

## **Department of Homeland Security Opens Doors, Proposes \$1.0 Billion for R&D**

(This analysis revises earlier AAAS R&D Funding Updates from 2002 on the R&D portfolio and organizational structure of the DHS. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D by agency in the FY 2004 budget, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the “FY 2004 R&D” or the “What’s New” sections.)

### **Highlights**

- **The Department of Homeland Security (DHS) began full operations in March 2003** by consolidating nearly 180,000 federal employees from nearly two dozen agencies into a single cabinet-level department.
- The DHS would become one of the major funding sources of R&D. **The DHS R&D portfolio would total \$1.0 billion in the Bush Administration’s FY 2004 request, a 50 percent jump** from the \$669 million for comparable programs in FY 2003 and nearly quadruple the FY 2002 funding level.
- In FY 2003, DHS R&D would be mostly transfers of existing programs from DOD, DOE, DOT, and USDA, but **in FY 2004 a new Homeland Security Advanced Research Projects Agency (HSARPA) would begin to fund extramural R&D.**
- **The bioterrorism R&D portfolio would stay in the National Institutes of Health (NIH)**, but DHS will have a priority-setting role.

On March 1, the new Department of Homeland Security (DHS) took shape with the transfer of nearly 180,000 federal employees in nearly two dozen federal agencies to the new department. While the DHS officially came into existence on January 24 with a skeleton staff, this month marks the formal reorganization of existing government programs into a new cabinet-level department devoted to protecting the U.S. homeland against terrorist attacks, as specified in the law creating the DHS (Public Law 107-296, enacted November 25, 2002). Included under the new DHS umbrella are agencies such as the Coast Guard, the Customs Service, the Federal Emergency Management Agency, and the Immigration and Naturalization Service; all told, the DHS brings together \$36 billion worth of programs (FY 2004 request) in the largest reorganization of the federal government since the 1940s.

### **The DHS R&D Portfolio**

The President’s FY 2004 budget request, released February 3 just days after the formal creation of DHS, proposes a budget of \$36.2 billion for the new department in FY 2004. **Included in this total is an R&D portfolio of \$1.0 billion, up from \$669 million in FY 2003 for the various existing agency R&D programs that transferred to the new department on March 1 (see Table).** Not only would DHS quickly become one of the major R&D funding agencies, but it would enjoy by far the largest percentage increase in R&D among the R&D funding agencies. The DHS will have its own S&T policy infrastructure as well as a significant R&D portfolio of its own, drawing on transfers of programs from other agencies as well as newly created R&D programs and R&D performing organizations.

### **R&D in the Directorate of Science and Technology**

Nearly all of the DHS R&D programs will find their home in the Directorate of Science and Technology, one of four broad directorates in the new department. This Directorate will have responsibility for setting homeland-security R&D goals and priorities, coordinating homeland security R&D throughout the federal government, funding its own homeland security R&D, facilitating the transfer and deployment of technologies for homeland security, and advising the DHS Secretary on all scientific and technical matters.

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The Directorate will be led by a new **Under Secretary for Science and Technology**, who reports directly to the Secretary for Homeland Security (Tom Ridge). On February 14, President Bush officially nominated Charles McQueary to the post; he was confirmed in March and sworn in in April.

The S&T Directorate will take in 80 percent of the R&D in DHS (\$801 million out of \$1.0 billion; see Table). Except for a small amount for overhead costs (\$2 million), all of the \$803 million in funding in this directorate will be R&D, with the majority of funds for development and only about 10 percent each for basic research and applied research.

The FY 2004 DHS budget breaks down the directorate's R&D portfolio as follows: \$137 million for the development of radiological / nuclear countermeasures including detection systems and crisis-response technologies; \$365 million for the development of biological countermeasures to reduce the probability and impacts of a biological terrorist attack; \$65 million for chemical or explosives countermeasures to protect U.S. civilians against chemical attacks and explosive attacks (including aircraft explosives); \$90 million for threat and vulnerability assessments to develop technologies to analyze and evaluate threats, especially in information technologies; \$25 million for a standards program to develop test and evaluation criteria for homeland defense technologies; \$55 million for conventional missions R&D to develop technologies that could assist DHS units in better performing their existing, non-homeland security missions; and finally \$62 million for University Programs and the Emerging Threats and Rapid Prototyping Program, which will fund university research and basic research. As Congress begins writing the FY 2004 appropriations process, these priorities may change somewhat, and new priorities may be added.

The Directorate of S&T will rely on several existing agency programs to carry out this work. The Directorate is the new home of existing DOD, DOE, and USDA programs with an estimated budget of \$521 million in FY 2003. Nearly all of this funding comes from DOD's newly created National Bioweapons Defense Analysis Center, which will be responsible for nearly all of the \$365 million FY 2004 biological countermeasures portfolio. Although officially an existing program, it was created in the FY 2003 budget and barely exists right now; it will actually take shape this year under the auspices of DHS. From DOE, DHS takes in parts of the Lawrence Livermore National Laboratory (LLNL) such as its Advanced Scientific Computing Research program and some smaller programs. Among other DOE programs, the Biological and Environmental Research program's microbial pathogens activities, and the national security and nuclear smuggling and other programs within Nonproliferation & Verification R&D move to DHS. The Plum Island Animal Disease Center off Long Island, New York became part of DHS on June 1. Plum Island, with a budget of roughly \$20 million a year, was formerly funded through USDA's Agricultural Research Service (ARS); USDA will continue to fund some research at this facility even under the new DHS management.

DHS will also create a new R&D unit in the S&T directorate. In FY 2004, DHS will create a new **Homeland Security Advanced Research Projects Agency (HSARPA)**, modeled on the existing Defense Advanced Research Projects Agency (DARPA) in the Department of Defense (DOD). HSARPA will award extramural grants for basic and applied research to promote revolutionary changes in homeland security technologies; will develop and test potential homeland security technologies; and will accelerate or prototype the development of homeland security technologies to get them ready for deployment. HSARPA will therefore have responsibility for the entire spectrum of R&D from basic research all the way to prototyping new technology products, though initial indications are that the majority of HSARPA's activities will be in development and advanced prototyping to take new technologies all the way from the laboratory to deployment as actual products. As an example, the DHS FY 2004 budget suggests that HSARPA funding will "address immediate gaps in high-priority operational areas like protecting critical infrastructure and securing our nation's borders." HSARPA will begin life with a request for roughly \$350 million in FY 2004, but could expand up to and beyond the authorized level of \$500 million a year. Planning for the HSARPA is already underway this year; HSRAPA has begun hiring employees and establishing its processes for awarding R&D grants.

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In order to carry out its S&T tasks, the Directorate will create a new S&T infrastructure over the next few months to a year. The Under Secretary for S&T will act as scientific and technical adviser to the Secretary for Homeland Security and will be assisted by his or her own staff and will also have the ability to rely on numerous new institutions that will be created in the coming months. There will be a Homeland Security Advisory Committee consisting of 20 members appointed by the Under Secretary representing first responders, citizen groups, researchers, engineers, and businesses to provide science and technology advice to the Under Secretary. The DHS could also create a new federally funded research and development center (FFRDC), the Homeland Security Institute, to act as a think tank for risk analyses, simulations of threat scenarios, analyses of possible countermeasures, and strategic plans for counterterrorism technology development. DHS will also have the authority to contract with existing FFRDCs for independent analyses on homeland security-related issues.

There will also be an Office for National Laboratories that will coordinate DHS interactions with Department of Energy (DOE) national laboratories with expertise in homeland security; the Office can help DHS jointly sponsor R&D at the labs or can contract directly with the labs for R&D. The Office also has the authority to establish a semi-independent DHS headquarters laboratory within an existing federal laboratory, national lab, or FFRDC to supply scientific and technical knowledge to the DHS; the most recent indications are that DHS plans to do so with several national labs. In addition to Livermore, DHS has initial plans to establish labs-within-labs at Los Alamos, Sandia, Argonne, Brookhaven, Pacific Northwest, and Oak Ridge National Laboratories. DHS will also establish one or more university-based centers for homeland security. Current plans call for several university-based centers, though it is still uncertain how they will be selected or how much funding they will receive.

#### **R&D in Other DHS Directorates and Programs**

\$200 million, or a fifth, of the FY 2004 DHS R&D portfolio would remain outside the S&T Directorate (see Table).

- **Directorate of Border and Transportation Security:** This division is by far the largest of the four in terms of budget and personnel with a budget of \$18 billion in FY 2004, and will integrate federal government operations aimed at securing U.S. borders and transportation systems. It folds in the Immigration and Naturalization Service, the Customs Service, and the recently created Transportation Security Administration (TSA) within DOT. This directorate inherits TSA's R&D programs on aviation security, with an appropriation of \$110 million in FY 2003 rising to \$172 million in FY 2004. Current plans call for the S&T Directorate to gradually assume responsibility for these R&D activities over the next few years, including a management role for TSA laboratories.

- **Directorate for Information Analysis and Infrastructure Protection:** R&D is not a large part of this directorate, totaling just \$5 million in FY 2004 out of a total budget of \$829 million. The Department of Energy's (DOE) National Infrastructure Simulation and Analysis Center (NISAC) moves to DHS. NISAC is a partnership between two of DOE's national laboratories, Los Alamos and Sandia, both in New Mexico, and performs R&D to analyze critical infrastructures and their vulnerabilities, and simulate infrastructure or biological attack scenarios. Although R&D spending is a small part of this directorate's budget, most of its research and analysis needs on cybersecurity will be performed by the S&T Directorate and will also rely on research performed by other agencies such as Commerce's National Institute of Standards and Technology (NIST).

- **Directorate of Emergency Preparedness and Response:** This directorate will coordinate all federal assistance in response to disasters (including natural disasters) and domestic attacks, and folds in the Federal Emergency Management Agency (FEMA). There are no R&D programs within its \$6 billion budget in FY 2004, though the S&T Directorate could fund R&D to improve this directorate's ability to respond to disasters.

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- **Coast Guard:** The Coast Guard's \$23 million R&D portfolio becomes part of DHS. DHS takes over responsibility of the Coast Guard from DOT, but the Coast Guard will remain an independent entity under the DHS umbrella.

### **Other Homeland Security R&D Programs**

**Although DHS will be the focal point for homeland security-related R&D in the federal government, the majority of federal homeland security-related R&D will remain outside the department. Bioterrorism R&D programs currently within the National Institutes of Health (NIH) will stay there instead of transferring to DHS.** The NIH bioterrorism R&D portfolio for FY 2004 would be \$1.6 billion, mostly in the National Institute of Allergy and Infectious Diseases (NIAID), dwarfing the DHS R&D portfolio. The DHS legislation signed into law last November gives the DHS Secretary authority with the HHS Secretary to set priorities and strategy for human health-related research on terrorist threats, but no funding authority; research grants will continue to flow from NIH out of the NIH budget and be administered by NIH personnel using existing funding mechanisms, but research priorities will come from DHS. Other counterterrorism R&D programs in other agencies, notably EPA, DOD, and DOE, will continue to remain outside DHS. (For more on the NIH R&D portfolio, see the FY 2004 NIH R&D Funding Update on the AAAS R&D web site).

### **Next Steps and Possible Impacts**

Although the DHS officially has assumed responsibility for its wide-ranging portfolio, it will take years before the DHS reorganization is complete. In particular, it will take months before the new department has the leadership and capabilities to flesh out its S&T infrastructure.

In the meantime, Congress has struggled to reorganize its committee structure to handle the new department. The prospect of changing the composition of appropriation and authorization committees, and forcing some Members to relinquish political clout over the components of the department, initially left many political wonks skeptical that Congress would rise to the occasion. But the House moved fairly rapidly, perhaps a bit too quickly for the Senate.

The House Select Committee on Homeland Security, led by Rep. Christopher Cox (R-CA) and Rep. James Turner (D-TX) formally organized in February 2003. The committee has the authority to coordinate all House oversight of DHS and may also exercise exclusive legislative jurisdiction over the Homeland Security Act that established the department. The 50-member Select Committee is comprised of the chairs of relevant oversight committees, as well as a broad spectrum of Democratic members with a range of interests (*e.g.*, workers rights). The Senate, meanwhile, has not addressed the issue of whether or how to knit together the authorizing committees into a similar counterpart, and has left most oversight functions with the Government Affairs Committee that crafted the legislation.

The House also took the first step on the appropriations front with House Appropriations Chairman C. W. (Bill) Young (R-FL) stating his intention to create a Homeland Security subcommittee that will consolidate authority over DHS, which is still currently spread over nine subcommittees. In order to keep the total number of appropriations subcommittees at 13, Young proposed to combine the Transportation and Treasury/Postal subcommittees. Sen. Ted Stevens (R-AK), Chairman of the Senate Appropriations Committee, expressed displeasure that the House had made such a move without consulting their chamber. In the end, the Senate relented and agreed to create a new appropriations subcommittee structure mirroring the House version. Shifting the appropriations debate to a single subcommittee will significantly smooth the way for the FY 2004 budget deliberations, which are scheduled to get underway in late June with the drafting of the first-ever Homeland Security appropriations bill in the House, followed shortly by the Senate version.

With congressional oversight more or less in place, the difficult task of using that oversight to assist the department to flesh out its structure now comes into play. With a looming war, the S&T components will likely take second stage to more pressing issues such as border and transportation security and

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immigration. Two exceptions, however, are in the area of bioterrorism R&D (as noted above) and applied research and development into technologies that can be utilized to enhance border and transportation security.

While the research community lies in wait for funding opportunities in the R&D components of the new department, of heightened concern will be the role that DHS plays in balancing national security interests with academic freedom pursuits. Scientific research, especially in biotechnology fields, can be a double-edged sword and the knowledge gained can be used not only to create therapies but also to create weapons by those with intent to do harm.

Compounding this is the reality that science is a global enterprise that relies on the education of its workforce and the conduct of research in an open and internationally collaborative setting. How DHS plans to handle foreign students and visitors, sensitive but unclassified information, and the sharing of research results supported through its federal grants and contracts will be carefully scrutinized by the scientific community.

AAAS will continue to monitor the new DHS and its implications for federal R&D as it organizes, and will update this analysis as events warrant. (Further AAAS R&D Funding Updates on the AAAS R&D Web site will provide up-to-date information on R&D in FY 2004 appropriations.)

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Table II-20. Department of Homeland Security R&D

**Table II-20.** R&D in the Department of Homeland Security  
(budget authority in millions of dollars)

	FY 2002	FY 2003	FY 2004	Change FY 03-04	
	Actual	Estimate	Budget	Amount	Percent
Border & Transportation Security	95	110	<b>172</b>	62	56.1%
Emergency Preparedness	0	0	<b>0</b>	0	--
Information Analysis and Infra.	5	15	<b>5</b>	-10	-66.7%
Science and Technology	147	521	<b>801</b>	280	53.7%
Coast Guard	19	23	<b>23</b>	0	0.0%
<b>Total DHS R&amp;D</b>	266	669	<b>1,001</b>	332	49.6%

Source: OMB data for R&D for FY 2004 and agency supporting documents.

All figures are rounded to the nearest million. Changes calculated from unrounded figures.

**FY 2003 figures adjusted to reflect AAAS estimates of final FY 2003 appropriations.**

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