For Official Use Only

United States
Environmental Protection Agency

FISCAL YEAR 2018

Justification of Appropriation Estimates for the Committee on Appropriations

Tab 03: Science and Technology

May 2017

EPA-190-K-17-002

www.epa.gov/ocfo

Environmental Protection Agency
2018 Annual Performance Plan and Congressional Justification

Table of Contents - Science and Technology

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

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology				
Budget Authority	$763,829.4	$733,251.0	$450,812.0	($282,439.0)
Total Workyears	2,107.0	2,199.7	1,484.7	-715.0

*For ease of comparison, Superfund transfer resources for the audit and research functions are shown in the Superfund account.

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; necessary expenses for personnel and related costs and travel expenses; procurement of laboratory equipment and supplies; and other operating expenses in support of research and development, $450,812,000, to remain available until September 30, 2019.

Program Projects in S&T
(Dollars in Thousands)

Program Project	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Clean Air				
Clean Air Allowance Trading Programs	$8,149.6	$7,793.0	$5,739.0	($2,054.0)
GHG Reporting Program	$8,824.2	$8,003.0	$0.0	($8,003.0)
Federal Support for Air Quality Management	$6,234.3	$7,453.0	$3,959.0	($3,494.0)
Federal Vehicle and Fuels Standards and Certification	$85,613.6	$93,070.0	$76,010.0	($17,060.0)
Subtotal, Clean Air	$108,821.7	$116,319.0	$85,708.0	($30,611.0)
Indoor Air and Radiation				
Indoor Air: Radon Program	$378.9	$172.0	$0.0	($172.0)
Radiation: Protection	$2,064.5	$1,831.0	$0.0	($1,831.0)
Radiation: Response Preparedness	$3,716.5	$3,774.0	$3,339.0	($435.0)
Reduce Risks from Indoor Air	$260.4	$209.0	$0.0	($209.0)
Subtotal, Indoor Air and Radiation	$6,420.3	$5,986.0	$3,339.0	($2,647.0)

Program Project	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Enforcement				
Forensics Support	$13,949.7	$13,643.0	$10,444.0	($3,199.0)
Homeland Security				
Homeland Security: Critical Infrastructure Protection	$9,807.2	$10,497.0	$0.0	($10,497.0)
Homeland Security: Preparedness, Response, and Recovery	$26,800.2	$26,004.0	$22,597.0	($3,407.0)
Homeland Security: Protection of EPA Personnel and Infrastructure	$551.0	$551.0	$500.0	($51.0)
Subtotal, Homeland Security	$37,158.4	$37,052.0	$23,097.0	($13,955.0)
IT / Data Management / Security				
IT / Data Management	$2,892.6	$3,083.0	$2,725.0	($358.0)
Operations and Administration				
Facilities Infrastructure and Operations	$71,332.8	$68,209.0	$68,339.0	$130.0
Workforce Reshaping	$0.0	$0.0	$10,995.0	$10,995.0
Subtotal, Operations and Administration	$71,332.8	$68,209.0	$79,334.0	$11,125.0
Pesticides Licensing				
Pesticides: Protect Human Health from Pesticide Risk	$3,772.1	$3,122.0	$2,274.0	($848.0)
Pesticides: Protect the Environment from Pesticide Risk	$1,737.5	$2,324.0	$2,195.0	($129.0)
Pesticides: Realize the Value of Pesticide Availability	$427.4	$570.0	$527.0	($43.0)
Subtotal, Pesticides Licensing	$5,937.0	$6,016.0	$4,996.0	($1,020.0)
Research: Air and Energy				
Research: Air and Energy	$104,407.9	$91,731.0	$30,592.0	($61,139.0)
Research: Safe and Sustainable Water Resources				
Research: Safe and Sustainable Water Resources	$114,874.9	$107,230.0	$68,520.0	($38,710.0)
Research: Sustainable Communities				
Research: Sustainable and Healthy Communities	$154,349.4	$139,709.0	$54,211.0	($85,498.0)
Research: Chemical Safety and Sustainability				
Human Health Risk Assessment	$36,007.0	$37,530.0	$22,516.0	($15,014.0)

Program Project	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Research: Chemical Safety and Sustainability				
Endocrine Disruptors	$15,980.1	$0.0	$10,122.0	$10,122.0
Computational Toxicology	$23,937.4	$0.0	$17,165.0	$17,165.0
Research: Chemical Safety and Sustainability (other activities)	$53,405.9	$89,158.0	$34,386.0	($54,772.0)
Subtotal, Research: Chemical Safety and Sustainability	$93,323.4	$89,158.0	$61,673.0	($27,485.0)
Subtotal, Research: Chemical Safety and Sustainability	$129,330.4	$126,688.0	$84,189.0	($42,499.0)
Water: Human Health Protection				
Drinking Water Programs	$3,975.8	$3,512.0	$3,657.0	$145.0
Congressional Priorities				
Water Quality Research and Support Grants	$10,378.5	$14,073.0	$0.0	($14,073.0)
Subtotal, Water Quality Research and Support Grants	$10,378.5	$14,073.0	$0.0	($14,073.0)
TOTAL, EPA	$763,829.4	$733,251.0	$450,812.0	($282,439.0)

*For ease of comparison, Superfund transfer resources for the audit and research functions are shown in the Superfund account.

Program Area: Clean Air

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$17,343.4	$16,112.0	$12,791.0	($3,321.0)
Science & Technology	***$8,149.6***	***$7,793.0***	***$5,739.0***	***($2,054.0)***
Total Budget Authority / Obligations	$25,493.0	$23,905.0	$18,530.0	($5,375.0)
Total Workyears	71.7	71.4	63.7	-7.7

Program Project Description:

This program is responsible for managing the Clean Air Status and Trends Network (CASTNET), a long-term ambient monitoring network, established under Title IX of the Clean Air Act (CAA) Amendments of 1990, which serves as the nation's primary source for atmospheric data on the dry component of acid deposition, regional ground-level ozone, and other forms of particulate and gaseous air pollution. Used in conjunction with the National Atmospheric Deposition Program's (NADP) wet deposition networks and other ambient air quality networks, CASTNET's long-term datasets and data products are used to determine the effectiveness of national and regional emission control programs. The CASTNET program provides spatial and temporal trends in ambient air quality and atmospheric deposition in non-urban areas and sensitive ecosystems (i.e., National Parks). Maintaining the CASTNET monitoring network continues to be critical for assessing the environmental benefits realized from the Acid Rain Program and regional programs that control transported emissions (thereby reducing secondary pollutant formation of ozone and fine particles).

The EPA's Long-Term Monitoring (LTM) program was created to assess the health of water bodies in response to changes in deposition of atmospheric pollutants. Today, it ensures that the Clean Air Act continues to be effective in reducing the impact of atmospheric pollutants (e.g., strong acid anions) on surface waters in New England, the Adirondack Mountains, the Northern Appalachian Plateau (including the Catskill and Pocono mountains), and the Blue Ridge region. This program is operated cooperatively with numerous partners in state agencies, academic institutions, and other federal agencies. The LTM surface water chemistry monitoring program provides field measurements for understanding biogeochemical changes in sulfur, nitrogen, acid neutralizing capacity (ANC), aluminum, and carbon in streams and lakes in relation to changing pollutant emissions. The LTM program is one of the longest running programs at the EPA, providing long-term datasets based on sampling and measurements that go back to 1983.

Clean Air Allowance Trading Programs, established under Title I and IV of the Clean Air Act, help implement the National Ambient Air Quality Standards (NAAQS) and the Acid Rain Program, as well as reduce toxics emissions and regional haze. Pollutants reduced include sulfur dioxide (SO_2), nitrogen oxides (NO_x), ground-level ozone, fine particulate matter ($PM_{2.5}$), and mercury. The EPA provides assistance to states as they develop, implement, and assess their state and regional programs to address major regional and national air issues from large stationary sources. This

assistance has traditionally come in the form of technical analysis, modeling, and emissions monitoring support.

In July 2011, the EPA issued the Cross-State Air Pollution Rule (CSAPR). CSAPR, which took effect on January 1, 2015,[1] requires 27 states to limit their state-wide emissions of SO_2 and/or NOx in order to reduce or eliminate the states' contributions to fine particulate matter and/or ground-level ozone pollution in other states. The emissions limitations are defined in terms of maximum state-wide "budgets" for emissions of annual SO_2, annual NOx, and/or ozone-season NOx from each state's large electric generating units (EGUs). In September 2016, the EPA finalized an update to CSAPR for the 2008 ozone NAAQS.

FY 2018 Activities and Performance Plan:

In FY 2018, the EPA will:

- Continue quality assurance, analysis, and reporting of environmental data from the CASTNET deposition/rural ozone and LTM surface water monitoring networks to the extent possible. Analyze and assess trends in sulfur and nitrogen deposition, rural ozone concentrations, surface water quality, and other indicators of ecosystem health and ambient air quality in non-urban areas of the U.S.

- Assure the continuation of ongoing SO_2 and NO_X emission reductions from power plants in the eastern half of the U.S. by implementing CSAPR and the CSAPR update, and across the contiguous U.S. by implementing the Acid Rain Program.[2]

- Ensure accurate and consistent results for the programs. Work will continue on performance specifications and investigating monitoring alternatives and methods to improve the efficiency of monitor certification and emissions data reporting.

- Work with states to implement emission reduction programs to comply with CAA Section 110(a)(2)(D) requirements.

The EPA tracks the change in nitrogen deposition and sulfur deposition to assess the effectiveness of the Acid Rain and related programs with performance targets set for every three years. The EPA

[1] CSAPR was stayed and then vacated by the D.C. Circuit Court of Appeals, but the Supreme Court reversed the D.C. Circuit's opinion vacating the rule, EPA v. EME Homer City Generation, L.P., 134 S. Ct. 1584 (2014), and the D.C. Circuit subsequently lifted the stay. In July 2015, the D.C. Circuit issued a decision on remaining legal challenges to CSAPR, upholding the rule in most respects but remanding without vacatur several state budgets to the EPA for reconsideration. EME Homer City Generation, L.P. v. EPA, 795 F.3d 118 (D.C. Cir. 2015). EPA is responding to the remand by withdrawing the federal implementation plan provisions requiring compliance with the remanded budgets. Eleven of the remanded budgets addressed the 1997 ozone NAAQS. These budgets were withdrawn in the final rule updating CSAPR for the 2008 ozone NAAQS. In eight cases, the withdrawn budgets were replaced with new budgets addressing the more recent NAAQS, and, in three cases, the budgets were withdrawn without replacement. The remaining four remanded budgets addressed the 1997 and/or 2006 NAAQS for particulate matter. Three of the four states concerned have submitted, or have committed to submit, state implementation plans replacing the withdrawn budgets, and withdrawal of the remanded budgets is being coordinated with approval of the replacement budgets. To address the final remanded budget, for Texas, EPA has issued a proposed rule that would withdraw the federal implementation plan provisions requiring Texas power plants to participate in the CSAPR trading programs for annual emissions of SO_2 and NO_X without replacement. 81 FR 78954 (November 10, 2016). That proposal has not yet been finalized.

[2] Clean Air Act §§ 110(a)(2)(D) and Section 401.

also tracks changes in surface water acidity in lakes and streams in acid sensitive regions to assess the change in the number of chronically acidic water bodies. This is a long-term measure with a performance target set for 2030. The EPA will close seven of 59 EPA-sponsored CASTNET monitoring sites (six on Tribal lands) and seven of EPA's 32 National Atmospheric Deposition Program sites. Because these are the newest sites in the network, their closure would have the lowest impact on the agency's long-term record of monitoring.
See http://www.epa.gov/airmarkets-/progress/progress-reports.html for additional information.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$2,054.0) This streamlines support for the following activities in FY 2018:
    - Close seven CASTNET monitoring sites (six on Tribal lands) and seven National Atmospheric Deposition Program sites. The EPA will limit operations at other sites;
    - Focus assistance, such as technical analysis, modeling, and emissions monitoring support, to states as they develop, implement, and assess their state and regional programs to address major regional and national air issues from large stationary sources;
    - Phase-out the development of a new Air Markets Program Data tool; and
    - Discontinue reanalysis of the multi-state e-Government infrastructure program.

Statutory Authority:

Clean Air Act.

GHG Reporting Program

Program Area: Clean Air

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$106,864.3	$95,255.0	$13,580.0	($81,675.0)
Science & Technology	***$8,824.2***	***$8,003.0***	***$0.0***	***($8,003.0)***
Total Budget Authority / Obligations	$115,688.5	$103,258.0	$13,580.0	($89,678.0)
Total Workyears	204.5	224.1	50.0	-174.1

Program Project Description:

Within the S&T account, this program supports implementation and compliance with emission standards.

FY 2018 Activities and Performance Plan:

Resources and FTE have been eliminated for this program in FY 2018.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$8,003.0 / -33.8 FTE) This funding change eliminates the program in the S&T account.

Statutory Authority:

Clean Air Act; Pollution Prevention Act (PPA), §§ 6602-6605; National Environmental Policy Act (NEPA), § 102; Clean Water Act, § 104; Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), § 8001; Energy Policy Act of 2005, § 756.

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$138,050.2	$124,506.0	$96,456.0	($28,050.0)
Science & Technology	***$6,234.3***	***$7,453.0***	***$3,959.0***	***($3,494.0)***
Total Budget Authority / Obligations	$144,284.5	$131,959.0	$100,415.0	($31,544.0)
Total Workyears	804.1	842.0	601.8	-240.2

Program Project Description:

Federal support for the criteria pollutant and air toxics programs includes a variety of tools to characterize ambient air quality and the level of risk to the public from air pollutants and to measure national progress toward improving air quality and reducing associated risks. The Federal Support for Air Quality Management program supports development of State Implementation Plans (SIPs) through modeling and other tools and assists states in implementing, attaining, maintaining, and enforcing the National Ambient Air Quality Standards (NAAQS) for criteria pollutants. The program also develops and provides information, training, and tools to assist state, Tribal, and local agencies, as well as communities, to reduce air toxics emissions and risk specific to their local areas. Finally, the program includes activities related to the Clean Air Act's stationary source residual risk program, which involves an assessment of source categories subject to Maximum Achievable Control Technology (MACT) standards to determine if more stringent standards are needed to further reduce the risks to public health (taking into account developments in practices, processes, and control technologies).

FY 2018 Activities and Performance Plan:

As part of implementing the revised NAAQS, the EPA will provide state and local air quality agencies with a basic level of assistance in developing SIPs during FY 2018. The EPA also will help states identify the control options available and provide priority guidance to assist them with attaining the NAAQS. The EPA will ensure national consistency in how air quality modeling is conducted as part of regulatory decision-making including federal and state permitting programs as well as how conformity determinations are conducted across the U.S. The agency will work with state and local air quality agencies to ensure that particulate matter (PM) hot-spot analyses are conducted in a manner consistent with the transportation conformity regulation and guidance.

The EPA is working on improving monitoring systems to fill data gaps and get a better estimate of actual population exposure to toxic air pollution. The EPA will continue to provide quality assurance proficiency testing for federal and commercial laboratories that produce data from $PM_{2.5}$ air monitoring systems to ensure quality data for use in determining air quality.

In FY 2018, the EPA will work with partners to continue improving emission factors and inventories, including the National Emissions Inventory, to the extent possible. This effort includes gathering improved activity data from monitoring equipment and using geographic information systems and satellite remote sensing, where possible, for key point, area, mobile, and fugitive sources, and global emission events.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$3,494.0 / -3.1 FTE) This streamlines assistance to state, Tribal, and local agencies in SIP/TIP development as well as activities to reduce air toxic emissions and risks for communities.

Statutory Authority:

Clean Air Act.

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$85,613.6***	***$93,070.0***	***$76,010.0***	***($17,060.0)***
Total Budget Authority / Obligations	$85,613.6	$93,070.0	$76,010.0	($17,060.0)
Total Workyears	285.2	304.5	304.3	-0.2

Program Project Description:

Under the Federal Vehicle and Fuels Standards and Certification program, the EPA develops, implements, and ensures compliance with national emission standards to reduce mobile source related air pollution from light-duty cars and trucks, heavy-duty trucks and buses, nonroad engines and vehicles, and from the fuels that power these engines. The program also evaluates new emission control technology and provides state, Tribal, and local air quality managers and transportation planners with access to information on transportation programs and incentive-based programs. As part of ensuring compliance with national emission standards, the program tests vehicles, engines, and fuels, and establishes test procedures for federal emissions and fuel economy standards.

The National Vehicle and Fuel Emissions Laboratory (NVFEL) ensures air quality benefits and fair competition in the marketplace by conducting testing operations on motor vehicles, heavy-duty engines, nonroad engines, and fuels to certify that all vehicles, engines, and fuels that enter the U.S. market comply with all federal clean air and fuel economy standards. The NVFEL conducts vehicle emission tests as part of pre-production tests, certification audits, in-use assessments, and recall programs to ensure compliance with mobile source clean air programs.

The EPA works with states and local governments to ensure the technical integrity of the mobile source control emission benefits in State Implementation Plans (SIPs) and transportation conformity determinations. The EPA develops and provides information and tools to assist state, local, and Tribal agencies, as well as communities, to reduce air toxics emissions and risks specific to their local areas. Reductions in emissions of mobile source air toxics, such as components of diesel exhaust, are achieved through establishing national emissions standards and partnership approaches working with state, local, and Tribal governments, as well as a variety of stakeholder groups.

The EPA administers the Renewable Fuel Standard (RFS) program, which was created under the Energy Policy Act of 2005 (EPAct), which amended the Clean Air Act (CAA), and was expanded under the Energy Independence and Security Act of 2007 (EISA). The RFS program requires a certain volume of renewable fuel to replace or reduce the quantity of petroleum-based transportation fuel, heating oil, or jet fuel. The four renewable fuel categories under the RFS are biomass-based diesel, cellulosic biofuel, advanced biofuel, and total renewable fuel. Obligated

parties under the RFS program are refiners or importers of gasoline or diesel fuel. Compliance is achieved by blending renewable fuels into transportation fuel, or by obtaining credits (called "Renewable Identification Numbers" or RINs) to meet an EPA-specified Renewable Volume Obligation (RVO).

FY 2018 Activities and Performance Plan:

The Federal Vehicle and Fuels Standards and Certification program supports the agency's integrated criteria pollutant and greenhouse gas (GHG) compliance programs by operating test cells that simultaneously measure criteria pollutants and GHG emissions, reviewing certification applications for light-duty vehicles and heavy-duty engines to approve applications for both the criteria pollutant and GHG programs, and examining potential violations.

In FY 2018, the Federal Vehicle and Fuels Standards and Certification program will focus its efforts on certification decisions. The agency will continue to perform its compliance oversight functions on priority matters. In FY 2018, the agency will conduct compliance oversight tests where there is evidence to suggest noncompliance. The EPA will continue to conduct, at a reduced level, testing activities for pre-certification confirmatory testing for emissions and fuel economy for passenger cars.

In FY 2018, the EPA anticipates reviewing and approving about 5,000 vehicle and engine emissions certification requests, including light-duty vehicles, heavy-duty diesel engines, nonroad engines, marine engines, locomotives, and others. This has been a significant increase in demand for the EPA's certification services over the last two decades, due in part to the addition of certification requirements for marine, other nonroad, and small spark-ignited engines.

The EPA uses in-use emissions data, provided by light-duty vehicle manufacturers, as a means to measure compliance and determine if any follow-up evaluation or testing is necessary. Since 2000, light-duty vehicle manufacturers have been required, by regulation, to test a number of newer and older in-use vehicles and provide the data to the EPA. The EPA receives over 2,100 test results annually. The EPA reviews the data and determines if there are any specific vehicles, models, or manufacturers that are failing emissions in-use. The EPA will use this information submitted by light-duty manufacturers to determine if there are vehicle models that should be identified for testing for the upcoming model year prior to granting the manufacturer a certificate of conformity which allows the manufacturer to sell vehicles in the U.S.

In FY 2018, the EPA will continue to implement the harmonized fuel economy and existing GHG emission standards for light-duty vehicles and heavy-duty vehicles which provide regulatory certainty to the marketplace and spur innovation in vehicle technology. These standards were finalized by the EPA in coordination with the National Highway Traffic Safety Administration (NHTSA) and the EPA is responsible for implementing both the emission standards and significant aspects of the fuel economy standards.

In FY 2018, the EPA also will oversee compliance with vehicle fuel economy labeling requirements. In past years, the EPA conducted in-use audits of manufacturer "coast-down" data revealing issues in manufacturer data submitted to the EPA and, as a result, inaccurate fuel economy labels on more

than a million vehicles from several well-known manufacturers.

In FY 2018, the EPA will continue implementing the Tier 3 standards for light-duty vehicles and certifying manufacturers' fleets for vehicle Model Year 2019. The EPA is responsible for establishing the test procedures needed to measure tailpipe emissions and for verifying manufacturers' vehicle fuel economy data; as a result, the agency will deploy its laboratory testing resources to ensure that new cars and trucks are in compliance with the Tier 3 emissions standards.

On March 15, 2017, the EPA and the Department of Transportation announced that the EPA intends to reconsider the Final Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle GHG Emissions Standards, issued on January 12, 2017. Consistent with the original schedule, the EPA intends to make a new Final Determination regarding the appropriateness of the standards no later than April 1, 2018. In order to provide the technical foundation for an agency decision, the program will undertake an assessment of factors such as technological feasibility, cost impacts, impacts on air quality and public health, and other relevant issues for the Administrator's consideration in making a Final Determination. If the Administrator's Final Determination is that the model year 2022-2025 standards or program should be modified, the EPA must then make any modifications to the existing rule through a notice-and-comment rulemaking, including the issuing of a Notice of Proposed Rulemaking and a Final Rulemaking.

The EPA will continue working with the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO) on programs to control conventional pollutant emissions from marine and aircraft engines, respectively. The EPA will work with ICAO on its program to develop international action plans to reduce particulate matter (PM) emissions from international civil aviation.

The Motor Vehicle Emissions Simulator (MOVES) is the agency's emission modeling system that estimates emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics. In FY 2018, MOVES will support the agency's emission control programs, as well as provide critical support to states in their determination of program needs to meet air quality standards. The agency also will evaluate the schedule for updates to MOVES.

In FY 2018, the EPA will continue to provide state and local governments with assistance in developing SIPs and providing assistance with transportation conformity determinations. The EPA will continue to work with states and local governments to ensure the technical integrity of the mobile source emission estimates in their SIPs. The EPA will assist in identifying control options available and provide guidance, as needed. In addition, the EPA will ensure national consistency in how conformity determinations are conducted across the U.S. and in the development of motor vehicle emissions budgets in air quality plans, for use in conformity determinations.

The EPA will continue to provide assistance to state and local transportation and air quality agencies working on $PM_{2.5}$ hot-spot analyses. This will help ensure that analyses use the latest available information and that a measure of consistency exists across the nation. Additionally, the EPA will continue partnering with states to support inspection and maintenance (I/M) programs that focus on in-use vehicles and engines. Basic and/or enhanced I/M testing is currently being conducted in over 30 states with technical and programmatic guidance from the EPA.

In FY 2018, the EPA will continue to work with a broad range of stakeholders to develop targeted, sector-based, and place-based incentives for diesel fleets (including school buses, ports, and freight) to limit emissions from older, pre-2007 diesel engines not subject to stringent emissions standards. Because large numbers of people live near ports and are vulnerable to mobile source diesel emissions, the EPA will focus its efforts on reducing mobile source emissions in and around ports. According to the EPA's National Port Strategy Assessment report (https://www.epa.gov/ports-initiative/national-port-strategy-assessment), approximately 39 million people in the U.S. currently live in close proximity to ports and can be exposed to air pollution associated with emissions from diesel engines at ports, including particulate matter, nitrogen oxides, ozone, and air toxics. The EPA will focus its efforts on reducing mobile source emissions in and around ports. The EPA will seek balanced stakeholder advice, through the Mobile Source Technical Review Subcommittee of the Clean Air Act Advisory Committee, on its approach to reducing these port-related emissions. The EPA also is working with industry to bring about field testing and emissions testing protocols for a variety of innovative, energy-efficient, and emissions reducing technologies for the legacy fleet.

In the fuels area, the EPA will continue to implement the RFS program and to carry out several other actions required by the Energy Policy Act (EPAct) of 2005 and the Energy Independence and Security Act (EISA) of 2007, including operating and maintaining of credit trading system (EMTS). EISA dramatically expanded the renewable fuels provisions of EPAct and requires additional studies in various areas of renewable fuel use. EISA requires that the EPA set an annual volume standard for renewable fuels and the 2019 RFS volume requirements are statutorily required to be promulgated in FY 2018.

EISA also requires the EPA to develop a comprehensive lifecycle GHG methodology to implement the Act's GHG threshold requirements for the RFS. Producers of new and advanced biofuels regularly seek to qualify their fuels under RFS and the EPA will continue to apply its lifecycle analysis to such fuels to evaluate and determine eligibility for the program. The EPA will reprioritize the evaluations of new fuel products.

In FY 2018, the EPA will maintain oversight of the RFS program and continue to evaluate compliance with RFS provisions through its moderated transaction system, which is used to track the creation, trades, and use of billions of Renewable Identification Numbers (RINs) for compliance. The tracking system handles 4,000 to 6,000 submissions per day, typically averaging more than 20,000 transactions per day, and the generation of more than 1.4 billion RINs per month. RINs are generated with the production of qualifying renewable fuel and are used to achieve national RFS programmatic goals of reducing or replacing the quantity of petroleum-based transportation fuel, heating oil, or jet fuel.

In FY 2018, the EPA will continue to implement its Fuel and Fuel Additive Registration program. The agency will prioritize its review and decisions for Part 79 registrations.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$17,060.0 / -0.2 FTE) This streamlines funding to the overall program. The agency will consolidate efforts to ensure compliance with national standards to reduce air pollution from vehicles, and engines, and fuels. The agency also will assess the capabilities of new and current vehicle technologies and focus efforts to detect potential violations of clean air standards in a more efficient manner.

Statutory Authority:

Title II of the Clean Air Act; Motor Vehicle Information Cost Savings Act; Alternative Motor Fuels Act of 1988; National Highway System Designation Act; Energy Policy Act of 1992; Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU); Energy Policy Act of 2005; Energy Independence and Security Act of 2007.

Program Area: Indoor Air and Radiation

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$378.9***	***$172.0***	***$0.0***	***($172.0)***
Environmental Program & Management	$2,759.3	$2,904.0	$0.0	($2,904.0)
Total Budget Authority / Obligations	$3,138.2	$3,076.0	$0.0	($3,076.0)
Total Workyears	8.5	10.6	0.0	-10.6

Program Project Description:

Title III of the Toxic Substances Control Act (TSCA) authorizes the EPA to undertake a variety of activities to address the public health risks posed by exposures to indoor radon. Under the statute, the EPA studies the health effects of radon, assesses exposure levels, sets an action level, and advises the public of steps they can take to reduce exposure. For over 29 years, the EPA's radon program has provided important guidance and significant funding to help states establish their own programs.

FY 2018 Activities and Performance Plan:

Resources and FTE have been eliminated for this program in FY 2018. This is a mature program where states have the technical capacity to continue this work.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$172.0) This funding change eliminates the Indoor Air: Radon program.

Statutory Authority:

Title III of the Toxic Substances Control Act (TSCA); Title IV of the Superfund Amendments and Reauthorization Act of 1986 (SARA); Clean Air Act.

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$12,972.9	$13,707.0	$0.0	($13,707.0)
Science & Technology	***$260.4***	***$209.0***	***$0.0***	***($209.0)***
Total Budget Authority / Obligations	$13,233.3	$13,916.0	$0.0	($13,916.0)
Total Workyears	37.6	40.7	0.0	-40.7

Program Project Description:

Title IV of the Superfund Amendments and Reauthorization Act of 1986 (SARA) authorizes the EPA to conduct and coordinate research on indoor air quality, develop and disseminate information, and coordinate efforts at the federal, state, and local levels.

The EPA conducts field measurements and assessments and provides technical support for indoor air quality remediation, when requested.

FY 2018 Activities and Performance Plan:

Resources and FTE have been eliminated for this program in FY 2018. This is a mature program where states have the technical capacity to continue this work.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$209.0 / -1.6 FTE) This funding change eliminates the Reduce Risks from Indoor Air program.

Statutory Authority:

Title III of the Toxic Substances Control Act (TSCA); Title IV of the Superfund Amendments and Reauthorization Act of 1986 (SARA); Clean Air Act.

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$8,371.0	$8,427.0	$0.0	($8,427.0)
Science & Technology	***$2,064.5***	***$1,831.0***	***$0.0***	***($1,831.0)***
Hazardous Substance Superfund	$2,194.2	$1,981.0	$0.0	($1,981.0)
Total Budget Authority / Obligations	$12,629.7	$12,239.0	$0.0	($12,239.0)
Total Workyears	52.9	59.1	0.0	-59.1

Program Project Description:

The EPA supports waste site characterization and cleanup by providing field and fixed laboratory environmental radioanalytical data and technical support, radioanalytical training to state and federal partners, and by developing new and improved radioanalytical methods. The National Analytical Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama and the National Center for Radiation Field Operations (NCRFO) in Las Vegas, Nevada provide analytical and field operation support for radioanalytical and mixed waste testing, quality assurance, analysis of environmental samples, field radiological support, and field measurement systems and equipment to support site assessment, cleanup, and response activities in the event of a radiological accident or incident.

Together, these organizations provide technical support for conducting site-specific radiological characterizations and cleanups. They also develop guidance for cleaning up Superfund and other sites that are contaminated with radioactive materials.

FY 2018 Activities and Performance Plan:

Resources and FTE have been eliminated for this program in FY 2018.

The EPA will explore alternatives to continue to meet its statutory obligation to implement its regulatory oversight responsibilities for Department of Energy (DOE) activities at the Waste Isolation Pilot Plant (WIPP) facility, as mandated by Congress in the WIPP Land Withdrawal Act of 1992.

The EPA also will explore alternatives for its requirement, under the Atomic Energy Act, to establish health and environmental protection standards for exposures to radiation.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$1,831.0 / -12.3 FTE) This funding change eliminates the Radiation: Protection program.

Statutory Authority:

Atomic Energy Act of 1954; Reorganization Plan No. 3 of 1970, 84 Stat. 2086, as amended by Pub. L. 98–80, 97 Stat. 485 (codified at Title 5, App.) (EPA's organic statute); Clean Air Act; Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); Energy Policy Act of 1992; Nuclear Waste Policy Act of 1982; Public Health Service Act; Safe Drinking Water Act; Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978; Waste Isolation Pilot Plant Land Withdrawal Act of 1992; Marine Protection, Research, and Sanctuaries Act; Clean Water Act.

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$3,716.5***	***$3,774.0***	***$3,339.0***	***($435.0)***
Environmental Program & Management	$2,047.1	$2,545.0	$2,257.0	($288.0)
Total Budget Authority / Obligations	$5,763.6	$6,319.0	$5,596.0	($723.0)
Total Workyears	35.5	39.2	31.5	-7.7

Program Project Description:

The National Analytical Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama and the National Center for Radiation Field Operations (NCRFO) in Las Vegas, Nevada, provide laboratory analyses, field sampling and analyses, and direct scientific support to respond to radiological and nuclear incidents. This work includes measuring and monitoring radioactive materials and assessing radioactive contamination in the environment. This program comprises direct scientific field and laboratory activities to support preparedness, planning, training, and procedure development. In addition, selected personnel are members of the EPA's Radiological Emergency Response Team (RERT), a component of the agency's emergency response program, and are trained to provide direct expert scientific and technical assistance in the field. The EPA's Radiation and Indoor Air program's RERT asset is identified as an agency Critical Infrastructure/Key Resource.

FY 2018 Activities and Performance Plan:

In FY 2018, the EPA's RERT will continue to provide support for federal radiological emergency response and recovery operations under the National Response Framework (NRF) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). They also will support field operations with on-site technical support/consultation, fixed laboratory and mobile laboratory analyses to provide rapid and accurate radionuclide analyses of environmental samples.[3]

In FY 2018, NAREL and NCRFO will prioritize and adjust the schedule, to develop rapid methods and techniques for the laboratory analysis of samples and rapid deployment capabilities to ensure that field teams and laboratory personnel are ready to provide scientific data, analyses, and updated analytical techniques for radiation emergency response programs across the agency. Both organizations will maintain core levels of readiness for radiological emergency responses; participate in the most critical emergency exercises; provide on-site scientific support to state radiation, solid waste, and health programs that regulate radiation remediation; participate in the Protective Action Guidance (PAG) development and application; and respond, as required, to radiological incidents.
A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

[3] See additional information at: http://www.epa.gov/radiation/rert/.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$612.0 / -4.3 FTE) This streamlines personnel and associated payroll for the development of rapid methods and techniques for the laboratory analysis of samples and rapid deployment capabilities.

- (+$177.0) This increases support for preparedness work including basic laboratory analytic functions such as measuring and monitoring radioactive materials and assessing radioactive contamination in the environment.

Statutory Authority:

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); Homeland Security Act of 2002; Atomic Energy Act of 1954; Reorganization Plan No. 3 of 1970, 84 Stat. 2086, as amended by Pub. L. 98–80, 97 Stat. 485 (codified at Title 5, App.) (EPA's organic statute); Clean Air Act; Post-Katrina Emergency Management Reform Act of 2006 (PKEMRA); Public Health Service Act (PHSA); Robert T. Stafford Disaster Relief and Emergency Assistance Act; Safe Drinking Water Act (SDWA).

Program Area: Enforcement

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$13,949.7***	***$13,643.0***	***$10,444.0***	***($3,199.0)***
Hazardous Substance Superfund	$1,739.3	$1,087.0	$708.0	($379.0)
Total Budget Authority / Obligations	$15,689.0	$14,730.0	$11,152.0	($3,578.0)
Total Workyears	78.3	80.3	49.7	-30.6

Program Project Description:

The EPA's Forensics Support program provides expert scientific and technical support for criminal and civil environmental enforcement cases, as well as technical support for the agency's compliance efforts. The EPA's National Enforcement Investigations Center (NEIC) is an environmental forensic center accredited for both laboratory and field sampling operations that generate environmental data for law enforcement purposes. It is fully accredited under International Standards Organization (ISO) 17025, the main standard used by testing and calibration laboratories, as recommended by the National Academy of Sciences.[4] The NEIC maintains a sophisticated chemistry laboratory and a corps of highly trained inspectors and scientists with expertise across media. The NEIC works closely with the EPA's Criminal Investigation Division to provide technical support (e.g., sampling, analysis, consultation, and testimony) to criminal investigations. The NEIC also works closely with the EPA's Headquarters and Regional Offices to provide technical support, consultation, on-site inspection, investigation, and case resolution services in support of the agency's Civil Enforcement program.

FY 2018 Activities and Performance Plan:

In FY 2018, the NEIC will continue to provide high-quality forensics work for the agency across all enforcement programs. Particularly, the NEIC will focus on improvements in inspection methods used at regulated hazardous waste facilities and the use of existing technologies.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$3,199.0 / -27.7 FTE) This streamlines the Forensics Support program.

Statutory Authority:

Reorganization Plan No. 3 of 1970, 84 Stat. 2086, as amended by Pub. L. 98–80, 97 Stat. 485 (codified at Title 5, App.) (the EPA's organic statute); Resource Conservation and Recovery Act; Clean Water Act; Safe Drinking Water Act; Clean Air Act; Toxic Substances Control Act;

[4] Strengthening Forensic Science in the United States: A Path Forward, National Academy of Sciences, 2009, available at http://www.nap.edu/catalog.php?record_id=12589.

Residential Lead-Based Paint Hazard Reduction Act; Federal Insecticide, Fungicide, and Rodenticide Act; Ocean Dumping Act (i.e., MPRSA); Emergency Planning and Community Right-to-Know Act.

Program Area: Homeland Security

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$9,807.2***	***$10,497.0***	***$0.0***	***($10,497.0)***
Environmental Program & Management	$627.1	$970.0	$0.0	($970.0)
Total Budget Authority / Obligations	$10,434.3	$11,467.0	$0.0	($11,467.0)
Total Workyears	23.6	23.1	0.0	-23.1

Program Project Description:

The EPA's water security program is implemented through close partnerships with the water sector, state emergency response and water program officials, and other federal agencies—most notably DHS, the Army Corps of Engineers, and the intelligence community.

FY 2018 Activities and Performance Plan:

Resources and FTE have been eliminated for this program in FY 2018. Please note that 5.0 FTE and associated resources have been provided to the Homeland Security: Preparedness, Response, and Recovery Program for a focused effort to meet the EPA's responsibilities as the water Sector-Specific Agency (SSA) implementing specific statutory and Presidential directives relating to homeland security.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$10,497.0 / -22.1 FTE) This funding change eliminates the S&T Homeland Security: Critical Infrastructure Protection program.

Statutory Authority:

Safe Drinking Water Act (SDWA), §§ 1431-1435; Clean Water Act; Public Health Security and Bioterrorism Emergency and Response Act of 2002; Emergency Planning and Community Right-to-Know Act (EPCRA), §§ 301-305.

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$26,800.2***	***$26,004.0***	***$22,597.0***	***($3,407.0)***
Hazardous Substance Superfund	$36,411.9	$35,209.0	$16,457.0	($18,752.0)
Total Budget Authority / Obligations	$63,212.1	$61,213.0	$39,054.0	($22,159.0)
Total Workyears	132.4	127.4	113.0	-14.4

Program Project Description:

The EPA has responsibility under Presidential Directives to remediate contaminated environments affected by incidents such as terrorist attacks, industrial accidents, or natural disasters. The EPA's disaster-related responsibilities are described by the following three objectives in Homeland Security Research Program's (HSRP's) *Strategic Research Action Plan* (StRAP): protecting America's water systems, remediation of indoor and outdoor contaminated areas, and the development of a nationwide laboratory network with the capability and capacity to analyze for Chemical, Biological, Radiological, and Nuclear (CBRN) agents during routine monitoring and in response to terrorist attacks and other disasters.

Funding will provide critical science to fulfill the aforementioned responsibilities, as well as support the EPA's efforts to help communities prepare for, absorb, and recover from disasters – safeguarding their economic, environmental, and social well-being. The HSRP will continue to build upon its record of providing measurable benefits to its partners and stakeholders in EPA's program offices, as well as develop innovative solutions for decontamination and remediation efforts. The HSRP will deliver effective tools, methods, information, and guidance to local, state, and federal decision-makers that will address both critical terrorism-related issues and natural or manmade disasters.

Research is planned and prioritized based on the needs of end-users of this science, including Regional On-Scene Coordinators[5] (OSCs), water utility companies, and EPA Regions and programs.[6] Priorities also are informed by lessons learned from EPA response activities, advice from external review boards such as the Board of Scientific Counselors (BOSC) and the Science Advisory Board (SAB), and participation on Office of Science and Technology Policy (OSTP) subcommittees and workgroups. The HSRP collaborates with state, local, and private sector organizations and key federal agencies[7] to prioritize research needs and prevent the duplication of scientific and technical work.

[5] On-Scene Coordinators (OSCs) are the federal officials responsible for monitoring or directing responses to all oil spills and hazardous substance releases reported to the federal government. https://www.epa.gov/emergency-response/epas-scene-coordinators-oscs

[6] Water programs, Land & Emergency Management programs, and EPA Regions.

[7] Partners include the Department of Homeland Security (DHS), Department of Defense (DoD), Centers for Disease Control and Prevention (CDC), the Federal Bureau of Investigation (FBI), National Institute of Health (NIH), National Science Foundation (NSF), Department of Energy (DOE), and the Department of Agriculture (DOA).

The EPA will serve as the SSA for the water sector and implement specific statutory and Presidential directives relating to homeland security. The EPA also will coordinate water sector specific cybersecurity risks with DHS and the sector under Executive Order 13636: Improving Critical Infrastructure Cybersecurity.

The EPA also is responsible for managing the network of near real-time stationary and deployable monitors known as RadNet under the Nuclear/Radiological Incident Annex to the National Response Framework (NRF). The network includes near real-time stationary monitors and deployable monitors. This network is identified as an EPA Critical Infrastructure/Key Resource asset.

FY 2018 Activities and Performance Plan:

HSRP Activities:

The HSRP features three topic areas of research that support the EPA's mission to protect human health and the environment and fulfill the Agency's legislative mandates.

Characterizing Contamination and Assessing Exposure
During an incident, the EPA oversees site characterization[8] and remediation of contaminated water systems and indoor and outdoor areas. This funding request will enable the EPA to continue to decrease the time it takes for site characterization, getting people back into their homes faster. In FY 2018, the HSRP activities in this topic will fill critical scientific research gaps by: providing the science needed for effective sampling strategy development, developing sampling and analysis methods for biological contaminants, and developing methods to assess exposure pathways for biological contamination to inform all aspects of the response.

Supporting Characterization of Contamination
In FY 2018, HSRP will develop innovative bio-threat agent sampling and analytical methods for the Selected Analytical Methods for Environmental Remediation and Recovery document, available on a publically-accessible website, to support post-incident decisions regarding exposure assessment, remediation, and re-occupancy.[9] The HSRP will conduct studies to support sample strategy options for characterization after a wide-area biological incident and examine methods and deployment strategies to reduce the logistical burden of characterization. A tool also will be developed to assist EPA end users in developing sampling and analysis plans for biological agents, which will incorporate data quality objectives and increase public confidence in the data and accompanying decisions. This research will be used by the EPA's OSCs and the Environmental Unit within the Incident Command Structure to ensure that biological agent characterization supports decisions within resource and time constraints.

Water System Security and Resilience
As of 2006, there were approximately 160,000 public drinking water utilities and more than 16,000 wastewater utilities in the United States. Roughly 75 percent to 85 percent of the population

[8] The process of identifying and quantifying the contaminants in environmental samples of a site to determine the nature and extent of contamination present.
[9] To access, please see: https://www.epa.gov/homeland-security-research/sam

receives potable water and sanitary sewer service from these utilities.[10] As the lead agency overseeing the Water Sector, the EPA addresses Water Sector needs identified by the Water Sector Coordinating Council and the Water Government Coordinating Council's Critical Infrastructure Partnership Advisory Council.[11]

Improving Resilience of Water Systems

Recent drinking water system contamination incidents, such as the spill of MCHM[12] into the Elk River in West Virginia, illustrates the connectivity between source water and drinking water systems, and the dire consequences of contamination: 300,000 people, government, and businesses without safe water for five days. HSRP will develop methods to decontaminate infrastructure and manage contaminated water. To support all of the water research efforts outlined above, the HSRP will conduct field-scale evaluations of water contamination sensors, decontamination methodologies, and water treatment. Data from these studies are made available to water utilities through the EPA's Water Contaminant Information Tool (WCIT) and through outreach activities with utilities.

Remediating Wide Areas

A myriad of biological threats, vulnerabilities, and consequences have collectively and dramatically increased the risk to the nation.[13] In FY 2018, the HSRP will continue to address critical scientific knowledge gaps in responding to and recovering from wide-area biological attack on urban centers and public areas. This funding request will enable the EPA to continue developing tools, methods, and technologies for decision-makers to respond to disasters, providing solutions that optimize cleanup efficacy, minimize cost and recovery time, and unintended consequences. The following research in this topic will bridge critical gaps for informed decontamination and waste management decisions for a biological agent incident. The HSRP will continue to develop effective strategies to complete remediation and re-occupancy activities for rapid return of normalcy in the affected area.

Decision Support Tools for Expedient and Effective Response to a Biological Agent

Decision-making during a large-scale environmental response is extremely complex, especially when very toxic and/or pathogenic contaminants are present. Decision makers, such as OSCs, need tools to safely and efficiently identify the best course of action. HSRP will develop tools to integrate data on the effectiveness of decontamination technologies in contrast with operational and logistical challenges. Scenarios generated will project the consequences of environmental response/remediation decisions. For example, HSRP developed the Waste Estimation Support Tool (WEST) to identify implications of decontamination method selections on the waste generated from decontamination activities versus removal. WEST supported numerous National Level Exercises related to radiological, nuclear, and natural disasters enabling realistic waste. The tool will be expanded in FY 2018 for use in a wide area biological incident.

The HSRP also will develop tools to support other bio-agent response decisions. Research will target optimization of sampling strategies from a cost-effectiveness perspective and identification

[10] R.M. Clark et al. *Handbook of Water and Wastewater System Protection,* Protecting Critical Infrastructure

[11] The Water Sector Coordinating Council is a "self-organized, self-run, and self-governed council" composed of water utilities. This council facilitates the development of policy impacting the water sector. It was formed as the federal government counterpart to the Water Sector Coordinating Council and is responsible for interagency coordination of efforts related to the water sector.

[12] 4-Methylcyclohexanemethanol, a chemical used for coal extraction

[13] From the source, "A National Blueprint for Biodefense" bipartisan report of the blue ribbon study panel on biodefense; http://www.biodefensestudy.org/

of optimal waste storage and staging sites. This tool will reduce the time responders spend in the hot zone during a bio-incident, provide a way to use the most recent science on sampling strategies, and find waste storage and staging sites to facilitate cleanup activities simultaneous to decision-making regarding waste treatment, transport, and disposal. These tools will be used by OSCs, the Environmental Unit, and other technical specialists, within the Incident Command, during an environmental response.

Decontamination Technologies & Methods for Biological Agents
Large research gaps remain in the identification and evaluation of decontamination technologies for a wide-area CBRN contamination incident. In FY 2018, HSRP will develop approaches to improve the capacity to conduct large-scale bio-agent cleanup including methods that are widely-available to local, state, and federal responders, such as municipal equipment (e.g., street sweepers) and commercial off-the-shelf methods for effective distribution of decontaminants (e.g., humidifiers). Research to scale-up technologies for wide-area use and develop scalable approaches to manage contaminated waste for application to a biological incident will continue specifically focusing on how to manage contaminated vehicles. The cost and logistics of disposing anthrax-contaminated vehicles may overwhelm local, state, and federal recovery efforts. In FY 2018, HSRP will study the fate and transport of spores to inform methods for decontamination and options for vehicle waste management. All methods developed are transitioned to state, local, and federal responders through guidance developed by HSRP's Program Office Partners.[14]

Radiation Monitoring:

The RadNet fixed monitoring network provides near real-time radiation monitoring coverage near each of the 100 most populous U.S. cities as well as expanded geographic coverage for a total of 139 monitoring sites. In FY 2018, the agency will operate the RadNet air monitoring network. Fixed stations will operate with essential maintenance and, should there be an emergency, in conjunction with available deployable monitors following a radiological incident. The RadNet air monitoring network will provide the agency, first responders, and the public with access to data, thereby informing officials' ability to make decisions about protecting public health and the environment during and after an incident. The EPA will continue to operate its fixed and deployable monitoring systems with essential maintenance. Additionally, the data will be used by scientists to better characterize the effect of a radiological incident.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$2,540.0 / -4.0 FTE) This changes the EPA's timeline to carry out its mandates and develop strategies and methods for characterizing, decontaminating, and managing waste from an intentional or unintentional release of chemical and radiological agents that result from currently understood threats.

[14] Office of Land and Emergency Management, Office of Emergency Management and Office of Resource Conservation and Recovery

- (-$1,187.0 / -0.3 FTE) This change refocuses resources from the development of tools to support resilience of water systems, including response to contamination incidents, and evaluation of sensors to support detection of contamination.

- (-$780.0 / -1.0 FTE) This change reflects a decrease of personnel and contract dollars to keep RadNet capabilities current with technology.

- (+$1,100.0 / +5.0 FTE) These resources and FTE have been reallocated to the Homeland Security: Preparedness, Response, and Recovery Program for a focused effort to meet the EPA's responsibilities as the water Sector-Specific Agency (SSA) implementing specific statutory and Presidential directives relating to homeland security.

Statutory Authority:

Atomic Energy Act of 1954; Clean Air Act, §§ 102, 103; Comprehensive Environmental Response Compensation and Liability Act (CERCLA), §§ 104-106; Safe Drinking Water Act (SDWA), §§ 1431-1435, 1442; Robert T. Stafford Disaster Relief and Emergency Assistance Act; National Defense Authorization Act for Fiscal Year 1997, §§ 1411-1412; Public Health Security and Bioterrorism Preparedness Response Act of 2002; Toxic Substances Control Act (TSCA), § 10; Oil Pollution Act (OPA); Pollution Prevention Act (PPA); Resource Conservation and Recovery Act (RCRA); Emergency Planning and Community Right-to-Know Act (EPCRA); Clean Water Act; Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Federal Food, Drug, and Cosmetic Act (FFDCA); Food Quality Protection Act (FQPA); Food Safety Modernization Act (FSMA), §§ 203, 208.

Homeland Security: Protection of EPA Personnel and Infrastructure

Program Area: Homeland Security

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$4,987.0	$5,336.0	$4,986.0	($350.0)
Science & Technology	***$551.0***	***$551.0***	***$500.0***	***($51.0)***
Building and Facilities	$7,366.2	$6,663.0	$6,176.0	($487.0)
Hazardous Substance Superfund	$833.6	$1,084.0	$542.0	($542.0)
Total Budget Authority / Obligations	$13,737.8	$13,634.0	$12,204.0	($1,430.0)
Total Workyears	8.1	12.2	12.2	0.0

Program Project Description:

This program supports activities to ensure that the EPA's physical structures and assets are secure and operational and that certain physical security measures are in place to help safeguard staff in the event of an emergency. These efforts also protect the capability of the EPA's vital laboratory infrastructure assets. Specifically, funds within this appropriation support security needs for the National Vehicle and Fuel Emissions Laboratory (NVFEL).

FY 2018 Activities and Performance Plan:

In FY 2018, the agency will continue to provide enhanced physical security for the NVFEL and its employees. This funding supports the incremental cost of security enhancements required as part of an agency security assessment review.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$51.0) This change reduces the security budget at the agency's National Vehicle and Fuel Emissions Laboratory (NVFEL).

Statutory Authority:

Intelligence Reform and Terrorism Prevention Act of 2004; Homeland Security Act of 2002; Reorganization Plan No. 3 of 1970, 84 Stat. 2086, as amended by Pub. L. 98–80, 97 Stat. 485 (codified at Title 5, App.) (the EPA's organic statute).

Program Area: IT / Data Management / Security

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$83,883.2	$83,790.0	$70,069.0	($13,721.0)
Science & Technology	***$2,892.6***	***$3,083.0***	***$2,725.0***	***($358.0)***
Hazardous Substance Superfund	$14,968.1	$13,776.0	$8,213.0	($5,563.0)
Total Budget Authority / Obligations	$101,743.9	$100,649.0	$81,007.0	($19,642.0)
Total Workyears	441.5	478.8	451.1	-27.7

Program Project Description:

The EPA's Information Technology/Data Management (IT/DM) program promotes the use of quality environmental information for informing decisions, improving management, documenting performance, and measuring success, which supports the agency's mission to protect public health and the environment. Science and Technology (S&T) resources for the EPA's IT/DM program fund the following activities: Quality Program,[15] EPA libraries, and One EPA Web.

The Quality Program ensures that all environmentally-related data activities performed by or for the agency will result in the production of data that is of adequate quality to support specific decisions or actions. In order for this data to be used with a high degree of certainty by its intended users, its quality must be known and documented. The Quality Program provides Quality Assurance (QA) policies, training, oversight and technical support to assist the EPA's programs in the implementation of their quality management systems which are required by the EPA Quality Policy CIO 2105.0 for all environmental data operations. The Quality Program also oversees the implementation of the EPA Information Quality Guidelines.

FY 2018 Activities and Performance Plan:

In FY 2018, the agency will focus S&T resources for this program to maintaining the EPA's national libraries and the One EPA Web, which supports hosting for all agency websites and Web pages. The Quality Program will provide limited technical support to all of the EPA's programs and laboratories for the implementation of the EPA Quality Policies, Procedures and Standards. The Quality Program also will continue to provide necessary QA training courses such as mandatory QA training in the agency's online training portal for all employees, a QA training for managers and staff, and a QA in contracts training.

In FY 2018, the Quality Program will complete at least six Quality Management Plan reviews and conduct at least two Quality System Assessments of the agency's programs. In addition, the program will continue to provide targeted technical support to the EPA's organizations conducting internal audits of their conformance with the Field Operations Group Guidelines. The oversight

[15] More information about the EPA Quality Program can be found at http://www.epa.gov/quality.

activities assist with environmental decision-making and assures the reliability of the data. Additionally, the Quality Program will provide oversight of the EPA's Information Quality Guidelines and facilitate the development of agency responses to the public's request for correction of the agency's disseminated information.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2017 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$358.0/ -3.6 FTE) The funding change streamlines technical support for conducting quality assurance oversight, training, policy development, and support for agency-wide quality activities.

Statutory Authority:

Federal Information Security Management Act (FISMA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); Clean Air Act (CAA); Clean Water Act (CWA); Toxic Substances Control Act (TSCA); Federal Insecticide Fungicide and Rodenticide Act (FIFRA); Food Quality Protection Act (FQPA); Safe Drinking Water Act (SDWA); Resource Conservation and Recovery Act (RCRA); Government Performance and Results Act (GPRA); Government Management Reform Act (GMRA); Clinger-Cohen Act (CCA); Paperwork Reduction Act (PRA); Freedom of Information Act (FOIA); Controlled Substances Act (CSA)

Program Area: Operations and Administration

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Inland Oil Spill Programs	$679.6	$583.0	$680.0	$97.0
Environmental Program & Management	$304,456.9	$310,948.0	$301,001.0	($9,947.0)
Science & Technology	***$71,332.8***	***$68,209.0***	***$68,339.0***	***$130.0***
Building and Facilities	$37,184.2	$35,573.0	$33,377.0	($2,196.0)
Leaking Underground Storage Tanks	$785.2	$782.0	$785.0	$3.0
Hazardous Substance Superfund	$69,168.0	$74,137.0	$59,072.0	($15,065.0)
Total Budget Authority / Obligations	$483,606.7	$490,232.0	$463,254.0	($26,978.0)
Total Workyears	332.9	357.7	312.2	-45.5

Program Project Description:

Science & Technology (S&T) resources in the Facilities Infrastructure and Operations program fund rent, utilities, and security. This program also supports centralized administrative activities and support services, including health and safety, environmental compliance and management, facilities maintenance and operations, energy conservation, sustainable buildings programs, and space planning. Funding is allocated for such services among the major appropriations for the agency.

FY 2018 Activities and Performance Plan:

In FY 2018, the EPA will continue to invest to reconfigure the EPA's workspaces, enabling the agency to release office space and reduce long-term rent costs, consistent with HR 4465[16], the *Federal Assets Sale and Transfer Act of 2016*. Since FY 2012 the EPA has released over 517 thousand square feet of office space nationwide, resulting in a cumulative annual rent avoidance of nearly $20 million across all appropriations. These savings help offset the EPA's escalating rent and security costs. Currently planned consolidations will allow the EPA to release another estimated 336 thousand square feet of office space. For FY 2018, the agency is requesting $28.80 million for rent, $19.53 million for utilities, and $14.13 million for security in the S&T appropriation.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

[16] For additional information, refer to: https://www.congress.gov/bill/114th-congress/house-bill/4465, *Federal Assets Sale and Transfer Act of 2016*.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (+$130.0) This change reflects an increase to support facility operations to meet basic needs and to fund cost escalation for contracts that support activities like custodial, landscaping, and warehouse activities at the EPA's research and development facilities and laboratories.

Statutory Authority:

Federal Property and Administration Services Act; Public Building Act; Robert T. Stafford Disaster Relief and Emergency Assistance Act; Clean Water Act; Clean Air Act; Resource Conservation and Recovery Act (RCRA); Toxic Substances Control Act (TSCA); National Environmental Policy Act (NEPA); Community Environmental Response Facilitation Act (CERFA); Energy Policy Act of 2005; Reorganization Plan No. 3 of 1970, 84 Stat. 2086, as amended by Pub. L. 98–80, 97 Stat. 485 (codified at Title 5, App.) (the EPA's organic statute).

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$0.0***	***$0.0***	***$10,995.0***	***$10,995.0***
Environmental Program & Management	$0.0	$0.0	$46,719.0	$46,719.0
Hazardous Substance Superfund	$0.0	$0.0	$10,437.0	$10,437.0
Total Budget Authority / Obligations	$0.0	$0.0	$68,151.0	$68,151.0
Total Workyears	0.0	0.0	0.0	0.0

Program Project Description:

Science and Technology (S&T) resources for the workforce reshaping program support organizational restructuring efforts throughout the U.S. Environmental Protection Agency. To help achieve its mission, the EPA will develop, review, and analyze mission requirements and implement options to effectively align and redistribute the agency's workforce based on program priorities, resource reallocation, and technological advances.

FY 2018 Activities and Performance Plan:

Effective workforce reshaping is critical to the EPA's ability to accomplish its mission. The EPA will be examining our statutory functions and processes to eliminate inefficiencies and streamline our processes. Primary criteria will include effectiveness and accountability, as the EPA is focused on greater value and real results. These analyses will likely create a need to significantly reshape the workforce. The agency anticipates the need to offer voluntary early out retirement authority (VERA) and voluntary separation incentive pay (VSIP), and potentially relocation expenses, as part of the workforce reshaping effort. The use of VERA/VSIP will increase voluntary attrition and enable more focused support for the agency's highest priority work.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (+$10,995.0) In support of the reprioritization of agency activities, this increase will support:
    - Voluntary early out retirement authority (VERA)
    - Voluntary separation incentive pay (VSIP)
    - Workforce support costs for relocation of employees as we realign work assignments.

Statutory Authority:

5 U.S.C. 8336(d)(2) includes the statutory VERA provisions for employees covered by the Civil Service Retirement System; 5 U.S.C. 8414(b)(1)(B) includes the statutory VERA provisions for employees covered by the Federal Employees Retirement System; Section 1313(b) of the Chief Human Capital Officers Act of 2002 (Public Law 107-296, approved November 25, 2002) authorized the VSIP option under regulations issued by OPM, as codified in Sections 3521 to 3525 of Title 5, United States Code (U.S.C.).

Program Area: Pesticides Licensing

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$3,772.1***	***$3,122.0***	***$2,274.0***	***($848.0)***
Environmental Program & Management	$57,708.1	$57,699.0	$48,568.0	($9,131.0)
Total Budget Authority / Obligations	$61,480.2	$60,821.0	$50,842.0	($9,979.0)
Total Workyears	399.9	418.7	416.5	-2.2

Program Project Description:

The EPA's Pesticide Program screens new pesticides before they reach the market and ensures that pesticides already in commerce are safe. As directed by Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Federal Food, Drug, and Cosmetic Act (FFDCA), as amended by the Food Quality Protection Act (FQPA) of 1996, as well as the Pesticide Registration Improvement Extension Act of 2012 (known as PRIA3), the EPA is responsible for registering and re-evaluating pesticides to protect consumers, pesticide users, workers who may be exposed to pesticides, children, and other sensitive populations. To make regulatory decisions and establish tolerances (maximum allowable pesticide residues on food and feed) for food use pesticides and for residential or non-occupational use, the EPA must find the pesticide safe, including cumulative and aggregate risks, and ensure extra protection for children. The agency must balance the risks and benefits of other uses.

The EPA's Chemical Safety, Pollution Prevention, and Pesticide program operates two laboratories that support the goal of protecting human health and the environment through diverse analytical testing and analytical method development and validation efforts. The laboratories also provide a variety of technical services to the EPA, other federal and state agencies, Tribal nations, and other organizations.

EPA's Microbiology Laboratory

The Microbiology Laboratory develops and standardizes product efficacy test methodology for public health pesticides (i.e., antimicrobial pesticides) and generates data to support programmatic decision-making. Antimicrobial pesticides are an essential tool in combating human pathogenic microorganisms on environmental surfaces, including treating surfaces contaminated with new and emerging pathogens.

The Microbiology Laboratory leads the federal effort on designing and standardizing ways to test important infectious agents such as *Clostridium difficile* (*C. difficile)* and *Candida auris.* Deaths related to *C. difficile* (hospital-acquired infections) continue to increase due in part to a stronger germ strain, and have now reached ~14,000 deaths per year. Almost half of the infections occur in

people younger than 65, but more than 90 percent of the deaths occur in people 65 and older.[17] The organism has been shown to persist in the hospital environment and disinfectants are essential to reduce disease transmission. Thirteen cases of *Candida auris,* a serious and sometimes fatal fungal infection which is emerging globally, were recently identified in the United States according to the CDC. The laboratory is working with this new microbe to develop a test method and efficacy data to ensure guidance to hospitals is adequate for environmental cleaning and disinfection. Any new emerging human or animal pathogen (H1N1, *Clostridium difficile*, MRSA, etc.) represents a new method development challenge for evaluating disinfectants. The goal is to standardize the procedures to ensure consistent data from the testing community. Regulatory guidance will be updated and a data call-in notice for all current registrations for *C. difficile* will be evaluated to ensure the efficacy of the products. The development of guidance for registering products against *Candida auris* is under development.

The laboratory also is leading efforts to evaluate an internationally harmonized efficacy test method, the Organization for Economic Cooperation and Development (OECD) quantitative test method, as well as methods for *Pseudomonas and Staphylococcus* biofilms, feline calcivirus, *Mycobacterium*, and a new quantitative test method for evaluating hospital disinfectant towelette formulations. Draft guidance for registering claims against biofilms was issued in FY 2016 for review and comment. The laboratory analyzed data from two collaborative studies in FY 2016– the towelette method and the virus component of the OECD method. Following data analysis, methods also will be adopted or placed under review at standard-setting organizations such as the American Society for Testing and Materials or Association of Official Analytical Communities. Methods are posted at: http://www.epa.gov/pesticides/methods/atmpindex.htm.

EPA's Analytical Chemistry Laboratory

The Analytical Chemistry Laboratory provides technical review of enforcement analytical methods and method validation and serves as a third-party confirmation laboratory. In addition, the laboratory provides analytical and technical support to various Regional Offices in enforcement cases, such as evaluating possible adverse effects of pesticide use, including contaminated, deficient, or illegally labeled products. The laboratory develops and validates multi-residue pesticide analytical methods to monitor and enforce agricultural uses of pesticides, and to analyze for pesticide residues in water, soil, bees, crops, and feeds. Multi-residue methods are a quicker and more cost effective "one-stop-shop" method for multiple (100+) pesticides, based on their mode of action and chemical properties. The laboratory is leading a team of chemists from the EPA's Pesticide Programs, Food and Drug Administration, United States Department of Agriculture, and Canada's Pest Management Regulatory Agency in the update of the agency's 860.1360 Residue Chemistry Guidelines for Multi-residue Methods. The new guidelines, when approved as a replacement for the current guideline (written in 1987), also will enable the submission of multi-residue methods for use in enforcement and tolerance setting, based on more cost effective and more reliable techniques and technologies.

The Analytical Chemistry Laboratory works to standardize analytical methods to provide the agency with scientifically valid data for use in risk assessment, such as for determining the permeability of agricultural tarps to fumigants. This work assists the EPA in determining potential

[17] http://www.cdc.gov/media/releases/2012/p0306_cdiff.html

buffer zone credit for fumigated fields and assists crop growers with information to help determine the best tarps for their practices. The laboratory continues to support the EPA by reviewing data submitted to the agency for buffer zone credit request of newly manufactured tarps.

The Analytical Chemistry Laboratory also operates the EPA National Pesticide Standard Repository (NPSR), which collects and maintains pesticide standards (samples of pure active ingredients or technical grade active ingredients for pesticides). It distributes these standards to the EPA and other federal, state, and Tribal laboratories involved in pesticide use enforcement.

FY 2018 Activities and Performance Plan:

In FY 2018, the agency will protect human health by ensuring the availability of appropriate analytical methods and techniques for analyzing pesticide residues in food, feed, water, soil, and bees (and their products) and ensuring their suitability for monitoring pesticide residues and enforcing tolerances. The Microbiology laboratory will continue with efficacy testing of antimicrobials, including *C. difficile* claims; complete current method development activities; present data to the international community on the OECD collaborative data and determine the course of action with respect to the method; issue final guidance for biofilm claims following review and comment; issue revised guidance for *C. difficile*, develop efficacy data and guidance for *Candida auris* claims; and initiate a collaborative study with *Trichophyton*. In addition, the laboratory will assist with efforts to formulate a new regulatory schematic for evaluating claims based on use of a disinfectant hierarchy for establishing efficacy claims for antimicrobials. Post-registration testing of antimicrobials enables the agency to remove ineffective products from the market. New methods enable the regulated community to register new products for use against emerging pathogens.

Additionally, the EPA will: (a) continue to develop improved analytical methods using state of the art instruments to replace outdated methods, thus increasing laboratory efficiency and accuracy of the data; (b) continue to provide analytical support to fill in data gaps for the Pesticide Programs' risk assessment and for Section 18 emergency exemptions, and to perform studies for use in risk mitigation; (c) continue to provide analytical assistance and technical advice to all Regional Offices in their enforcement cases; (d) continue operation of the NPSR; (e) continue to verify that antimicrobial pesticides are properly formulated; and (f) validate, optimize, and standardize a method to determine permeability of agricultural tarps for fumigants.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$848.0 / -1.3 FTE) This reduces funding for pesticide program activities from annual appropriations with the intent to increase utilization of pesticide user fee collections. Proposed legislative language accompanying the President's Budget will expand the EPA's scope of activities that can be funded with user fees.

Statutory Authority:

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Federal Food, Drug, and Cosmetic Act (FFDCA), §408.

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$39,651.4	$37,222.0	$31,930.0	($5,292.0)
Science & Technology	***$1,737.5***	***$2,324.0***	***$2,195.0***	***($129.0)***
Total Budget Authority / Obligations	$41,388.9	$39,546.0	$34,125.0	($5,421.0)
Total Workyears	280.4	269.3	268.4	-0.9

Program Project Description:

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), Section 3(c)(5), states that the Administrator shall register a pesticide if it is determined that, when used in accordance with labeling and common practices, the product "will also not generally cause unreasonable adverse effects on the environment." FIFRA defines "unreasonable adverse effects on the environment," as "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide."[18]

In compliance with FIFRA, the EPA conducts risk assessments using the latest scientific methods to determine the risks that pesticides pose to human health and ecological effects on plants, animals, and ecosystems that are not the targets of the pesticide. The agency's significant regulatory decisions are posted for review and comment to ensure that these actions are transparent and to allow stakeholders, including at-risk populations, to be engaged in decisions that affect their environment. Under FIFRA, the EPA must determine that a pesticide also will not cause unreasonable adverse effects on the environment. The EPA must determine that food and residential uses of pesticides are safe. For other risk concerns, the EPA must balance the risks of the pesticides with benefits provided from the use of the product. To avoid unreasonable risks, the EPA may impose risk mitigation measures such as modifying use rates or application methods, restricting uses, or denying some or all uses. In some regulatory decisions, the EPA may determine that uncertainties in the risk determination need to be reduced and may require monitoring of environmental conditions, such as effects on water sources or the development and submission of additional laboratory or field study data by the pesticide registrant.

In addition to FIFRA responsibilities, the agency has responsibilities under the Endangered Species Act (ESA).[19] Under the ESA, the EPA must ensure that pesticide regulatory decisions will not destroy or adversely modify designated critical habitat or result in jeopardy to the continued existence of species listed by the U. S. Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS) as threatened or endangered. Where risks are identified, the EPA must

[18] Federal Insecticide, Fungicide, and Rodenticide Act. Sections 2 and 3, Definitions, Registration of Pesticides (7 U.S.C. §§ 136, 136a). Available online at http://www.epa.gov/opp00001/regulating/laws.htm.
[19] The Endangered Species Act of 1973 Sections 7(a)(1) and 7 (a)(2); Federal Agency Actions and Consultations (16 U.S.C. 1536(a)). Available at U.S. Fish and Wildlife Service, Endangered Species Act of 1973 internet site: http://www.fws.gov/endangered/laws-policies/section-7.html

work with the FWS and NMFS in a consultation process to ensure these pesticide registrations also will meet the ESA standard.

The national program laboratories of the EPA's Pesticide Programs provide a diverse range of environmental data that are used by the EPA to make informed regulatory decisions. The Analytical Chemistry Laboratory and the Microbiology Laboratory each provide critical laboratory testing and support activities to assist the decision-making processes of the agency. The laboratories develop efficacy data, and validate environmental and analytical chemistry methods to ensure that the Food and Drug Administration (FDA), the United States Department of Agriculture (USDA), the EPA, and states have reliable methods to measure and monitor pesticide residues in food and in the environment.

EPA's Microbiology Laboratory

The Microbiology Laboratory ensures that pesticides deliver intended results by evaluating efficacy and registrant claims. The laboratory provides analyses that support the development of efficacy data for pesticides used for the decontamination of buildings (such as chlorine dioxide), supports research on methods and rapid detection assays, and evaluates commercial products used for the remediation and decontamination of sites contaminated with biothreat agents such as *Bacillus anthracis* (commonly known as anthrax). Work conducted by the laboratory led to a regulatory framework for licensing products against *Bacillus anthracis* as outlined in Pesticide Registration Notice 2008-2. Several products are now registered against this biothreat agent. The Microbiology Laboratory is the only EPA laboratory with a select agent registration under the CDC's select agent program, enabling the laboratory to receive, transfer, and work with *Bacillus anthracis*.

EPA's Analytical Chemistry Laboratory

The Analytical Chemistry Branch laboratory supports the work of the EPA to determine the ecological risks that pesticides pose to ecosystems, plants, and animals, such as bees, that are not the targets of the pesticide by bringing new analytical methods online and using in-house expertise to develop and validate multi-residue pesticide analytical methods. Additional benefits are gained by transferring technologies, such as the multi-residue methods, to other EPA organizations and state laboratories for use in monitoring pesticide residues in the environment and ecological systems, and the standard method for testing permeability of agricultural tarps to fumigants, which is currently used by tarp manufacturers to measure the efficiency of newly developed and manufactured tarps.

The Analytical Chemistry laboratory will continue to provide analytical support to fill data gaps for the pesticide program's risk assessments and for section 18 emergency exemptions, and to perform studies for use in risk mitigation. Support includes working collaboratively with the United States Geological Survey (USGS) to identify the presence of pesticides in rivers and streams across the nation. These data will allow USGS and the EPA to study the patterns of exposure of agricultural and urban ecosystems to pesticides. The Analytical Chemistry Laboratory also provides analytical assistance and technical advice to all the EPA Regional Offices for use in enforcement cases and reviews and validates analytical methods or studies submitted as part of a pesticide registration.

FY 2018 Activities and Performance Plan:

The Microbiology Laboratory is working with the Department of Homeland Security to evaluate various materials (wood, concrete, fabric, tile, etc.) for recovery (e.g., extracting the microbe of interest) of high consequence animal pathogens (foot and mouth disease, avian influenza, etc.) and the effect of decon technologies (including National Stockpile chemicals) on these viruses. The goal is to develop a methodology for evaluating antimicrobial pesticides against these pathogenic agents. These types of hard and porous materials are found at sites requiring remediation due to contamination with non-spore forming high consequence animal pathogens that can have a negative impact on the economy. Particular interest to the Microbiology Laboratory are methods for evaluating decontamination technologies for avian influenza. Outbreaks due to migratory birds have affected the poultry industry in the United States.

The Analytical Chemistry laboratory will continue to focus on analytical method development and validations as well as special studies to address specific short-term, rapid-turnaround priority issues. The laboratory also will continue to provide technical and analytical assistance to the Enforcement and Compliance Assurance Program and the EPA Regional Offices in support of their enforcement cases. Analytical support will continue in the fifth year of a multi-year multi agency (EPA and USGS) project to assess the quality of rivers and streams across the U.S. The lab will continue to support pesticide registration review and U.S. tarp manufacturers by reviewing the permeability data of fumigants through newly manufactured tarps. In an effort to reduce emission of soil fumigants into the air, the agency established certain buffer zone credits based on the tarps' permeability: the lower the permeability of a tarp, the lower the emission of fumigants into the air and more fumigant remains in the soil for pest control. Thus, the EPA can allow a greater buffer zone reduction credit. The Analytical Chemistry Laboratory will continue to understand the effects on pollinators as part of the program's existing registration and registration review processes.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$129.0 / -0.9 FTE) This reduces funding for pesticide program activities from annual appropriations with the intent to increase utilization of pesticide user fee collections. Proposed legislative language accompanying the President's Budget will expand the EPA's scope of activities that can be funded with user fees.

Statutory Authority:

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Endangered Species Act (ESA).

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$7,727.5	$6,074.0	$5,028.0	($1,046.0)
Science & Technology	***$427.4***	***$570.0***	***$527.0***	***($43.0)***
Total Budget Authority / Obligations	$8,154.9	$6,644.0	$5,555.0	($1,089.0)
Total Workyears	42.0	46.5	46.3	-0.2

Program Project Description:

The Chemical Safety and Pollution Prevention's national program laboratories make significant contributions to help the agency realize the value of pesticides.

EPA's Microbiology Laboratory

The Microbiology Laboratory evaluates and develops data to support Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) Section 18 Emergency Exemption requests to combat emerging or novel pathogens such as prions, new use sites (such as those colonized by biofilms, including sinks, drains, and water lines) and conducts applied research on new analytical methods for novel antimicrobials. In many cases of new claims or pathogens, there is no standard method for determining efficacy of a pesticidal product. For example, it is recognized that microorganisms that exist as biofilm communities may be more resistant to disinfection. The laboratory has technical expertise managing unusual pathogens for which registration of a pesticide might not be economically viable under FIFRA Section 3 Registration. The evaluation of these requests is necessary in order to make pesticides available in the marketplace for these unusual or emergency situations. Examples include the H1N1 virus, prions, foot and mouth disease, Severe Acute Respiratory (SAR) infections, *C. difficile, and C. auris*. The Microbiological Laboratory also evaluates the efficacy of antimicrobials to allow the EPA to remove ineffective products from the market. In addition, the Microbiology Laboratory provides technical support on numerous non-standard protocols for antimicrobials, including: foggers, chemicals used for inactivation of prions, use of citric acid for control of foot and mouth disease, and evaluation of requests from other federal agencies to use paraformaldehyde for decontamination of laboratory environments.

EPA's Analytical Chemistry Laboratory

The Analytical Chemistry Branch Laboratory works to benefit specialty crop growers by developing more cost-effective and efficient ways to establish tolerances (maximum residue levels). This is accomplished through the United States Department of Agriculture's Inter-Regional Research Project No. 4 (IR-4), Crop Group Validation, which focuses on the development of analytical methods and analysis of crop samples to determine if, when applied at the same rate, pesticide residues found in crops from same crop groups are similar. The data will be used to determine whether a representative crop from a crop group can be used as a model to establish

tolerances for all the members of the crop group. Such a validation would support the concept of crop grouping being accepted in the Codex[20] and by the Organization for Economic Co-operation and Development. Over 500 samples have been analyzed to date in support of this project. The laboratory also provided analytical support to the IR-4 Global Study to evaluate the influence of spatial variation between various geographic locations around the world on the level of pesticide residues in field grown tomatoes when subjected to standardized application parameters and rates. Crop grouping provides growers, especially growers that produce minor and specialty crops, with pesticide tools that otherwise would not be available due to the cost of generating field trial data. They allow for an efficient use of private resources and public tax dollars while ensuring a safe food supply.

The Analytical Chemistry Laboratory efforts and resulting success in standardizing the fumigation tarp protocol through the American Society for Testing and Materials (ASTM) international provides tarp manufacturers with a method to test their newly manufactured tarps before submitting the data to the agency to request buffer zone credit[21] to reduce the required buffer zone, when fumigant is used as pest control in the field.

FY 2018 Activities and Performance Plan:

In FY 2018, the EPA will realize the benefits of pesticides by operating the National Pesticide Standard Repository and conducting chemistry and efficacy testing for antimicrobials. As the recognized source for expertise in pesticide analytical method development, the EPA's laboratories will continue to provide quality assurance and technical support and training to the EPA's Regional Offices, state laboratories, and other federal agencies that implement FIFRA.

The Microbiology Laboratory will continue to evaluate Section 18 emergency exemptions and novel protocol requests for new uses and novel pathogens. The Analytical Chemistry Laboratory will continue its work with the IR-4 Global Study and the IR-4 Crop Group Validation Study.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$43.0 / -0.2 FTE) This reduces funding for pesticide program activities from annual appropriations with the intent to increase utilization of pesticide user fee collections. Proposed legislative language accompanying the President's Budget will expand the EPA's scope of activities that can be funded with user fees.

Statutory Authority:

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Federal Food, Drug, and Cosmetic Act (FFDCA), §408.

[20] http://www.who.int/foodsafety/areas_work/food-standard/en/

[21] http://www.epa.gov/soil-fumigants/calculating-buffer-zones-guide-applicators

Program Area: Research: Air and Energy

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$104,407.9***	***$91,731.0***	***$30,592.0***	***($61,139.0)***
Total Budget Authority / Obligations	$104,407.9	$91,731.0	$30,592.0	($61,139.0)
Total Workyears	274.3	287.8	153.8	-134.0

Program Project Description:

The Air and Energy (AE) research program provides scientific information to EPA program and Regional Offices. The overall research effort is organized around six integrated and transdisciplinary national research programs. Each program is guided by a Strategic Research Action Plan (StRAP) that is the result of a collaboration with, and supportive of, the EPA's programs and Regional Offices.

The resources requested for AE will support the analysis of research data and publication of scientific journal articles to disseminate findings. The AE research program relies on successful partnerships with other EPA research programs, offices, academic and industry researchers, state, local, and private sector organizations, as well as key federal agencies.

Recent Accomplishments:

The following are examples of recent accomplishments:

- **Multi-Ethnic Study of Atherosclerosis (MESA) Air Pollution Study**
  In 2004, EPA awarded a Science to Achieve Results (STAR) research grant to the University of Washington to study how air pollution affects the development of cardiovascular disease in healthy people. The MESA study investigated cardiovascular impacts among more than 6,000 participants over a 10-year period. This study determined that long-term everyday exposure of air pollution to people accelerates the progression of coronary artery disease. The research supports the investigation of health effects of air pollution under the Clean Air Act. The results are significant from both clinical practice and policy perspectives, emphasizing long-term prevention of exposure to air pollution as a strategy to mitigate or delay the onset of cardiovascular disease. This product provides key data and tools needed by individuals, communities, and governmental agencies to prevent and reduce emissions of pollutants, assess effects associated with pollutants, and make informed decisions to protect public health.

- **Village Green II Deployment**
  The EPA developed an innovative prototype air and weather measurement system, called the Village Green Station, to provide new ways for communities to learn about local air quality. Through partnerships with cities and other organizations, the EPA installed seven

new stations nationally and internationally in FY 2016. The stations are designed and engineered to incorporate sensor technology into standalone park bench structures. This project advances air pollution measurement technology to provide quality-assured data to the public in a real-time, transparent, and accessible way. This project further supports the EPA's mission of protecting human health and the environment by furthering public outreach, supplementing the regulatory monitoring network to explore local-scale pollution trends, and increasing data available for research purposes.

- **Community-Multiscale Air Quality Model (CMAQ) Update**
  As air pollution emissions are released locally and globally, they circulate through changing weather patterns in the atmosphere. Emissions are distributed in the areas where they are released and across the U.S., affecting the air Americans breathe. The EPA released an updated version of the Community Multi-Scale Air Quality Model[2] (CMAQ), allowing users in states, regional planning organizations, and international organizations to simulate air quality in and around metropolitan areas, identify air pollution hot spots, and develop potential remediation strategies. The system links meteorological and emissions models to simultaneously model multiple air pollutants, which helps air quality managers determine the best pollution management strategies for their communities, regions, and states. For example, CMAQ provided data to inform state and local actions to maintain and achieve clean air, to avoid an estimated 2,000 premature deaths per year and 50,000 cases of respiratory ailments in children nation-wide.

FY 2018 Activities and Performance Plan:

The AE program features five related topic areas that include research projects that support the EPA's mission to protect human health and the environment and fulfill the agency's legislative mandates. The AE program will attempt to measure progress toward environmental health goals, and translate research results to inform communities and individuals about measures to reduce impacts of air pollution. In addition, research personnel will analyze existing research data and publish scientific journal articles to disseminate findings associated with these data.

The EPA has established a standing subcommittee under the EPA's Board of Scientific Counselors (BOSC) for the AE program to evaluate its performance and provide feedback to the agency. In addition, the EPA meets with the BOSC and Science Advisory Board (SAB) annually for input on topics related to research program design, science quality, innovation, relevance, and impact. The EPA will be advised on its strategic research direction as part of the review of the Research and Development program's recently-released StRAPs.

The EPA collaborates with the National Institutes of Health (NIH), National Science Foundation (NSF), Department of Energy (DOE), U.S. Department of Agriculture (USDA), and the White House's Office of Science and Technology Policy (OSTP) to assess research performance. The EPA supports the interagency Science and Technology in America's Reinvestment, Measuring the Effect of Research on Innovation, Competitiveness, and Science (STAR METRICS) efforts.

[23] For more information, http://www.cmaq-model.org/

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$18,582.0 / -47.3 FTE) This funding change eliminates climate change research.
- (-$31,987.0 / -86.7 FTE) This funding change reduces air quality research.
- (-$10,570.0) This eliminates funding for the Science to Achieve Results (STAR) program for FY 2018.

Statutory Authority:

Clean Air Act; Title II of Energy Independence and Security Act of 2007; Environmental Research, Development, and Demonstration Authorization Act (ERDDAA); Intergovernmental Cooperation Act; National Environmental Policy Act (NEPA), § 102; Pollution Prevention Act (PPA); Global Change Research Act of 1990.

Program Area: Research: Safe and Sustainable Water Resources

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$114,874.9***	***$107,230.0***	***$68,520.0***	***($38,710.0)***
Total Budget Authority / Obligations	$114,874.9	$107,230.0	$68,520.0	($38,710.0)
Total Workyears	406.5	403.0	266.4	-136.6

Program Project Description:

The Safe and Sustainable Water Resources (SSWR) research program is developing cost-effective, sustainable solutions to current, emerging, and long-term water resource challenges for complex chemical and microbial contaminants.

The SSWR research program uses a systems approach to develop scientific and technological solutions for the protection of human health and watersheds. The research is being conducted in partnership with other EPA programs, federal and state agencies, academia, non-governmental agencies, public and private stakeholders, and the scientific community.

The SSWR research projects are organized into four interrelated research topics:

- **Watershed Sustainability:** Assessing and synthesizing the necessary environmental, economic, and social information of watersheds and aquatic resources from local to national scales, to determine the condition, future prospects, and restoration potential of the Nation's watersheds and aquatic resources.
- **Nutrients and Harmful Algal Blooms:** Conducting nutrient research efforts in lakes, rivers, streams, and estuaries across media (water, land, air) and scales (temporal and spatial).
- **Green Infrastructure (GI):** Developing innovative tools, technologies, and strategies for managing stormwater and combined sewer overflows (CSOs) today and over the long- term. Research focuses on the costs and benefits of using GI to control stormwater runoff and CSOs at multiple scales (e.g., from local scales, such as parking lots, to an entire watershed).
- **Water Systems (Drinking Water, Wastewater, Water Reuse):** Developing innovative tools and technologies and providing technical support for improving the treatment of water and wastewater. Research also focuses on water quality issues in drinking water distribution systems and premise plumbing. Efforts under this topic also promote economic water reuse and the recovery of water, energy, and nutrient resources through municipal water services and whole system assessment tools. Research results are translated into tools and training for small water system operators through workshops and webinars.

The overall research effort is organized around six integrated and transdisciplinary national research programs. Each program is guided by a Strategic Research Action Plan (StRAP) that is the result of a collaboration with, and supportive of, the EPA's program offices and regions.

Recent accomplishments include:

Recreational Water Quality
Advances in the performance of quantitative, molecular methods for waterborne pathogens to provide more robust, same-day notifications of fecal contamination in recreational waters. Method performance and standardization, including developing standards for use by stakeholders, has been evaluated in eight midwestern rivers, the National Rivers and Streams Assessment, the 2015 National Coastal Condition Assessment study, and in a multi-laboratory survey examining U.S. coastal and inland surface waters.

Harmful Algal Blooms
SSWR developed and released the Water Quality Assessment Tool (WQAT), in conjunction with NASA Stennis Space Center. WQAT is a software tool that facilitates and simplifies the extraction and analysis of satellite data. WQAT's intended users are the Water Program, Regions, States, tribes, drinking water treatment facilities, state health departments, recreational water managers, and state water quality managers.

Green Infrastructure Toolkit
The Green Infrastructure Models and Tools toolkit is a webpage of five EPA green infrastructure (GI) models and tools, along with communication materials. The toolkit is being used by the EPA's regions to train their staff and for outreach to states.

Flint, MI Technical Assistance
The agency's research and development program's researchers provided their expertise and participated in the EPA's Flint Drinking Water Task Force to assist the State of Michigan and the City of Flint with lead contamination and chlorine residual challenges in their drinking water system. In coordination with the EPA's Task Force, the city and state, the agency's involvement included project development, oversight, and implementation for distribution system monitoring for disinfectant and disinfection byproducts, lead pipe scale evaluations, pipe loop rigs for corrosion control testing, assessment of chlorine residual levels in the distribution system and the development of a flushing optimization plan. The agency's research and development program contribution played a large part in helping to raise chlorine residuals by flushing hydrants, as well as determining where chlorine sampling would take place. The assistance provided by the agency's research and development program is helping Flint move towards a solution to their drinking water crisis. The agency's researchers are currently developing sampling protocols and exposure risk assessment models for lead in drinking water for use by stakeholders.

FY 2018 Activities and Performance Plan:

In order to achieve its goals, the SSWR program has focused its four topic areas on specific research objectives as outlined below.

Watershed Sustainability
The EPA will continue research on waterborne pathogens to improve recreational water quality. A collaborative, cross-agency economic analysis will continue to develop tools for determining changes in value associated with changes in water quality, ecosystem services of water bodies, and watershed integrity.

Nutrients
The EPA will investigate health impacts from exposure to harmful algal/cyanobacteria toxins. Research also focuses on monitoring and optimizing drinking water treatment systems and developing methods to predict, monitor, and characterize blooms with innovative technology.

Research will continue on nutrient-enhanced acidification and hypoxia in economically important coastal fisheries (e.g., Pacific Northwest and New England), and nutrient and hypoxia modeling of the Mississippi River Basin and Gulf of Mexico.

Green Infrastructure
The EPA will continue leading research for core support of the Storm Water Management Model (SWMM) and National Stormwater Calculator to help states and utilities address stormwater and wastewater infrastructure needs, and for risk assessments on stormwater capture for augmenting water supplies.

Water Systems (Drinking Water, Wastewater, Water Reuse)
Research will focus on delivering safe drinking water (e.g., distribution systems and premise plumbing, lead and other chemical or microbial contaminants, disinfection by-products, and biofilm) assessing the health and environmental impacts of known and emerging risks of individual and groups of chemical and biological contaminants (e.g., per- and poly-fluorinated substances) in drinking water sources, drinking/wastewater treatment, and water reuse.

Water reuse will be an essential component of a sustainable water supply by mitigating water withdrawals from surface water and groundwater sources. Resource recovery and water reuse offer opportunities for collaboration with other federal agencies, industry, and international organizations to expedite the development and market introduction of cost effective technologies.

The EPA has established a standing subcommittee under the EPA's Board of Scientific Counselors (BOSC) for the SSWR program to evaluate its performance and provide feedback to the agency. In addition, the EPA will meet regularly with both the BOSC and SAB to seek their input on topics related to research program design, science quality, innovation, relevance, and impact. This includes advising the EPA on its strategic research direction as part of the review of the research and development program's recently released StRAPs.

The agency collaborates with several science agencies and the research community to assess our research performance. For example, the EPA is partnering with the National Institutes of Health, National Science Foundation, Department of Energy, Department of Agriculture, U.S. Geological Survey, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Department of Defense, National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, and others. The EPA also works with the White House's Office of Science and

Technology Policy and supports the interagency Science and Technology in America's Reinvestment–Measuring the Effect of Research on Innovation, Competitiveness, and Science (STAR METRICS) effort.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$5,098.0) This eliminates funding for the Science to Achieve Results (STAR) program for FY 2018.

- (-$20,372.0 / -79.2 FTE) This streamlines funding to the program for research related to technical support and site-specific support; communication and technology transfer efforts; translation of nutrient modeling and monitoring data; and research assisting states to prioritize watersheds and differentiating sources of nutrient overloading.

- (-$13,240.0 / -57.4 FTE) This refocuses resources from research on recovering resources (e.g. nutrients) from wastewater, transformative water systems and life cycle analysis and research on advancing water systems technologies for FY 2018.

Statutory Authority:

Safe Drinking Water Act (SDWA), § 1442(a)(1); Clean Water Act, §§ 101(a)(6), 104, 105; Environmental Research, Development, and Demonstration Authorization Act (ERDDAA); Marine Protection, Research, and Sanctuaries Act (MPRSA), § 203; Title II of Ocean Dumping Ban Act of 1988 (ODBA); Water Resources Development Act (WRDA); Wet Weather Water Quality Act of 2000; Marine Plastic Pollution Research and Control Act of 1987 (MPPRCA); National Invasive Species Act; Coastal Zone Amendments Reauthorization Act (CZARA); Coastal Wetlands Planning, Protection, and Restoration Act; Endangered Species Act (ESA); North American Wetlands Conservation Act; Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Toxic Substances Control Act (TSCA).

Program Area: Research: Sustainable Communities

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Inland Oil Spill Programs	$862.0	$663.0	$503.0	($160.0)
Science & Technology	***$154,349.4***	***$139,709.0***	***$54,211.0***	***($85,498.0)***
Leaking Underground Storage Tanks	$315.5	$319.0	$320.0	$1.0
Hazardous Substance Superfund	$13,622.3	$14,005.0	$5,655.0	($8,350.0)
Total Budget Authority / Obligations	$169,149.2	$154,696.0	$60,689.0	($94,007.0)
Total Workyears	460.3	476.3	265.1	-211.2

Program Project Description:

The EPA's Sustainable and Healthy Communities (SHC) program supplies research to support regulatory activities, including protocol development for the National Contingency Plan, and provides on-demand technical support at federal, Tribal, or state-led cleanup sites and during emergencies. The SHC program serves two primary customers: the EPA's federal and regional decision makers, and community decision makers across the country.

The overall research effort is organized around six integrated and transdisciplinary national research programs. Each program is guided by a Strategic Research Action Plan (StRAP) that is the result of a collaboration with, and supportive of, the EPA's program offices and regions.

Recent accomplishments include:

- **Identifying Key Factors for Improved Water Quality in Lawrence, MA**: SHC has worked closely with Region 1, the City of Lawrence, Groundwork Lawrence[23], and the Merrimack Valley Watershed Council[24] to map and analyze flood zones, precipitation data, combined sewer overflows, E. coli concentration data, incidents of gastrointestinal illness, and exposure locations to inform actions that reduce potential flooding and improve water quality.

- **Facilitating Improvements in Great Lakes Areas of Concern:** SHC works closely with Region 5, the Great Lakes Program Office, and Great Lakes States to fully integrate environmental protection with the communities' economic vitality. At the St. Louis River Estuary in Duluth, MN, significant improvements already have been made. A 2016 SHC study found that up to 85% of the estuary surface now falls below pollution limits.[25]

- **Developing Guidelines for Evaluating the Post-Closure Care (PCC) Period for Hazardous Waste Disposal Facilities:** SHC is evaluating data to quantify the field performance of

[23] http://www.groundworklawrence.org/
[24] http://www.merrimack.org/web/
[25] https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=311324

engineered containment systems from eight landfills that are nearing the end of their 30-year PCC period. Results from this evaluation will form the basis for technical guidance to evaluate hazardous waste landfills nation-wide per Subtitle C of RCRA.

- **Improving Children's Health Protection Through Lead Exposure Modeling:** In response to the National Drinking Water Advisory Council's (NDWAC)[26] recommendations for a revised Lead and Copper Rule, SHC has produced age-specific estimates of lead exposure from water, soil ingestion, food, and air to inform health-based values for lead in drinking water. This effort supplies information to otherwise data-poor areas of exposure research in very young children.
- **Adding Six New Communities to EnviroAtlas[27]:** EnviroAtlas is an interactive online mapping system that displays layers of information on environmental quality, health statistics, and socio-economic factors in specific communities. It provides local leaders with high resolution data to inform decision-making. In 2016, SHC added Austin, TX, Cleveland, OH, Des Moines, IA, Memphis, TN, Minneapolis, MN and New York, NY to the Atlas. The addition of these cities brought the number of EnviroAtlas communities to 18, with another 6 planned for inclusion in the coming fiscal year.

FY 2018 Activities and Performance Plan:

In FY 2018, resources will be used to support the research personnel who will analyze existing research data and publish scientific journal articles to disseminate findings associated with the data.

Several research efforts will be retained, including: EnviroAtlas, a web-based atlas of ecosystem services; conducting valuation of ecosystem services; studying how ecosystem services impact human health; measuring impact on vulnerable populations (e.g. children); and the remediation of contaminated sites.

The EPA has established a standing subcommittee under ORD's Board of Scientific Councilors (BOSC) for the SHC program to evaluate its performance and provide feedback to the agency. In addition, ORD will meet regularly with both the BOSC and the Science Advisory Board over the next several years to seek their input on topics related to research program design, science quality, innovation, relevance, and impact. This includes advising the EPA on its strategic research direction with the review of ORD's recently released Strategic Research Action Plans (StRAPs).[28]

The EPA also collaborates with several science agencies and the research community to assess our research performance. For example, the EPA is partnering with the National Institutes of Health, National Science Foundation, Department of Energy, and Department of Agriculture. The EPA also works with the White House's Office of Science and Technology Policy and supports the interagency Science and Technology in America's Reinvestment–Measuring the Effect of Research on Innovation, Competitiveness, and Science (STAR METRICS) effort.[29]
A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

[26] https://www.epa.gov/ndwac
[27] https://www.epa.gov/enviroatlas
[28] EPA Strategic Research Action Plans, http://www.epa.gov/research/strategic-research-action-plans-2016-2019.
[29] STAR METRICShttps://www.starmetrics.nih.gov/.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$36,524.0 / -86.7 FTE) This streamlines research support in FY 2018 related to the following activities:

    - The Ecotox database;
    - The EPA's Report on the Environment (ROE); and
    - The inclusion of a data layer in EnviroAtlas on ecosystem services and their beneficiaries.

- (-$18,266.0 / -50.4 FTE) This streamlines research efforts across environmental media, including:

    - Research on the life cycle of materials in commerce; and
    - The People, Prosperity and the Planet (P3) program for college-level competition.

- (-$17,121.0 / -40.3 FTE) This streamlines research on the following:

    - The Health Impact Assessment (HIA) approach for assessing the impact of major planned infrastructure development (e.g. highway construction) at a city scale of governance;
    - Research into the mechanisms of chemical exposures and effects on human health outcomes and well-being, especially research into cumulative effects;
    - Research into the uptake and distribution of contaminates (e.g., lead, arsenic) within vulnerable populations;
    - Research into the environmental component of children's asthma.

- (-$13,587.0) This eliminates funding for the Science to Achieve Results (STAR) program for FY 2018.

Statutory Authority:

Clean Air Act (CAA); Clean Water Act (CWA); Clinger Cohen Act; Coastal Zone Management Act (CZMA); Environmental Research, Development & Demonstration Authorization Act (ERDDAA); Endangered Species Act (ESA); Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Food Quality and Protection Act (FQPA); Intergovernmental Cooperation Act; Marine Protection, Research, and Sanctuaries Act; National Environmental Education Act; National Environmental Policy Act (NEPA); Toxic Substances Control Act, §§ 10, 306; Water Resources Research Act.

Program Area: Research: Chemical Safety and Sustainability

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$93,323.4***	***$89,158.0***	***$61,673.0***	***($27,485.0)***
Total Budget Authority / Obligations	$93,323.4	$89,158.0	$61,673.0	($27,485.0)
Total Workyears	291.1	306.4	238.9	-67.5

Program Project Description:

The EPA's Chemical Safety for Sustainability (CSS) research program provides information, tools, and methods to make better-informed, more-timely decisions about the thousands of chemicals circulating in the United States. The CSS program provides products that strengthen the agency's ability to evaluate and predict impacts from the use and disposal of manufactured chemicals. The CSS program works with program offices to plan and develop innovative research that directly addresses agency challenges and informs agency decisions. Products delivered by the CSS program inform the implementation of multiple agency programs including mitigation activity at Superfund sites (CERCLA), the assessment of chemical toxicity using alternative testing protocols, and chemical prioritization (TSCA).

The CSS program is one of six integrated and transdisciplinary national research programs. Each program is guided by a Strategic Research Action Plan (StRAP) that is the result of a collaboration with, and supportive of, the EPA's program offices and regions.

Recent accomplishments include:

- **Public release of the interactive Chemistry Dashboard:**[30] In a continued commitment to improve the public's access to data, CSS scientists released a new interactive Chemistry Dashboard with chemistry information for over 700,000 chemicals. While large amounts of chemical data are available, it often appears in scattered locations. The Chemistry Dashboard is a gateway to an array of related public domain databases and serves as a hub that links together many EPA research databases, providing improved access to data and models associated with chemicals of interest. The Chemistry Dashboard brings the EPA one step closer to a one-stop-shop for data needs regarding environmental chemistry data that inform future exposure and risk assessments by the agency and outside researchers.

- **Advances in consensus modeling: powering prediction through collaboration**[31]**:** Predictive computational models can efficiently help prioritize thousands of chemicals for additional testing and evaluation. In support of the EPA's Endocrine Disruptor Screening Program (EDSP), CSS scientists led a large-scale modeling project called the Collaborative Estrogen Receptor Activity Prediction Project (CERAPP). CERAPP demonstrated the

[30] Interactive Chemistry Dashboard accessible here: https://comptox.epa.gov/dashboard/
[31] Link to article "CERAPP: Collaborative Estrogen Receptor Activity Prediction Project" http://ehp.niehs.nih.gov/15-10267/

efficacy of using computational models with high-throughput screening data to predict potential estrogen receptor activity of over 32,000 chemicals. This international effort (17 research groups from the United States and Europe) collaborated to develop 48 individual models which were then evaluated and weighed for their predictive accuracy. This research demonstrates the feasibility of computational modeling and data and literature mining approaches for screening large numbers of chemicals, which aids the work of the EPA's regulators and outside parties.

- **Advances in exposure dose-response modeling for improved risk assessments[32]:** Understanding what happens to a chemical after it enters the body, and how the chemical is adsorbed, distributed, metabolized, and excreted (ADME) is an important challenge for risk assessors. Models to estimate ADME and relevant exposures and doses have been extremely limited by available data. Even with the engagement of the broader scientific community, 14 such models for unique chemicals are produced each year. In FY 2016, CSS researchers and their collaborators produced a portfolio of modeling approaches and curated databases that make it possible to accelerate the rate at which these models can be developed for the chemicals and populations of interest. These models inform users inside and outside the EPA.

- **Public release of the Sequence Alignment to Predict Across Species Susceptibility (SeqAPASS) tool[33]:** Researchers and regulators often have to make decisions based on limited information. SeqAPASS helps fill their knowledge gaps faster and cheaper by extrapolating toxicity information across species. It does this by using reported information about the effect of one chemical on a specific species to apply it to information about other species. This tool has proven to be extremely valuable in evaluating risks of exposures from pesticides and pharmaceuticals in wildlife species.

FY 2018 Activities and Performance Plan:

The CSS program will continue to produce innovative tools that accelerate the pace of data-driven chemical evaluations, enable the EPA and state decisions to be environmentally sound and public health protective, and support sustainable innovation of chemicals.

Computational Toxicology (CompTox): The EPA has been a leader in developing innovative computational and high-throughput methods for efficiently screening large numbers of chemicals in a shorter amount of time and using fewer research dollars than conventional methods. In FY 2018, CompTox research will provide essential support to agency activities across diverse regulatory frameworks (e.g., TSCA, FIFRA). Novel applications can add significant efficiency and effectiveness to agency operations and provide states with the information to support effective decisions and actions. Opportunities in FY 2018 include:

[32] Link to example article about evaluating risks to infants and children https://academic.oup.com/toxsci/article-abstract/152/1/230/2579248/Integration-of-Life-Stage-Physiologically-Based

[33] Additional information here: https://blog.epa.gov/blog/tag/seqapass/. Login here: https://seqapass.epa.gov/seqapass/

- Using ToxCast/Tox21 data to develop high-throughput risk assessments, in particular for chemicals for which adequate information has not been available historically to conduct risk assessments.
- Developing and releasing on-line software tools to transparently provide information on thousands of chemicals and integrate human health, environmental, and exposure data for a range of decisions, including chemical prioritization decisions.
- Exploring how high-throughput exposure and hazard information can be combined to predict potential for exposure and risk to susceptible subpopulations.

These applications perform research as directed by, and to support efforts of the agency's Chemical Safety and Pollution Prevention Program to fulfill requirements for chemical evaluation under the Toxic Substances Control Act of 1976 (TSCA) as amended by the *Frank R. Lautenberg Chemical Safety for the 21st Century Act.*

Endocrine Disrupting Chemicals: The agency is requesting funding to fulfill its core statutory requirements under the Food Quality Protection Act of 1996 (Public Law 104-170). The EPA will significantly reduce its overall research efforts focused on endocrine disrupting chemicals.

Emerging Materials (including Nanotechnology): In FY 2018, the CSS program will continue research on emerging materials, including the increased use of nanoparticles. Research activities on nanoparticles maintain the agency's contribution to research carried out under the *21st Century Nanotechnology Research and Development Act* (Public Law 108-153), which includes specifically mapping the environmental fate of nanomaterials across the lifecycle, evaluating impacts to ecosystems and wildlife health, and providing research support that aids industry in developing safer nanomaterials.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$6,270.0) This eliminates funding for the Science to Achieve Results (STAR) program for FY 2018.

- (-$4,451.0 / -13.1 FTE) This change in funding reduces resources for the development of high-throughput toxicity testing and the agency's development of improved methods for chemical evaluations.

- (-$2,753.0 / -10.7 FTE) This change in funding reduces research efforts focused on endocrine disrupting chemicals under this program.

- (-$14,011.0 / -43.7 FTE) This reduces funding for the development of virtual tissue models and tools that potentially can be used to conduct chemical toxicity screening to understand impacts on human development and health outcomes, while minimizing the use of animal testing.

Statutory Authority:

Clean Air Act §§ 103, 104, 154; Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); Children's Health Act; 21st Century Nanotechnology Research and Development Act; Clean Water Act, §§ 101-121; Environmental Research, Development, and Demonstration Authorization Act of 1976 (ERDDAA); Federal Food, Drug, and Cosmetic Act (FFDCA); Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Food Quality Protection Act (FQPA); Intergovernmental Cooperation Act; National Environmental Policy Act (NEPA), § 102; Pollution Prevention Act (PPA); Resource Conservation and Recovery Act (RCRA); Safe Drinking Water Act (SDWA); Toxic Substances Control Act (TSCA), §§ 10, 15.

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$36,007.0***	***$37,530.0***	***$22,516.0***	***($15,014.0)***
Hazardous Substance Superfund	$2,751.4	$2,838.0	$5,305.0	$2,467.0
Total Budget Authority / Obligations	$38,758.4	$40,368.0	$27,821.0	($12,547.0)
Total Workyears	160.7	178.9	111.6	-67.3

Program Project Description:

The EPA's Human Health Risk Assessment (HHRA) research program is focused on the science of assessments that inform decisions made by the EPA and its partners, including states and tribes. These assessments provide the scientific basis for decisions under an array of environmental laws, including the Clean Air Act, Clean Water Act, Safe Drinking Water Act, Toxic Substances Control Act (TSCA), and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The current portfolio of HHRA products include:

- ***Integrated Risk Information System (IRIS):*** IRIS assessments are the top tier source of toxicity information used by the EPA and other health agencies to inform national standards, clean-up levels at local sites, and set advisory levels. IRIS assessments are not risk assessments. IRIS assessments inform decisions under the Clean Air Act, Safe Drinking Water Act, CERCLA/Superfund, and TSCA.

- ***Integrated Science Assessments (ISAs):*** Provide a concise evaluation and synthesis of science necessary to support decisions to retain or revise the National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants (particulate matter, ozone, lead, sulfur oxides, nitrogen oxides, and carbon monoxide) as required every five years by Sections 108(a)(2) and 109(d)(1) of the Clean Air Act. ISAs also inform the cost-benefit analyses that support the regulations designed to allow states and local areas to meet the NAAQS.

- ***Community and Site-specific Risk*:** Develops Provisional Peer-Reviewed Toxicity Values (PPRTVs) and exposure assessment tools to help inform the EPA's timely response to contaminated Superfund and hazardous waste sites, as required by the CERCLA. PPRTVs are typically developed for data poor chemicals for which no IRIS value exists.

- ***Research to Advance Analyses and Applications:*** Develops tools and methods that support the scientific advances in assessments. This includes research to incorporate non-animal testing data into assessments. It also includes research on cumulative risk assessment.

Recent accomplishments include:

Final IRIS Assessments for Ammonia, Trimethylbenzenes, Ethylene Oxide, and Benzo(a)pyrene: HHRA scientists recently finalized and posted IRIS reviews of these high priority chemicals. The IRIS assessment for ammonia addresses the potential noncancer human health effects from long-term inhalation exposure to ammonia, and it updates the toxicological information on ammonia posted to the IRIS database in 1991. Trimethylbenzenes are important constituents of gasoline and common waste site contaminants. Ethylene oxide is a major industrial chemical and is used to sterilize hospital equipment. Benzo(a)pyrene is a component of smoke from forest fires, industrial processes, vehicle exhaust, cigarettes, and is formed through the burning of fuel (such as wood, coal, and petroleum products).

Final ISA for Oxides of Nitrogen – Primary NAAQS (Health Criteria): The ISA is a comprehensive evaluation and synthesis of the policy-relevant science characterizing exposures to ambient oxides of nitrogen and the health effects associated with the exposures. This ISA will provide the scientific basis for decisions by the EPA Administrator to retain or revise the NAAQS for nitrogen dioxide.

Exposure Resource for Scenarios Tool (ExpoFIRST) and EPA-Eco-Box: The ExpoFIRST tool launched at the end of FY 2016 expanded the capabilities of regional, state, and local scientists in conducting site-specific health assessments by allowing users to define and explore an unlimited number of potential exposure scenarios related to a chemical of concern based on the Exposure Factors Handbook and the Expo-Box toolbox. The EPA-Eco-Box provides a quick, easy, and flexible way for users to access information and resources for conducting ecological risk assessments.

FY 2018 Activities and Performance Plan:

The program will continue to provide support to EPA programs, Regional Offices, and states in their chemical evaluation needs to implement the *Frank R. Lautenberg Chemical Safety for the 21st Century Act.* This includes scientific support for risk evaluations and high priority contaminants, including perfluorinated compounds, lead, and polychlorinated biphenyls (PCBs). In order to achieve its goals, HHRA will focus its resources on the following research projects:

IRIS:

The IRIS program will focus its efforts on accelerating the pace of and throughput for its chemical reviews.

- Assessments that support policy and regulatory decisions for the EPA's programs and regions, and state agencies, will be consolidated into a portfolio of C*hemical Evaluation* products that optimize the application of best available science and technology. These products will be shaped for use by a number of partners, including the EPA's program and Regional Offices, states, and other federal agencies. This will allow HHRA to: a) navigate by anticipating the EPA's strategic regulatory and policy directions, while scientifically remaining ahead of the curve; b) manage tactically by ensuring that the order/timing/priorities of its assessment

activities are consistent with both short-term and long-term goals; and c) work proactively to translate and integrate the science and its tailored 'fit-for-purpose' products.

- Through a more proactive pipeline with the EPA's Office of Pollution Prevention and Toxics (OPPT), IRIS will continue to provide the support required for TSCA implementation. In addition, IRIS will work with the Office of Air and Radiation to support response to court-ordered requirements under the Residual Risk Assessment program.

- In terms of updated Health Assessments, IRIS will develop case studies of accelerated systematic review methodologies/protocols and related automation tools. For this pilot, existing assessments will be updated to meet focused high-priority needs for the EPA's program and Regional Offices.

- HHRA also will collaborate with the Chemical Safety for Sustainability (CSS) research program to link the architecture of assessment databases and literature management tools, including *Health and Environmental Research Online* (HERO) with the RapidTox Dashboard being developed by the National Center for Computational Toxicology in CSS. This integration can be used to inform assessment development and fill gaps in assessments, especially for data poor chemicals. It also can incorporate diverse data streams, including data from non-animal testing strategies, to develop assessment products for chemicals that are lacking assessments. The National Academies Report, *Using 21st Century Science to Improve Risk-Related Evaluations*[34] provides additional guidance for implementing this approach through structured case studies.

Integrated Science Assessments (ISAs):
ISAs will continue to be developed, including a draft ISA for particulate matter and a second draft ISA for the ecological effects of nitrogen oxides, sulfur oxides, and particulate matter. The final ISA for Oxides of Sulfur is anticipated to be completed on schedule: litigation is underway and a court decree has been proposed that includes completion of this ISA in December 2017.

Community and Site-Specific Risk:
PPRTVs will be developed to support the EPA's clean-up decisions at contaminated Superfund and hazardous waste sites, as required by CERCLA/Superfund. In FY 2018, 12 PPRTVs will be completed and provided to the EPA's Land and Emergency Management Program and conveyed to state and local agency partners to support decisions at waste sites.

Research to Advance Analyses and Applications:
Continued updating of the Exposures Factors Handbook and support for the Expo-Box and Eco-Box toolsets will provide support and advance new methods (e.g. sensor technologies) to target real-world scenarios. Research to develop and apply advances in molecular and systems biology to inform IRIS, PPRTV, TSCA, and other assessment activities will be continued at a modified schedule.

The EPA has established a standing subcommittee under the EPA's Board of Scientific Councilors (BOSC) for the Chemical Safety for Sustainability area that will be utilized to evaluate the research

[34] (http://dels.nas.edu/Report/Using-21st-Century-Science-Improve/24635?bname=best)

dimensions of the HHRA program as part of its performance and provide feedback to the agency. The EPA will meet regularly with both the BOSC and Science Advisory Board (SAB) to seek their input on topics related to research program design, science quality, innovation, relevance, and impact. This includes advising the EPA on its strategic research direction as part of the review of the agency's research and development program's recently released Strategic Research Action Plans (StRAPs).[35]

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$12,050.0 / -66.8 FTE) This refocuses research in the following areas:
    - The Integrated Risk Information System (IRIS);
    - The development of cumulative risk methods and models to evaluate the complex mixture and interplay of chemical and non-chemical stressors affecting ecological and human health;
    - The Superfund Health Risk Technical Support Center (STSC) and Ecological Risk Assessment Support Center (ERASC);
    - Systematic review and dose-response methods and tools used to inform ISAs, IRIS, PPRTVs, and TSCA; and
    - The development of advanced methods to support cost-benefit assessment.

- (-$2,964.0 / -15.2 FTE) Resources are being realigned to the Superfund appropriation within this program/project for IRIS.

Statutory Authority:

CAA Amendments, 42 U.S.C. 7403 et seq. - Sections 103, 108, 109, and 112; CERCLA (Superfund, 1980) Section 209(a) of Public Law 99-499; CWA Title I, Sec. 101(a)(6) 33 U.S.C. 1254 – Sec 104 (a) and (c) and Sec. 105; ERDDA 33 U.S.C. 1251 – Section 2(a); FIFRA (7 U.S.C. s/s 136 et seq. (1996), as amended), Sec. 3(c)(2)(A); FQPA PL 104-170; SDWA (1996) 42 U.S.C. Section 300j-18; TSCA (Public Law 94-469): 15 U.S.C. s/s 2601 et seq. (1976), Sec. 4(b)(1)(B), Sec. 4(b)(2)(B).

[35] EPA Strategic Research Action Plans, http://www.epa.gov/research/strategic-research-action-plans-2016-2019.

Program Area: Water: Human Health Protection

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Environmental Program & Management	$96,372.2	$96,341.0	$80,044.0	($16,297.0)
Science & Technology	***$3,975.8***	***$3,512.0***	***$3,657.0***	***$145.0***
Total Budget Authority / Obligations	$100,348.0	$99,853.0	$83,701.0	($16,152.0)
Total Workyears	511.4	522.7	443.3	-79.4

Program Project Description:

Through the Drinking Water Technical Support Center, this program provides critical tools to provide accurate and reliable monitoring for contaminants and effective operation of treatment systems to remove the contaminants that present public health risk in drinking water.

FY 2018 Activities and Performance Plan:

In FY 2018, the EPA's Drinking Water Technical Support Center will carry out the following activities:

- Lead the development, revision, evaluation, and approval of chemical and microbiological analytical methods for compliance monitoring and for occurrence data gathering to ensure protection of public health from contaminants in drinking water (*e.g.*, toxins resulting from harmful algal blooms).
- Implement the EPA's Drinking Water Laboratory Certification Program, which sets direction for oversight of municipal and commercial laboratories that analyze drinking water samples. Conduct three regional program reviews during FY 2018 and deliver three certification officer training courses [(1) chemistry, (2) microbiology, and (3) cryptosporidium)] for state and regional representatives to ensure the quality of the analytical results.
- Partner with states and water systems to optimize their treatment technology under the drinking water Area Wide Optimization Program (AWOP). The AWOP is a highly successful technical/compliance assistance and training program that enhances the ability of small systems to meet existing microbial, disinfectant, and disinfection byproduct standards and also addresses distribution system integrity issues. During FY 2018, the EPA expects to continue to work with 21 states and tribes to facilitate the transfer of specific skills and build upon other drinking water implementation program efforts to reduce health based compliance challenges.
- Initiate monitoring under the fourth Unregulated Contaminant Monitoring Rule (UCMR 4). The UCMR 4 was published in December 2016, and addresses collection of data on occurrence of 30 contaminants (e.g., cyanotoxins) to assess the frequency and levels at which these contaminants are found in public water systems. The UCMR 4 is a federal

direct implementation program coordinated by the EPA, as directed by the Safe Drinking Water Act. The data collected are used by the EPA as part of the agency's determination of whether to establish a health-based standard to protect public health. Monitoring activities for UCMR 4 will occur from 2018-2020. Key activities for the EPA include assuring laboratories are available that can perform the required analyses, managing all aspects of small system monitoring, and managing data reported by large systems. The EPA is required by Section 1452(o) of the Safe Drinking Water Act (SDWA), as amended, to annually set aside $2.0 million of Drinking Water State Revolving Funds to pay the costs of small system monitoring and sample analysis for contaminants for each cycle of the UCMR.

A list of FY 2018 performance measures and targets is located in the FY 2018 Performance Measures tab.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (+$145.0 / -2.1 FTE) Resource and FTE changes represent the net of all other changes in the program/project.

Statutory Authority:

Safe Drinking Water Act (SDWA).

Program Area: Congressional Priorities

(Dollars in Thousands)

	FY 2016 Actuals	FY 2017 Annualized CR	FY 2018 Pres Bud	FY 2018 Pres Bud v. FY 2017 Annualized CR
Science & Technology	***$10,378.5***	***$14,073.0***	***$0.0***	***($14,073.0)***
Environmental Program & Management	$12,678.0	$12,676.0	$0.0	($12,676.0)
Total Budget Authority / Obligations	$23,056.5	$26,749.0	$0.0	($26,749.0)
Total Workyears	4.1	4.0	0.0	-4.0

Program Project Description:

In FY 2016, Congress appropriated $14.1 million in the Science and Technology appropriation. $4.1 million was to fund high priority water quality and water availability research. The EPA was instructed to award grants on a competitive basis, independent of the STAR program, and give priority to not-for-profit organizations that: conduct activities that are national in scope; can provide a twenty-five percent match, including in-kind contributions; and often partner with the agency. $3.0 million was to further research on oil and gas development in the Appalachian Basin. $7.0 million was to fund certification and compliance activities related to vehicle and engine emissions. This funding was provided by Congress to help the agency address certification and compliance program needs in light of motor vehicle emissions noncompliance.

FY 2018 Activities and Performance Plan:

Resources and FTE have been eliminated for this program in FY 2018.

FY 2018 Change from FY 2017 Annualized Continuing Resolution (Dollars in Thousands):

- (-$14,073.0 / -4.0 FTE) This funding change eliminates this program.

Statutory Authority:

CAA 42 U.S.C. 7401 et seq. Title 1, Part A – Sec. 103 (a) and (d) and Sec. 104 (c); CAA 42 U.S.C. 7402(b) Section 102; CAA 42 U.S.C. 7403(b)(2) Section 103(b)(2); Clinger Cohen Act, 40 U.S.C. 11318; CERCLA (Superfund, 1980) Section 209(a) of Public Law 99-499; Children's Health Act; CWA, Sec. 101 - 121; CWPPRA; CZARA; CZMA 16 U.S.C. 1451 - Section 302; Economy Act, 31 U.S.C. 1535; EISA, Title II Subtitle B; ERDDA, 33 U.S.C. 1251 – Section 2(a); ESA, 16 U.S.C. 1531 - Section 2; FFDCA, 21 U.S.C. Sec. 346; FIFRA (7 U.S.C. s/s 136 et seq. (1996), as amended), Sec. 3(c)(2)(A); FQPA PL 104-170; Intergovernmental Cooperation Act, 31 U.S.C. 6502; MPRSA Sec. 203, 33 U.S.C. 1443; NAWCA; NCPA; National Environmental Education Act, 20 U.S.C. 5503(b)(3) and (b)(11); NEPA of 1969, Section 102; NISA; ODBA Title II; PPA, 42 U.S.C. 13103; RCRA; SDWA (1996) 42 U.S.C. Section 300j-18; SDWA Part E, Sec. 1442 (a)(1); TSCA, Sections 10, 15, 26, U.S.C. 2609; USGCRA 15 U.S.C. 2921; WRDA; WRRA; and WWWQA.