

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute of Environmental Health Sciences  
Department of Interior and Related Agencies Appropriations  
Superfund-Related Activities

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**NATIONAL INSTITUTES OF HEALTH**

National Institute of Environmental Health Sciences  
Department of Interior and Related Agencies Appropriations  
Superfund – Related Activities

For carrying out Section 311(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, and Section 126(g) of the Superfund Amendments and Reauthorization Act of 1986, [~~\$80,289,000~~] *\$78,414,000*.

[Department of Interior and Related Agencies Appropriations Act for Fiscal Year 2006 as enacted by Public Law (109-54)]

National Institutes of Health

National Institute of Environmental Health Sciences  
 Department of Interior and Related Agencies Appropriations  
 Superfund - Related Activities

Amounts Available for Obligation

Source of Funding	FY 2005 Actual	FY 2006 Appropriation	FY 2007 Estimate
Appropriation	\$80,486,000	\$80,289,000	\$78,414,000
Enacted Rescissions	(644,000)	(1,181,000)	---
Subtotal, Adjusted Appropriation	79,842,000	79,108,000	78,414,000
Subtotal, adjusted budget authority	79,842,000	79,108,000	78,414,000
Unobligated balance lapsing	(6,000)	---	---
Total obligations	79,836,000	79,108,000	78,414,000

## Justification

### National Institute of Environmental Health Sciences Department of Interior and Related Agencies Superfund - Related Activities

Authorizing Legislation: Section 311(a) of the Comprehensive Environmental, Response, Compensation, and Liability Act of 1980, as amended, and Section 126(g) of the Superfund Amendments and Reauthorization Act of 1986

FY 2005 Actual	FY 2006 Appropriation	FY 2007 Estimate	Increase or Decrease
\$79,842,000	\$79,108,000	\$78,414,000	-694,000

FTEs are included with the regular NIEHS appropriation.

## INTRODUCTION

The nation continues to face the daunting challenges associated with toxic waste sites which have been created in the U.S. over decades of industrialization. Even as our methods of cleaning up these sites have grown more sophisticated, new problems emerge -- new technologies and processes create new waste streams, which are not always proactively addressed. At the same time, we are finding that some of the previously employed cleanup strategies have been inadequate, and in some instances have created new environmental threats. Unfortunately, we continue to struggle with many of the contaminants we were struggling with two and three decades ago. At the same time, the costs of clean up are exorbitant, while the costs to society in the form of human health effects and environmental damage are incalculable.

Under the Superfund Amendments and Reauthorization Act of 1986, the National Institute of Environmental Health Sciences (NIEHS), an institute of the National Institutes of Health (NIH), is mandated to support the nation's efforts to tackle these enormous problems through the administration and management of the Superfund Basic Research and Training Program (SBRP) and the Worker Education and Training Program (WETP). The missions of the two programs are:

**Superfund Basic Research Program:** Develop a basic science foundation that supports decision-making in risk assessment and in the cleanup of hazardous waste sites

**Worker Education and Training Program:** Train workers in safe practices in remediating hazardous waste sites and in responding to emergencies involving hazardous substances.

NIEHS Superfund programs utilize the successful NIH structure to effectively administer and manage the grants and cooperative agreements that conduct vital research and training activities. In FY2005, the SBRP supported 20 university-based grants, including over 200 different research projects and cores, plus one Phase 1 and four Phase 2 Small Business Innovative Research (SBIR) grants. The WETP, using a cooperative agreement mechanism, supported 17 primary worker-training grantees, in conjunction with over eighty collaborating institutions. The WETP also supported four Phase 1 and one Phase 2 SBIR grants.

## STORY OF DISCOVERY

### *Identifying and Preventing Adverse Effects of Arsenic Exposure*

**Background:** Arsenic contamination of groundwater, as the result of natural geologic processes and/or man-made releases from mining, industrial and agricultural activities, has been documented in the United States and nearly 20 other countries. It is one of the five most common inorganic compounds found at Superfund sites and is present at over 70% of the sites. Arsenic exposure has been linked to lung, skin and bladder cancers; cardiovascular diseases such as hypertension; and a range of cognitive functions including learning, memory, and concentration, as well as peripheral and central neuropathies in adults. Because of the prevalence of arsenic, the SBRP has placed an emphasis on supporting arsenic-related research, as is evidenced by eleven programs that include projects focused on arsenic. At one of these programs, Columbia University, health, earth, and social scientists are conducting collaborative, multi-disciplinary studies in Bangladesh to understand and mitigate the health issues arising from arsenic exposure via drinking water. This research is already demonstrating its relevance to exposures that are occurring in the United States, such as the unexpected discovery about the impact of arsenic and manganese exposures on children in Bangladesh.

**Advances:** The SBRP-funded researchers have undertaken a coordinated, multi-faceted approach to investigating the implications of arsenic in the environment, exploring not only the human health impacts of arsenic exposures, but also conducting studies to determine the sources of exposure and identify strategies to reduce exposures.

**Hydrogeology Findings** – Researchers are studying spatial and temporal variability of groundwater arsenic concentrations as well as the geophysical, hydrological, and geochemical processes that regulate arsenic levels in groundwater. They tested 6,000 tube wells in Bangladesh and have identified the fundamental processes that result in arsenic contamination of groundwater. Not only does this information provide the necessary foundation for long-term resources management in Bangladesh, but conceivably it can be applied to many similar conditions found in the United States.

**Mitigation** – The researchers are translating their hydrogeology findings into practical mitigation strategies to provide the rural population of Bangladesh access to safe water. Using results from their 6,000 test wells, the researchers designed strategies to give families access to safe water. These strategies rely on promotion of well-switching and the installation of community wells in the most affected villages. Follow-up survey results indicate that two-thirds of the households that were drawing their water from wells that tested unsafe for arsenic in 2000 have switched to safe wells.

**Effects on Human Health** – Epidemiologists have established a prospective cohort study of 11,746 men and women in Bangladesh to investigate the health effects of arsenic exposure with an initial focus on skin lesions and skin cancers. To date, they have documented a clear and strongly linear dose-dependent effect of arsenic exposure on the risk of skin lesions. This dose relationship is evident even at levels of arsenic in drinking water of 60 µg/L and lower -- a range in which ~77 million people in Bangladesh and millions of people in the United States have been chronically exposed.

Additionally, in a cross-sectional study of over 200 ten year-old children, the researchers found that drinking water arsenic and manganese were each significantly and adversely associated with child intelligence, again, in a dose-response manner. No significant interaction between arsenic and manganese exposure was detected. This is the first documentation of such impacts in children and these effects were identified at arsenic and manganese drinking water concentrations common in the United States. This is noteworthy as breast milk and infant formulas in the United States have been reported to contain manganese at levels investigated in this study, with documented concentrations of 3 to 10 µg Mn/L in breast milk and 50 to 300 µg Mn/L in infant formula.

**Implications:** These findings are important in the United States, where 2.5 million people get their drinking water from sources containing more than 25 µg/L arsenic. Furthermore, this work indicates a strong association between arsenic and manganese exposures and the diminution of intelligence in children, which adds urgency to the need for effective public health interventions and remediation in the United States.

**Sources:**

Wasserman, G.A., X. Liu, F. Parvez, H. Ahsan, D. Levy, P. Factor-Litvak, J. Kline, A. van Geen, V. Slavkovich, N.J. Lolocono, Z. Cheng, Y. Zheng, J.H. Graziano. 2005 (In Press). Water Manganese Exposure and Children's Intellectual Function in Araihasar, Bangladesh. *Environmental Health Perspectives*. <http://ehp.niehs.nih.gov/docs/2005/7903/abstract.html>

Wasserman, G.A., X. Liu, F. Parves, H. Ahsan, P. Factor-Litvak, A. van Geen, V. Slavkovich, N.J.Lolocono, Z. Cheng, I. Hussain, H. Momataj, and J.H. Graziano. September 2004. Water Arsenic Exposure and Children's Intellectual Function in Araihasar, Bangladesh. *Environmental Health Perspectives* 112(13)1329-1333.

## SCIENCE ADVANCES

### Superfund Basic Research Program (SBRP)

Cancer, reproductive disorders, neurotoxicity, and respiratory disease are among the disorders associated with exposures to substances commonly found at hazardous waste sites. To better elucidate the exposure-disease relationship, the SBRP applies a multidisciplinary approach to basic research. The goal of this approach is to integrate scientific disciplines such that the resulting research addresses the challenges posed by environmental contamination. These challenges include health risks, toxicity, exposure predictions, fate and transport and the need for cost effective treatments of hazardous wastes sites, as found throughout the United States. The ultimate intent of this research strategy is to provide a solid scientific foundation which environmental managers and risk assessors can draw upon to make sound decisions related to Superfund and other hazardous waste sites. The following examples highlight a few of the recent research advances produced by the SBRP.

SBRP investigators contribute to understanding disease etiologies as linked to exposures to environmental contaminants:

*Example:* Hepatocellular carcinoma (HCC), i.e., liver cancer, is the third largest cause of cancer deaths world-wide. Many risk factors have been associated with the disease, including environmental pollutants, but the causal and mechanistic relationships between these risk factors and the mechanisms of disease are unknown. A topic under intense investigation by researchers at the University of California at San Diego is the understanding of the molecular mechanisms that connect inflammation and chemically-induced HCC. Using a well-established mouse model for chemically induced liver cancer, this group has shown that inflammatory processes in non-cancer cells are important for tumor development. Specifically, mice hepatocytes that lacked a protein involved in orchestrating the activation of inflammatory-like responses showed an increased susceptibility to chemically-induced liver tumors. In contrast, when this same protein was also absent in Kupffer cells, a type of liver cell that are involved in removing foreign bodies, such as bacteria, the opposite effect was seen -- there was a decrease in liver tumors. Their result demonstrates that chemical-induced HCC involves an inflammatory response, which suggests that anti-inflammatory intervention that targets Kupffer cells may be a novel chemopreventive strategy for HCC.

SBRP investigators develop new exposure assessment methodologies:

*Example:* SBRP investigators at Boston University have developed an innovative exposure assessment method to model complex interconnected geometries for a town's entire water distribution system. As a foundation, they used EPANET, an EPA software package that simulates hydraulic and water quality characteristics within pressurized pipe networks. Using a Geographic Information System (GIS) they produced digital maps for each study town that identify the subjects' residences and water pipe network. By combining these two technologies, they are able to calculate the yearly tetrachloroethylene (PCE) concentration at each subject's residence and then estimate exposures. Improving the ability to assess exposure to PCE is important as it has been identified by the U.S. Environmental Protection Agency (EPA) as a possible human carcinogen. Unlike other traditional historical surveys, this approach to exposure assessment has the advantage that it is not subject to residents' recall bias. Investigators are comparing the relationship between the exposure data generated by this model and reproductive and developmental outcomes.

SBRP investigators design innovative remediation strategies:

*Example:* Trichloroethylene (TCE) is the most prevalent groundwater contaminant in the United States and is found at most hazardous waste sites. Researchers across the country are working to develop and optimize biological and chemical remediation strategies to degrade this ubiquitous contaminant. Investigators at the University of Kentucky SBRP are designing and testing methods using nanostructured metals to degrade TCE. Because nanoscale metals have significantly more surface area per unit mass than bulk-scale metals and have enhanced reactive sites, theoretically, reaction rates with nanoscale metals can be several orders of magnitude higher than with bulk-scale metals. They have tested this hypothesis and demonstrated a 75%

reduction in TCE levels in 4.2 hours with cellulose-acetate containing nanoparticles, and complete destruction (formation of ethane only) within 2 hours was obtained with bimetallic iron/nickel systems. This corresponds to about 100 times higher reaction rates than bulk iron metals. Furthermore, only minimal leaching of the metal into the solution was observed and harmful byproducts of TCE degradations were not generated. This research may have significant impact on remediation of chlorinated organics with potential application in improving water quality.

*SBRP uses ecological data to predict human exposures:*

*Example:* Mercury occurs naturally in the environment and is emitted by coal-fired power plants, municipal waste combustion, medical waste incineration and chlorine production. While atmospheric concentrations are generally very low, mercury is deposited by wet and dry processes to forest ecosystems, from which it can be transported to and bioaccumulate in the food chain of aquatic ecosystems. However, there is great variability in metal burden of aquatic organisms. SBRP investigators at Dartmouth College speculated that this variation arises from fundamental differences in the food web (e.g. different assemblages of algae, microscopic zooplankton, larger insects and fish) and sought to determine the environmental conditions underlying the movement of toxic metals such as mercury through the food webs into fish as a primary conduit for human exposure to metals. They studied more than 150 lakes in the northeastern United States representing a gradient of environments ranging from watersheds in remote, pristine areas to watersheds impacted by Superfund sites. These studies indicate that bioaccumulation of mercury was greatest in remote lake ecosystems, which tend to be poorly buffered, lower in pH and have minimal human land use. These results suggest that the physical and chemical parameters of the lake influence the uptake of metals and may serve as predictors of high mercury burdens in fish.

*SBRP investigators are developing cost-effective detection methodologies:*

*Example:* Sensitive and rapid lead analytic techniques are needed for site and exposure assessments and to evaluate the progress of remediation efforts. Conventional wet-chemistry techniques for soil-lead analysis involve time-intensive, multi-step processes. Researchers at the University of California, Berkeley have been evaluating laser spectroscopy techniques as a quicker, simpler and more sensitive method to detect lead in soil. They have found that by applying an excimer laser fragmentation fluorescence spectroscopy (ELFFS) technology they are able to produce a fluorescent signal that is proportional to the concentration of lead in the sample. The detection limit is half the EPA regulatory standard, results are obtained within seconds and data are easily interpreted. This method holds promise as a rapid and sensitive method for characterizing lead in soil samples, assessing possible lead exposures and evaluating the effectiveness of soil-lead remediation efforts.



## **ADVANCES**

### **Worker Education and Training Program (WETP)**

Anthrax, chlorine, asbestos, nuclear waste... the safe handling of such hazardous materials obviously requires properly trained workers. The WETP, established in 1987, has provided training support for over 1,200,000 workers. The WETP funds non-profit organizations with a demonstrated track record of providing high quality occupational safety and health education to workers who are involved in handling hazardous materials or in responding to emergency releases of hazardous substances. Every day, these workers clean up hazardous and nuclear waste sites, and during times of crisis, these emergency responders and skilled support personnel are on the scene protecting lives and property.

The program is comprised of three main components: the Hazardous Waste Worker Training Program (HWWTP), the Minority Worker Training Program (MWTP) and the Brownfields Minority Worker Training Program (Brownfields Program).

- The HWWTP provides high quality training to workers who are involved in handling hazardous waste or in responding to emergency releases of hazardous materials. Since the initiation of the HWWTP in 1987, the WETP has funded organizations to deliver high-quality, peer-reviewed safety and health curriculum to target populations of hazardous waste workers and emergency responders.
- Over the past nine years, the MWTP has successfully trained thousands of young adults. The main goal of this program is to increase the number of underrepresented minorities in the construction and environmental remediation industries by providing a vigorous training program that eventually leads to productive employment. The overall job placement currently is 66%, up from 64% last year. Training programs are specialized to the specific needs of the workforce in the geographic area; however, hazardous materials and waste training remain the primary core curriculum. New or modified training added this year include radiation worker, commercial driver's license, and hazmat transportation training.
- The Brownfields Program offers comprehensive training to disadvantaged residents and fosters economic and environmental restoration to communities impacted by brownfields, i.e., land contaminated or perceived to be contaminated by past industrial and commercial activities. The program has now reached approximately 2,140 individuals, providing training to the unemployed or chronically under-employed.

When President Bush released Homeland Security Presidential Directive # 8 on December 17, 2003, he included "skilled support personnel" as an essential part of the "first responders" definition. This recognition by the President and the Department of Homeland Security (DHS) has been an important measure of the success of the WETP's effort to increase, at a national

level, an awareness of the importance of this critical skill set in the national incident management system.

A few examples of recent WETP advances follow:

*The WETP is involved in disaster-oriented hazardous preparedness training:*

*Example:* Since 9/11, the WETP has worked to alter and revamp all of the basic Occupational Safety and Health Administration (OSHA) HAZWOPER (Hazardous Waste Operations and Emergency Response) courses, customizing them to known disaster response issues and scenarios. Additionally, all existing WETP remediation and cleanup worker training courses now include construction safety issues that arose at the World Trade Center, and provide heavy equipment operators with lessons learned on how to work safely and effectively under the terrible conditions likely to be encountered.

*Example:* At the federal level, in response to the lessons learned about the inadequate preparedness of disaster response workers, the WETP has initiated funding for a Hazmat Disaster Preparedness Training Program (HDPDP) with the primary objective to develop a nation-wide cadre of well-trained environmental response workers prepared for possible future terrorist attacks. This training has been modeled after the successful HWWTP that provided certification to thousands of workers who are now available to safely apply their trade at existing or new hazardous waste sites.

*Example:* The WETP has developed training modules on various biological/chemical agents that can be incorporated into Hazardous Waste Refresher courses or can stand alone as part of a larger weapons of mass destruction training program. Nine new awards for this disaster preparedness training program were made on September 1, 2005 for \$2,500,000.

*The WETP pursues efficiencies in training through E-Learning:*

*Example:* The relatively new WETP Small Business Innovative Research E-Learning Program has resulted in several innovative approaches. For example, e-HazTools™ is a new product that assists instructors in teaching the chemical safety aspects of HAZWOPER training. Other tools developed include interactive DVDs that help train workers involved in brownfields cleanup, leaking chemical drum incidents, and confined space entry; an online product for training railroad workers in responding to leaking chemical cars; and an instructor-led, web-based interactive training site. The grantees developing these tools are encouraged to partner with other WETP grantees in order to ensure the integration of these tools into the worker safety and health profession.

## **OTHER AREAS OF INTEREST**

Like all Americans, NIEHS staff sought to support the people and communities in the paths of Hurricanes Katrina, Rita and Wilma. As the environmental health research institute of the NIH,

the NIEHS, through both the SBRP and the WETP, recognized that it was uniquely positioned to provide essential training resources to emergency responders and valuable environmental health information to public health, environmental health and public safety workers deployed to affected communities. NIEHS responded to this human catastrophe with a multi-pronged approach that involved both the WETP and SBRP.

Immediately after the disaster, the WETP developed and released a PowerPoint presentation that covered all of the pertinent government guidance available about safety and health hazards resulting from the destruction caused by Hurricane Katrina. This PowerPoint presentation, "Protecting Yourself While Helping Others," was posted on the NIEHS Katrina response website, [http://www.wetp.org/wetp/public/hasl\\_get\\_blob.cfm?ID=2080](http://www.wetp.org/wetp/public/hasl_get_blob.cfm?ID=2080), and was continuously updated in response to newly identified, relevant information. It was also translated into Spanish by the Center to Protect Workers Rights. In a complementary effort, thousands of copies of the "Katrina Safety Orientation" pocket guide have been printed by the Operating Engineers National Hazmat Program with the support of the WETP.

In a parallel effort, the SBRP has drawn on the analytical and technical expertise of its grantees. Several programs from across the country responded to NIEHS' decision to build a web-based, interactive GIS. The SBRPs at Duke University and the University of California at San Diego took the lead in developing a web portal that allows for a visualization of the locations of sources that pose threats of toxic releases. The initial portal, which offered detailed flat maps of the area, was made available, electronically, on September 9. The more robust interactive site was available approximately two weeks later. This site, <http://www-apps.niehs.nih.gov/Katrina/gis/portal.html>, provides useful and readily accessible environmental health information to public health, environmental health, and public safety workers and volunteers deployed to impacted communities. In the long-term, the GIS portal will support the development of models for predicting the movement of contaminants and identifying sources of potential human exposure. The SBRP continues to compile, organize and update the environmental health data such that there is a single resource of relevant information readily available to public and professionals making informed decisions during the period of cleanup and redevelopment.

In addition to these two products (the PowerPoint and GIS site), the WETP was tasked by OSHA and Federal Emergency Management Agency (FEMA) to provide safety and health training to site responders in the four-state Katrina Recovery Zone. The WETP provided the OSHA with curricula materials to modify the current 16-hour Disaster Site Worker course to include modules specific to the hazards of hurricane response. WETP grantees will continue to develop course materials to train trainers and deliver training to target populations in the Katrina response zone, including those who may serve as skilled support personnel and disaster site responders.

The focus of the current WETP mission in the Gulf Coast states is to offer training to federal employees and federally-deployed contractors in the four-state area. Training activities will focus on preparing federally deployed response workers to enter highly contaminated locations and engage in site assessments, debris removal, demolition and quality assurance activities. Safety and health training activities will also be targeted to private sector, small businesses, and local and state officials who become involved in the cleanup process.

NIEHS has received \$800,000 from EPA via an interagency agreement to support training under the Brownfields Program and the MWTP for job training in the four-state area. These programs will expand the existing programs to target displaced residents for focused job training in construction and environmental remediation work to re-build the Gulf Coast area.

## INITIATIVES

In FY2005, NIEHS initiated a long-term plan designed to allow the SBRP to replace its five-year recompetition cycle with a more flexible cycle where new research can be introduced to the program on an annual basis. In FY2007, the SBRP will be in its third year of the plan. It will continue to support the multi-project grants, which incorporate both biomedical and non-biomedical research, that were awarded in FY2005 and FY2006. It will also be receiving new multi-project applications in response to a Request for Application (RFA) to be released in FY2006. Under this RFA, the SBRP will solicit applications that address emerging issues surrounding exposures from hazardous waste sites. The program intends to promote remediation research with an emphasis on options for sequestering metals and understanding the structure and function of microbial communities as used in bioremediation strategies. As part of this plan, the SBRP seeks to use multiple funding mechanisms as has been done in the past. In FY2007, the SBRP will continue the Small Business and Innovative Research Grants by making grant awards to support the development of new tools and techniques for monitoring and detecting environmental exposures as well developing remediation technologies. It is also NIEHS' interest to, in the future, support a limited number of individual project grants such as was done in 2003 and 2004 under an RFA titled "Molecular Assessment of the Structure and Function of Ecological Populations in the Sequestration/Degradation of Environmental Contaminants." Throughout FY2006, the SBRP will continue to build and refine the Hurricane Response GIS website that it launched in late FY2005. Efforts to expand and enhance this site are ongoing and, to the extent feasible, the SBRP plans to include additional data layers and more geographic regions to the site with the intent of providing broader coverage of the United States.

The natural disasters that occurred during the summer of 2005 identified a gap in our nation's preparedness training strategy. In response, the WETP will assure that its education and training programs are modified to meet the unique demands of both man-made and natural disasters. In addition, these new training activities are also enhancing the WETP's working relationship with the health and safety departments of several emergency-oriented agencies. For example, in conjunction with OSHA and DHS-FEMA, the WETP will continue to deploy trainers, equipment, and curricula materials to sites in Louisiana, Mississippi, Texas and Alabama to train workers such that they can safely participate in the enormous cleanup effort. With the WETP's clearly-identified role in the new national Response Plan and a long track record of response, the WETP anticipates it will continue in FY2007 to integrate its training activities in disaster response with its sister federal agencies.

## **INNOVATIONS IN MANAGEMENT AND ADMINISTRATION**

The mechanisms that NIEHS uses for the submission, review and management of the SBRP and WETP grants and cooperative agreements directly affect the implementation of these programs. In FY2005, NIEHS introduced several innovative approaches to these processes, and additional enhancements are planned for FY2006 and FY2007. Specifically, with the intent of improving efficiencies and reducing costs of the review of applications, the scientific peer-review process was streamlined in FY2005. Previously the review involved several face-to-face meetings that included the participation of over 150 reviewers. This year the process was revised to incorporate two phases. In the first phase, approximately 250 reviewers submitted written critiques electronically. In the second phase, a small group of reviewers (less than 50) met face-to-face to discuss the on-line critiques and provide a final overall assessment of the technical merit of the applications. Initial estimates of the revised process indicate a savings of over 40% in actual cost, plus an increase in the efficiencies in the logistical planning and arrangements. In addition to modifications in the review process, other administrative and management procedures continue to be enhanced through the increased use of electronic technologies. For example, beginning in FY 2006 all SBIR/STTR applications will be submitted via Grants.gov, a government-wide standardized process for submitting electronic applications. By 2007 all SBRP and WETP competing and non-competing applications will be submitted electronically.

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Budget Authority by Activity  
 (dollars in thousands)

ACTIVITY	FY 2006	FY 2007	Change
	Appropriation Amount	Estimate Amount	Amount
<u>Superfund:</u>			
Basic Research Program	\$50,629	\$50,185	(\$444)
Worker Education and Training Program	28,479	28,229	(250)
Total	79,108	78,414	(694)

NATIONAL INSTITUTES OF HEALTH

National Institute of Environmental Health Sciences  
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Budget Authority by Object Class

OBJECT CLASSES		FY 2006 Appropriation	FY 2007 Estimate	Increase or Decrease
Personnel Compensation:				
11.1	Full-Time Permanent	\$820,000	\$855,000	\$35,000
11.3	Other than Full-Time Permanent	104,000	108,000	4,000
11.5	Other Personnel Compensation	13,000	13,000	0
11.8	Special Personnel Services Payments			
<b>11.9</b>	<b>Total Personnel Compensation</b>	<b>937,000</b>	<b>976,000</b>	<b>39,000</b>
12.1	Personnel Benefits	315,000	329,000	14,000
13.0	Benefits for Former Personnel			
<b>Subtotal, Pay Costs</b>		<b>1,252,000</b>	<b>1,305,000</b>	<b>53,000</b>
21.0	Travel & Transportation of Persons	100,000	105,000	5,000
22.0	Transportation of Things	11,000	11,000	0
23.1	Rental Payments to GSA			
23.2	Rental Payments to Others			
23.3	Communications, Utilities & Miscellaneous Charges	1,000	1,000	0
24.0	Printing & Reproduction	45,000	47,000	2,000
25.1	Consulting Services			
25.2	Other Services	1,800,000	1,777,000	(23,000)
25.3	Purchase of Goods & Services from Government Accounts	1,725,000	1,740,000	15,000
25.4	Operation & Maintenance of Facilities			
25.5	Research & Development Contracts			
25.6	Medical Care			
25.7	Operation & Maintenance of Equipment	9,000	9,000	0
25.8	Subsistence & Support of Persons			
<b>25.0</b>	<b>Subtotal, Other Contractual Services</b>	<b>3,534,000</b>	<b>3,526,000</b>	<b>(8,000)</b>
26.0	Supplies & Materials	19,000	19,000	0
31.0	Equipment	9,000	9,000	0
32.0	Land and Structures			
33.0	Investments & Loans			
41.0	Grants, Subsidies & Contributions	74,137,000	73,391,000	(746,000)
42.0	Insurance Claims & Indemnities			
43.0	Interest & Dividends			
44.0	Refunds			
<b>Subtotal, Non-Pay Costs</b>		<b>77,856,000</b>	<b>77,109,000</b>	<b>(747,000)</b>
<b>Total Budget Authority by Object</b>		<b>79,108,000</b>	<b>78,414,000</b>	<b>(694,000)</b>

Note: FTEs are included with the regular NIEHS appropriation.

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Authorizing Legislation

	CERCLA/ SARA	U.S. Code Citation	2006 Amount Authorized	2006 Estimate	2007 Amount Authorized	2007 Budget Estimate
Environmental Protection Agency's Hazardous Substance Superfund	CERCLA Section 311 (a)	42§9660 Section 9660(a)	a/	\$50,629,000	Indefinite	\$50,185,000
	SARA Section 126 (g)	42§9660 Section 9660a	a/	28,479,000	Indefinite	28,229,000
Total, Budget Authority				79,108,000		78,414,000

a/ Funding provided under the Department of Interior and Related Agencies Appropriations Act for Fiscal Year 2006 (P.L. 109-54)

Superfund-16