compare performance of new and existing CASTNET monitoring instrumentation.

- Complete a data comparability study to evaluate how data collected by the advanced technology instrumentation compares and relates to the existing CASTNET data, to preserve the integrity of the long-term data record.

- Identify and begin development of new ecological indicators of air quality and atmospheric deposition to expand the suite of environmental metrics available for measuring the performance and efficiency of the operating programs consistent with the PART measures developed in cooperation with OMB.

In addition, the program provides analytical support for the interagency National Acid Precipitation Assessment Program (NAPAP). NAPAP coordinates Federal acid deposition research and monitoring of emissions, acidic deposition, and their effects, including assessing the costs and benefits of Title IV. In 2007, the program will continue analyzing the costs and benefits of the Acid Rain Program for inclusion in NAPAP's Integrated Assessment Report.

Performance Targets:

Measure Type		FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Percent change in average sulfur deposition and mean ambient sulfate concentrations reduced.				29	Percentage Reduction

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Percent change in average nitrogen deposition and mean total ambient nitrate concentrations reduced.				10	Percentage Reduction

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Tons of sulfur dioxide emissions from electric power generation sources	Data Lag	6,900,000	7,000,000	7,500,000	Tons Reduced

Reducing emissions of SO_2 remains a crucial component of EPA's strategy for cleaner air. Particulate matter can be formed from direct sources (such as diesel exhaust or smoke), but can also be formed through chemical reactions. Emissions of SO_2 can be chemically transformed into ammonium sulfates, which are very tiny particles that can be carried hundred of miles by winds. These same small particles are also a main pollutant that impairs visibility across large areas of the country, particularly national parks that are known for their scenic views. Meeting EPA's national health-based air quality standards is an important step towards ensuring the air is safe to breathe. To meet the standards, EPA, states, tribes, and local governments work as partners to reduce emissions of SO_2.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$732.4) Funding will support modeling and monitoring efforts for CAIR and CAMR implementation.

Statutory Authority:

CAA (42 U.S.C. 7401-7661 f).

Federal Support for Air Quality Management

Program Area: Air Toxics and Quality
Goal: Clean Air and Global Climate Change
Objective(s): Healthier Outdoor Air

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$89,350.1	$95,949.0	$88,065.6	($7,883.4)
Science & Technology	***$10,747.8***	***$10,012.0***	***$10,272.9***	***$260.9***
Total Budget Authority / Obligations	$100,097.9	$105,961.0	$98,338.5	($7,622.5)
Total Workyears	721.3	715.9	709.0	-6.9

Program Project Description:

This program supports state development of the clean air plans through developing modeling and other tools. EPA works with states and local governments to ensure the technical integrity of the mobile source controls in the State Implementation Plans (SIPs). Also, EPA assists states and local governments that identify the most cost-effective control options available.

FY 2007 Activities and Performance Plan:

Performance Assessment: In 2005 OMB assessed the NAAQS and Regional Haze Programs through the PART process, and rated them as "Adequate." The NAAQS program sets standards to protect human health and the environment from the effects of air pollution. The Regional Haze program, which addresses some of the same pollutants, improves visibility in areas of special natural, recreational, scenic, or historic value. The program is working on developing a broader, more integrated multiple-pollutant approach in standard-setting. In promulgating air quality standards, the program clearly outlines the expected health and environmental benefits and will be working on developing an efficiency measure to show efficiency improvements over time.

As part of implementing the 8-hour ozone and $PM_{2.5}$ standards, EPA will continue to provide state and local governments with substantial assistance in implementing the conformity rule during this period. In FY 2007, EPA will continue to ensure national consistency in how conformity determinations are conducted across the US. EPA will continue to ensure consistency in adequacy findings for motor vehicle emissions budgets in air quality plans, which are used in conformity determinations. EPA also will continue working on revising the conformity rule to address changes made in Safe Accountable Flexible Efficient Transportation Equality Act – A Legacy for Users (SAFETEA-LU). In addition, EPA will work with states and local governments to ensure the technical integrity of the mobile source controls in the SIPs for the 8-hour ozone and $PM_{2.5}$ air quality standards which are due in 2007 and 2008, respectively. EPA will also assist areas in identifying the most cost-effective control options available and provide guidance, as needed, for areas that implement conformity.

EPA will partner with states, tribes, and local governments to create a comprehensive compliance program to ensure that vehicles and engines pollute less. EPA will use advanced in-

use measurement techniques and other sources of in-use data to monitor the performance of On-board Diagnostics (OBD) systems on vehicle models to make sure that OBD is a reliable check on the emissions systems as part of vehicle inspection and maintenance (I/M) programs. In FY 2005, basic and/or enhanced vehicle I/M testing was being performed in over 30 states with technical and programmatic guidance from EPA. In FY 2007, EPA will continue to assist states in incorporating OBD inspections into their I/M programs.

EPA will continue to assist state, Tribal, and local agencies implement and assess effectiveness of national clean air programs via a broad suite of analytical tools. (For more information visit: http://www.epa.gov/ttn/).

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Cumulative percent reduction in population-weighted ambient concentration of ozone in monitored counties from 2003 baseline.	Available in 2006	3	5	6	Percentage

EPA, collaborating with the states, will be implementing federal measures and assisting with the development of clean air plans to continue to improve air quality as measured by the air quality index and other measures.

FY 2007 Change from FY 2006 Enacted Operating Plan (Dollars in Thousands):

- (+$202.0) This reflects an increase for payroll and cost of living for existing FTE.
- (+$58.9) This increase will provide additional assistance to States for conformity implementation.

Statutory Authority:

CAA (42 U.S.C. 7401-7661f); Motor Vehicle Information Cost Savings Act; Alternative Motor Fuels Act of 1988; National Highway System Designation Act; NEP Act.

Federal Support for Air Toxics Program

Program Area: Air Toxics and Quality
Goal: Clean Air and Global Climate Change
Objective(s): Healthier Outdoor Air

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$23,518.7	$25,405.0	$25,513.7	$108.7
Science & Technology	***$3,040.8***	***$2,225.0***	***$2,264.7***	***$39.7***
Total Budget Authority / Obligations	$26,559.5	$27,630.0	$27,778.4	$148.4
Total Workyears	139.5	144.8	144.2	-0.6

Program Project Description:

Federal support for the air toxics program includes a variety of tools to help characterize the level of risk to the public and measure the Agency's progress in reducing this risk. The program will develop and provide information and tools to assist state, local, and Tribal agencies as well as communities to reduce air toxics emissions and risk specific to their local areas.

Reductions in emissions of mobile source air toxics, such as diesel particulate matter (PM), are achieved through innovative and voluntary approaches working with state, local, and Tribal governments as well as a variety of stakeholder groups. This program also includes activities related to the Stationary Source Residual Risk Program.

FY 2007 Activities and Performance Plan:

Performance Assessment: The Air Toxics program, re-assessed by OMB in 2004, received a rating of "Adequate." The Program reduces emissions of toxic air pollutants by establishing and reviewing technology-based regulations for mobile and stationary sources. The Program also collects information about exposure to air toxics and provides tools and compliance assistance to state, Tribal, and local air pollution control agencies. The program is working on improving monitoring systems to fill data gaps and get a better assessment of actual population exposure to toxic air pollution.

In FY 2007, EPA will work with a broad range of stakeholders to develop incentives for different economic sectors (construction, ports, freight, and agriculture) to address the emissions from existing diesel engines. Work is being done across these sectors at the national and regional level to clean up the existing fleet. This work addresses emissions from diesel engines that both contribute to meeting the Agency's Ambient Air Quality Goals and reduce the harmful exposure to air toxics from diesel engines. EPA has also developed several emissions testing protocols that will provide potential purchasers of emission control technology a consistent, third party evaluation of emission control products. EPA has developed partnerships with state and local governments, industry, and private companies to create project teams to help fleet owners create the most cost-effective retrofit programs.

EPA also will continue to provide technical expertise and support to state, local, and tribal air toxics programs in assessing and reducing mobile source air toxics. This support includes models and other assessment tools; guidance on the application of such tools for evaluating impacts of proposed transportation facilities and the benefits of voluntary mobile source control programs; and education and outreach materials.

EPA will work with partners to develop improved emission factors and inventories. This effort will include gathering improved activity databases and using geographic information systems (GIS) and satellite remote sensing, where possible, for key point, area, mobile and fugitive source categories and global emission events.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Cumulative percentage reduction in tons of toxicity-weighted (for cancer risk) emissions of air toxics from 1993 baseline.			22	22	Percentage

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Cumulative percentage reduction in tons of toxicity-weighted (for noncancer risk) emissions of air toxics from 1993 baseline.			55	56	Percentage

Implementation of the MACT standards is expected to result in the reduction of over 1.7 million tons of hazardous air pollutants. These emission reductions, used in conjunction with unit risk estimates and reference concentration information, will be converted to toxicity-weighted emission reductions. Changes to the FY 2007 level of funding will not impact the established targets as they are based on standards already promulgated.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$23.2) This reflects an increase for payroll and cost of living for existing FTE.

- (+$16.5) This increase will help develop or revise three toxics emission factors using control strategies.

Statutory Authority:

CAA (42 U.S.C. 7401-7661f).

Federal Vehicle and Fuels Standards and Certification

Program Area: Air Toxics and Quality
Goal: Clean Air and Global Climate Change
Objective(s): Healthier Outdoor Air

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$60,614.9***	***$58,613.0***	***$68,324.5***	***$9,711.5***
Total Budget Authority / Obligations	$60,614.9	$58,613.0	$68,324.5	$9,711.5
Total Workyears	285.8	283.2	295.2	12.0

Of this requested amount, $19 million should be appropriated from the Environmental Services fund from resources collected by the mobile source compliance fees.

Program Project Description:

The most common mobile sources of air pollution are highway motor vehicles and their fuels. Other mobile sources, such as airplanes, ships, construction equipment and lawn mowers also produce significant amounts of pollutants. EPA regulates the air pollution produced by all of these sources. The Agency also provides emissions and fuel economy information for new cars, funds grants for the development of cleaner burning fuels and alternative energy sources, and educates consumers on the ways their actions affect the environment.

Primary responsibilities include: developing national regulatory programs to reduce mobile source-related air pollution from light-duty cars and trucks, heavy-duty trucks and buses, nonroad engines and vehicles and their fuels; evaluating emission control technology; and providing state and local air quality regulators and transportation planners with access to critical information on transportation programs and incentive-based programs. Other activities include testing vehicles, engines and fuels, and establishing test procedures for and determining compliance with Federal emissions and fuel economy standards.

FY 2007 Activities and Performance Plan:

Performance Assessment: OMB assessed the Mobile Sources program in 2004 through the PART process, and rated it as "Moderately Effective." The Program protects public health by limiting harmful emissions from mobile sources of air pollution. Emissions of key air pollutants from motor vehicles per vehicle-miles-traveled have decreased substantially since enactment of the 1990 Clean Air Act Amendments. The Program will continue to monitor efficiency improvements.

In FY 2007, EPA will support implementation of the Tier II light-duty (LD) vehicle program, the 2007-2010 Heavy-Duty (HD) Diesel standards, and the Non-Road Diesel Tier 4 standards (and earlier nonroad standards) in order to ensure the successful delivery of cleaner vehicles, equipment, and fuel. In FY 2007, a number of regulatory actions will be under development or completed. A final rule is planned in FY 2007 to implement the Renewable Fuels Standard (RFS) required by the Energy Policy Act (EPAct) of 2005. This complex rulemaking will set the stage for several more EPAct provisions required of the Agency over the next few years. A final rule is also planned in FY 2007 concerning on-board diagnostic (OBD) standards for engines used in

heavy-duty trucks. Because of the recently promulgated 2007 HD truck standards, these vehicles will become more complex and dependent on electronic controls and exhaust emission control technology. In FY 2007, EPA will finalize a rule that will reduce toxic emissions from mobile sources by setting new standards to limit the benzene content of gasoline; reduce hydrocarbon emissions from passenger vehicles operating at cold temperatures; and reduce evaporation and spillage from gas cans. An EPA rule will be issued addressing exhaust and evaporative emissions from small gasoline engines (under 50 horsepower), including all recreational marine gasoline engines, non-handheld engines (such as those used in lawnmowers), and handheld engines (such as those used in trimmers and chainsaws). In FY 2007, EPA also plans to issue a final rule for new test methods for the fuel economy labeling program. The new test methods will lower the city and highway MPG estimates for new cars and trucks, and bring them closer to the fuel economy consumers are getting in the real-world. This rule was proposed in January 2006 and the new test methods will take effect in model year 2008. EPA is also planning a rulemaking action to review and revise, as appropriate, the long-term emission standards for snowmobiles, consistent with a 2004 court order. Rulemakings are also planned in FY 2007 for more stringent standards for locomotives and marine diesel engines and for further reducing emissions from large commercial ships. Technology reviews for the Nonroad Tier 4 program and Nonroad Fuel Implementation were planned for 2007, but will be delayed due to a high priority shift for efforts related to the Energy Policy Act (EPAct).

EPA's National Vehicle and Fuel Emissions Laboratory (NVFEL) will continue to conduct vehicle emission tests as part of the pre-production tests, certification audits, in-use assessments, and recall programs to support mobile source clean air programs. Tests are conducted on motor vehicles, heavy-duty engines, non-road engines, and fuels to: 1) certify that vehicles and engines meet Federal air emission and fuel economy standards; 2) ensure engines comply with in-use requirements; and 3) ensure fuels, fuel additives, and exhaust compounds meet Federal standards. In FY 2007, EPA will continue to conduct testing activities for fuel economy, LD vehicle and HD engine characterization, Tier II testing, reformulated gasoline, future fleets, OBD evaluations, certification audits, and recall programs.

EPA will review and approve approximately 2,400 vehicle and engine emissions certification requests, including light-duty vehicles, heavy-duty diesel engines, nonroad engines, marine engines, locomotives and others. The Agency will review the first in-use verification program (IUVP) data submitted by vehicle manufacturers to determine whether there are any emissions compliance issues, and continue the development of a new, web-based compliance information system to be used by manufacturers and EPA staff to house compliance data for all regulated vehicles and engines.

EPA will also test heavy-duty diesel engines to support implementation of the 2007 HD diesel requirements and non-road diesel engine rulemaking activities. In-use compliance is an important element of EPA's regulatory programs ensuring that new engine standards are actually met under real-world conditions. EPA will implement a manufacturer-run in-use compliance surveillance program for highway heavy-duty diesel engines. Additionally, EPA is planning to propose a manufacturer-run in-use testing program for nonroad diesel engines.

EPA also will continue implementing the Reformulated Gasoline (RFG) program, which is designed to substantially reduce vehicle emissions of ozone-forming and toxic pollutants. Major changes in the RFG regulations will be introduced to account for the elimination of the oxygen mandate in light of the new Energy Policy Act of 2005. Additionally, new opt-in rules covering newly eligible areas (under the Energy Policy Act) will have to be promulgated and implemented. EPA also will continue to address issues associated with the use of oxygenates (e.g., MTBE and ethanol) and will review the industry's retail station survey plan.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Limit the increase of CO emissions (in millions of tons) from mobile sources compared to a 2000 baseline.	0.84M	0.84M	1.01 M	1.18M	Millions of Tons

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Millions of Tons of Volatile Organic Compounds (VOCs) Reduced since 2000 from Mobile Sources	0.86M	0.86M	1.03 M	1.20M	Millions of Tons

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Millions of Tons of Nitrogen Oxides (NOx) Reduced since 2000 Reduced from Mobile Sources	1.69M	1.69M	2.03 M	2.37M	Millions of Tons

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Tons of PM-10 Reduced since 2000 from Mobile Sources	62,161	62,161	74,594	87,026	Tons

Funding will allow EPA to continue achieving results in reducing pollution from mobile sources, especially NOx emissions. The Tier 2 Vehicle program, which took effect in 2004, will make new cars, SUVs, and pickup trucks 77 to 95 percent cleaner than 2003 models. Beginning in 2007, the Clean Trucks and Buses program will make new highway diesel engines as much as 95 percent cleaner than current models. Under the Non-road Diesel program, new fuel and engine requirements will reduce sulfur in off-highway diesel by more than 99 percent by 2010.

Combined, these measures will prevent over 22,000 premature deaths each year, reduce millions of tons of pollution a year, and prevent hundreds of thousands of respiratory illnesses.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$9,000.0) This increase in funding is provided to support implementation of the Energy Policy Act's Renewable Fuel Standard (RFS). This complex rulemaking will set the stage for several more Energy Act provisions required of the Agency over the next few years.

- (-$2033.0) This change represents redirections within this program project to address high priority Energy Policy Act implementation work.

- (+20.0 FTE) This increase in FTE is provided to support implementation of the Energy Policy Act's Renewable Fuel Standard (RFS).

- (-5.0 FTE) These FTE were reprogrammed to support the Clean Air Interstate Trading Rule implementation. These FTE will be used to augment existing work in: modifying data systems; establishing allowance accounts; allocating allowances; assisting States in developing and promulgating their State Implementation Plans (SIP); assisting affected facilities through set up of certification emissions measurement equipment; and to establish baseline assessments for program accountability.

- (-3.0 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

- (+$101.4) This increased funding will cover increases in fixed-costs at the National Vehicles and Fuels Emissions Laboratory.

- (+$2,643.7) This reflects the net increase for payroll and cost of living for existing FTE; the increase in number of FTE for Energy Policy Act work; and the reduction in payroll associated with the decreases in FTE for the reprogramming to the CAIR rule implementation and the Agency's workforce management strategy.

Statutory Authority:

CAA (42 U.S.C. 7401-7661f); Motor Vehicle Information Cost Savings Act; Alternative Motor Fuels Act of 1988; National Highway System Designation Act; National Environmental Policy Act; Energy Policy and Conservation Act; and Energy Policy Act of 2005.

Radiation: Protection
Program Area: Air Toxics and Quality
Goal: Clean Air and Global Climate Change
Objective(s): Radiation

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$11,694.4	$11,178.0	$10,648.6	($529.4)
Science & Technology	***$2,552.0***	***$2,086.0***	***$2,054.3***	***($31.7)***
Hazardous Substance Superfund	$1,969.4	$2,120.0	$2,323.3	$203.3
Total Budget Authority / Obligations	$16,215.8	$15,384.0	$15,026.2	($357.8)
Total Workyears	102.0	103.5	96.6	-6.9

Program Project Description:

This program supports the maintenance of an on-going radiation protection capability at the National Air and Radiation Environmental Laboratory (NAREL) located in Montgomery, Alabama and the Radiation and Indoor Environments National Laboratory (R&IE) located in Las Vegas, Nevada. These laboratories provide radioanalytical and mixed waste testing and analysis of environmental samples to support site assessment, clean-up, and response activities.

Both labs provide technical support for conducting site specific radiological characterizations and clean-ups, which uses the best available science to develop risk assessment tools. The labs also develop guidance for cleaning up sites that are contaminated with radioactive materials in collaboration with the public, industry, states, tribes and other governments. EPA, in partnership with other Federal agencies, will promote the management of radiation risks in a consistent and safe manner.

FY 2007 Activities and Performance Plan:

In FY 2007 EPA, the Department of Energy (DOE), Department of Defense (DOD), state and local governments and other Federal Agencies will: assist with site charcterizations and providing analytical support for site assessment activities, remediation technologies, and measurement and information systems; and provide training and direct site assistance including laboratory, field, and risk assessment support at sites with actual or suspected radioactive contamination.

EPA's laboratories will provide radiological and technical support to EPA Program Managers and On-Scene Coordinators, the public, industry, tribes and state and local governments. EPA will also conduct approximately 1,300 radioanalytical and mixed waste analyses in support of Regional site assessments, cleanups and response activities.

Performance Targets:

EPA is developing new outcome-oriented performance measures for this program in preparation for a 2006 PART assessment. The program will have new performance information to report in FY 2008. EPA will continue to track progress on routine program indicators such as preparedness and response capability for radiological incidents.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (-$8.8) This decrease will affect testing at the National Radiation and Indoor Environments Laboratory of radiation samples to support rules and guidances.

- (-$22.9) This decrease is the net effect of increases for payroll and cost of living increases for existing FTE, combined with a reduction based on the recalculation of base workforce costs.

- (-1 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

Statutory Authority:

AEA of 1954, as amended, 42 U.S.C 2011 et seq. (1970), and Reorganization Plan #3 of 1970; CAA Amendments of 1990; CERCLA, as amended by the SARA of 1986 ; Energy Policy Act of 1992, P.L. 102-486; Executive Order 12241 of September 1980, National Contingency Plan, 3 CFR, 1980; NWPA of 1982; PHSA, as amended, 42 U.S.C 201 et seq.; SDWA; UMTRCA of 1978; Waste WIPP Land Withdrawal Act.

Radiation: Response Preparedness
Program Area: Air Toxics and Quality
Goal: Clean Air and Global Climate Change
Objective(s): Radiation

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$2,284.4	$2,632.0	$2,688.7	$56.7
Science & Technology	***$2,460.0***	***$3,468.0***	***$3,585.9***	***$117.9***
Total Budget Authority / Obligations	$4,744.4	$6,100.0	$6,274.6	$174.6
Total Workyears	35.1	42.3	42.3	0.0

Program Project Description:

The National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama and the Radiation and Indoor Environments National Laboratory (R&IE) in Las Vegas, Nevada provide field sampling and analyses, laboratory analyses, and direct scientific support to respond to radiological and nuclear incidents. This includes measuring and monitoring radioactive materials in the environment and assessing of radioactive contamination in the environment. This program comprises direct scientific field and laboratory activities to support preparedness, planning, training, and procedures development. In addition, selected staffs are members of EPA's Radiological Emergency Response Team (RERT) and are trained to provide direct expert assistance in the field.

FY 2007 Activities and Performance Plan:

In FY 2007, EPA's RERT, a component of the Agency's emergency response structure, will maintain its preparedness in the laboratories for radiological incidents including those for which EPA is the Coordinating Agency under the National Response Plan. The laboratory RERT members will conduct training and exercises to enhance their ability to fulfill EPA responsibilities in the field, using mobile analytical systems, and in the fixed labs, in order to provided the necessary mix of rapid and accurate radionuclide analyses in environmental matrices.[1]

Also in FY 2007, the research labs will continue to be ready to deploy field teams that provide scientific data, analyses and updated analytical techniques for radiation emergency response programs across the Agency; maintain readiness for radiological emergency responses, participate in mock emergency response situations; provide on-site scientific support to state radiation, solid waste, and health programs that regulate radiation remediation; participate in the Protective Action Guidance (PAG) workshops; and respond, as required, to radiological incidents.

[1] Additional information can be accessed at: http://www.epa.gov/radiation/rert/rert.htm last accessed 1/20/2006.

Performance Targets:

EPA is developing new outcome-oriented performance measures for this program in preparation for a 2006 PART assessment. The program will have new performance information to report in FY 2008. EPA will continue to track progress on routine program indicators such as preparedness and response capability for radiological incidents.

FY 2007 Change from FY 2006 Enacted Budget Request (Dollars in Thousands):

- (+$9.1) This increase supports costs associated with maintaining field sampling, laboratory analyses, preparedness, planning and training in the National Air and Radiation Environment Laboratory and the Radiation and Indoor Environments National Laboratory.

- (+$108.8) This reflects an increase for payroll and cost of living for existing FTE.

Statutory Authority:

AEA of 1954, as amended, 42 U.S.C 2011 et seq. (1970), and Reorganization Plan #3 of 1970; CAA. Amendments of 1990; CERCLA, as amended by the (SARA); Executive Order 12241 of September 1980, National Contingency Plan, 3 CFR, 1980; Executive Order 12656 of November 1988, Assignment of Emergency Preparedness Responsibilities, 3 CFR, 1988; Public Health Service Act, as amended, 42 U.S.C 201 et seq.; Robert T. Stafford Disaster Relief and EAA, as amended, 42 U.S.C 5121 et seq.; SDW Act; and Title XIV of the NDA of 1997, PL 104-201 (Nunn-Lugar II).

Program Area: Climate Protection Program

Climate Protection Program

Program Area: Climate Protection Program
Goal: Clean Air and Global Climate Change
Objective(s): Reduce Greenhouse Gas Intensity; Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$92,457.2	$90,834.0	$91,843.3	$1,009.3
Science & Technology	***$20,448.0***	***$18,648.0***	***$12,549.6***	***($6,098.4)***
Total Budget Authority / Obligations	$112,905.2	$109,482.0	$104,392.9	($5,089.1)
Total Workyears	218.1	216.3	214.1	-2.2

Program Project Description:

EPA manages the Clean Automotive Technology (CAT) and the Fuel Cell and Hydrogen programs to recognize and remove barriers in the marketplace, and to more rapidly deploy technology into the transportation sector of the economy. The Agency's Clean Automotive Technology program develops advanced clean and fuel-efficient automotive technology to better protect the environment and save energy. The emphasis of Clean Automotive Technology program work for the next 5-10 years will be research and collaboration with the automotive, trucking, and fleet industries. Through cooperative research and development agreements (CRADA), EPA's unique hydraulic hybrid technology and advanced clean-engine technologies will be demonstrated in vehicles, such as large SUVs, pickup trucks, urban delivery trucks, school buses, shuttle buses, and refuse trucks. The intent of these real world demonstrations is to lead to the initial commercial introduction of significant elements of EPA's technologies by vehicle manufacturers.

Under the Fuel Cell and Hydrogen program, EPA will continue working closely with DaimlerChrysler and UPS on the Fuel Cell Delivery Vehicle Testing Program based in Ann Arbor. EPA will also continue to coordinate with key stakeholders through the public/private California Fuel Cell Partnership to facilitate the commercialization of innovative technologies.

FY 2007 Activities and Performance Plan:

In FY 2007, the Clean Automotive Technology Program will:

- Continue to provide technology transfer to partners for clean engine and hydraulic hybrid technologies in order to phase down Federal investment in these technologies; and

- Continue to support field tests for hydraulic-hybrid and clean engine technologies in an urban delivery vehicle or large SUV to achieve better fuel

Performance Assessment: OMB assessed the Climate Change Program in 2004, and gave it a rating of "Adequate." There are over 20 climate change programs which work with the private sector to cost effectively reduce greenhouse gas emissions and facilitate energy efficiency improvements. Each sector (buildings, industry, and transportation) has performance and efficiency measures to track the amount of greenhouse gas emissions that are reduced as a result of the programs' efforts.

economy than the typical baseline vehicle, while meeting or exceeding 2007/2010 Heavy Duty or Tier 2 Bin 5 Light Duty standards.

In FY 2007, the Fuel Cell and Hydrogen Program will:

- Continue to develop and participate in effective government/industry partnerships that advance fuel cell and hydrogen fueling vehicle technologies;

- Continue evaluation of the new-technology "Sprinter" delivery vehicle as a part of the EPA/Daimler Chrysler/UPS Fuel Cell Deliver Vehicle Testing partnership (the first real-world demonstration of a medium duty fuel cell vehicle in the US); and

- Support use of the Motor Vehicles Emissions Simulator (MOVES) model for life-cycle analyses.

Performance Targets:

EPA will work to develop better performance measures that more clearly link to greenhouse gas reduction potential in the near term.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (-$6,244.0) This reduction reflects a phase down in Federal investment in hydraulic hybrid technology development as a result of transfer to private sector of hybrid and clean diesel technologies.

- (+$145.6) This reflects an increase for payroll and cost of living for existing FTE.

Statutory Authority:

CAA Amendments, 42 U.S.C. 7401 et seq. - Sections 102, 103, 104, and 108; Pollution Prevention Act, 42 U.S.C. 13101 et seq. - Sections 6602, 6603, 6604, and 6605; NEPA, 42 U.S.C. 4321 et seq. - Section 102; Global Climate Protection Act, 15 U.S.C. 2901 - Section 1103; Federal Technology Transfer Act, 15 U.S.C. - Section 3701a.

Program Area: Enforcement

Forensics Support
Program Area: Enforcement
Goal: Compliance and Environmental Stewardship
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$13,377.9***	***$13,129.0***	***$13,185.2***	***$56.2***
Hazardous Substance Superfund	$3,599.5	$3,643.0	$4,184.2	$541.2
Total Budget Authority / Obligations	$16,977.4	$16,772.0	$17,369.4	$597.4
Total Workyears	104.1	108.6	107.8	-0.8

Program Project Description:

The Forensics Support program provides specialized scientific and technical support for the nation's most complex civil and criminal enforcement cases, and provides technical expertise for non-routine Agency compliance efforts. EPA's National Enforcement Investigations Center (NEIC) is the only accredited environmental forensics center in the nation. NEIC's Accreditation Standard has been customized to cover the civil, criminal, and special program work conducted by the program.

NEIC collaborates with state, local and Tribal agencies, providing technical assistance, consultation, and on-site investigation and inspection activities in support of the Agency's civil program. In addition, the program coordinates with the Department of Justice and other Federal, state and local law enforcement organizations in support of criminal investigations. For more information visit: http://www.epa.gov/compliance/neic/index.html

FY 2007 Activities and Performance Plan:

Performance Assessment: The Civil Enforcement Program was rated adequate in the last PART review completed for the Program in 2004 based on preparation of a Measures Improvement Plan (MIP) to better characterize pollutant reductions with respect to hazard and exposure.

Throughout FY 2007, efforts to stay at the forefront of environmental enforcement will include the refinement of successful multi-media inspection approaches; use of customized laboratory methods to solve unusual enforcement case problems; applied research and development for both laboratory and field applications. In response to civil and criminal case needs, the NEIC conducts applied research and development to identify and deploy new capabilities, and to test and/or enhance existing methods and techniques involving environmental measurement and forensic situations. As part of this activity, NEIC evaluates the scientific basis and/or technical enforceability of select EPA regulations. The program also provides technical support for national, regional, state, and Tribal initiatives and priorities, as well as the Agency's integrated Compliance Assurance program, using a unique process-based approach.

Also in FY 2007, the Forensics program will continue to function under more stringent International Standards of Operation for environmental data measurements to maintain its accreditation. The program also will continue development of emerging technologies in field measurement techniques and laboratory analytical techniques, as well as identifying sources of pollution at abandoned waste sites.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Pounds of pollution estimated to be reduced, treated, or eliminated as a result of concluded enforcement actions. (civil enf)	1,100	300	450	500	million pounds

This program was included in the Civil Enforcement PART assessment in 2004, which received an overall rating of Adequate based on development of a Measures Implementation Plan. One of the program measures, pounds of pollutants reduced, looks at the overall reduction in pollution as a result of enforcement actions. The Agency is exploring methodologies to extend the measure by analyzing the risk associated with the pollutants reduced. This may entail analysis of pollutant hazards and population exposure.

Although the estimated pollution reductions as a result of the enforcement actions taken by EPA have grown over the past 5 years, they are projections made from future pollution reduction based on the settlement agreements entered during each specific fiscal year. One or two cases can have a significant affect on the end-of-year results. A baseline was established in FY 2006.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (-0.8 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

- (-$312.2) This reflects a decrease for the National Enforcement Investigations Center (NEIC).

- (+$368.4) This reflects an increase for payroll and cost of living for existing FTE.

Statutory Authority:

CAA, as amended; CWA; EPCRA; FIFRA; FTTA; ODA; PPA; Pollution Prosecution Act; RLBPHRA; RCRA, as amended; SDWA; SBIDA; TSCA.

Program Area: Homeland Security

Homeland Security: Critical Infrastructure Protection

Program Area: Homeland Security
Goal: Clean and Safe Water
Objective(s): Protect Human Health

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$6,700.6	$6,787.0	$7,242.7	$455.7
Science & Technology	***$17,952.2***	***$12,393.0***	***$45,251.0***	***$32,858.0***
Hazardous Substance Superfund	$1,348.2	$1,442.0	$1,571.6	$129.6
Total Budget Authority / Obligations	$26,001.0	$20,622.0	$54,065.3	$33,443.3
Total Workyears	47.9	59.0	59.0	0.0

Program Project Description:

This program provides resources to coordinate and support protection of the nation's critical water infrastructure from terrorist threats. Reducing risk in the water sector requires a multi-step approach to: determine risk through vulnerability assessments, reduce risk through security enhancements, and prepare to respond effectively to incidents. Homeland Security Presidential Directives (HSPDs) 7 and 9 direct EPA to help the water sector implement protective measures and develop comprehensive water surveillance and monitoring program. The Public Health Security and Bioterrorism Response and Preparedness Act of 2002 (Bioterrorism Act) also provides that EPA support the water sector in such activities.

FY 2007 Activities and Performance Plan:

EPA will continue to support the WaterSentinel pilot program and water sector-specific agency responsibilities, including the Water Alliance for Threat Reduction (WATR), to protect the nation's critical water infrastructure. In FY 2007, the Agency and major stakeholders in critical water infrastructure protection will continue their efforts to develop and implement measures on the best security practices and policies recommended by the National Drinking Water Advisory Council in 2005.

WaterSentinel

HSPD-9 directs EPA to develop a "robust, comprehensive, and fully coordinated surveillance and monitoring system" for drinking water and a water laboratory network that would support water surveillance and emergency response activities. The overall goal of WaterSentinel is to design and demonstrate an effective system for timely detection and appropriate response to drinking water contamination threats and incidents through a pilot program that would have broad application to the nation's drinking water utilities. Recent analyses underscore the importance of a contaminant warning system that integrates all five components of event detection, as different contaminants are detected by different sequences of triggers or alarms.

5 Components of a Contamination Warning System:

- Enhanced physical security monitoring
- Water quality monitoring
- Routine and triggered sampling of high priority contaminants
- Public health surveillance
- Consumer complaint surveillance

The WaterSentinel program would demonstrate the concept of an effective contamination warning system, so that drinking water utilities, ideally of all sizes and characteristics, could adopt such a system. While a scattering of utilities have deployed elements of a contaminant warning system, WaterSentinel represents a broader effort to integrate all five components into one monitoring and surveillance system. WaterSentinel would provide a comprehensive protocol that would enable utilities to most effectively deploy monitoring stations. EPA's Science Advisory Board is reviewing the design and implementation of the Water Sentinel program.

In FY 2007, EPA will establish, in selected cities, additional pilot contamination warning systems with water utilities through intensive water monitoring and other surveillance. The pilots will integrate information from contaminant-specific sampling and laboratory analysis, on-line water quality monitoring, public health surveillance, customer complaints, and physical security to form a comprehensive contamination warning system. Through the pilots, EPA will analyze the design and implementation issues over a range of system types including: different sized water systems; different types of water delivery systems (open versus closed); and different types of treatment (chlorinated versus non-chlorinated). The addition of water utilities in FY 2007 will allow for more comprehensive testing of the contaminant warning system, as each utility---due to its unique distribution networks, treatment regimens, relationship with public health departments, and other specific circumstances---will encounter different challenges in design and implementation. Ultimately, an expansion of the number of utilities will serve to promote the adoption of WaterSentinel within the water sector, as functioning warning systems among several utilities of potentially divergent configurations will afford a more compelling outcome than just one utility. The pilots will also involve building the analytical capability and capacity necessary to support the contaminant-specific sampling. This entails leveraging existing laboratory infrastructure through select expansion of Federal, state, and utility laboratory resources to enhance the capability and capacity for processing high priority biological, chemical, and radiological threat agents in water. By the end of FY 2007, EPA expects to begin disseminating information learned from the pilots to other water utilities.

In addition, selection of these cities will be tailored to offer opportunities to evaluate the operational experience of different types of water systems. EPA will provide training and technical assistance to water systems on monitoring devices, sampling protocols, analytical methods and consequence management. The Agency will report monitoring results to the National Biosurveillance Integration System run by the Department of Homeland Security (DHS). The Agency will also continue evaluating and improving early warning system and detection devices, analytical methods, and modeling programs for high priority contaminants as well as disseminating information and training drinking water utilities in these new surveillance

technologies. EPA will develop a performance evaluation plan that will describe the specific criteria against which all of the key monitoring and surveillance elements of WaterSentinel will be reviewed. The evaluation plan will enable EPA to identify the most effective, both in terms of early warning and cost, combination of monitoring and surveillance elements.

- For the WaterSentinel program, EPA will fund new pilots in FY 2007. Each pilot entails significant efforts in coordinating with selected utilities, purchasing monitoring and laboratory equipment, installing monitoring stations, ensuring interfaces between the utilities and public health departments, and establishing data management and analysis systems.

- EPA will conduct a program evaluation of the first pilot begun in FY 2006.

- In FY 2007, the Agency and major stakeholders in critical water infrastructure protection will continue efforts to develop and implement performance measures on the best security practices and policies recommended by the National Drinking Water Advisory Council.

Work will be carried out in collaboration with other Federal agencies, such as DHS, Centers for Disease Control and Prevention, Department of Defense, and the U.S. Geological Survey.

Water Sector-Specific Agency Responsibilities

HSPD-7 designates EPA as the Sector-Specific Agency "responsible for infrastructure protection activities" for the water sector (drinking water and wastewater utilities). Under this directive, EPA is responsible for developing and providing tools and training on improving security to the 54,000 community water systems and 13,000 publicly-owned treatment works.[2]

EPA will continue to provide special assistance to high-priority drinking water systems under the Water Alliance for Threat Reduction (WATR). In FY 2006, the Agency will provide training and technical assistance to as many as 100 water utilities serving greater than 100,000 people. In FY 2007, EPA will work to ensure that the remaining 367 large water utilities have tools and information to prevent, detect, and respond to a terrorist or other intentional attack. The following preventive and preparedness activities will be implemented for the water sector in collaboration with DHS and states' homeland security and water officials:

- Continue to develop and conduct exercises to prepare utilities, emergency responders, and decision-makers to evaluate and respond to physical, cyber-, and contamination threats and events;

- Build on recommendations made by the National Drinking Water Advisory Council, continue to provide technical assistance and training to high risk water utilities and

[2] U.S. Environmental Protection Agency. "FACTOIDS: Drinking Water and Ground Water Statistics for 2004." EPA 816-K-05-001 Washington, D.C. May 2005. Available at: http://www.epa.gov/safewater/data/pdfs/data_factoids_2004.pdf

relevant state and local officials on implementing active and effective security programs and practices to protect against the sector's priority vulnerabilities;

- Provide expert technical assistance in preparedness and response for national special security events and incidents; and

- Disseminate (e.g., via the Water Information Sharing and Analysis Center) tools and provide technical assistance to ensure that water utilities and emergency responders react rapidly and effectively to intentional contamination. Tools include information on high priority contaminants, sampling and detection protocols and methods, and treatment options.

- For the Water Alliance for Threat Reduction (WATR), EPA anticipates it will conduct approximately 30 training sessions for drinking water systems serving over 100,000 people.

In FY 2007, EPA will develop the foundation, in coordination with key federal and water sector partners, for a robust critical infrastructure monitoring and surveillance program. In addition, EPA will provide the critical tools, training, and exercises that drinking and wastewater utilities need to detect, prevent, and respond to a terrorist or other intentional attack while fulfilling its responsibility as a Sector-Specific Agency under the National Infrastructure Protection Plan (NIPP).

Performance Targets:

Work under this program supports EPA's protect human health objective. Currently, there are no performance measures specific to this program project.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$30,479.5) This increase will support additional WaterSentinel pilot systems.

- (+$2,256.7) This increase will provide training and technical assistance for water utilities serving greater than 100,000 people.

- (+$121.8) This reflects an increase for payroll and cost of living for existing FTE.

Statutory Authority:

SDWA; CWA; Public Health Security and Bioterrorism Emergency and Response Act of 2002; EPCRA.

Homeland Security: Preparedness, Response, and Recovery

Program Area: Homeland Security
Goal: Clean Air and Global Climate Change
Objective(s): Radiation

Goal: Healthy Communities and Ecosystems
Objective(s): Chemical, Organism, and Pesticide Risks; Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$2,620.2	$3,252.0	$3,328.7	$76.7
Science & Technology	***$33,417.3***	***$35,752.0***	***$44,498.1***	***$8,746.1***
Hazardous Substance Superfund	$38,131.8	$37,579.0	$49,774.9	$12,195.9
Total Budget Authority / Obligations	$74,169.3	$76,583.0	$97,601.7	$21,018.7
Total Workyears	143.2	160.6	165.6	5.0

Program Project Description:

Through research, development and technical support activities, this program continues to increase the Agency's preparedness, and its response and recovery capabilities for homeland security incidents involving chemical, biological or radiological threats,. The Agency continues to increase the state of its knowledge of potential threats, as well as its response capabilities, by assembling and evaluating private sector tools and capabilities so that preferred response approaches can be identified and evaluated for future use by first responders, decision makers, and the public. EPA also continues to work with Federal institutions and other organizations through collaborative research efforts to strengthen decontamination capabilities.

FY 2007 Activities and Performance Plan:

The Agency will continue to strengthen its response capabilities, clarify its roles and responsibilities to ensure an effective response, and promote improved response capabilities across government and industry in areas where EPA has unique knowledge and expertise.

EPA's National Homeland Security Research Center (NHSRC):

The NHSRC oversees Agency research in preparedness, risk assessment, detection, containment, decontamination, and disposal associated with chemical, biological, and radiological attacks. The Center will continue work in support of its responsibilities as assigned in Homeland Security Presidential Directives (HSPDs) (e.g., HSPD-7, HSPD-9, and HSPD-10) and Department of Homeland Security requirements for EPA expertise in a number of key areas. Activities in FY 2007 will include the following:

- Water infrastructure protection research will focus on developing, testing, demonstrating, communicating, and implementing enhanced methods for detection, treatment, and

containment of biological and chemical warfare agents, certain radiological contaminants, and bulk industrial chemicals intentionally introduced into drinking water and wastewater systems. This is consistent with the Critical Infrastructure Protection Plan (CIPP) developed for water infrastructure and with the *Water Security Research and Technical Support Action Plan*.

- Threat and consequence assessment research will focus on conducting risk assessments of decontamination byproducts; refining toxicity databases; developing fate, transport, dispersion, and exposure parameters; and developing computer-based tools to aid decision makers in assessing the risks associated with biological and chemical attacks; as well as determination/revision of cleanup guidance goals.

- To support the new Homeland Security requirements under HSPDs 9 and 10, EPA will expand its Standardized Analytical Methods (SAM) document for Homeland Security to include development, validation, and testing of non-standard methods and additional methods for chemicals, biologicals, and radiologicals in new environmental matrices. EPA will also establish an applied measurement science research program to administer the activities of a national laboratory network that will manage method development, validation, and application for contaminants resulting from terrorist attacks.

- EPA will conduct critical research to improve existing decontamination systems and to develop and test new decontamination methods and systems for buildings, large structures, and outdoor areas. In addition, field studies to validate decontamination methods specific to anthrax will be conducted, as will research to develop decontamination and disposal methods for building materials.

- Other efforts will be conducted to begin evaluating toxicity, infectivity, mechanisms of action, and other risk characterization information of biological contaminants in order to develop dose/response relationships and cleanup goal estimates. Additionally, work will begin to evaluate existing technologies that can be applied to *in situ* management of crops and animal carcasses contaminated with threat agents.

- EPA's Homeland Security research program plans to have several projects and proposals reviewed by independent scientific advisory bodies during FY 2007. EPA has set up a special Science Advisory Board (SAB) committee to review research related to Homeland Security. In addition, EPA's Homeland Security research program has tentatively planned a Board of Scientific Counselors (BOSC) review.

Radiation Monitoring:

In the Nuclear/Radiological Incident Annex to the National Response Plan for Homeland Security, EPA's responsibilities include maintenance and enhancement of the RadNet monitoring network. The network includes deployable monitors, conventional monitors, and fixed, near-real-time monitors. (RadNet, until early 2005, was known as the Environmental Radiation Monitoring System [ERAMS]). EPA also is responsible for maintenance of both fixed

and mobile personnel and asset readiness for radiological emergency responses, which includes participating in emergency response situations and providing technical expertise and support.

- The Agency will continue to upgrade and enhance the RadNet air monitoring network. From FY 2005 through FY 2007, EPA expects to deploy approximately 110 monitors providing near real-time radiation monitoring coverage for over 60% of the U.S. population. As the RadNet air monitoring network is upgraded and enhanced, response time and data dissemination will be reduced from days to hours and will provide the Agency with greater access to near real-time data, enabling officials to make decisions about protecting public health during an incident and improving preparedness for radiological incidents.

- By FY 2009, approximately 150 fixed radiation air monitors will have been deployed providing near real-time radiation monitoring coverage for close to 70% of the U.S. population. Monitors will be put into operation as they are delivered and installed at the sites by the manufacturer. These near-real-time monitors will replace the existing system of 60 conventional air samplers that comprise the current air network of RadNet. Fixed stations will operate in conjunction with 40 deployable monitors.

- In FY 2007, EPA will build upon work begun in FY 2006 to augment EPA's existing applied science radiological labs to meet emerging homeland security needs and serve as the Agency's radiological reference laboratory. Also, EPA will continue to upgrade the Agency's lab response capability to ensure a minimal level of surge capacity for radiological terrorism incidents; enhance the existing capability to conduct chemical and radiological analysis simultaneously; and coordinate the Radiological Emergency Response Team's sample handling protocols with the mobile triage units. Additionally, EPA will align and integrate related radiological activities with existing National Lab Networks and initially assess capability and capacity of ten state, Federal, and commercial laboratories.

Biodefense:

EPA will continue work to develop and validate methods to evaluate the efficacy of products against bioterrorism agents, expanding this work to address fumigants. EPA will address critical gaps in efficacy test methodology and knowledge of microbial resistance. In addition to bacteria, in FY 2007, EPA will begin to address threatening viruses and other emerging pathogens in environmental media. Thus far, decontamination test methods for viruses have not been addressed. EPA will propose the development and evaluation of efficacy test protocols for products designed to control viruses in the environment during decontamination.

Performance Targets:

Work under this program supports multiple performance objectives. Currently, there are no performance measures specific to this program project.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$196.4) This reflects increases for payroll and cost of living for existing FTE.

- (+$442.3) This increase will support Homeland Security research activities in the fields of threat and consequence assessment and management, and water infrastructure protection.

- (+$7,075.0) This increase in Homeland Security research includes: (1) development of new or revised sampling and analytical methods for chemical, biological, and radiological contaminants of concern; (2) testing and evaluation of outdoor decontamination methods; (3) evaluation of treatment and disposal options for agricultural biomass; and (4) evaluation of the health risks from decontamination by-products.

- (+$337.8) This increase will provide statistical contract support to develop methodologies for evaluating the efficacy of antimicrobial compounds and fund expenses at the environmental chemistry lab related to biodefense activities.

- (+$545.1) Increase requested to acquire updated mobile radiological monitoring equipment to better respond to radiological events.

- (+$112.6) This is the result of minor adjustments to IT and telecommunication resources to more accurately align with Agency priorities.

- (+$36.9) This change is the net result of realigning workforce and support costs to more accurately reflect programmatic priorities.

Statutory Authority:

Atomic Energy Act of 1954, as amended, 42 U.S.C 2011 et seq. (1970), and Reorganization Plan #3 of 1970; CAA; CERCLA, SARA; Executive Order 12241 of September 1980, National Contingency Plan, 3 CFR, 1980; Executive Order 12656 of November 1988, Assignment of Emergency Preparedness Responsibilities, 3 CFR, 1988; Public Health Service Act, as amended, 42 U.S.C 201 et seq.; Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, 42 U.S.C 5121 et seq.; SDWA; Title X IV of the National Defense Authorization Act of 1997, PL 104-201 (Nunn-Lugar II) National Response Plan; Public Health Security and Bioterrorism Emergency and Response Act of 2002; TSCA; Oil Pollution Act; Pollution Prevention Act; RCRA; EPCRA; CWA; FIFRA; Federal Food, Drug and Cosmetic Act; FQPA; Ocean Dumping Act; Public Health Service Act, as amended; 42 U.S.C 201 et seq.; Executive Order 10831 (1970); Public Law 86-373; PRIA.

Homeland Security: Protection of EPA Personnel and Infrastructure

Program Area: Homeland Security

Goal: Provide Agency-wide support for multiple goals to achieve their objectives. This support involves Agency-wide activities primarily provided by EPA's six (6) support offices - the Office of Administration and Resources Management (OARM), Office of the Chief Financial Officer (OCFO), Office of Environmental Information (OEI), Office of General Counsel (OGC), Office of the Administrator (OA), and the Office of Inspector General (OIG).

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$9,102.2	$6,199.0	$6,268.9	$69.9
Science & Technology	***$2,517.6***	***$2,050.0***	***$2,079.0***	***$29.0***
Building and Facilities	$12,936.5	$11,331.0	$11,385.1	$54.1
Hazardous Substance Superfund	$694.2	$588.0	$594.2	$6.2
Total Budget Authority / Obligations	$25,250.5	$20,168.0	$20,327.2	$159.2
Total Workyears	4.4	3.0	3.0	0.0

Program Project Description:

This program involves activities to ensure that EPA's physical structures and assets are secure and that the Agency is prepared to conduct its essential functions during an emergency or threat situation. This involves safeguarding EPA's staff, ensuring the continuity of operations and protecting the capability of EPA's vital infrastructure assets.

FY 2007 Activities and Performance Plan:

The Agency conducts nationwide vulnerability assessments at EPA's 191 facilities on a regular basis in accordance with federal mandates. In FY 2007, the Agency will conduct physical security vulnerability assessments and mitigation efforts; perform window security vulnerability assessments, engineering analyses and post mitigation analyses; ensure new construction, new leased, and major modernization projects meet physical security requirements; expand or realign existing laboratories for homeland security support activities. The Agency will also focus on retrofitting access control systems in Level 4 Laboratories in order to comply with Homeland Security Presidential Directive (HSPD) 12 – Policy for a Common Identification Standard for Federal Employees and Contractors.

Performance Targets:

Work under this program supports multiple performance objectives. Currently, there are no performance measures specific to this program project.

FY 2007 Changes from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$29.0) This increase will support security at new EPA facilities.

Statutory Authority:

Public Health Security and Bioterrorism Emergency and Response Act of 2002; and Secure Embassy Construction and Counterterrorism Act (Sections 604 and 629).

Program Area: Indoor Air

Indoor Air: Radon Program

Program Area: Indoor Air
Goal: Clean Air and Global Climate Change
Objective(s): Healthier Indoor Air

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$5,986.6	$5,159.0	$5,519.2	$360.2
Science & Technology	***$696.7***	***$429.0***	***$442.2***	***$13.2***
Total Budget Authority / Obligations	$6,683.3	$5,588.0	$5,961.4	$373.4
Total Workyears	41.0	43.3	42.9	-0.4

Program Project Description:

The Radiation and Indoor Environments National Laboratory (R&IE) in Las Vegas, Nevada is the only Federal laboratory that: 1) gives technical support to private, state, and local radon labs; 2) provides the mechanism for private radon measurement firms to obtain testing and evaluation of new radon measurement devices; 3) provides consumer protection by assuring accurate and precise radon measurements; and 4) is the only U.S. avenue to establish traceability to a nationally recognized radon standard. R&IE supports the radon program by: evaluating new radon instruments and devices; collecting samples and performing analyses for radon; and distributing radon kits and analyzing follow-up measurements for community-based environmental justice partners with a focus on tribes.

EPA has established four priority areas to double radon mitigation in new construction by 2012: EPA will build new national partnerships and increase national outreach; through state partnerships, increase the number of states, tribes, and localities with active and comprehensive radon programs; continue to work with partners to accelerate action in the marketplace to incorporate radon protection as a normal part of doing business and in conjunction with its partners, will expand scientific knowledge and technologies to support and drive aggressive action on radon.

FY 2007 Activities and Performance Plan:

In FY 2007, EPA's radon laboratory will continue to provide ongoing measurement expertise as the only Federal lab for radon devices as well as radon support and technical tools for community-based environmental justice partners. EPA will continue to evaluate new radon instruments and devices for private radon measurement firms. As part

Performance Assessment: The Indoor Air program, assessed by OMB in 2005, received a rating of "Adequate." The program does not issue regulations, so it works toward its goal by conducting research and promoting appropriate risk reduction actions through voluntary education and outreach programs. The program will be focusing on making efficiency improvements.

of its environmental justice efforts, EPA will distribute approximately 2,500 radon kits to our network of partner organizations and community-based environmental justice partners and analyze 100% of returned radon kits.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Number of additional homes (new and existing) with radon reducing features	Data Avail. 06	173,000	180,000	190,000	Homes

In FY 2007, EPA expects to have 190,000 additional homes with radon reducing features (90,000 mitigations and 100,000 new homes with radon resistant new construction), bringing the cumulative number of U.S. homes with radon reducing features to 2.4 million. EPA estimates that this cumulative number will result in over 700 future premature cancer deaths prevented (each year these radon reducing features are in place).

These program goals are a result of the total funding the program area receives through EPM, S&T, and SIRG funding.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$0.8) This increase will help support EPA national radon reinvigoration activities that reduce the health risk from radon in homes, schools, and workplaces.

- (+$12.4) This reflects an increase for payroll and cost of living for existing FTE.

Statutory Authority:

CAA Amendments of 1990; (IRAA), Section 306 Radon Gas Indoor Air Quality Research Act; Title IV of the Superfund Amendments and Re-authorization Act (SARA) of 1986; Toxic Substances Control Act (TSCA), section 6, Titles II, and Title III (15 U.S.C. 2605 and 2641-2671), and Section 10.

Reduce Risks from Indoor Air

Program Area: Indoor Air
Goal: Clean Air and Global Climate Change
Objective(s): Healthier Indoor Air

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$21,464.4	$23,137.0	$23,464.3	$327.3
Science & Technology	***$909.5***	***$810.0***	***$828.7***	***$18.7***
Total Budget Authority / Obligations	$22,373.9	$23,947.0	$24,293.0	$346.0
Total Workyears	75.1	69.2	68.9	-0.3

* Resources under the program/project were formerly captured under Indoor Air: Asthma (74), Indoor Air: Environmental Tobacco Smoke Program (75), and Indoor Air: Schools and Workplace Programs (77).

Program Project Description:

The Radiation and Indoor Environments National Laboratory (R&IE) maintains the capacity to conduct field measurements, assessments and technical support for indoor air quality remediations. R&IE also conducts training and provides technical support for development of Tribal capacity for indoor air quality programs, such as mold remediation, assessment and characterization of sources of volatiles and intruding vapors, and monitoring and measurement techniques.

FY 2007 Activities and Performance Plan:

In FY 2007, EPA will conduct several Indoor Air Quality (IAQ) intervention and remediation training courses which will continue to support development of tribal capacity for indoor air quality programs. EPA will continue conducting field measurements and assessments and providing technical support for indoor air quality remediations.

Performance Assessment: The Indoor Air Program, assessed by OMB in 2005 through the PART process, received a rating of "Adequate." The program does not issue regulations, so it works toward its goal by conducting research and promoting appropriate risk reduction actions through voluntary education and outreach programs. The program will be focusing on making efficiency improvements.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Estimated annual number of schools establishing indoor air quality programs based on EPA's Tools for Schools guidance.	3,000	2500	1200	1100	Number

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Percent of public that is aware of the asthma program's media campaign.	31	>20	>20	>20	Percentage

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Additional health care professionals trained annually by EPA and its partner on the environmental management of asthma triggers.	3,080	2000	2000	2000	Number

The measure included in the performance table is a new measure developed during the process of completing a 2005 Program Assessment Rating Tool (PART) process; the target listed is the long-term date for reporting out results of the measure.

EPA will continue to work towards its long term 2012 goal to have 6.5 million people with asthma take the essential actions to reduce their exposure to their environmental triggers of asthma, including environmental tobacco smoke. EPA's goal is to have close to 400,000 additional people with asthma to take these actions in 2007, bringing the total number to over 4.5 million people with asthma taking these actions. As part of this goal, EPA will continue to work to reduce existing disparities between disproportionately impacted populations and the overall population.

EPA will continue to work towards its long term 2012 goal of 40,000 schools implementing effective indoor air quality management plans. In 2007, EPA aims to have an additional 1,100 schools start implementation of an effective IAQ management plan, bringing the total to over 35,000 schools implementing these plans nationwide.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$5.9) This increase will support testing costs at the National Radiation and Indoor Environments Laboratory.

- (+$12.8) This reflects an increase for payroll and cost of living for existing FTE.

Statutory Authority:

CAA Amendments of 1990; Radon Gas Indoor Air Quality Research Act; Title IV of the SARA of 1986.

Program Area: IT / Data Management / Security

Goal: Provide Agency-wide support for multiple goals to achieve their objectives. This support involves Agency-wide activities primarily provided by EPA's six (6) support offices - the Office of Administration and Resources Management (OARM), Office of the Chief Financial Officer (OCFO), Office of Environmental Information (OEI), Office of General Counsel (OGC), Office of the Administrator (OA), and the Office of Inspector General (OIG).

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$84,371.1	$94,567.0	$96,807.2	$2,240.2
Science & Technology	***$4,141.3***	***$4,173.0***	***$4,268.0***	***$95.0***
Leaking Underground Storage Tanks	$108.0	$182.0	$175.9	($6.1)
Oil Spill Response	$39.5	$31.0	$32.5	$1.5
Hazardous Substance Superfund	$17,734.0	$17,053.0	$17,120.4	$67.4
Total Budget Authority / Obligations	$106,393.9	$116,006.0	$118,404.0	$2,398.0
Total Workyears	510.4	486.4	488.0	1.6

Program Project Description:

The S&T IT/Data Management program supports the development of the Agency's Enterprise Architecture and develops analytical tools (e.g., Environmental Indicators) to ensure sound environmental decision-making. The program implements the Agency's e-Government responsibilities as well as designs, develops and manages the Agency's Internet and Intranet resources including the Integrated Portal. In addition, the IT/Data Management program supports the development, collection, management, and analysis of environmental data (to include both point source and ambient data) to manage statutory programs and to support the Agency in strategic planning at the national, program, and regional levels, and provides a secure, reliable, and capable information infrastructure based on a sound enterprise architecture which includes data standardization, integration, and public access. The program manages the Agency's Quality System ensuring EPA's processes and data are of quality and adhere to Federal guidelines, and supports S&T information technology infrastructure, administrative and environmental programs, and telecommunications. These functions are integral to the implementation of Agency information technology programs and systems like the Exchange Network, the Central Data Exchange (CDX, http://www.epa.gov/cdx) and Permit Compliance System (PCS, http://www.epa.gov/enviro/html/pcs/index.html) Agency Offices rely on the IT/Data Management program and its capabilities to develop and implement tools for ready access to accurate and timely data.

FY 2007 Activities and Performance Plan:

In FY 2007, EPA will continue to provide methods to manage the quality of its environmental data collection, generation, and use. The primary goal of the EPA Quality System is to ensure

that its environmental data are of sufficient quantity and quality to support the data's intended use. As part of the Agency's Quality System, policies and procedures have been developed to assist individual data collectors, data users, and decision makers in defining their needs for data and assessing data against these needs, and to provide EPA management with methods for overseeing the quality-related activities of their programs. Like the larger IT/Data Management efforts, the Quality System is closely coordinated with the Exchange Network and Information Security programs. This relationship ensures quality data are available and accessible to promote sound environmental decision-making.

Performance Targets:

Work under this program supports multiple performance objectives. Currently, there are no performance measures specific to this program project.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$85.0) This reflects an increase for payroll and cost of living for existing FTE.

- (+$10.0) This resource adjustment reflects additional use of Agency's information technology infrastructure components.

Statutory Authority:

Federal Advisory Committee Act; Government Information Security Reform Action; CERCLA; CAA and amendments; CWA and amendments; Environmental Research, Development, and Demonstration Act; TSCA; FIFRA; Food Quality Protection Act; Safe Drinking Water Act and amendments; Federal Food, Drug and Cosmetic Act; Emergency Planning and Community Right-to-Know; RCRA; SARA; GPRA; GMRA; Clinger-Cohen Act; Paperwork Reduction Act; FOIA; Computer Security Act; Privacy Act; EFOIA; EPAct.

Program Area: Operations and Administration

Goal: Provide Agency-wide support for multiple goals to achieve their objectives. This support involves Agency-wide activities primarily provided by EPA's six (6) support offices - the Office of Administration and Resources Management (OARM), Office of the Chief Financial Officer (OCFO), Office of Environmental Information (OEI), Office of General Counsel (OGC), Office of the Administrator (OA), and the Office of Inspector General (OIG).

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$317,744.7	$343,908.0	$294,760.1	($49,147.9)
Science & Technology	***$8,892.1***	***$8,511.0***	***$70,239.5***	***$61,728.5***
Building and Facilities	$32,244.5	$28,295.0	$28,430.9	$135.9
Leaking Underground Storage Tanks	$982.9	$894.0	$916.8	$22.8
Oil Spill Response	$552.1	$500.0	$499.3	($0.7)
Hazardous Substance Superfund	$65,156.8	$69,667.0	$73,944.7	$4,277.7
Total Budget Authority / Obligations	$425,573.1	$451,775.0	$468,791.3	$17,016.3
Total Workyears	364.1	437.2	438.6	1.4

Program Project Description:

S&T resources in the Facilities Infrastructure and Operations Program Project are used to fund rent, utilities, and security, and also to manage activities and support services in many centralized administrative areas such as health and safety, environmental compliance, occupational health, medical monitoring, fitness/wellness and safety, and environmental management functions at EPA. Resources for this program also support a full range of ongoing facilities management services including: facilities maintenance and operations; Headquarters security; space planning; shipping and receiving; property management; printing and reproduction; mail management; and transportation services.

FY 2007 Activities and Performance Plan:

The Agency will continue to manage its lease agreements with GSA and other private landlords by conducting rent reviews and verifying that monthly billing statements are correct. The Agency also reviews space needs on a regular basis.

These resources also help to improve operating efficiency and encourage the use of new, advanced technologies and energy sources. EPA will continue to direct resources towards acquiring alternative fuel vehicles and more fuel-efficient passenger cars and light trucks to meet the goals set by Executive Orders (EO) 13149[3], *Greening the Government through Federal Fleet*

[3] Information available at http://www.epa.gov/fedsite/eo13149.htm

and Transportation Efficiency and EO 13123[4], *Greening the Government through Efficient Energy Management*.

As a result of an ongoing review of indirect cost charging in FY 2007, the Agency is reviewing the allocation of rent, security and utilities costs among EPA's various appropriations. The largest shift is to the Science and Technology appropriation, but other appropriations' proportions have been adjusted. These changes do not result in any overall funding difference. In the past, only direct laboratory rent, security, and utilities have been included under the S&T appropriation. This methodology change will better reflect actual costs for personnel with S&T funds. Funds were moved from EPM; no S&T programs were reduced in this effort.

Lastly, EPA will provide transit subsidy to eligible applicants as directed by Executive Order (EO) 13150[5] *"Federal Workforce Transportation."* EPA will continue the implementation of the Safety and Health Management Systems to ensure a safe working environment.

Performance Targets:

Work under this program supports multiple objectives. Performance information is included in the Program Performance and Assessment section.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$60,993.1) This is not an increase to the overall program, but a shift to the Science and Technology (S&T) appropriation from the Environmental Programs and Management (EPM) appropriation for rent, security, and utilities costs. This change reflects the restructuring of cost allocation methodologies. Overall funding is not affected, and no S&T programs were reduced in this effort. In the past, direct laboratory rent, security, and utilities have been included under the EPM appropriation. This methodology change will better reflect actual costs for personnel with S&T funds.

- (+$41.6) This increase will support Agency environmental management systems projects.

- (+$2.6) This reflects an increase for payroll and cost of living for existing FTE.

- (+$691.2) Provides additional resources to cover basic facilities management services in EPA's laboratories.

Statutory Authority:

FPASA; PBA; annual Appropriations Acts; CWA; CAA; D.C. Recycling Act; Executive Orders 10577 and 12598; United States Marshals Service, Vulnerability Assessment of Federal Facilities Report; Homeland Security Presidential Decision Directive 63 (Critical Infrastructure Protection).

[4] Information available at http://www.epa.gov/fedsite/eo13123.htm
[5] Additional information available at http://ceq.eh.doe.gov/nepa/regs/eos/eo13150.html

Program Area: Pesticides Licensing

Pesticides: Registration of New Pesticides

Program Area: Pesticides Licensing
Goal: Healthy Communities and Ecosystems
Objective(s): Chemical, Organism, and Pesticide Risks

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$39,321.6	$41,604.0	$39,767.6	($1,836.4)
Science & Technology	***$2,473.1***	***$2,463.0***	***$2,766.1***	***$303.1***
Total Budget Authority / Obligations	$41,794.7	$44,067.0	$42,533.7	($1,533.3)
Total Workyears	401.9	327.8	327.8	0.0

Program Project Description:

The Agency has three laboratories supporting registration activities including an Analytical Chemistry Laboratory and a microbiology laboratory at the Environmental Science Center (ESC) at Fort Meade, MD and an Environmental Chemistry Laboratory (ECL) at Stennis Space Center, Bay St. Louis, MS. The Analytical Chemistry and Environmental Chemistry laboratories validate environmental and analytical chemistry methods to ensure that the Food and Drug Administration (FDA), United States Department of Agriculture (USDA), and states have reliable methods to measure and monitor pesticide residues in food and in the environment. The laboratories provide support to EPA's enforcement programs with highly specialized pesticide chemistry services to support enforcement cases including the more difficult to analyze older pesticides. State pesticide laboratories receive technical and quality assurance support through workshops and training in pesticide analytical chemistry. Analytical methods are evaluated for:

- Potential use in detecting pesticide residues in the environment to ensure these methods are suitable for monitoring residues in soil and water;
- Enforcement for product chemistry to ensure that the labels are accurate; and
- Detecting residues in food and feed to ensure that they are suitable for monitoring and to enforce legal residue limits (tolerances).

Analytical Chemistry laboratory resources are used to operate the National Pesticide Standard Repository for pesticide analytical reference standards and to distribute the standards to Federal and state enforcement laboratories. EPA laboratories, in cooperation with industry and state and regional laboratories, develop multi-residue analytical methods to allow enforcement agencies to test for several different chemicals using one test.

The microbiology laboratory conducts post-market product performance testing of hospital disinfectants and tuberculocides, evaluates new efficacy test methods for antimicrobials, investigates new technologies and screening techniques for evaluating the product performance of antimicrobials, and provides technical support and training on testing methods and procedures.

The microbiology laboratory also validates methods used for the detection of DNA and proteins associated with plant incorporated protectants, or "PIPs" (genetically modified plants).

FY 2007 Activities and Performance Plan:

EPA's laboratories will continue to provide quality assurance and technical support and training to EPA regions, state laboratories, and other Federal agencies that implement the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). The laboratories will evaluate registered products that are most crucial to infection control (sterilants, tuberculocides, and hospital-level disinfectants).

Performance Assessment: The Pesticides Registration program underwent PART review in calendar year 2002 and received a rating of "adequate." Using the logic model process, the Agency is developing new, output-oriented performance measures. EPA has consulted with State and Tribal partners throughout the development process, and the Pesticide Program Dialogue Committee, the program's federal advisory committee, is currently reviewing the proposed measures.

Under the PIP method validation program, work will continue on evaluating several novel molecular-based methods. The Microarray Research Laboratory efforts will continue research to better understand how antimicrobial pesticides work at the genetic level in hopes this will provide a faster and better way to test antimicrobials for efficacy, thus increasing efficiencies in the Antimicrobial Testing Program.

Additionally, as discussed in the program/project *Homeland Security: Preparedness, Response and Recovery*, the laboratories will continue to support Homeland Security activities such as anthrax surrogate studies and ensure the ability to provide surge capacity to respond to incidents. In addition, the laboratory will continue research on sporicidal test methods in order to formulate registration requirements for products used to remediate areas contaminated with bioterrorism agents, most notably *Bacillus anthracis*. The Homeland Security activities associated with these laboratories are discussed in more detail in the program project *Homeland Security: Preparedness, Response and Recovery*.

Performance Targets:

Some of the PART measures for this program are program outputs, which, when finalized, represent the program's statutory requirements to ensure that pesticides entering the marketplace are safe for human health and the environment. Evaluating chemistry and efficacy claims allows the Agency to take regulatory or enforcement action on products which do not comply with the conditions of registration.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$47.5) This reflects an increase for payroll and cost-of-living for existing FTE.
- (+$11.7) This increase will support activities including contracts, grants, and expenses to support our environmental laboratories.

- (+$243.9) This increase will fund laboratory support for pesticide registration and reregistration activities, including quality assurance technical support and training to state FIFRA laboratories.

Statutory Authority:

PRIA; FIFRA; FFDCA; FQPA.

Pesticides: Review / Reregistration of Existing Pesticides

Program Area: Pesticides Licensing
Goal: Healthy Communities and Ecosystems
Objective(s): Chemical, Organism, and Pesticide Risks

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$49,074.7	$57,458.0	$51,814.6	($5,643.4)
Science & Technology	***$2,471.1***	***$2,480.0***	***$2,820.4***	***$340.4***
Total Budget Authority / Obligations	$51,545.8	$59,938.0	$54,635.0	($5,303.0)
Total Workyears	460.7	462.7	458.7	-4.0

Program Project Description:

Pesticide review and reregistration is supported by an Analytical Chemistry Laboratory and a microbiology laboratory at the Environmental Science Center (ESC) at Fort Meade, MD and an Environmental Chemistry Laboratory (ECL) at Stennis Space Center, Bay St. Louis, MS. These laboratories support Reregistration activities by validating environmental and analytical chemistry methods to ensure that the Food and Drug Administration (FDA), the United States Department of Agriculture (USDA), Regional offices, and states have reliable methods to measure and monitor pesticide residues in food and in the environment. The laboratories, in cooperation with industry and state and regional laboratories, develop multi-residue analytical methods to allow enforcement agencies to test for several different chemicals using one test.

Activities of the microbiology laboratory include:

- Conducting product performance testing of antimicrobials related to public health;
- Investigating new efficacy test methods for antimicrobials, including those used for Homeland Security purposes;
- Providing technical support and training on testing methods and procedures; and
- Providing method validation services for genetically modified organisms (GMO) products (plant incorporated protectants).

Additionally, the laboratories provide EPA's enforcement programs with highly specialized pesticide chemistry services to support enforcement cases, including the more difficult to analyze older pesticides, and dioxin assessments and screenings. Support is provided for screening for method development, biotechnology, and homeland security activities.

The laboratories support the following functions:

- Provide the state pesticide laboratories with technical and quality assurance support through workshops and training in pesticide analytical chemistry;

- Evaluate analytical methods for detecting pesticide residues in the environment to ensure that they are suitable for monitoring residues in soil and water;

- Evaluate enforcement analytical methods for product chemistry and product efficacy to ensure that the labels are accurate;

- Evaluate analytical methods for detecting residues in food and feed to ensure that they are suitable for monitoring, and to enforce legal residue limits (tolerances); and

- Operate the National Pesticide Standard Repository for pesticide analytical reference standards, distributing the standards to Federal and state enforcement laboratories.

FY 2007 Activities and Performance Plan:

The Agency will continue supporting the Reregistration program activities, operating the National Pesticide Standard Repository, and conducting chemistry and efficacy testing for antimicrobials. Additionally, as discussed in the program/project *Homeland Security: Preparedness, Response and Recovery*, the laboratories will continue to support Homeland Security activities such as anthrax surrogate studies and ensure the ability to provide surge capacity to respond to incidents. The Homeland Security activities associated with these laboratories are discussed in more detail in the program/project *Homeland Security: Preparedness, Response and Recovery*.

Performance Assessment: The Pesticides Registration program underwent PART review in calendar year 2004 and received a rating of "adequate." Using the logic model process, the Agency is developing new, output-oriented performance measures. EPA has consulted with State and Tribal partners throughout the development process, and the Pesticide Program Dialogue Committee, the program's federal advisory committee, is currently reviewing the proposed measures.

Performance Targets:

Work under this program supports multiple performance objectives. Currently, there are no performance measures specific to this program project.

Some of this program's PART performance measures are program outputs which represent statutory requirements to ensure that pesticides entering the marketplace are safe for human health and the environment and when used in accordance with the packaging label present a reasonable certainty of no harm. While program outputs are not the best measures of risk reduction, they do provide a means for reducing risk in that the program's safety review prevents dangerous pesticides from entering the marketplace.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$51.5) This reflects an increase for payroll and cost-of-living for existing FTE.

- (+$288.9) This increase will support activities including contracts, grants, and the purchase of equipment and repairs at our pesticides laboratories.

Statutory Authority:
PRIA; FIFRA; FFDCA; FQPA.

Program Area: Research: Clean Air

Research: Air Toxics

Program Area: Research: Clean Air
Goal: Clean Air and Global Climate Change
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$14,472.5***	***$16,226.0***	***$12,274.2***	***($3,951.8)***
Total Budget Authority / Obligations	$14,472.5	$16,226.0	$12,274.2	($3,951.8)
Total Workyears	58.5	55.5	52.6	-2.9

Program Project Description:

Air Toxics (AT) research provides the scientific foundation that enables the Agency to fulfill responsibilities mandated by the Clean Air Act. This research seeks to increase understanding of the exposure and health risks posed by hazardous air pollutants (HAPs) and reduce uncertainty in national- and community-scale assessments as well as residual risk. Research also provides the tools (i.e., methods, models, and health hazard, exposure, and emission data) needed to identify and implement cost-effective approaches to reduce AT risks. This program addresses both indoor and outdoor environments and source categories regulated by the Agency's AT rules.

The Agency's AT research strategy and multi-year plan outline steps for meeting research needs and annual performance goals and measures for evaluating progress.[6] (R&D Investment Criteria: Relevance, Performance) EPA's Science Advisory Board (SAB), an independently chartered Federal Advisory Committee Act (FACA) committee, annually conducts in-depth reviews and analyses of EPA's S&T account.[7] (R&D Investment Criteria: Relevance, Quality, Performance) The SAB reports its findings to the House Committee on Science and EPA's Administrator. In addition, these documents have been peer reviewed by the Science Advisory Board (SAB), a distinguished body of scientists and engineers who are recognized non-government experts from academia and industry. (R&D Investment Criteria: Quality, Relevance)

FY 2007 Activities and Performance Plan:

In FY 2007, AT research will continue support for the Health Effects Institute (HEI), an independent, nonprofit corporation chartered in 1980 that partners with EPA to investigate topics including the health effects of air pollution from mobile sources and threats such as carbon monoxide, methanol and aldehydes, nitrogen oxides, diesel exhaust, ozone, and particulate air pollution. The program will complete selected ongoing research efforts in FY 2007 and

[6] EPA, Office of Research and Development, *Air Toxics Multi-Year Plan (Washington: EPA, 2003).* Available at: <http://www.epa.gov/sab/03minutes/atrsmyp072303mattach_e.pdf>

[7] The latest SAB review is: EPA, SAB, *Science and Research Budgets for the U.S. Environmental Protection Agency (EPA) for Fiscal Year 2006; An Advisory Report by the EPA Science Advisory Board (Washington: EPA, 2005).* Available at: <http://www.epa.gov/sab/pdf/science_and_res_budgets_fy-2006_sab-adv-05-002.pdf>

transition toward the Multiple Air Pollutant Program (MAPP) recommended by external reviews.[8]

Performance Targets:

Work under this program supports cleaner air. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (–$3,946.4) EPA is transitioning toward a multiple air pollutant program recommended by the National Research Council. As part of this shift, some extramural research in this program project will be discontinued, while other projects, including work on the next National Air Toxics Assessment research to support residual risk evaluations, and field studies to improve techniques used to measure organic air toxics and human exposure factors from stationary and mobile sources will be delayed. In addition, identification of options to reduce exposures and to analyze fuel and additive emissions, exposures, and health effects will be reduced.

- (–2.9 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

- (–$5.4) This decrease is the net effect of increases for payroll and cost of living increases for existing FTE, combined with a reduction based on the recalculation of base workforce costs.

Statutory Authority:

CAA, Radon Gas and Indoor Air Quality Research Act; Title IV of the Superfund Amendments and Re-authorization Act (SARA) of 1986.

[8] National Research Council, *Research Priorities for Airborne Particulate Matter: IV. Continuing Research Progress (Washington: National Academies Press, 2004).* Available at: <http://books.nap.edu/catalog/10957.html>

Research: Global Change

Program Area: Research: Clean Air
Goal: Healthy Communities and Ecosystems
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$19,395.9***	***$18,619.0***	***$17,456.4***	***($1,162.6)***
Total Budget Authority / Obligations	$19,395.9	$18,619.0	$17,456.4	($1,162.6)
Total Workyears	39.1	37.1	35.3	-1.8

Program Project Description:

EPA's global change research focuses on understanding the potential consequences of global change (particularly climate variability and change) on air and water quality, ecosystems, and human health in the United States. The goal of the program is to produce timely and useful information and decision support tools for resource managers and policymakers that enable them to formulate adaptation strategies to respond effectively to the risks and opportunities presented by global change. For example, the program has worked with communities and decision makers in the Great Lakes and Northeast regions to investigate the potential impact of climate change on the frequency of combined sewer overflow events, and to help them develop effective long-term control plans that will reduce the number of overflow events in future years.

The Board of Scientific Counselors (BOSC), a distinguished body of scientists and engineers who are recognized non-government experts from academia and industry, evaluates the Agency's research programs, national laboratories, centers, and offices, and management practices, and provides peer review, including evaluation of the program's peer review policies and research plans and products. The BOSC evaluated the global change program in September, 2005, and will release a draft report to the public in early 2006.

The program's activities are closely coordinated with the U.S. Climate Change Science Program (CCSP) to ensure complete consistency with CCSP's strategic plan.[9] CCSP integrates the planning and implementation of EPA's program with other participating Federal agencies to reduce overlap, identify and fill programmatic gaps, and add integrative value to products and deliverables produced under the CCSP's auspices. The Agency also maintains a global change research multi-year plan[10] that outlines steps for meeting research needs and annual performance goals and measures for evaluating progress. (R&D Investment Criteria: Relevance, Performance)

[9] Climate Change Science Program and the Subcommittee on Global Change Research, *Strategic Plan for the U.S. Climate Change Science Program.* Available at: <http://www.climatescience.gov/Library/stratplan2003/final/ccspstratplan2003-all.pdf>
[10] EPA, Office of Research and Development, *Global Change Research Program Multi-Year Plan, (Washington: EPA, 2003).* Available at: <http://www.epa.gov/osp/myp/global.pdf>

FY 2007 Activities and Performance Plan:

In FY 2007, the program will concentrate primarily on the potential effects of global change on air quality and aquatic ecosystems. The program's top priorities include producing the three CCSP Synthesis and Assessment (S&A) reports for which EPA is the lead Federal agency (sea level rise, ecosystem adaptation, and analyses of the effects of global change on human health and welfare and human systems), and contributing to seven others. CCSP is producing 21 S&A reports by 2007-2008 on the highest priority research, observation, and decision support needs. The S&A documents EPA is responsible for must be finalized and published in 2007; one by the third quarter and the remaining two by the end of the fourth quarter. The CCSP effort responds to the President's direction that climate change research activities be accelerated to provide the best possible scientific information to support public discussion and decision making on climate-related issues. Many of the S&A reports (including two of the reports being produced by EPA) are necessary to comply with Section 106 of the Global Change Research Act of 1990.

The program will continue to make significant contributions to high-level interagency bilateral climate initiatives with China, Italy, Canada, and India. For example, EPA and the National Oceanic and Atmospheric Administration (NOAA) recently organized conferences with the governments of China and India to discuss the potential impacts of and responses to climate change. The Department of State (DOS) is coordinating Federal agencies' participation in these activities.

CCSP is increasingly emphasizing improved decision making and adaptive management ("decision support"). In step with these priorities, EPA's global change research program will work in collaboration with the National Research Council (NRC) and NOAA's Office of Global Programs to better understand the factors that determine the extent to which outcomes of given resource management decisions are climate sensitive, the extent to which altering the decision may facilitate adaptation to climate change, and the likelihood that decision support strategies could improve associated environmental outcomes.

Performance Targets:

Work under this program supports cleaner air. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$457.4) This reflects an increase for payroll and cost of living for existing FTE.

- (–$1,620.0, -1.7 FTE) This reduces computer modeling efforts related to climate change impacts on watersheds, sewer systems and coral reefs.

- (–0.1 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

Statutory Authority:

USGCRA; NCPA.

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$63,156.4***	***$66,777.0***	***$65,455.6***	***($1,321.4)***
Total Budget Authority / Obligations	$63,156.4	$66,777.0	$65,455.6	($1,321.4)
Total Workyears	186.3	190.9	191.9	1.0

In FY 2006, Program/Project Research: Particulate Matter (B4) and Program/Project Research: Tropospheric Ozone (B9) were eliminated and Program/Project H6 (Research: NAAQS) established.

Program Project Description:

This research provides the scientific foundation for implementation and review of the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM), tropospheric ozone, carbon monoxide, sulfur dioxide, nitrogen oxides, and lead.[11] Research focuses on PM in particular,[12] but also considers ozone (O_3) and other important co-pollutants.

The NAAQS research program develops and transfers to clients new data in atmospheric, exposure, biological, engineering, and environmental sciences. This research informs the setting of standards to protect air quality by providing insights into human susceptibility to air pollution and into specific sources and attributes of PM associated with a growing number of potential health outcomes. The program develops, among other things, products that can help inform environmental decision-making, such as tools to predict, measure, and model concentrations and emissions of air pollutants, which are directly used by states to develop and successfully implement the most cost-effective control strategies to comply with existing NAAQS. The program includes research that addresses scientific uncertainties and refines knowledge of the health risks associated with sources of PM exposure.

Air Quality Criteria Documents (AQCDs), which are prepared under the Human Health Risk Assessment Program, incorporate the improved scientific understanding gained by the NAAQS research program as part of the standard-setting process.

The research on PM conducted through the NAAQS research program is guided by a series of National Academy of Sciences reports that identify research priorities for airborne particulate matter.[13] (R&D Investment Criteria: Relevance, Quality) The program incorporates the National Academy's recommendations into its multi-year plan, which outlines steps for meeting

[11] For more information about NAAQS, visit: <http://www.epa.gov/air/criteria.html>
[12] For more information about EPA's PM research, visit: <http://www.epa.gov/pmresearch>
[13] National Research Council, *Research Priorities for Airborne Particulate Matter: IV. Continuing Research Progress (Washington: National Academies Press, 2004).* Available at: <http://books.nap.edu/catalog/10957.html>

the needs of the program clients and the annual performance goals and measures for evaluating progress.[14] (R&D Investment Criteria: Relevance, Performance)

The Board of Scientific Counselors (BOSC), a body of scientists and engineers who are recognized non-government experts from academia and industry, evaluates the Agency's research programs, national laboratories, centers, and offices, and management practices, and provides peer review, including evaluation of the program's peer review policies and research plans and product. The BOSC evaluated the NAAQS research program in 2005 and reports that "the PM & O_3 Program directly addresses NRC (and OMB) concerns in terms of the Agency's long-term goals, the plans to meet these goals, and the ways to measure progress toward these goals. The … PM & O_3 Research Program has resulted in significant reductions in scientific uncertainty in critical areas… [T]he outputs produced by research to support these reductions in uncertainty have provided a sound basis for subsequent improvements in public health (outcomes)."[15] (R&D Investment Criteria: Relevance, Quality, Performance)

FY 2007 Activities and Performance Plan:

The Agency's NAAQS research, which is organized according to a source-to-health-outcome paradigm, is strongly tied to the high-priority PM research topics identified by the National Academy. EPA's NAAQS research focuses on the following key areas:

- Identifying profile constituents and downstream products (e.g., sulfates, nitrates, organic and elemental carbon, and metals) that link to health effects;
- Determining the hazardous components and associated biological mechanisms as linked to PM size;
- Differentiating the health effects of PM from those of other air pollutants;
- Understanding the quantitative relationship between exposure to different particles and various health effects;
- Understanding attributes of susceptibility, e.g., exposure, dose, and biological differences, that factor into response;

The NAAQS research program was reviewed as a rePART in 2005, as it received a "results not demonstrated" rating in its initial PART in 2003. The NAAQS research program received an "Adequate" rating on the 2005 PART assessment. The purpose of the NAAQS research program is to support the EPA's mandated responsibilities under the Clean Air Act to review and set national air quality standards. This includes performing investigations and research concerning specific problems of air pollution and to provide to regions, States, and Tribes (as well as appropriate air pollution control agencies) the information they need to develop appropriate and effective air pollution control strategies. OMB has accepted the program's proposed measures in the 2005 PART. OMB is recommending the following actions to improve the performance of the program: (1) improve multi-year plans, financial data tracking, and other systems to better integrate grantee and program performance with financial information; (2) develop and implement adequate, easily understood methods for calculating progress on performance measures; and (3) develop efficiency measures that assess program

[14] EPA, Office of Research and Development, *Draft Particulate Matter Research Program Multi-Year Plan (Washington: EPA, 2003).*

[15] EPA, Office of Research and Development, Board of Scientific Counselors, *Particulate Matter and Ozone Research Program (Washington: EPA, 2005).* Available at: <http://www.epa.gov/osp/bosc/pdf/pm0508rpt.pdf>

- Improving methods to measure and estimate source emissions, including understanding chemical composition;
- Developing air quality models and associated atmospheric chemistry and meteorology inputs, e.g., Community Multiscale Air Quality (CMAQ), to predict NAAQS concentrations;
- Developing and field testing ambient monitoring methods, including Federal Reference Methods; and
- Evaluating the performance of technologies that can be used to control multiple pollutants from the same source category.

The most recently awarded PM research centers, which will begin work in FY 2006, will support research in the first six areas identified above. A long-term epidemiological study of the relationship of PM exposure to cardiovascular disease will be supported as well as health effects, exposure, and atmospheric science research related to important PM sources and components. Research will also be initiated to support emerging needs such as developing new approaches to evaluate the effectiveness of Agency regulatory actions and interventions, e.g., diesel bus retrofits.

EPA is transitioning its air research to begin to incorporate the National Academy's recommended Multiple Air Pollutant Program (MAPP) approach. The Agency will carefully integrate its air research programs to provide science that optimizes the cost-effectiveness and health-effectiveness of future air quality management strategies. In FY 2006, the Research: Particulate Matter and Research: Tropospheric Ozone Programs merged to form the Research: NAAQS Program. In FY 2007, efforts will be made to improve integration between the NAAQS and air toxics research programs. A more integrated program will support select aspects of research formerly conducted in separate programs. This approach aligns with emerging Agency needs and a multi-pollutant research focus to improve the Agency's efficiency and effectiveness in reducing risks.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percentage of NAAQS program publications rated as highly cited papers				35.7	Percent

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percent progress toward completion of a hierarchy of air pollutant sources based on the risk they pose to human health.				30	Percent

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percent planned actions accomplished toward the long-term goal of reducing uncertainty in the science that support standard setting and air quality management decisions.				100	Percent

FY 2007 Change from FY 2006 Enacted (Dollars in Thousands):

- (–$918.0 \ +1 FTE) This reduction impacts PM monitoring methods and emission source testing. This reduction will also impact tropospheric ozone research.

- (–$403.4) This decrease is the net effect of increases for payroll and cost of living increases for existing FTE, combined with a reduction based on the recalculation of base workforce costs.

Statutory Authority:

CAA.

Program Area: Research: Clean Water

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$46,824.0***	***$45,170.0***	***$49,242.5***	***$4,072.5***
Total Budget Authority / Obligations	$46,824.0	$45,170.0	$49,242.5	$4,072.5
Total Workyears	199.5	209.6	208.6	-1.0

Program Project Description:

The goal of the program's Drinking Water research is to develop leading-edge research products that the Water program and other clients use in implementing the 1996 Safe Drinking Water Act (SDWA) Amendments[16]. In pursuit of this goal, the research program directly supports several key elements of EPA's "Strategic Plan for Clean and Safe Water,[17]" including developing or revising standards for contaminants of concern, effectively implementing these standards, and protecting drinking water sources.

To meet the requirements of SDWA, EPA conducts an integrated, multi-disciplinary research program that is closely linked to the agency's regulatory activities and timelines. Research in the Drinking Water research program: provides new scientific data and analytical methods for identifying and evaluating the health effects of waterborne pathogens (e.g., *Cryptosporidium*, Norwalk virus) and chemicals (e.g., arsenic, disinfection byproducts) that may contaminate drinking water (assessments and methods for estimating risk to waterborne pathogens and chemicals are conducted under the Human Health Risk Assessment Program-project); and develops improved technologies for cost-effective control of these risks.

Research is guided by several research strategy documents (e.g., Microbial Pathogens/Disinfection Byproducts (M/DBPs) in Drinking Water[18] and Arsenic in Drinking Water[19]) that were developed with participation from major clients and that outline the research needs and priorities. The Agency also maintains a Drinking Water Research Program Multi-Year Plan[20] (MYP) that outlines steps for meeting these needs and annual performance goals and measures for evaluating progress. These plans were subjected to rigorous peer review and

[16] Safe Drinking Water Act Amendments of 1996, Public Law 104-182. Available through the internet: http://www.epa.gov/safewater/sdwa/sdwa.html
[17] U.S. EPA, Office of the Chief Financial Officer. *"2003 – 2008 EPA Strategic Plan: Direction for the Future."* Date of Access: January 14, 2004. Available through the internet: http://www.epa.gov/ocfo/plan/2003sp.pdf
[18] U.S. EPA, Office of Research and Development. *Research Plan for Microbial Pathogens and Disinfection By-Products in Drinking Water*. Washington, D.C.: U.S. Government Printing Office. EPA 600-R-97-122. (1997).
[19] U.S. EPA, Office of Research and Development. *Research Plan for Arsenic in Drinking Water*. Washington, D.C.: U.S. Government Printing Office. EPA 600-R-98-042. (1998).
[20] U.S. EPA, Office of Research and Development, Drinking Water Research Program Multi-Year Plan, Washington, D.C. Available through the internet: http://www.epa.gov/osp/myp.htm

address those problems deemed most pressing in the area of drinking water quality (R&D Criteria: Quality, Relevance, Performance).

The Board of Scientific Counselors (BOSC), a distinguished body of scientists and engineers who are recognized non-government experts from academia and industry, evaluates the Agency's research programs, national laboratories, centers, and offices, and management practices, and provides peer review, including evaluation of the Agency's peer review policies and research plans and products. In 2005, the Drinking Water research program underwent a program-wide review by the BOSC, who concluded that the program is "quite relevant and is focused on high quality research of national importance" and that the program's "research outputs are leading to important outcomes with respect to EPA's Water program and other clients" (R&D Criteria: Quality, Relevance, Performance).

FY 2007 Activities and Performance Plan:

In FY 2007, the Drinking Water research program will focus on the science needed to implement SDWA's requirements for the Contaminant Candidate List (CCL), safety of drinking water quality in distribution systems, and the protection of drinking water sources, while continuing to support the SDWA-mandated 6-year review of regulated contaminants.

Key products planned include:

- Report on the feasibility of surveillance methods to measure endemic drinking water associated illness;
- Syntheses of Arsenic Treatment Technology Demonstration Program results;
- A DNA microarray test for pathogen virulence and infectivity to aid discovery of previously unidentified microbes for classification and potential listing on future CCLs;
- Reports on the characterization and real-time monitoring of water quality in distribution systems;
- A Treatability Database – a web-enabled, secure database of treatability information for chemicals and pathogens providing information to the Agency for prioritization of contaminants and for Homeland Security efforts;
- Large and small system treatment technology evaluations of CCL pathogens and chemicals;
- Results from acute toxicity, carcinogenicity, and population-based health effects studies on the cyanobacterial toxins; and
- Report on public health benefits associated with improvements in drinking water treatment to reduce microbial exposures.

Performance Assessment: The drinking water research Program received an "Ineffective" rating on its first PART review in 2005. The purpose of the drinking water research program is to provide timely, leading-edge research products to support sound scientific decisions by EPA's Water program. The drinking water research program's secondary purpose is to provide research products to state and local water authorities and to the drinking water research community. EPA and OMB came to an agreement on program long-term goals and measures during the 2005 PART process. OMB suggested that EPA take the following actions to improve the performance of the program: (1) develop baselines and targets for all long-term and annual performance measures; (2) develop a performance measure to track how efficiently the program delivers its services to its primary client, the EPA Water program; and (3) improve oversight on non-grant partners and requiring non-grant partners to work towards the annual and long-term goals of the program.

A new investment in FY 2007 will support research and development of innovative approaches and technologies aimed at the growing gap in the nation's water infrastructure requirements. Deteriorated potable water infrastructure makes it difficult to meet Safe Drinking Water Act requirements, and increases the potential for waterborne disease outbreaks. The reliable and efficient functioning of America's potable water infrastructure provides massive benefits to public health, the environment, industry, homeland security, and the economy. The purpose of this initiative will be to conduct research to generate the science and engineering to evaluate promising innovative technologies and techniques to reduce the cost of operation, maintenance, and replacement of aging and failing potable water conveyance systems and move toward sustainable water infrastructure. Planned activities to be conducted in FY 2007 include:

- Research and evaluation of innovative approaches to detect, locate, characterize, and repair leakage in distribution systems;

- Research and evaluation of innovative approaches to inspect and assess the condition of high risk water mains; and

- Selected full-scale demonstration of the most promising technologies and techniques.

By conducting research in support of SDWA this research program will assist the Agency in pursuing its objective of providing, by 2008, drinking water that meets all applicable health-based drinking water standards to 95% of the population served by community water systems.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percentage of planned outputs delivered in support of Six Year Review decisions.				100	Percent

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percentage of planned outputs delivered in support of Contaminant Candidate List Decisions.				100	Percent

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$2,047.4) This reflects an increase for payroll and cost of living for existing FTE.

- (+$2,000.0) This increase will support innovative approaches and technologies aimed at the growing gap in the nation's water infrastructure requirements. This research will generate the science and engineering to evaluate promising innovative technologies and

techniques to reduce the cost of operation, maintenance, and replacement of aging and failing potable water conveyance systems. This reflects part of the total Water Infrastructure initiative funding of $7M. The remaining $5M resides in the Water Quality research program.

- (+$993.7) This increase will support key research products for the EPA's Water program including: a report on the public health benefits associated with drinking water treatment changes to reduce microbial exposures; reports on the characterization and real-time monitoring of water quality in distribution systems, as well as other products to support implementation of the source water protection provisions in SDWA.

- (-$968.6) This is a reduction to lower priority research to fund higher priorities within the Drinking Water Research Program.

- (-1 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

Statutory Authority:

SDWA; CWA; MPRSA.

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$46,243.2***	***$51,269.0***	***$56,988.2***	***$5,719.2***
Total Budget Authority / Obligations	$46,243.2	$51,269.0	$56,988.2	$5,719.2
Total Workyears	229.4	247.3	245.4	-1.9

Program Project Description:

Although the quality of the Nation's waters has shown improvement, threats to water quality remain and new threats continue to be identified. The adoption and implementation of watershed management approaches by states and tribes require strong standards, monitoring, Total Maximum Daily Load (TMDL) determinations, and implementation programs, including best-management practices, restoration, and TMDL watershed plans. Water quality research provides the sound science needed to implement effective watershed management approaches by developing methods to: apply criteria that support designated uses of water bodies; monitor and assess water body conditions; diagnose causes and sources of water body impairments; protect and restore water bodies; and forecast the effectiveness of protection/restoration alternatives.

Research is guided by the several research strategy documents (e.g., Landscape ecology,[21] Aquatic stressors[22]) which were developed with participation from major clients. The strategies outline the research needs and priorities. The Agency also maintains a Water Quality Research Program multi-year plan[23] (MYP) that outlines steps for meeting these needs and annual performance goals and measures for evaluating progress. (R&D Criteria: Relevance, Performance)

The Board of Scientific Counselors (BOSC), evaluates the Agency's research programs, national laboratories, centers, and offices, and management practices, and provides peer review, including evaluation of the Agency's peer review policies and research plans and products. The Water Quality research program will undergo review by the BOSC in January 2006.

[21] U.S. EPA, Office of Research and Development, *A National Assessment of Landscape Change and Impacts to Aquatic Resources: A 10-year Research Strategy for the Landscape Sciences Program*; EPA/600/R-00/001, Washington, D.C. 20460, January 2000. Available on the internet at: http://www.epa.gov/nerlesd1/land-sci/pdf/157leb00.pdf
[22] U.S. EPA, Office of Research and Development, *Aquatic Stressors: A Framework and Implementation Plan for Effects Research*, 2002. EPA 600/R-02-074.
[23] U.S. EPA, Office of Research and Development, *Water Quality Research Program Multi-Year Plan*, Washington, D.C. Available on the internet at: http://www.epa.gov/osp/myp.htm

FY 2007 Activities and Performance Plan:

Performance Assessment: The Water Quality research program has been proposed for a PART review in FY 2006. The program has begun developing outcome-based performance measures in order to

In FY 2007, EPA research on diagnostic methods will continue to focus on the causes and sources of aquatic ecosystem impairment. Specifically, this research will provide the scientific foundation and information management scheme for an integrated 305(b)/ 303(d) process for assessing, listing, and reporting water quality conditions, including a classification framework for surface waters, watersheds, and regions to guide problem formulation. In addition, the program will develop field-oriented approaches to establish biocriteria for a range of designated uses, including determination of ecological needs for water availability and quality ("fishability," "ecological integrity") and potential for preserving or restoring waterbody uses.

As EPA directs and informs the efforts of the states to adopt nutrient criteria for individual waterbodies, research is required to identify nutrient responses based on geographic region, waterbody type, and designated use. Research on responses of coastal receiving waters will be emphasized in 2007, generating and refining models that address the ecological responses to nutrient loads for a range of estuary types.

Studies will be conducted on the transport and control of contaminants from land-based practices, including agricultural operations and land-use conversions, that reach the environment through surface runoff or leaching to ground water, and the effectiveness of best-management practices in mitigating such transfers.

Research on wetlands will develop a hierarchical assessment approach to address the objectives of the President's initiative to preserve and restore wetlands, and to augment the current no-net-loss policy by incorporating wetlands functions and impacts on water quality. Comparison of natural and constructed wetlands to determine how seasonal changes in hydrologic regime, stressor load, and upland land use affect the functioning of these systems will inform the protection and restoration of wetlands.

To provide more efficient monitoring and diagnostic tools, research will continue to develop methods of using landscape assessments for monitoring and assessing watershed conditions. Models to determine likelihood of impairment will be integrated with monitoring to assess condition to develop optimal monitoring strategies that support integrated assessment and reporting (305(b)/303(d)). Research on the integration of economic data and ecosystem services will lead to better understanding of both the costs and benefits of alternative ways to achieve water quality.

To minimize the public health risks from swimming and other recreational water activities, research will specifically focus on both developing techniques to reduce wet weather flow (WWF) impacts and providing data to support the development of scientifically sound criteria for protecting recreational waters. Guided by the "EPA Action Plan for Beaches and

Recreational Waters"[24] and the Beaches Act of 2000, EPA is performing a suite of epidemiological studies to establish a strong, defensible link between rapid water quality indicators and swimming-associated health effects. Research will address the need to predict water quality indicators and health risks associated with short-term (meteorological) and longer-term (storm-water infrastructure and land-use management) determinants of recreational and coastal water quality, and the effectiveness of mitigation measures, with an emphasis on concurrent mitigation of multiple stressors.

A new investment in FY 2007 will support research and development of innovative approaches and technologies aimed at the growing gap in the nation's water infrastructure requirements. Deteriorated wastewater infrastructure makes it difficult to meet Clean Water Act requirements, and increases the potential for waterborne disease outbreaks, fish kills, loss of biodiversity and habitat, sewer backups and overflows. The reliable and efficient functioning of America's wastewater infrastructure provides massive benefits to public health, the environment, industry, and the economy. The purpose of this initiative is to generate the science and engineering to evaluate promising innovative technologies and techniques to reduce the cost of operation, maintenance, and replacement of aging and failing wastewater conveyance systems and move toward sustainable water infrastructure. Additional work on this initiative is supported under the Research: Drinking Water program.

Planned activities to be conducted in FY 2007 include:

- Research and evaluation of inspection, condition assessment, and cost estimating tools for existing collection systems;

- Investigation of advanced design concepts for wastewater collection systems that reduce construction costs and increase carrying capacity and storage capabilities;

- Research and evaluation of performance and cost of innovative repair, rehabilitation, and replacement technologies and procedures for wastewater collection systems; and

- Evaluation of novel techniques to improve performance and extend service life of existing wastewater systems by addressing problems associated with factors such as: sediments; fats, oils, and grease; pH; corrosion, etc.

Performance Targets:

Work under this program supports cleaner and safer water. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

[24] U.S. EPA, Office of Research and Development, Office of Water. EPA Action Plan for Beaches and Recreational Waters.Washington, D.C.: U.S. Government Printing Office. EPA 600-R-98-079. (1999). Available through the internet at: http://www.epa.gov/ord/WebPubs/beaches/600r98079.pdf S&T - 68

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$5,000.0) This increase will support the research and development of innovative approaches and technologies aimed at the growing gap in the nation's wastewater infrastructure requirements. This will generate the science and engineering to evaluate promising innovative technologies and techniques to reduce the cost of operation, maintenance, and replacement of aging and failing wastewater conveyance systems and move towards sustainable water infrastructure. This reflects part of the total Water Infrastructure initiative funding of $7M. The remaining $2M resides in the Drinking Water research program.

- (+$2,788.5 / +0.2 FTE) These resources will focus on the effects of multiple stressors on wildlife populations in spatially diverse landscapes and research on the associations between land characteristics and water quality conditions used to target more comprehensive monitoring of the causes of water quality degradation. This work will also address concerns regarding the risk posed by the levels of pathogens, hormones, and chemical toxics in livestock manure released from concentrated animal feeding operations (CAFOs).

- (+$228.6) This reflects an increase for payroll and cost of living increases for existing FTE.

- (-$2,297.9) This is a reduction to lower priority research to fund higher priorities within the Water Quality Research Program.

- (-2.1 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

Statutory Authority:

CWA; ODBA; SPA; CVA; WRDA; WWWQA; MPPRCA; NISA; CZARA; CWPPRA; NAWCA; FIFRA; TSCA; ESA.

Program Area: Research: Human Health and Ecosystems

Human Health Risk Assessment

Program Area: Research: Human Health and Ecosystems
Goal: Healthy Communities and Ecosystems
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$33,247.5***	***$35,637.0***	***$34,488.5***	***($1,148.5)***
Hazardous Substance Superfund	$3,848.8	$3,755.0	$3,847.2	$92.2
Total Budget Authority / Obligations	$37,096.3	$39,392.0	$38,335.7	($1,056.3)
Total Workyears	177.9	184.0	183.9	-0.1

Program Project Description:

Human health risk assessment is a process where information is analyzed to determine if an environmental hazard might cause harm to exposed persons (National Research Council, 1983). Risk assessment is extensively used by EPA programs, regions, and other parties to determine the threshold levels of environmental contaminants that are unlikely to pose a human health hazard, to develop regulatory standards, and to manage environmental cleanups.

Three complementary areas comprise the risk assessment program:

Integrated Risk Information System (IRIS) and other health hazard assessments: Peer reviewed, qualitative, and quantitative health hazard assessments are prepared on environmental pollutants of major relevance to EPA's regulatory mandates. These assessments are used by EPA's program and regional offices to support their decision-making, and also disseminated to the public, principally on the IRIS internet database.[25] IRIS is widely used throughout EPA and the risk assessment/risk management community as the premier source of hazard and dose-response information for environmental pollutants. As of FY 2005, there are over 500 health hazard assessments available through IRIS. (R&D Criteria: Quality, Relevance)

Risk assessment guidance, methods and model development: Improved risk assessment guidance, methods, and models are developed to enhance the quality and objectivity of assessments through the incorporation of contemporary scientific advances for use in decision-making by EPA programs and regional offices. These scientific products are externally peer reviewed and disseminated through the published literature, EPA web-sites, and incorporation in IRIS assessments. (R&D Criteria: Quality, Relevance)

Air Quality Criteria Documents (AQCDs): Congress requires that EPA regularly summarize the state-of-the-science on the criteria air pollutants – ozone, particulate matter, sulfur and nitrous oxides, carbon monoxide, and lead – to assist EPA's air and radiation programs in

[25] Available at: <http://www.epa.gov/iris>

determining the National Ambient Air Quality Standards (NAAQS). These summaries, AQCDs, are major risk assessments that undergo rigorous external peer review by the Clean Air Scientific Advisory Committee (CASAC). (R&D Criteria: Quality, Relevance)

This research program is guided by the Human Health Risk Assessment Multi-Year Plan[26] (MYP), which provides detail on the assessment and methods development products planned under this program/project. The MYP also outlines the research needs and priorities. Performance outputs and outcomes are documented in the MYP through annual performance goals and annual performance measures structure. The MYP also coordinates with a number of EPA research strategies and plans[27] (e.g., Human Health Research Plan, Asthma Research Strategy, Particulate Matter and Ozone MYPs) to obtain the information necessary to inform risk assessment outputs, and hence programmatic decision-making needs.

FY 2007 Activities and Performance Plan:

Principal activities of relevance to the assessment of human health risks in FY 2007 will include:

- Completing 16 health hazard assessments of high priority chemicals for interagency review or external peer review, including (but not limited to) acrylonitrile, methanol, methylene chloride, trichloroethylene, and tetrachlorodibenzo-p-dioxin; (R&D Criteria: Quality, Relevance, Performance)

- Delivering a final AQCD for Lead (Pb) which serves as the basis for the EPA Air Quality Program paper for the NAAQS; (R&D Criteria: Relevance, Performance) and,

- Delivering external review draft AQCDs for Sulfur Dioxide and Nitrogen Oxides for CASAC peer review. (R&D Criteria: Relevance, Performance)

Risk assessment methods development in 2007 will:

- Deliver an external review draft report on central estimates and uncertainty bounds in dose-response analysis - current techniques, alternatives, and decision parameters for application to risk assessment, thereby advancing risk-based decision-making through the incorporation of data-informed uncertainty parameters; (R&D Criteria: Relevance, Performance)

- Provide approaches to harmonization of uncertainty factors for cancer and non-cancer risk assessment; (R&D Criteria: Relevance, Performance) and,

- Provide guidance on how to interpret human bladder tumor results and immuno-suppression information in the context of human health risk assessment of environmental pollutants. (R&D Criteria: Relevance, Performance)

[26] U.S. EPA, Office of Research and Development, Human Health Risk Assessment Multi-Year Plan (2005).
[27] Available at: <http://www.epa.gov/ord/htm/researchstrategies.htm#rs01>

In FY 2007, the Agency is proposing to enhance the risk assessment process through incorporating additional peer review and consultation for high impact and scientifically controversial risk assessments. In particular, very difficult and complex assessments may be provided to the National Academy of Sciences (NAS) for consultation or review. Expansion of peer review to the NAS will directly improve the quality, objectivity, and utility of information disseminated by EPA. (R&D Criteria: Quality, Relevance)

Performance Targets:

Work under this program supports community and ecosystem protection. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$500.0) This increase to the human health risk assessment program will support the development and use of high-impact EPA health hazard assessments by providing peer review and consultation by the NAS, and by increasing opportunities for review by other federal agencies and the public. Chemicals likely to be sent to the NAS for review include very difficult and complex assessments such as formaldehyde and trichloroethylene.

- (-$736.5) The NCS is being realigned to the Human Health research program to better reflect the nature of the research which focuses on health effects to infants and children. There will be no change in purpose.

- (-$676.3) Reduces funding to Agency-wide risk assessment guidance and involvement in interpreting risks associated with children's risk assessment and with biotechnology.

- (-$235.7) This decrease is the net effect of increases for payroll and cost of living increases for existing FTE, combined with a reduction based on the recalculation of base workforce costs.

- (-1.5 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

Statutory Authority:

CAA; SDWA; CWA; TSCA; FIFRA; CERCLA; SARA; FQPA.

Research: Computational Toxicology

Program Area: Research: Human Health and Ecosystems
Goal: Healthy Communities and Ecosystems
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$12,002.9***	***$12,327.0***	***$14,983.1***	***$2,656.1***
Total Budget Authority / Obligations	$12,002.9	$12,327.0	$14,983.1	$2,656.1
Total Workyears	19.9	36.8	34.3	-2.5

Program Project Description:

EPA's Computational Toxicology Research Program (CTRP) has three objectives: 1) improving the linkages in the source-outcome paradigm; 2) providing tools for screening and prioritization of chemicals under regulatory review; and 3) enhancing quantitative risk assessment. The National Center for Computational Toxicology (NCCT) was specifically created to play a critical coordination and implementation role in these activities across the agency.

A peer reviewed Framework for a Computational Toxicology Research Program[28] has been developed. The framework identifies the research needs and unique capabilities of EPA and provides the basis for a more focused and integrated research program in the future.

The Board of Scientific Counselors (BOSC), a distinguished body of scientists and engineers who are recognized non-government experts from academia and industry, evaluates the Agency's research programs, national laboratories, centers, and offices, and management practices, and provides peer review, including evaluation of the program's peer review policies and research plans and products. A standing subcommittee of the BOSC has been established to provide guidance to the newly formed NCCT. In April 2005, this subcommittee met to review the proposed directions for the NCCT. Their report is available on the BOSC website (http://epa.gov/osp/bosc/subcomm-ctox.htm). The report was highly favorable of the early efforts of the NCCT, and encouraged its further development. A formal response was prepared and submitted to EPA and the BOSC. The NCCT is currently drafting an implementation plan for its research program, which will be submitted to the BOSC for review and comment in 2006. (R&D Criteria: Quality)

FY 2007 Activities and Performance Plan:

Research programs funded for a three-year period through a competitive process in FY 2004 will be completed, and allow for expansion of the NCCT and CTRP in four key focal areas in FY 2007: 1) Information technology; 2) chemical prioritization and categorization tools; 3) systems biology models; and 4) cumulative risk assessment. (R&D Criteria: Relevance)

28 U.S. EPA, Office of Research and Development. *A Framework for a Computational Toxicology Research Program. Washington, DC: EPA.* Accessed August 4, 2005. Available on the Internet: http://www.epa.gov/comptox/publications/comptoxframework06_02_04.pdf

Information Technology: New technologies are needed to mine existing data for patterns to place new chemicals of unknown hazards appropriately in the context of existing data. In addition, new technologies will allow the integration of data from different domains of toxicology and newer "omics" experiments to look beyond traditional means for classifying chemicals. (R&D Criteria: Relevance) As a result, more chemically annotated, publicly available datasets will be posted on the internet through the Distributed Structure-Searchable Toxicity Database project (DSSTox). (R&D Criteria: Performance)

Chemical Prioritization and Categorization Tools: Having the capability to predict which chemicals are in greatest need of toxicology testing, and what endpoints would be the most important to examine, is a pressing problem for multiple regulatory offices in EPA. Knowledge of key steps in the potential mechanisms of action of a chemical provides a template for developing models for these predictions. Moreover, the ToxCast program which was initiated in FY 2006 will be obtaining high throughput screening data on 200-400 chemicals of know toxicological profiles. Fingerprints of biological activity associated with differing toxicological profiles will be developed from this database, which is being developing in conjunction with the NIH Molecular Libraries Initiative (R&D Criteria: Relevance). Examples of outputs in this area include:

- Constructing *in silico* models for identifying chemicals that can interact with steroid hormone (e.g., estrogen and androgen) receptors; (R&D Criteria: Performance)

- Providing alternative assays for the Endocrine Disruptor Screening Program that will reduce the numbers of animals required for screening; (R&D Criteria: Performance) and

- Integrating information from a variety of data sources that can provide indications of the similarity of chemicals to interact with biological systems being developed and implemented to support the needs of the Program Offices. (R&D Criteria: Performance)

Systems Biology Models: Modeling now plays a crucial role in practically all areas of biological research. Systems models integrate information at all levels of organization and aid in bridging the source-to-outcome paradigm and in conducting quantitative risk assessments (R&D Criteria: Relevance). In FY 2007 the CTRP will:

- Provide standards for developing, documenting, archiving, and accessing quantitative mathematical models that will foster both the development and linkages of these models, and their regulatory acceptance; (R&D Criteria: Performance)

- Utilize systems modeling approaches for the latest biological, chemical, and exposure data for quantitative risk assessment; (R&D Criteria: Performance) and

- Developing guidance on best practices for the construction, analysis and reporting of toxicological models that link pharmacokinetic information with the dynamic responses of target organs.

Cumulative Risk Assessment: Computational tools offer the potential to reducing uncertainties in cumulative risk by focusing on aspects of data compilation, integration, and analysis (R&D Criteria: Relevance).

The CTRP will explore mathematical approaches to the analysis of the effects of dietary exposure throughout the day to pesticides that act via the same mechanism (e.g., the methyl carbamates and pyrethroids). (R&D Criteria: Performance) Research will also build conceptual frameworks that consider how biomonitoring data can be used to characterize cumulative risk and how psychosocial factors can be incorporated into cumulative risk assessments using tools of the new field of visual analytics. These new tools offer the promise of integrating different types of data representing physical, chemical, and psycho-social aspects and that are proposed to be collected in the National Children's Study. (R&D Criteria: Performance) The CTRP will also be working with the Center for Environmental Bioinformatics, established through the Science to Achieve Results (STAR) program, to enhance predictive linkages between the components of the source-outcome paradigm.

Performance Targets:

Work under this program supports community and ecosystem protection. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$2,178.2) This increase will support research to implement a biologically-based system to reduce the uncertainty in the prioritization and categorization of chemicals for classical toxicological testing, add a number of new toxicological databases to the distributed structure-searchable toxicity (DSSTox) system, and develop computational models of biological processes relevant to the induction of toxicity for high priority environmental contaminants. As a result of this increase, the Agency will be less reliant on default assumptions for risk assessments and able to accurately characterize the true uncertainty associated with risk predictions for various chemical classes (e.g., EDCs, HPVs).

- (+$477.9) This reflects an increase for payroll and cost of living for existing FTE.

- (-2.5 FTE) This decrease reflects a change in EPA’s workforce management strategy that will help the Agency better align resources, skills, and Agency priorities.

Statutory Authority:

TSCA; FIFRA; FQPA; SDWA.

Research: Endocrine Disruptor

Program Area: Research: Human Health and Ecosystems
Goal: Healthy Communities and Ecosystems
Objective(s): Enhance Science and Research

Goal: Compliance and Environmental Stewardship
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$12,559.5***	***$10,494.0***	***$9,081.2***	***($1,412.8)***
Total Budget Authority / Obligations	$12,559.5	$10,494.0	$9,081.2	($1,412.8)
Total Workyears	58.0	54.8	54.8	0.0

Program Project Description:

Research in direct support of EPA's screening and testing programs (mandated under the Food Quality Protection Act (FQPA) of 1996 and the Safe Drinking Water Act Amendments[29] (SDWAA) of 1996) will evaluate current testing protocols and develop new protocols to evaluate potential endocrine effects of environmental agents. Research will assist decision makers in working toward reducing and preventing exposure of humans and ecosystems to endocrine disruptors that pose an unreasonable risk.

Research is guided by the Research Plan for Endocrine Disruptors, which was developed with participation from major clients and outlines research needs and priorities.[30] The Agency also maintains a multi-year plan (MYP)[31] for Endocrine Disruptors that outlines steps for meeting these needs, as well as annual performance goals and measures for evaluating progress. (R&D Criteria: Quality, Performance)

The Board of Scientific Counselors (BOSC), a distinguished body of scientists and engineers who are recognized non-government experts from academia and industry, evaluates the Agency's research programs, national laboratories, centers, and offices, and management practices, and provides peer review, including evaluation of the program's peer review policies and research plans and products. In December 2004, the Endocrine Disrupting Chemicals (EDCs) research program underwent a program-wide review by a subcommittee of the BOSC, who commended the progress and direction of the research and provided recommendations for further partnerships.[32]

[29] SDWA Section 1457
[30] U.S. EPA, Office of Research and Development, *Research Plan for Endocrine Disruptors (Washington, DC. 1998).* .
Available at: <http:// *www.epa.gov/ord/htm/documents/ORD-EDR-Feb1998.pdf*>
[31] U.S. EPA, Office of Research and Development, *Multi-Year Plan for Endocrine Disruptors (Washington, DC. 2003).*
Available at: <www.epa.gov/osp/myp/edc.pdf>
[32] U.S. EPA, Office of Research and Development, EDC Research Program Review, (Washington, DC, 2004).
Available at: <http://www.epa.gov/osp/bosc/pdf/edc0504rpt.pdf>

FY 2007 Activities and Performance Plan:

Performance Assessment: In FY 2003, the EDC research program received an overall rating of "adequate" from OMB's PART review. Supporting the Office of Prevention, Pesticides and Toxic Substances by providing screening and testing tools for EDCs is one of several outcome-based performance measures developed and accepted by OMB.

In FY 2007, EPA will continue to develop and evaluate innovative DNA microarray and other state-of-the-art analytical methods for EDCs. EPA's endocrine disruptors research program has developed and refined assays, and improved other screening tools using genomics and high-speed computing capabilities so that the Agency has the necessary protocols to validate for use in the Endocrine Disruptors Screening Program. Using genomics and related approaches in the continued development of improved molecular and computational tools that can be used to prioritize chemicals for screening and testing is within the "Understanding Complex Biological Systems" category highlighted as a priority for Federal investment by the Office of Management and Budget (OMB) and Office of Science and Technology Policy (OSTP)[33]. Other important areas of research to be conducted in FY 2007 include:

- Applying computational and molecular approaches to develop models that predict a chemical's ability to cause endocrine disruption;
- Compiling a report on the development of high throughput screens for EDCs;
- Continuing to study the ability of conventional wastewater treatment and drinking water treatment processes to remove EDCs;
- Increasing emphasis on studying concentrated animal feeding operations (CAFOs) as possible sources of EDCs to the environment;
- Developing tools for examining environmental and human exposures to EDCs through a variety of pilot programs; and,
- Determining the degree to which effects of EDCs with defined mechanisms of action can be extrapolated across classes of vertebrates leading to reduced animal testing.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Improved protocols for screening and testing				6	Reports

[33] FY 2007 Administration Research and Development Budget Priorities memo by J.Marburger and J. Bolten; July 8, 2005.

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Effects and exposure milestones met				4	Reports

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Assessment milestones met					Reports

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Risk management milestones met				3	Reports

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$10.3) This reflects an increase for payroll and cost of living for existing FTE.

- (-$1,423.1) This reflects a reduction of extramural support for research focusing on the effects of multiple EDCs, major sources of EDC exposure, and approaches for managing risks from EDCs.

Statutory Authority:

CAA; ERDDA; FIFRA; TSCA; FQPA; SDWA; CWA; RCRA; CERCLA; PPA.

Research: Fellowships

Program Area: Research: Human Health and Ecosystems
Goal: Healthy Communities and Ecosystems
Objective(s): Enhance Science and Research

Goal: Compliance and Environmental Stewardship
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$14,476.8***	***$11,691.0***	***$8,383.0***	***($3,308.0)***
Total Budget Authority / Obligations	$14,476.8	$11,691.0	$8,383.0	($3,308.0)
Total Workyears	2.3	2.8	2.8	0.0

Program Project Description:

To ensure an educated and trained scientific workforce for the future, EPA offers five fellowship programs that encourage promising students to obtain advanced degrees and pursue careers in environmentally related fields.

Science to Achieve Results (STAR) Fellowship Program:[34] EPA provides stipends, tuition assistance, and research support to graduate students in environmentally-related fields for up to three years. In addition to providing quality research to EPA, fellows agree to maintain contact with the Agency for at least five years after graduation.

Greater Research Opportunities (GRO) Fellowship Program:[1] EPA provides stipends, tuition assistance, and research support to undergraduate and graduate students in environmentally-related fields for up to two (undergraduate) or three (graduate) years. The GRO program serves higher education institutions that receive less than $35 million annually in Federal science and engineering funds[35] to create opportunities for minorities and less-privileged students. In addition to providing quality research to EPA, fellows agree to maintain contact with the Agency for at least five years after graduation.

Environmental Science and Technology (EST) Fellowship Program:[36] In conjunction with the American Association for the Advancement of Science (AAAS), EPA hosts post-doctoral students for up to two years at EPA headquarters. Fellows work independently with support from Agency mentors on projects of their own design that advance the use of science in decision making.

[34] For more information, visit: <http://es.epa.gov/ncer/fellow>
[35] As determined by the National Science Foundation. NSF, *Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: Fiscal Year 2002 (Arlington: NSF, 2005).* Available on the Internet at: <http://www.nsf.gov/statistics/nsf05309/>
[36] For more information, visit: <http://fellowships.aaas.org/01_About/01_Partners.shtml#EPA>

Environmental Public Health (EPH) Fellowship Program:[37] In conjunction with the Association of Schools of Public Health (ASPH), EPA places graduates from public health programs in its research laboratories and centers for up to two years to conduct projects that relate to EPA's public health mission.

EPA Marshall Scholarship Program:[38] In conjunction with the British Marshall Scholarship program, EPA will offer three scholarships for U.S. students to undertake graduate environmental studies. The program will give priority to students whose work focuses on environmental problems of a global or international nature. Supported by the British government, scholars will spend two years at a British university. Students may then continue their graduate work for up to three years to obtain a doctoral degree, either in the United Kingdom or U.S., with EPA support.

EPA is the only Federal agency that provides higher education assistance and career development in the environmental sciences. (R&D Investment Criteria: Relevance) The Agency encourages applicants to choose research projects that align with EPA's research priorities. (R&D Investment Criteria: Relevance) Fellowships are awarded through a competitive, merit-based process that incorporates external peer review of candidates. (R&D Investment Criteria: Quality)

FY 2007 Activities and Performance Plan:

EPA will award new STAR, GRO, EST, and EPH fellowships and support the second and third years of fellows initially funded in Fiscal Years 2005 and 2006. The first EPA Marshall Scholars will begin British-supported studies in 2005 and continue with EPA support in FY 2007. Fellowship recipients will complete progress and exit reports, and the Agency will maintain contact information and follow-up data on former fellows. (R&D Investment Criteria: Performance)

Performance Targets:

Work under this program supports community and ecosystem protection. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$47.3) This reflects an increase for payroll and cost of living for existing FTE.

- (–$3,355.3) This reduction reflects the discontinuation of directed FY 2006 funding for the STAR fellowships program. This reduction will affect approximately 37 graduate students pursuing environmentally-related degrees.

[37] For more information, visit: <http://www.asph.org/document.cfm?page=751&JobProg_ID=1>
[38] For more information, visit: <http://www.marshallscholarship.org/applicationepa.html>

Statutory Authority:

CAA; CWA; FIFRA; NCA; RCRA; SDWA; TSCA.

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$169,805.8***	***$167,703.0***	***$161,312.7***	***($6,390.3)***
Total Budget Authority / Obligations	$169,805.8	$167,703.0	$161,312.7	($6,390.3)
Total Workyears	520.4	509.8	509.3	-0.5

Program Project Description:

The Agency conducts human health and ecosystems research to: 1) identify and characterize environment-related human health problems and determine exposures to and sources of agents responsible for these health concerns; and 2) understand the condition of ecosystems, the stressors changing that condition, the consequences of those changes, and how to prevent, mitigate, or adapt to those changes. The Human Health and Ecosystems Program also supports mercury research, research on indicators to support the Agency's Report on the Environment (ROE), advanced monitoring research, nanotechnology research, and exploratory research.

Research is guided by the *Human Health Research Strategy*[39], *Ecological Research Strategy*[40] and the *Environmental Monitoring and Assessment Program (EMAP) Research Strategy*[41], which were developed with participation from major clients (e.g., program offices and regions). These strategies outline the programs' research needs and priorities. Under this program project, several multi-year plans (MYPs)[42] (e.g., human health, ecological research, mercury) convey research priorities and approaches for achieving goals and objectives. MYPs outline the steps for meeting client research needs, as well as annual performance goals and measures for evaluating progress. The Human Health research program and the Ecological research program both underwent successful Board of Scientific Counselors (BOSC) reviews in March of 2005.

FY 2007 Activities and Performance Plan:

Human Health Research

In FY 2007, EPA will support research to derive a commonly accepted set of principles defining how mode of action information can be used in chemical risk assessments, particularly as it relates to extrapolation between animals and humans and from high to low dose. Such research will inform the re-evaluation of acceptable levels of arsenic in drinking water, as well as the risk

[39] U.S. EPA, Office of Research and Development. *Human Health Research Strategy*. Washington, DC: EPA. Accessed August 8, 2005. Available on the Internet: http://www.epa.gov/nheerl/humanhealth/HHRS_final_web.pdf
[40] For additional information, please go to: http://www.epa.gov/ord/htm/documents/eco.pdf
[41] U.S. EPA, Office of Research and Development, *EMAP Research Strategy (Washington: EPA).* For additional information, please go to http://www.epa.gov/emap/html/pubs/docs/resdocs/EMAP_Research_Strategy.pdf
[42] For additional information, please go to: http://www.epa.gov/osp/myp

assessments of cancer and non-cancer effects of conazole fungicides. Additional research efforts will be initiated to develop emerging molecular methods and approaches and identify critical toxicity pathways for characterizing effects of chemicals (such as particulate matter and brominated disinfection by-products) on human health.

Performance Assessment: The human health research program received an "Adequate" rating on its first PART assessment in 2005. The PART found that the program's research results are being used to reduce uncertainty in risk assessment, but the program needs more data and clearer long-term targets to show that it is making continued progress. EPA is taking the following actions to: (1) improve the program's ability to link budget resources to performance; (2) develop ambitious long-term performance targets that clearly define a successful program and promote continued improvement; and (3) implement follow-up recommendations from a recent independent expert review.

Research on intervention and prevention strategies will ultimately reduce human risk associated with exposures to single and multiple environmental stressors, including chemical exposure in schools. Other research related to children's health includes efforts to identify the key factors influencing children's exposures to environmental toxicants by lifestage, and to produce high quality children's exposure data to reduce current uncertainties in risk assessment. EPA will continue to collaborate with the Children's Centers, which are establishing long-term birth and school age cohorts that follow participants over many years to consider the full range of developmental consequences of exposure to environmental chemicals. Additionally, the Children's Centers are tracking the wide range of exposure concentration at multiple stages of development to evaluate the relationships between distribution of exposure and observed effects.

Cumulative risk research will develop approaches for using exposure, biomarker, and pharmacokinetic data in cumulative risk assessments. (R&D Criteria: Performance) Other human health research will focus on physiological and biochemical changes that result from aging, which will be used as a basis for understanding potential susceptibility to environmental stressors. This research will also determine if older individuals are exposed differentially to environmental stressors. (R&D Criteria: Performance)

Public health outcomes research will report on the results of proof-of-concept studies undertaken with Regional offices to develop approaches to evaluate actual public health outcomes for risk management decisions. (R&D Criteria: Performance)

The Board of Scientific Counselors (BOSC), a distinguished body of scientists and engineers who are recognized non-government experts from academia and industry, evaluates the Agency's research programs, national laboratories, centers, and offices, and management practices, and provides peer review, including evaluation of the program's peer review policies and research plans and products. In the 2005 BOSC review, the review panel stated "the research of the human health research program is of high quality and appropriately focused, it is multidisciplinary, yet coherent and coordinated, and the research benefits from managerial excellence across all aspects of the program."[43]

[43] *Report of the Subcommittee on Health*, revised July 27, 2005, Board of Scientific Counselors, pg 9. For additional information please go to: http://www.epa.gov/osp/bosc/pdf/hh0507rpt.pdf

Ecological Research

The Ecological Research Program is comprised of three primary elements: (1) Condition assessment and accountability research including EMAP, (2) Tool and methodology development (primarily for causal diagnostics and environmental forecasting), including ReVA, and (3) Ecological Services and Restoration research, including RePLUS.

A component of the *EMAP Research Strategy*[44] is the National Coastal Assessment (NCA) and its contributions to the third National Coastal Conditions Report (NCCR3), which will be released in FY 2007. In addition to an assessment of the current biological condition of the nation's coastline, NCCR3 will include an analysis of the trends of condition of the mid-Atlantic and Gulf of Mexico coastline for the period 1993-2004.

A number of major efforts in EMAP will be completed in 2006, including the estuarine portion of the National Coastal Assessment (NCA) and wadeable streams portion of the Western EMAP (WEMAP). Resources for these efforts will be refocused into other EMAP continuing research efforts, including condition assessment research in the Central Basin Integrated Assessment, coastal wetlands, and programs to develop and refine environmental indicators (R&D Criteria: Relevance). Other efforts include diagnostic research relating measured ecological condition and landscape models to estimate condition in locations without direct measurements. One EMAP research area that will be expanded is the use of assessments in environmental decision-making in concert with non-environmental information (e.g., socioeconomic issues, demographic issues, etc.). Results from WEMAP, NCA, and the National Streams Survey reporting efforts will be used to guide the development of monitoring frameworks for other aquatic ecosystems (R&D Criteria: Relevance).

The Regional Vulnerability Assessment (ReVA) program extends environmental assessments at the regional scale by using integrative technologies to predict future environmental risk in order to support decision-making. In FY 2007 EPA will continue research to evaluate the effectiveness of restoration options for aquatic ecosystems, with particular emphasis on options for the Mid-Atlantic Region and the western United States (R&D Criteria: Performance).

Performance Assessment: The ecological research program was reviewed as a rePART in 2005 and received an "ineffective" rating. The PART found that the program collaborates and coordinates with related programs, but that it lacks ambitious targets for some of its long-term and annual performance measures. The program is taking the following actions to: (1) refine the questions used in independent scientific reviews; (2) develop a program specific customer survey; and (3) improve ability to link budget resources to annual and long-term performance targets by requesting and reporting human health research and ecosystem research funding as separate program projects (beginning in the FY 2008 budget request).

In an effort to prepare for the recent FY 2005 PART review and respond to OMB's three R&D Investment Criteria (Quality, Relevance, and Performance) the Ecological Research program was reviewed in FY 2005 by the Board of Scientific Counselors (BOSC). The review panel stated "the potential benefits of the Ecological Research Program's research to the public are evident and clearly articulated". The panel also stated that the "results of Ecological research program are relevant and of direct use to states and tribes in protecting and restoring ecological

[44] For additional information please go to: http://www.epa.gov/emap/html/pubs/docs/resdocs/resstrat02.html

resources."[45] During the next program review, the BOSC will re-evaluate the program using the newly developed long-term measures developed through the PART process, which will provide a more specific assessment of program progress.

Indicators Research to support the Report on the Environment (ROE)

In FY 2007, the Agency will continue its research in support of the triennial ROE. The ROE is working to shift beyond EPA's historic reliance on indicators of reduction in exposure to more direct outcome measures, while maintaining emphasis on the identification, development, and application of existing and future indicators that extend EPA's ability to assess environmental condition and progress.

Nanotechnology and Exploratory Research

In FY 2007, the Agency will continue its exploratory grants program, which funds investigator-initiated projects that address emerging environmental issues. Exploratory grants will be awarded to address the implications of manufactured nanoparticles on human health and the environment, including toxicity, fate and transport, and life cycle impacts. The Agency will conduct new intramural nanotechnology research consistent with the findings of the President's Council of Advisors on Science and Technology (PCAST) review of the National Nanotechnology Initiative (NNI) at five years,[46] which recommended further study of the environmental and health implications of nanotechnology. (R&D Investment Criteria: Relevance, Performance). Additional research will include nanoparticles' reactivity with other elements and their byproducts, bio-persistence, and transport and fate. Research will also investigate nanotechnology's potential to improve environmental measurement and monitoring and its potential to enhance control and remediation technologies.

Advanced Monitoring (AMI) Effort

In 2007, the Advanced Monitoring Initiative (AMI) will continue to bring together information technology advancements with advances in remote sensing and in situ monitoring. EPA and its partners will continue to integrate socioeconomic, human health, and ecosystem databases and models, to monitor the health of humans and the environment over greater expanses, in less time, and more cost-effectively than ever before, supporting decision-making processes that provide clear societal benefits in the near term. This effort is linked with the interagency U.S. Global Earth Observations (US GEO) initiative and with the international community through the Global Earth Observation System of Systems (GEOSS) program.

[45] *Report of the Subcommittee on Ecological Research*, April 1, 2005 – revised August 19, 2005, Board of Scientific Counselors, pg 7. For additional information please go to: http://www.epa.gov/osp/bosc/pdf/eco0508rpt.pdf

[46] Executive Office of the President, Office of Science and Technology Policy, President's Council of Advisors on Science and Technology, *The National Nanotechnology Initiative at Five Years: Assessment and Recommendations of the National Nanotechnology Advisory Panel (OSTP: Washington, 2005).* Available at: http://www.ostp.gov/PCAST/PCASTreportFINAL.pdf

Mercury Research

In FY 2007, mercury research will focus on supporting effective implementation of the new Clean Air Mercury Rule (CAMR)[47] and on evaluating the rule's effectiveness. Research will seek to improve understanding of the effectiveness of the "cap and trade" strategy contained in the CAMR. This will be accomplished by analyzing power plant emissions of mercury and the species of mercury using source continuous emission monitors. The program will also seek to reduce uncertainties about the cost and performance of various alternative emission control devices that could be installed by utility companies as they consider how to implement the CAMR provisions.

The mercury research program will also aim to better understand the relationship between emissions reductions resulting from CAMR and changes in mercury concentrations in the environment. The program will include collaborative research with interested stakeholders to jointly design approaches to site mercury monitors optimally so they produce data that will address the scientific questions of greatest interest to federal and state policy officials. The mercury research program's activities are guided by a multi-year research plan.[48]

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Number of states using a common monitoring design and appropriate indicators to determine the status and trends of ecological resources and the effectiveness of national programs and policies.				30	States

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percentage of planned outputs delivered in support of public health outcomes long-term goal.				100	Percent

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percentage of planned outputs delivered in				100	Percent

[47] For more information, visit: <http://www.epa.gov/air/mercuryrule>

[48] EPA, Office of Research and Development, *Mercury Research Multi-Year Plan (Washington: EPA, 2003).* Available at: <http://www.epa.gov/osp/myp/mercury.pdf>

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
	support of mechanistic data long-term goal.					

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percentage of planned outputs delivered in support of aggregate and cumulative risk long-term goal.				100	Percent

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Output	Percentage of planned outputs delivered in support of the susceptible subpopulations long-term goal.				100	Percent

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Efficiency	Average time (in days) to process research grant proposals from RFA closure to submittal to EPA's GAD, while maintaining a credible and efficient competitive merit review system				292	Average Days

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$3,000.0) This increase supports expansion of the Agency's nanotechnology research. This research aims to generate the underlying science needed to better understand and predict the potential implications of nanoparticle releases to the environment and their fate and transport, which may potentially result in exposure to human health and ecosystems. It also seeks to identify how nano-scale science can be responsibly used for beneficial environmental applications (e.g., improved sensors, control/remediation options). Research will also study how releases of nanoparticles are measured, protocols for waste handling and disposal that take nanoparticles into consideration, and how nanoparticles used for environmental remediation may affect human health. This research will directly support activities in the Agency's program and regional offices.

- (-$5,000.0) This decrease is due to the program's lack of progress in developing adequate performance measures as assessed in the Program Assessment Rating Tool (PART). This decrease will reduce support for the Environmental Monitoring and Assessment Program (EMAP).

- (-$1,625.2) This reduction will impact research on the use of mechanistic information in risk assessment, aggregate and cumulative risk, and public health outcomes that was determined to be of relatively lower importance.

- (-$1,344.1) This reflects a net reduction of directed FY 2006 STAR funding.

- (-$931.3, +3.8 FTE) This change is the net result of technical adjustments of workyears, and associated workforce and support resources to more accurately align with Agency research priorities, including realignment of resources for library subscriptions management from the Facilities, Infrastructure and Operations program directly into the research program.

- (-$489.7) This decrease is the net effect of increases for payroll and cost of living increases for existing FTE, combined with a reduction based on the recalculation of base workforce costs.

- (-4.3 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the Agency better align resources, skills, and Agency priorities. Although fewer FTE will be available to provide human health research, the program is using data collected from its recent assessment of resource skills needs to ensure that there will not be a negative impact to the program.

Statutory Authority:

CAA; SDWA; ERDDA; CWA; FIFRA; FFDCA; RCRA; FQPA; TSCA.

Program Area: Research: Land Protection

Research: Land Protection and Restoration

Program Area: Research: Land Protection
Goal: Land Preservation and Restoration
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$10,257.6***	***$11,606.0***	***$10,552.8***	***($1,053.2)***
Leaking Underground Storage Tanks	$699.3	$634.0	$651.3	$17.3
Oil Spill Response	$841.0	$838.0	$903.1	$65.1
Hazardous Substance Superfund	$23,322.6	$22,927.0	$21,963.9	($963.1)
Total Budget Authority / Obligations	$35,120.5	$36,005.0	$34,071.1	($1,933.9)
Total Workyears	138.9	135.4	142.8	7.4

Program Project Description:

Research performed under this program supports scientifically defensible and consistent decision-making for Resource Conservation and Recovery Act (RCRA) waste management and corrective action by providing a tested multimedia modeling system and technical support to those who use the model to make environmental decisions. Research and support within this program addresses resource conservation, corrective action, hazardous waste treatment, multimedia modeling, landfills, leaching, containment systems, and landfill bioreactors.

Research is guided by the long term *Waste Research Strategy*[49], which was developed with participation from major clients and outlines research needs and priorities. These research efforts are guided by multi-year plans (MYPs)[50], developed with input from across the Agency, which outline steps for meeting the needs of the Research and Development program's clients and for evaluating progress through annual performance goals and measures. Specific human health risk and exposure assessments and methods are discussed and conducted under the Human Health Risk Assessment Program.

EPA requested an independent review of a major component of this program by the Science Advisory Board (SAB). The SAB evaluated the Multimedia, Multi-pathway, Multi-receptor

[49] EPA, Office of Research and Development, *Waste Research Strategy (Washington: EPA).* For additional information please go to: http://www.epa.gov/ord/htm/documents/wastepub.pdf

[50] For additional information, please go to: http://www.epa.gov/osp/myp

The *Waste Research Strategy* outlines the research needs and priorities at the time it was prepared. To guide these research efforts as progress is made and new needs emerge, EPA develops multi-year research plans that are revised periodically. EPA is currently merging the Contaminated Sites and RCRA Multi-Year Plans (MYPs) into one cohesive Land Research MYP, with input from across the Agency, to ensure research conducted continues to support the Agency's mission to protect human health and the environment.

Exposure and Risk Assessment (3MRA) modeling system[51] and in its report of November 2004, concluded that:

- 3MRA is ready to be used for national exit level analyses;
- By including additional exposure pathways (e.g. vapor intrusion, dermal exposure), and additional treatment options, 3MRA can be used for site-specific assessments; and
- 3MRA can be upgraded easily as technology advances because the Framework for Risk Analysis in Multimedia Environmental Systems (FRAMES) architecture makes it very adaptable.

The Board of Scientific Counselors (BOSC), a distinguished body of scientists and engineers who are recognized non-government experts from academia and industry, evaluates the Agency's research programs, national laboratories, centers, and offices, and management practices, and provides peer review, including evaluation of the program's peer review policies and research plans and products. The Land Protection and Restoration research program was reviewed by the BOSC in FY 2006 (December, 2005) and findings will be reported to the Agency in the 2nd quarter of 2006.

FY 2007 Activities and Performance Plan:

Performance Assessment: The Land Research and Restoration program is scheduled for PART review in FY 2006. The program has begun developing and refining outcome-based performance measures in order to demonstrate results.

In support of EPA's Resource Conservation Challenge (RCC), a major national effort to reduce waste and conserve natural resources by promoting the use of recycled products, EPA will continue to develop effective options for minimizing waste, and for assessing the performance of waste minimization programs through multimedia risk assessments (R&D Criteria: Performance). In FY 2007, utilizing its multimedia modeling risk assessment methodologies, EPA's research and development program will provide an estimate of the benefits realized (i.e., reduction in risk to human and ecological receptors) in reducing priority chemicals waste streams (R&D Criteria: Relevance, Performance). EPA also will continue to collaborate with the private sector to conduct field sampling, and with the states to optimize operations and monitoring of several landfill bioreactors and determine their potential to provide alternative energy in the form of landfill gas while increasing the nation's landfill capacity (R&D Criteria: Relevance, Performance). The Association of State and Tribal Solid Waste Management Officials (ASTSWMO) helps transfer research results on landfill bioreactors to the states (R&D Criteria: Relevance), who issue the permits under the recent Research, Development, and Demonstration (RD&D) rule.

[51] *EPA's Multimedia, Multipathway, and Multireceptor Risk Assessment (3MRA) Modeling System; A Review by the 3MRA Review Panel of the EPA Science Advisory Board* EPA-SAB-05-003. For more information please go to: http://www.epa.gov/sab/pdf/sab_05_003.pdf

Performance Targets:

Work under this program supports restoring land. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (-$179.6) This decrease is the net effect of increases for payroll and cost of living increases for existing FTE, combined with a reduction based on the recalculation of base workforce costs.

- (-$873.6) This reflects a decrease to work in the RCRA research program, including performance evaluation of landfill liners and covers.

- (-0.8 FTE) This decrease reflects a change in EPA's workforce management strategy that will help the agency better align resources, skills, and Agency priorities.

Statutory Authority:

SWDA; HSWA; SARA; CERCLA; RCRA; OPA; BRERA.

Program Area: Research: Sustainability

Research: Economics and Decision Science(EDS)

Program Area: Research: Sustainability
Goal: Compliance and Environmental Stewardship
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$2,465.6***	***$2,361.0***	***$2,494.6***	***$133.6***
Total Budget Authority / Obligations	$2,465.6	$2,361.0	$2,494.6	$133.6
Total Workyears	2.4	3.0	3.0	0.0

In FY 2006, Program/Project Research: Pollution Prevention (B6) was eliminated and Program/Projects Research: Economics and Decision Sciences (EDS) (H7) and Research: Sustainability (H8) established.

Program Project Description:

Economics and Decision Sciences (EDS) research is designed to improve EPA's decision making, cost-benefit analyses, and implementation strategies.[52] EDS research focuses on areas such as:

- How people value their health and the environment;
- Corporate and consumer environmental behavior;
- Market mechanisms and incentives; and
- Information disclosures, e.g., how the public and markets respond to publicizing institutional environmental behavior.

Protecting the environment depends not only on understanding the health and ecological effects of environmental change, but also human and organizational environmental behavior. EDS is designed to meet this critical need. Since its inception, the EDS program has produced dozens of published, peer-reviewed articles that have contributed to the field of environmental decision making and been used in crafting state and Federal environmental policies. For example, EPA's agency-wide guidelines for cost-benefit analyses cite 10 peer-reviewed, academic articles sponsored by the EDS program.[53] (R&D Criteria: Quality)

Research is guided by the Environmental Economics Research Strategy (EERS),[54] research strategy, which was developed with participation from our major clients and was reviewed by independent experts.[55] The strategy outlines the research needs and priorities. The Agency also

[52] For more information, visit: <http://es.epa.gov/ncer/science/economics>
[53] EPA, Office of the Administrator, *Guidelines for Preparing Economic Analyses, (Washington: EPA, 2000).* Available on the Internet at: <http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html/$file/Guidelines.pdf>
[54] EPA, *Environmental Economic Research Strategy, (Washington: EPA, 2005).* Available on the Internet at: <http://www.epa.gov/ord/htm/documents/econresearch.pdf>
[55] EPA, Science Advisory Board, Advisory Panel on the Environmental Economics Research Strategy, *Review of the Environmental Economics Research Strategy of the U.S. Environmental Protection Agency (Washington: EPA, 2004).* Available on the Internet at: <http://www.epa.gov/sab/pdf/sab_04007.pdf>

maintains a Multi-Year Plan (MYP) [56] that reflects the priorities identified in the recently-released EERS and outlines steps for meeting these needs, as well as annual performance goals and measures for evaluating progress. (R&D Criteria: Quality, Relevance, Performance)

FY 2007 Activities and Performance Plan:

In FY 2007, Economics and Decision Science research will focus on benefit transfer methods and better understanding and designing practical trading programs. These two areas are important to EPA's program offices and have broad application to the Agency's regulatory work.

Economic valuation is a high priority in the EERS (and the draft Ecological Benefits Assessment Strategic Plan) and improving benefit transfer methods is a related high priority research need. Benefit transfer methods are the techniques used to transfer benefit numbers from an existing study to a policy analysis. The techniques are used in virtually all economic analyses performed by the Agency. In FY 2007, research efforts will seek to develop methodological advances in benefit transfer relying primarily on existing datasets, which would enable faster delivery of research results. These results would fill a critical need for the Agency to conduct accurate benefit transfers.

Another focus in FY 2007 will be the design of trading programs. Programs such as the sulfur dioxide trading program have been remarkably successful, but that success has not always transferred to other trading programs, especially those that are local or are in new areas. There is a need across many offices to better understand how to design practical trading programs for local and new markets. For example, there are numerous water quality trading programs in the context of Total Maximum Daily Loads, but actual trades in these programs tend to be rare. Other similar areas are pesticide trading and local air pollution trading. Research will be conducted on a series of case studies to identify the causes for success or failure for the trading programs. These results could be used to immediately inform the ongoing design of similar trading programs and bring about a more effective and innovative way to solve environmental pollution problems.

EPA's most frequent use of economic research is as a basis for economic analyses for environmental regulations and other policies. Economic principles are also playing an increasingly important role in the design of implementation strategies, such as marketable pollution permit trading as an alternative to traditional regulation. EPA has also begun to use economic research to explain and predict individual or corporate environmental behavior in response to voluntary programs, incentives, regulations or sanctions.

[56] EPA, Office of Research and Development, *Draft Economic, Social, and Behavioral Science Research Program Multi-Year Plan (Washington: EPA, 2001).*

Performance Targets:

Work under this program supports compliance and environmental stewardship. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$182.9) This reflects an increase for payroll and cost of living for existing FTE.

- (-$49.3) This is a technical adjustment of program support resources to more accurately align with Agency research priorities, and to cover increases in fixed costs.

Statutory Authority:

CAA; CWA; PPA; RCRA; SDWA; SARA; TSCA.

Research: Environmental Technology Verification (ETV)

Program Area: Research: Sustainability
Goal: Compliance and Environmental Stewardship
Objective(s): Enhance Science and Research

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$3,364.9***	***$2,990.0***	***$0.0***	***($2,990.0)***
Total Budget Authority / Obligations	$3,364.9	$2,990.0	$0.0	($2,990.0)
Total Workyears	6.2	4.7	0.0	-4.7

Program Project Description:

The Environmental Technology Verification (ETV) program[57] verifies the performance of environmental technologies that address high-priority, high-risk environmental issues. The ETV Program operates as a public-private partnership through agreements between EPA and private nonprofit testing and evaluation organizations. These organizations work with EPA technology experts to create efficient and quality-assured testing procedures that verify the performance of innovative technologies. These technologies are submitted voluntarily by private industry, which cite ETV's findings to support claims about a product's capabilities. ETV only verifies the performance of commercial-ready technologies, allowing the program to respond to the immediate needs of the environmental technology market. ETV operates using centers and one pilot program covering a broad range of environmental technology categories, and has verified over 300 environmental technologies since 1995. An active community of nearly 800 collaborating stakeholders assist the centers in developing protocols for testing, prioritizing the types of technologies to be verified, and designing and implementing outreach activities to the customer groups they represent.

Through this program, EPA supports the stakeholder process that identifies technology categories and vendors for verification, conducts outreach to vendors via trade conferences and industry publications, provides program oversight, and provides technical and QA support to the centers, thus ensuring that the data obtained meet EPA's data quality standards. The vendor pays for the remainder of the program's costs, including test plan development, testing, data analysis, reporting, and any vendor- or product-specific verification expenses. In some cases, a third party such as a state or another Federal agency contributes towards vendors' shares of the costs. EPA and its partner centers work to facilitate these arrangements as they arise.

ETV also supports state, national, and international efforts to address environmental issues with technological solutions. States use ETV data and protocols to shorten site-specific pilot testing of technologies, and some require verification of technologies used to comply with state and Federal pollution laws. The ETV program's operating procedures and the testing protocols it

[57] For more information, visit: <http://www.epa.gov/etv>

produces serve as peer-reviewed standards for the international and business communities on how to verify different types of environmental technologies.

FY 2007 Activities and Performance Plan:

In FY 2007, EPA funding for the verification centers will be discontinued. Workforce and associated resources will be shifted to the sustainability research program where they will continue to provide in-kind programmatic and technical oversight, and quality assurance/quality control of the partner centers' verifications.

Performance Targets:

Work under this program supports compliance and environmental stewardship. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (-$2,170.1) ETV will move to a fully vendor-and other collaborator-paid program with an EPA commitment to provide 'in-kind" technical and QA oversight. In addition to shifting a larger portion of the cost of verification to vendors (as appropriate), the program, largely through the efforts of its centers, will obtain funding and in-kind support from organizations interested in collaborating with ETV. This will allow EPA ETV to leverage its technical expertise against the technical, monetary, and capital resources provided by these collaborators and its center partners. Ultimately, this shift will enable the program to verify technologies in an increasingly cost-effective and relevant manner, allowing the program to build strategic relationships that support common environmental goals.

- (-$689.7) This decrease represents a shift in payroll resources to the sustainability program project to support to support redirected workyears.

- (-$130.2, - 4.7 FTE) ETV staff moved to the sustainability program project will continue to provide in-kind programmatic and technical oversight, and quality assurance/quality control of the program's verification activities. This redirection of work years is consistent with EPA's Research and Development program's long term human capital priorities.

Statutory Authority:

CAA; CWA; FIFRA; PPA; RCRA; SDWA; SARA; TSCA.

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$36,354.6***	***$25,803.0***	***$21,404.9***	***($4,398.1)***
Hazardous Substance Superfund	$501.0	$292.0	$0.0	($292.0)
Total Budget Authority / Obligations	$36,855.6	$26,095.0	$21,404.9	($4,690.1)
Total Workyears	111.1	76.2	77.3	1.1

In FY 2006, Program/Project Research: Pollution Prevention (B6) was eliminated and Program/Projects Research: Economics and Decision Sciences (EDS) (H7) and Research: Sustainability (H8) established.

Program Project Description:

Sustainable and preventive approaches to health and environmental problems have increasingly become the agency's focus since the Pollution Prevention Act of 1990. Sustainable approaches require innovative design and production techniques that minimize or eliminate environmental liabilities; integrated management of air, water, and land resources; and changes in the traditional methods of creating and distributing goods and services. In addition to conducting research related to human health and environmental threats, EPA is committed to promoting sustainability—achieving economic prosperity while protecting natural systems and quality of life. Specific sustainability research areas include:

- *Pollution Prevention Tools*:[58] This research creates tools that the public and private sectors use to improve environmental decision making. For example, the P2 Tools program will develop new Life Cycle Impact Assessment (LCIA) analytical techniques that are cost effective, take less time to complete, and provide high priority life cycle benchmark data.

- *Small Business Innovation Research (SBIR) Program*:[59] As required by the Small Business Act as amended,[60] EPA sets aside 2.5% of its extramural research budget for contracts to small businesses to develop and commercialize new environmental technologies.

- *National Environmental Technology Competition (NETC)*:[61] The People, Prosperity, and the Planet (P^3) Award[62] is a student competition to develop solutions to sustainability challenges.

[58] For more information, visit: <http://www.epa.gov/ord/NRMRL/std/sab>
[59] For more information, visit: <http://es.epa.gov/ncer/sbir>
[60] U.S. Public Law 219. 79th Congress, 2nd session, 22 July 1982. *Small Business Innovation Development Act of 1982*. More information is available on the Internet at: <http://thomas.loc.gov/cgi-bin/bdquery/z?d097:s.881:>
[61] For more information, visit: <http://www.epa.gov/etop/netc>
[62] For more information, visit: <http://es.epa.gov/ncer/p3>

- *Sustainable Environmental Systems (SES)*:[63] The SES program develops methodologies for understanding and managing large, complex environmental systems such as metropolitan areas and watersheds.

EPA is drafting a new sustainability research strategy and Multi-Year Plan. In the interim, research will be guided by the agency's Pollution Prevention Research Strategy[64] and draft Multi-Year Plan.[65]

FY 2007 Activities and Performance Plan:

Performance Assessment: In 2003, the Pollution Prevention research program underwent a PART assessment and received an overall rating of "Results Not Demonstrated". The program will continue to work with OMB on finalizing the appropriate measures for the program as we proceed with collecting the data needed to show program results.

Sustainability is a priority for water infrastructure if the Nation is to meet the challenges of an aging infrastructure. The Shepherd Creek Watershed Management Project in Cincinnati, Ohio is an effort to test the effectiveness of a market-based incentive as a tool to manage storm water run-off in urban watersheds. Urban storm water run-off is a well known environmental problem because it mobilizes pollutants, causes combined sewer overflows, and scourers streams resulting in ecological damage. The incentive will take the form of a voluntary auction where individual land owners will bid on a lease to establish on-site, on-property run-off control best management practices such as rain barrels and rain gardens. The project plan calls for the auction to be held during 2006 and the establishment of the best management practices by the start of 2007. The management system will be fully operational in 2007 including an extensive network for ecological, hydrological, and water quality monitoring to quantitatively assess the effectiveness of the process.

In FY 2007, the Pollution Prevention Tools research area will begin developing the foundation for an indicator model, GREENSCOPE that will be used to evaluate a particular reaction or process for its sustainability value with respect to the environment, energy, efficiency, and economics. This direct evaluation will allow for variant comparisons of industrial processes by normalizing the results and will allow one to choose the most sustainable process. This "what-if" approach will help to guide research efforts, save resources, and eliminate chemical waste from exploratory research. As bench processes are scaled up, these same effects should be realized as green industrial processes.

In FY 2007, the People, Prosperity, and Planet (P3) Award will support up to 50 student design projects from around the country, focusing on challenges in areas such as materials and chemicals, energy, resources, and water. In the spring, teams will be invited to bring their designs to Washington, D.C., to compete for the P3 Award. Winners of the P3 Award will be

[63] For more information, visit: <http://www.epa.gov/ord/NRMRL/std/seb>
[64] EPA, Office of Research and Development, *Pollution Prevention Research Strategy (Washington: EPA, 1998).* Available on the Internet at: <http://www.epa.gov/ord/htm/documents/p2.pdf>
[65] EPA, Office of Research and Development, *Draft Pollution Prevention and New Technologies for Environmental Protection Multi-Year Plan (Washington: EPA, 2003).*

eligible for additional funds from EPA to match contributions from industry or non-governmental organizations to help further develop the design, implement the project in the field, and move the design to the marketplace.

Performance Targets:

Work under this program supports compliance and environmental stewardship. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$130.2, +4.7 FTE) This reflects the redirection of workforce and associated costs from the ETV program to support research on sustainability. Resources will provide technical oversight and quality assurance activities related to technology verifications conducted in FY 2006 as well as program evaluation efforts. EPA's commitment to provide "in-kind" technical and QA support for vendor paid verifications supporting sustainability research will continue in 2007 with sustainability evaluation criteria incorporated into the technology verifications.

- (-$2,668.6, -3.0 FTE) This reflects an adjustment for Small Business Innovation Research (SBIR). Enacted funding levels for this program project include the amount EPA is required to set aside for contracts to small businesses to develop and commercialize new environmental technologies. This adjustment is necessary because the SBIR set aside, at this point in the budget cycle, is redistributed to other research programs in the President's Budget request. After the budget is enacted, when the exact amount of the mandated requirement is known, the funds will be transferred to the SBIR program in this program project.

- (-$1,000.0) This reduction reflects discontinuation of the Collaborative Science and Technology Network for Sustainability (CNS) grants program. CNS projects use science at a regional scale to inform decision-making related to long-term sustainability of resources, including water, air, land, materials, energy, and ecosystems.

- (-$560.4) This reduction to CC&T research will discontinue research funding for efforts such as the development of less toxic chemicals for use in the metal finishing industry and cost effective environmental improvements to mine waste run-off.

- (-$299.3) This decrease is the net effect of increases for payroll and cost of living increases for existing FTE, combined with a reduction based on the recalculation of base workforce costs.

- (-0.6 FTE) This decrease reflects a change in EPA’s management strategy that will help the Agency better align resources, skills, and Agency priorities.

Statutory Authority:

CAA; CWA; FIFRA; PPA; RCRA; SDWA; SBA; SARA; TSCA.

Program Area: Toxic Research and Prevention

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Science & Technology	***$28,276.0***	***$30,357.0***	***$26,223.7***	***($4,133.3)***
Total Budget Authority / Obligations	$28,276.0	$30,357.0	$26,223.7	($4,133.3)
Total Workyears	133.3	123.4	122.2	-1.2

Program Project Description:

The Pesticides and Toxics research program is a multidisciplinary program that examines risks resulting from exposure to pesticides and toxic chemicals. The research is designed to support the Agency's efforts to reduce current and future risks to the environment and to humans by preventing and/or controlling the production of new chemicals that pose unreasonable risk, as well as assessing and reducing the risks of chemicals already in commerce. This research complements work conducted under the Human Health and Ecosystem Research, the Human Health Risk Assessment, and the Endocrine Disruptor programs. The development and validation of methods and assessments for predicting risks to human health are conducted under the Human Health Research and the Human Health Risk Assessment programs. The development and validation of methods and assessments for predicting risks from pesticides and toxic substances to human health and ecosystems are conducted under the Pesticides and Toxics research program. (R&D Criteria: Relevance)

Research is guided by the Biotechnology Research Strategy[66] and the Wildlife Research Strategy,[67] both of which were developed with participation from major clients (e.g., EPA's Prevention, Pesticides and Toxic Substances program and the Regional Offices). The strategies outline the research needs and priorities. The Agency also maintains a Safe Pesticides/Safe Products (SP2) multi-year plan (MYP)[68] that outlines steps for meeting these needs, as well as, annual performance goals and measures for evaluating progress.

[66] U.S. EPA, Office of Research and Development. *Biotechnology Research Strategy*. Washington, DC: EPA. Accessed August 8, 2005. Available at: <http://www.epa.gov/nheerl/publications/files/biotechnology_research_program_4_8_05.pdf>

[67] U.S. EPA, Office of Research and Development, *Wildlife Research Strategy (Washington: EPA).* Available at: <http://www.epa.gov/nheerl/publications/files/wildlife_research_strategy_2_2_05.pdf>

[68] U.S. EPA, Office of Research and Development, Safe Pesticides/Safe Products Multi-Year Plan (Washington: EPA, 2003). Available at: <http://www.epa.gov/osp/myp/safecomm.pdf>

FY 2007 Activities and Performance Plan:

In FY 2007, research will continue to focus on the following four major goals of the pesticides and toxics research program:

Providing predictive tools for prioritization and enhanced interpretation of exposure, hazard identification, and dose-response information: This research will develop/validate: 1) predictive biomarkers of neurotoxic effects for major classes of pesticides, 2) alternative test methods for the hazard identification of developmental neurotoxicants, 3) virtual chemical screening methods for risk-based prioritization and ranking needs for chronic non-cancer effects, and 4) quantitative structure activity relationships (QSARs) to relate various structural descriptions of molecules to toxicity endpoints. EPA will use the results of this research to make decisions about which chemicals should undergo more definitive toxicological testing by industry and, subsequently, to help interpret the industry-submitted data for use in risk assessments. The two extramural Environmental Bioinformatic Research Centers that were awarded in FY 2006 will continue to be supported and will work collaboratively with EPA to develop and apply novel computational approaches to integrate data from genomics, proteomics, and metabonomics studies. Integrating data from genomics and related approaches is consistent with the "Understanding Complex Biological Systems" category highlighted as a priority for Federal investment by the Office of Management and Budget (OMB) and Office of Science and Technology Policy (OSTP)[69]. (R&D Criteria: Relevance, Quality, Performance)

Creating the scientific foundation for probabilistic risk assessment methods to protect natural populations of birds, fish, and other wildlife: This research directly supports Agency efforts to assure that endangered species are protected from pesticides while making sure farmers and communities have the pest control tools they need. Four key components of this research are: 1) extrapolation among wildlife species and exposure scenarios of concern, 2) population biology to improve population dynamics in spatially-explicit habitats, 3) models for assessing the relative risk of chemical and non-chemical stressors, and 4) models to define geographical regional/spatial scales for risk assessment. Methods for characterization of population-level risks of toxic substances to aquatic life and wildlife will also be developed. Results of this research will help the Agency meet the long term goal of developing scientifically valid approaches for assessing spatially-explicit, population-level risks to wildlife populations from multiple stressors. (R&D Criteria: Relevance, Quality, Performance)

Providing the scientific underpinnings for guidance to prevent or reduce risks of human environments within communities, homes, and workplaces: Research in biotechnology will improve the capability to assess the ecologic risks associated with genetically modified organisms (GMOs) and will provide preliminary tools for risk management. Development of methods to assess the potential allergenicity of genetically engineered foods will continue to be supported. Tools for characterizing community and meso-scale exposures associated with the use of agricultural pesticides will be developed (Spray Drift). Research will examine human risks resulting from the transport of pesticides and associated degradants from source waters through conventional drinking water treatment plants and then through the distribution systems

[69] FY 2007 Administration Research and Development Budget Priorities memo by J. Marburger and J. Bolten: July 8, 2005.

to the end users. Research designed to provide updated tools for asbestos risk assessments will be completed in 2007. (R&D Criteria: Relevance, Quality, Performance)

Providing strategic scientific information and advice concerning novel or newly discovered hazards: The mechanisms by which perfluoroctane sulfonate (PFOS) causes developmental toxicity in a laboratory animal model will be characterized. Research examining the potential for selected perfluorinated chemicals to degrade to perfluorooctanoic acid (PFOA) and/or it's precursors in the environment will continue. New protocols to assess risk to non-target plant species from high potency herbicides will be developed. (R&D Criteria: Relevance, Quality, Performance)

Performance Targets:

Work under this program supports community and ecosystem protection. Research milestones are identified in the program's multi-year planning documents, but there are currently no annual performance measures that meet the requirements of the PART guidance (i.e., that can demonstrate progress toward established long-term outcome goals).

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$26.1) This reflects an increase for payroll and cost of living for existing FTE.

- (-$4,159.4, -1.2 FTE) This reflects a decrease to various lower priority research projects as defined by the program's aforementioned multi-year research plans and research strategies. The decrease will impact biotechnology, collaborative and risk-related research efforts while the program continues to demonstrate progress toward its research goals.

Statutory Authority:

FQPA; FIFRA; TSCA; CWA; CAA.

Program Area: Water: Human Health Protection

Drinking Water Programs
Program Area: Water: Human Health Protection
Goal: Clean and Safe Water
Objective(s): Protect Human Health

(Dollars in Thousands)

	FY 2005 Obligations	FY 2006 Enacted	FY 2007 Pres Bud	FY 2007 Pres Bud v. FY 2006 Enacted
Environmental Program & Management	$94,559.1	$95,656.0	$99,121.0	$3,465.0
Science & Technology	***$3,326.0***	***$3,092.0***	***$3,243.1***	***$151.1***
Total Budget Authority / Obligations	$97,885.1	$98,748.0	$102,364.1	$3,616.1
Total Workyears	582.1	588.6	583.9	-4.7

Program Project Description:

These resources provide technical support to drinking water programs through the Technical Support Center (TSC), which evaluates engineering and scientific data, collects and evaluates contaminant occurrence data, evaluates treatment technologies, develops and evaluates monitoring approaches and analytical methods, and develops and disseminates treatment plant performance improvement mechanisms to affect development and implementation of National Primary Drinking Water Regulations that ensure the safety of drinking water. The Center also provides external technical assistance in support of EPA Regional and state drinking water programs. (See http://www.epa.gov/safewater/ for more information.)

FY 2007 Activities and Performance Plan:

In FY 2007, the drinking water technical support program will:

- Provide technical and scientific support for the development and implementation of drinking water regulations;

- Continue to implement EPA's Drinking Water Laboratory Certification Program. This program sets standards and establishes methods for Agency, state, and privately-owned labs that are analyzing drinking water samples. Through this program, EPA will also conduct three regional program/laboratory reviews;

- Support small systems' efforts to optimize their treatment technology under the drinking water treatment Area Wide Optimization Program (AWOP). AWOP is a highly successful technical assistance and training program that enhances the ability of small systems to meet existing and future microbial, disinfectant, and disinfection byproducts standards. By the end of 2007, EPA expects that 30 states will be working with the Agency to establish, strengthen, and enhance AWOPs. EPA will complete the disinfection byproduct distribution system performance based training pilot;

- Manage the implementation of Unregulated Contaminant Monitoring Rule(s) (UCMR2);

- Support the Partnership for Safe Water, a national voluntary collaborative effort between the water industry and EPA to pursue optimization of the drinking water treatment infrastructure to maximize public health protection; and

- Provide analytical method development/validation to enable implementation of the Nation's compliance-monitoring and occurrence data gathering.

Performance Targets:

Measure Type	Measure	FY 2005 Actual	FY 2005 Target	FY 2006 Target	FY 2007 Target	Units
Outcome	Percent population served by community water systems in compliance with health based drinking water standards.* *This measure is a long-term PART measure for the Drinking Water programs under the STAG appropriation. This program is scheduled for an initial PART review in FY 2006.	88.5	93	93	94	% population

The Technical Support Center (TSC) will provide technical and scientific support for the development and implementation of drinking water regulations. In FY 2007, the TSC will assist in the development of tools for states and water utilities to use in implementing Stage 2 of the Disinfection Byproducts and Long-Term 2 Enhanced Surface Water treatment rules;

The vast majority of the nation's community water systems will provide drinking water that meets all health-based standards, progress in line with EPA's 2008 target of 95%.

EPA continues to work to achieve this target and to accurately reflect the many public health benefits such as reducing acute illnesses linked to microbiological contaminants or longer-term health problems related to exposure from contaminants that are achieved through safe drinking water.

FY 2007 Change from FY 2006 Enacted Budget (Dollars in Thousands):

- (+$5.4) This increase will enhance technical and scientific support of the National Primary Drinking Water Regulations.

- (+$145.7) This reflects an increase for payroll and cost of living for existing FTE.

Statutory Authority:

SDWA; CWA.

Environmental Protection Agency

FY 2007 Annual Performance Plan and Congressional Justification

Science and Technology