

**DEPARTMENT OF HEALTH AND HUMAN  
SERVICES**

**NATIONAL INSTITUTES OF HEALTH**

**National Institute of Environmental Health Sciences  
VA/HUD Appropriations  
Superfund-Related Activities**

**Superfund FY 2006 Congressional Justification**

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**NATIONAL INSTITUTES OF HEALTH**

**National Institute of Environmental Health Sciences  
VA/HUD 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, [\$79,842,000] *\$80,289,000*.

[Department of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriation Act, as enacted by the Consolidated Appropriations Act for Fiscal Year 2005].

**NATIONAL INSTITUTES OF HEALTH**

**National Institute of Environmental Health Sciences  
VA/HUD Appropriations  
Superfund-Related Activities**

**Amounts Available for Obligation**

<b>Source of Funding</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Appropriation</b>	<b>FY 2006 Estimate</b>
Appropriation	\$78,774,000	\$80,486,000	\$80,289,000
Enacted Rescission	(465,000)	(644,000)	---
			<b>80,289,000</b>
			<b>80,289,000</b>
Unobligated balance lapsing	(9,000)	---	---
			<b>80,289,000</b>

**Justification**

**National Institute of Environmental Health Sciences  
VA/HUD Appropriations  
Superfund - Related Activities**

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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.

Budget Authority:

<b>FY 2004 Actual</b>	<b>FY 2005 Appropriation</b>	<b>FY 2006 Estimate</b>	<b>Increase or Decrease</b>
\$78,309,000	\$79,842,000	\$80,289,000	\$447,000

FTEs are included with the regular NIEHS appropriation.

**INTRODUCTION**

Almost twenty-five years ago, in December 1980, Congress established the Superfund Program to clean up the most egregious hazardous waste sites. While many of these sites have been remediated, many others, including those identified as mega sites (sites where total costs are expected to exceed \$50 million), continue to plague the nation with formidable cleanup challenges. Such challenges include developing cost-effective remediation strategies that are protective of human health and the environment, as well as providing the nation with a workforce trained to address the complex needs of Superfund cleanups and chemical emergency response. The two National Institute of Environmental Health Sciences' (NIEHS) Superfund programs, the Superfund Basic Research Program (SBRP) and the Worker Education and Training Program (WETP), are committed to assisting other federal and state agencies as they address these challenges.

The SBRP and WETP were created in 1986, under the Superfund Amendments and Reauthorization Act, and are administered by the NIEHS, an institute of the National Institutes of Health (NIH). 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. |

These two Superfund programs utilize the successful competitive NIH structure to effectively administer and manage the grants that conduct the vital research and training activities. The SBRP supports university-based grants, Small Business Innovative Research (SBIR) grants, Small Business Technology Transfer (STTR) grants and exploratory grants. The WETP conducts training through a network of cooperative agreements with nonprofit organizations. The WETP program includes a successful minority worker training component and also supports SBIR/STTR grants.

### **Story of Discovery: Preventing Groundwater Contamination**

Background: Arsenic is considered a probable human lung, skin and bladder carcinogen. Interestingly, it is unique as it is the only known agent that causes lung cancer following systemic rather than inhalation exposure. Arsenic has also been associated with the possible increased risk of cardiovascular disease and reproductive problems. On October 31, 2001, the U.S. Environmental Protection Agency (U.S. EPA) Administrator Christie Todd Whitman announced the reduction of the Maximum Contaminant Level (MCL) of arsenic in drinking water from 50 ppb to 10 ppb. Public water systems must comply with the new standard beginning in January 2006. It is estimated that the reduction of the arsenic MCL will require additional treatment processes at approximately 4,000 of the U.S. community water systems. The treatment technologies likely to be used (e.g., precipitation, adsorption, ion exchange and membrane filtration) will result in the generation of a solid or liquid waste stream containing elevated levels of arsenic. Through funds made available by the SBRP, Dr. Wendell Ela of the University of

Arizona has shown that waste material from the drinking water treatment procedure has the potential to leach arsenic into groundwater after it has been sent to sanitary landfills.

**Advances** : Dr. Ela has assembled an innovative, interdisciplinary effort to assess the full environmental life cycle of arsenic in our nation's groundwater - from detecting the arsenic in the environment, through its removal from our drinking water supplies, to the fate of the residual material resulting from water supply treatment. With regard to this latter phase, understanding the fate of the residual material, Dr. Ela conducted an evaluation of the efficacy of the Toxic Characteristic Leaching Procedure (TCLP), the analytical test currently used by the U.S. EPA to simulate sanitary landfill contaminant leaching in waste samples. Based on TCLP results and U.S. EPA guidelines, waste samples are categorized as hazardous or non-hazardous. Dr. Ela determined that the TCLP underestimates the potential for arsenic leaching particularly under the conditions found at older landfills (e.g., alkaline, anaerobic reducing conditions). These findings indicate that the accepted analytical test, the TCLP, will not adequately predict the potential for arsenic to leach from sanitary landfills, which, in turn, may lead to the contamination of groundwater.

Dr. Ela has assessed alternative analytical methods that hold promise of being more effective than the TCLP in predicting the potential for groundwater contamination. Initial results indicate that there are other methods which appear to more accurately estimate the potential for arsenic to leach from landfills. In addition, Dr. Ela is also identifying the conditions that are likely to greatly reduce or preclude leaching from landfills. He is characterizing the residuals from different water treatment procedures, as well as characterizing the properties of landfills to determine which conditions are most likely to reduce or prevent leaching of arsenic. Using this increased understanding of the dynamics occurring in sanitary landfills, we will be better able to identify and appropriately mitigate any unanticipated negative impacts of the recently promulgated arsenic drinking water standard.

**Implications** : Dr. Ela's research findings have major potential implications for the nation's drinking water treatment, waste treatment and Superfund programs. His work, which bridges several environmental science disciplines, identifies a potential environmental threat of groundwater contamination by arsenic leaching from landfills and resulting in new Superfund sites. Should this occur, potentially as yet unknown numbers of people would be exposed to arsenic thus defeating the intent of lowering the MCL. The SBRP recognized the significance of Dr. Ela's work and immediately initiated a series of meetings with representatives of several offices of the U. S. EPA to identify strategies to translate these research findings into a *proactive* research and field intervention program. This has been done early enough for the scientific community to assess options for averting the threat before it occurs. This effort could serve as a model interagency collaboration in translating research to practice to protect public health.

*Source:*

Ghosh A, M. Mukiibi, W. Ela September, 2004. TCLP underestimates leaching of arsenic from solid residuals under landfill conditions. *Environmental Science & Technology*.

38(17):4677-4682.

### **Story of Discovery: Training Prepares Skilled Workers in Disaster Response**

**Background :** Workers in the skilled trades (e.g., construction workers) have historically provided essential support to first response operations after natural disasters, such as hurricanes, earthquakes, tornados and floods. More recently they have been called to respond to man-made disasters such as the terrorist attacks in Oklahoma City, the World Trade Center and the Pentagon. Within months of the September 11, 2001 attacks, with support from NIEHS, the Laborers-Associated General Contractors Education and Training Fund (L-AGC) conducted numerous courses for a wide range of law enforcement agencies in the Washington , DC metropolitan area, including the U.S. Capitol Police and the DC Metropolitan Police Department. The L-AGC customized its Hazardous Waste Worker Training Course, to make it applicable to the needs of law enforcement, by emphasizing hazard recognition and the proper use of personal protective equipment, particularly respirators. The training has also incorporated weapons of mass destruction (WMD) information with a primary focus on chemical and biological agents.

**Advances :** The U.S. Capitol Police Special Alert Team and the DC Metropolitan Police Alert Team - who were first on the scene after ricin, a highly toxic biological agent, was found in Senate Majority Leader Frist's office in January 2004 - received their hazardous response training from the L-AGC. The L-AGC has trained 260 law enforcement agents in the DC area since 2001. Of those trained, 180 were from the DC Metro Police Department. Sergeant Frank Edward of the Department explained that all the protocols developed by his department were based on the L-AGC information and training course. He stated, "Without the L-AGC, we would not have a foundation from which to go by. The training provided by the L-AGC has made our nation's capitol safer."

**Implication :** The L-AGC, in conjunction with the WETP, has launched a critical training program for the skilled workers who are called on to respond to bioterrorist events. The training has been structured to be delivered through a national network of seasoned trainers. This new national training program has already demonstrated, at the Senate building, that it provides the expertise necessary to respond if terrorists strike again.

## **SCIENCE ADVANCES**

### **Superfund Basic Research Program**

The SBRP is a dynamic robust research program contributing important knowledge in understanding exposures to hazardous substances as well as determining approaches to mitigate these exposures. The traditional metric for evaluating a basic research investment has been the publication of peer-reviewed papers; however, the SBRP, and

the NIEHS as a whole, has instilled a higher standard. We insist on the translation of basic science discoveries into new technologies and environmental remediation practices. Over the last five years, the SBRP has averaged greater than 500 publications per year, many in prestigious journals such as the *New England Journal of Medicine*, *Nature*, *Science*, *Environmental Science and Technology* and *The Journal of the American Medical Association*. By pursuing a proactive information and technology transfer strategy, the Program has successfully contributed to the resolution of pressing environmental and environmental health problems associated with hazardous waste sites. The examples that follow provide short synopses that highlight the benefits of a few of the program's research contributions, as well as examples that demonstrate how SBRP investigators are actively contributing to the decision-making processes.

*The SBRP contributes to understanding environmental exposures and the disease process:*

**Example:** A basic premise of environmental health research is that understanding key molecular mechanisms will elucidate disease pathways. One research advance in this area is a study that shows ***the first evidence of a molecular link between inflammation and cancer***. In this study, SBRP investigators have identified an enzyme in mice, IKK beta, that, when deactivated, significantly reduces the incidence of cancer. This enzyme is required for the activation of a protein, NF-kB, which elicits an inflammation response that results in cell proliferation and tumor growth. The studies demonstrate that by blocking the inflammatory response, the size and number of tumors in mouse models are significantly reduced.

**Example :** As described earlier in the Story of Discovery, chronic exposure to arsenic has many deleterious health effects. In recent health-related research, SBRP investigations suggest that arsenic may also have an effect on the proteins that regulate salt balance. Through this mechanism ***arsenic may contribute to the severity of cystic fibrosis*** (CF). CF patients carry a mutation in their CFTR gene that compromises its function. The researchers hypothesize that exposure of CF patients to arsenic in drinking water may further interfere with CFTR expression and function, thereby exacerbating disease symptoms. This is an example of a gene-environment interaction where a combination of a genetic predisposition and a subsequent environmental exposure leads to a more severe disease state.

**Example :** Researchers have found that exposure to a common Superfund contaminant, polychlorinated biphenyls (PCBs), can contribute to the pathology of cardiovascular diseases, such as atherosclerosis. Recent findings have shown that ***the antioxidant vitamin E can markedly interfere with the PCB- induced disease pathway***. Other studies have demonstrated that dietary flavonoids, found in tea and red wine, and quercetins, found in fruits and vegetables, can also modify PCB-induced toxicity. These plant-derived compounds possess antioxidant and anti-inflammatory properties, and appear to reduce the effects of PCBs in a dose-dependent manner. Based on these findings, dietary recommendations and nutritional interventions could be used to mitigate risks for populations likely to be exposed to PCBs.

*The SBRP contributes to the understanding of complex environmental conditions :*

**Example :** Innovations in sampling and analytical methods are needed for the characterization of sites contaminated with hazardous wastes. To this end, one group of SBRP investigators has pioneered the development of methods to fingerprint sediment samples. They measure the concentration and distribution of specific, naturally occurring elements in sediment cores to determine the age of the core and establish the rate of sedimentation. ***Comparison of core sections from different locations or different times allows the researchers to identify contaminant sources, pathways and rates of transport, as well as determine the rate of contaminant degradation within an ecosystem.*** This approach was used to study samples collected in the Hudson River and showed that PCBs were not degraded nearly as rapidly as predicted by laboratory studies. This work provided critical information to regulatory agencies responsible for identifying an appropriate remediation strategy for the Hudson River Superfund site. The use of core comparisons is applicable to hazardous waste sites across the country and has great potential to provide valuable input into efforts to address multi-source, multi-contaminant issues facing environmental and public health decision-makers.

**Example :** Trichloroethene (TCE), which is present at nearly one-half of all Superfund sites, is one of the nation's most prevalent groundwater pollutants. A team of ***SBRP scientists have developed a new field method to monitor TCE biodegradation in groundwater - - push-pull tests.*** The researchers inject ("push") a water-based test solution into a contaminated aquifer (i.e. a potential drinking water source) via a monitoring well and then extract ("pull") samples of the test solution/groundwater mixture from the same well. The "pulled" samples are analyzed for test and contaminant concentrations, which provide accurate measurements of the rates of TCE degradation. Information gained from the push-pull technique is critical to the improvement of risk assessment capabilities. It will allow researchers to evaluate concepts for new bioremediation technologies, monitor the effectiveness of on-going bioremediation efforts and to design bioremediation plans for TCE-contaminated sites.

*SBRP investigators are involved on a national and international level in the decision-making process :*

**Example :** A team of investigators at Columbia University, along with other university officials is advising ministers within the Bangladesh government with regard to arsenic in the country's drinking water. These SBRP investigators have been studying exposures in Bangladesh for many years and have established a trusted and credible relationship with the people of Bangladesh. Based on their expertise and commitment to reducing exposures to arsenic in this country the investigators have been tasked with ***developing a strategic plan to provide safe drinking water to the entire population of Bangladesh*** within five years. The plan proposes to work at the village level in all 86,000 villages and develop communal wells that tap deep water supplies (aquifers). The deep aquifers are considered to be a "temporary" solution (decades), until a major treated-surface water program can be developed. The Bangladesh ministers are now considering the plan proposed by the SBRP investigators. The World Bank, with input from Columbia

University, has also adopted a comparable plan and has now partially funded such an initiative.

**Example** : Within the United States, several investigators are actively serving on national panels established to provide the nation with expert advice on various environmental and environmental health issues. In this capacity, a Harvard SBRP investigator is serving on a National Research Council committee that is assessing the evolving scientific and technical issues related to the selection and use of computational and statistical models in the decision-making processes.

*SBRP investigators are contributing to the community-at-large in developing and applying important tools for understanding environmental contaminants:*

**Example** : SBRP investigators at the University of Arizona published a textbook, *Environmental Monitoring and Characterization*, describing the latest trends and technologies being applied in the field. This state-of-the-art text provides a realistic understanding of the benefits and shortcomings of existing technologies and identifies the most appropriate approaches in context of varying environmental conditions.

**Example** : Several SBRP researchers have developed geographical information systems (GIS) to facilitate the correlations between spacial distributions of environmental contaminants and disease incidence. In some cases this expertise is being applied at a community level to predict possible exposures. In an effort to predict lead exposures, mapping of county data is being used to identify likely areas of lead based paint. Health care professionals can then use the data from this model to target communities for lead screening. In another example, high school students have developed a geographic database to better understand and communicate toxic releases in a spacial context.

## **ADVANCES**

### **Worker Education and Training Program**

The WETP provides the nation with a workforce trained in the safe handling of hazardous materials and waste. This includes thousands of workers employed at Superfund sites. This vital training is conducted in all regions of the country and to all relevant target populations by a network of non-profit organizations. These organizations are committed to protecting workers and their communities by creating and delivering high-quality, peer-reviewed safety and health curricula. Because the response to hazardous materials emergencies is a critical part of this training required by federal regulation, the mission of the program has evolved since September 11, 2001. Since that day, with additional support provided by Congress, WETP grantees have collaborated with federal, state and local-level stakeholders to identify needs and promote the improvement and delivery of training programs for workers who will be expected to respond to Weapons of Mass Destruction (WMD) attacks. Thus, the WETP awardees are

a network for preparing and protecting workers, communities and the nation. A few examples of how this training is benefiting local communities follow.

*WETP remains committed to its core mission - Superfund cleanup:*

**Example:** Workers trained by the WETP-supported New England Consortium are often called upon to protect our environmental and economic resources. Such was the case during the oil spill at Buzzards Bay in Cape Cod - one of the state's best shell fishing areas, where quahogs, soft-shell clams, scallops and oysters are produced. The spill resulted in a mixture of heavy oil and seawater, most of which stayed on the surface and was washed ashore. ***Dozens of workers who had been through the Consortium's training were called on to respond to this environmental catastrophe***, where they manually removed the oily globs and tended to oiled birds, in defense of the local environment.

**Example:** During the past year, the WETP-supported Midwest Consortium alone conducted 112 courses for nearly 1,500 Superfund workers. The site workers who take the Consortium refresher training come for updates and refreshers in performing site characterization or hazard evaluation, sampling drums, decontaminating tools or equipment, wearing a respirator or self contained breathing apparatus at work or wearing a chemical protective suit at work. The demand for this practical training is demonstrated by the fact that these Midwestern workers typically are employed at sites such as National Priority List Superfund sites including Kerr-McGee, Indiana Army Ammunition Plant, Paducah Gaseous Diffusion Plant and Maxie Flats; Copperhill, Milan Army Ammunition Plant, Flur A Rock Hill Labs, McGhee Tyson; and various sites in Wisconsin.

*WETP provides health and safety training for workers and the public:*

**Example:** What does training really mean? Firefighters from Rock Hill, South Carolina, used the expertise gained from WETP courses to rescue a victim who had fallen into a 20-foot-deep vertical sewer. The initial rescuer was equipped with proper protective gear and lowered into the space to find the victim drowning in the raw sewage. The rescuer removed obstructions from the victim's airway and stabilized his spine. With the assistance of a second rescuer, the rescuers were able to secure the victim for safe removal from the space.

**Example:** What would a high school teacher do if he or she found a "spill" - - a spill that could easily be nitric acid, methanol, or one of many other hazardous chemicals commonly found in a science lab? Should the teacher evacuate the school? Open the windows? What actions should be taken until an emergency response team arrives? To provide answers to such questions, the ***International Chemical Workers Union Council, with funding provided by WETP, recently held a 4-day chemical emergency response-training course for New York teachers and laboratory specialists***. Utilizing a "hands-on" and problem-solving approach, the course covered environmental regulations, hazard recognition, appropriate response actions, a simulated nitric acid spill and an emergency

egress exercise. "Our school is safer now...I am grateful for this training..." was a common response from the participants.

***Example:*** When a 100 year old refinery implements a new safety training program that results in the best safety year in its history, ripples of interest can spread through the industry. The Paper, Allied, Chemical and Energy Workers Union (PACE), a WETP-supported training provider, worked with management at Chevron Texaco's Richmond Refinery in California to implement a new approach to integrated safety management called the Triangle of Prevention (TOP). TOP is a program that focuses on "near misses," those events that can act as a warning that something should be fixed before an injury occurs. At the Richmond refinery, ***TOP paid off - 3 million hours worked with just five recordable injuries and six consecutive months without any injury.***

*WETP provides training for national emergencies including terrorist events:*

***Example:*** In April 2004, the WETP, in conjunction with the Department of Homeland Security (DHS) and the Occupational Safety and Health Administration (OSHA), sponsored a national workshop entitled, "Training Partnerships for Prevention, Protection, and Preparedness: A Conference to Build Stronger Partnerships on Disaster Response Training." The workshop forged stronger ties among key federal agencies and helped to assure that disaster response training is included as an essential component in the soon-to-be-released National Response Plan from DHS.

***Example:*** WETP grantees have coordinated with the OSHA Training Institute (US DOL) to develop a 16-hour Disaster Site Worker Course for responders to national disasters. The course includes a mandatory respiratory hands-on exercise and has been launched nationally through the OSHA Education Centers. Through this course development process, OSHA and WETP have built an important partnership for improving the federal government's capacity to protect workers during emergency responses to large national disasters.

## INITIATIVES

In FY 2006, the SBRP will be entering the second year of its new grant cycle, when we will award six to ten new grants. The initiation of new grants is a refreshing period for the program, as past research investments are updated and new directions are added to our research investment portfolio. We anticipate that a mix of existing grantees and new applicants will be funded. The program's historical emphasis on multidisciplinary research that links and integrates biomedical research with related engineering, hydrogeologic and ecologic components will continue to be a fundamental component of these new grants. However, we also expect that each grantee will incorporate state-of-the-art methodologies and technologies into the research theme of its program, positioning it to contribute to increasing our capacity to make risk assessment and remediation decisions. Overall, each new program will be grounded in its accountability for: (1)

improving our understanding of the relationship between exposure and disease; (2) promoting the development of a range of primary prevention strategies; (3) translating innovations into lower cleanup costs; and (4) allowing for the refinement of human and ecological risk assessments.

A period of change is also scheduled for the WETP in 2006, where we will shift our efforts in order to address emerging training priorities for hazardous waste and chemical responders, as well as for other workers who are involved in the many components of the environmental remediation process. These workers are employed by a wide variety of industry sectors, workplaces and state and local government response agencies. Since September 11, 2001, requests for training curricula, hands-on classes, technical information and crisis intervention have increased. The program in 2006 will be positioned to direct resources to meet these challenges.

## **OTHER AREAS OF INTEREST**

Over the last several years, NIEHS has aggressively pursued partnerships with other federal agencies. Establishing partnerships with our counterparts improves our ability to coordinate in addressing societal needs, as well as ensures that available funds are used in the most efficient and effective manner. The SBRP has continued to maintain close ties with the U.S. EPA and the Agency for Toxic Substances and Disease Registry. One of the most noteworthy examples of a productive collaboration that builds on our strong relationship with the U.S. EPA is demonstrated in the previously described Story of Discovery on arsenic. When Dr. Ela, of the University of Arizona's SBRP, brought to our attention his finding that the commonly used test for detecting arsenic leachate in landfills may not be protective, we immediately understood the potential importance of the finding to the U.S. EPA. We quickly convened meetings with their staff and Dr. Ela. Discussions are continuing with the hopes of marshaling the emerging science to support the U.S. EPA in developing the most protective water treatment strategies and preventing the creation of future Superfund sites. This type and level of interaction defines an excellent model of directly and proactively channeling a basic research outcome to the decision-makers who can make direct use of the findings.

Likewise, in light of potential terrorist threats, WETP has established an excellent working relationship with other federal agencies and task forces to address the nation's needs in emergency response. Productive partnerships are in place with the Federal Emergency Management Agency, Department of Homeland Security (DHS), Occupational Safety and Health Administration (OSHA), the National Response Team and the EPA Labor Task Force. As a basic premise, WETP has achieved a national consensus that hazardous material training is fundamental to all WMD responses. Specifically, biological/anthrax training, as well as emergency response and other training needed for skilled support personnel responding to a WMD incident, has been created, and coordinated efforts are continuing to promote the need of protecting these workers.

In April 2004, WETP sponsored a national workshop, in conjunction with the DHS and OSHA titled "Training Partnerships for Prevention, Protection, and Preparedness: A Conference to Build Stronger Partnerships on Disaster Response Training." This conference forged stronger ties among key federal agencies. Speakers from the DHS, OSHA, EPA, and the U.S. Chemical Safety and Hazard Investigation Board gave their perspective on protecting the safety and health of the workers who this nation will call upon to respond to terrorist actions. The conference also examined the partnerships that current WETP grantees have forged within the public and private sectors and identified successful models to build upon these successes. The missions of the DHS, OSHA, and EPA are critical to this country's future and to the health and safety of workers and communities. The WETP seeks to assist these and other agencies in meeting their goals and obligations.

## **INNOVATIONS IN MANAGEMENT**

NIEHS recognizes its responsibility to ensure the productivity and beneficial outcomes of its research and worker training investment. As demonstrated by the program advances described above, there are many successes to their credit. However, specifically with regard to the SBRP, the full benefit of the research investment relies on a proactive approach in translating key findings into practical application. Over the past year, one approach that we have pursued is the establishment of a Research Translation Core in each of our multi-project grants, which we are scheduled to award in April 2005 and April 2006. The intent of this Core is to encourage the grantee to actively communicate important research outcomes to appropriate audiences and thereby ensure that the program's research is being applied to immediate environment and health issues. We are requiring that each applicant develop a work plan for (1) establishing relationships with other federal and state agencies; (2) conducting formal technology transfer for research products and technologies; and (3) ensuring that all other stakeholders have timely access to important research advances in a format most fitting for the audience. We selected this approach to ensure that the grantees meet our expectation of actively advancing their research findings.

At the NIEHS level, we are actively pursuing the effective translation of research findings to broader audiences through electronic technologies. One mode of communication, now standard to most programs, is disseminating information through web sites. In the fall of 2004, the SBRP released the fourth version of its web site (<http://www-apps.niehs.nih.gov/sbrp/>). This new site has an emphasis on clearly communicating the program's products and accomplishments. It provides easy access to all of the program's stakeholders, whether they are the lay public, academia, other federal agencies or industry, in a format that is understandable to general audiences. For more technical audiences, we have developed, in partnership with EPA, an interactive web-based seminar series that highlights select research advances. Through this medium, we are able to provide in-depth discussion of the specific research findings with environmental professionals. This two-way mode of interaction provides the

environmental professional with emerging scientific data and provides the investigator with important feedback on research direction.

Within the WETP, we have chosen to advance training activities through the development of on-line training technologies. During September 2004, under the SBIR and STTR programs, we made three SBIR Phase I awards, one SBIR Phase II award, and one STTR Phase I award. These awards were for the development of innovative "e-learning" products for worker safety and health training in hazardous waste and emergency response. The products will assist in the training of skilled support personnel, such as crane operators, in response to WMD events.

**NATIONAL INSTITUTES OF HEALTH**

**National Institute of Environmental Health Sciences  
VA/HUD Appropriations  
Superfund-Related Activities**

Budget Authority by Activity  
(dollars in thousands)

ACTIVITY	FY 2005 Appropriation	FY 2006 Estimate	Change
	Amount	Amount	Amount
Superfund:			
Basic Research Program	\$51,099	\$51,385	\$286
Worker Education and Training Program	28,743	28,904	161
			<b>447</b>

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**Budget Authority by Object Class**

OBJECT CLASSES		FY 2005 Appropriation	FY 2006 Estimate	Increase or Decrease
Personnel Compensation:				
11.1	Full-Time Permanent	\$709,000	\$739,000	\$30,000
11.3	Other than Full-Time Permanent	96,000	100,000	4,000
11.5	Other Personnel Compensation	14,000	15,000	1,000
11.8	Special Personnel Services Payments			
				<b>35,000</b>
12.1	Personnel Benefits	190,000	198,000	8,000
13.0	Benefits for Former Personnel			
				<b>43,000</b>
21.0	Travel & Transportation of Persons	101,000	105,000	4,000
22.0	Transportation of Things			
23.1	Rental Payments to GSA			
23.2	Rental Payments to Others	2,000	2,000	
23.3	Communications, Utilities & Miscellaneous Charges	3,000	4,000	1,000
24.0	Printing & Reproduction	42,000	44,000	2,000
25.1	Consulting Services			
25.2	Other Services	1,585,000	1,667,000	82,000
25.3	Purchase of Goods & Services from Government Accounts	1,691,000	1,790,000	99,000
25.4	Operation & Maintenance of Facilities			

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25.5	Research & Development Contracts			
25.6	Medical Care			
25.7	Operation & Maintenance of Equipment			
25.8	Subsistence & Support of Persons			
				<b>181,000</b>
26.0	Supplies & Materials	13,000	14,000	1,000
31.0	Equipment	21,000	22,000	1,000
32.0	Land and Structures			
33.0	Investments & Loans			
41.0	Grants, Subsidies & Contributions	75,375,000	75,589,000	214,000
42.0	Insurance Claims & Indemnities			
43.0	Interest & Dividends			
44.0	Refunds			
				<b>404,000</b>
				<b>447,000</b>

Note: FTEs are included with the regular NIEHS appropriation.

**NATIONAL INSTITUTES OF HEALTH**

**National Institute of Environmental Health Sciences  
VA/HUD Appropriations  
Superfund-Related Activities**

**Authorizing Legislation**

	<b>CERCLA/ SARA</b>	<b>U.S. Code Citation</b>	<b>2005 Amount Authorized</b>	<b>2005 Estimate</b>	<b>2006 Amount Authorized</b>	<b>2006 Budget Estimate</b>
Environmental Protection Agency's Hazardous Substance Superfund	CERCLA Section 311 (a)  SARA Section 126 (g)	42§9660 Section 9660(a)  42§9660 Section 9660a	<u>a/</u>  <u>a/</u>	\$51,099,000  28,743,000	Indefinite  Indefinite	\$51,385,000  28,904,000
						<b>80,289,000</b>

a/ Funding provided under the Department of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, as enacted by the Consolidated Appropriations Act for Fiscal Year 2005 (P.L. 108-447).