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Homeland Security and Counterterrorism Research and Development: Funding, Organization, and Oversight

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Summary

Following the 2001 terrorist attacks, planning and coordination mechanisms for research and development (R&D) to counter terrorism were developed in the White House's Office of Homeland Security, Office of Science and Technology Policy, and in individual agencies. Subsequently, P.L. 107-296, the Homeland Security Act (H.R. 5005), consolidated some R&D and coordination in the Department of Homeland Security (DHS). DHS's FY2003 R&D funding was requested at $761 million, and at $1 billion for FY2004. Funds have not yet been appropriated for FY2003. P.L. 107-305 (H.R. 3394) authorized new cybersecurity R&D to deal with terrorist attacks. Policy issues include implementation of the laws; coordination of priority-setting among DHS, other agencies, and existing R&D coordination bodies; and appropriations. This report will be updated as events warrant.

Funding for Federal Counterterrorism R&D

Federal funding for counterterrorism R&D has increased substantially in the last three years. The President's Office of Science and Technology (OSTP) estimated the FY2004 budget request for all federal R&D to combat terrorism at $3.2 billion.[1] The new Department of Homeland Security will manage about one-third of this budget. The $2.9 billion FY2003 budget request for counterterrorism R&D was about two and one-half times the amount appropriated for FY2002. According to the Office of Management and Budget's (OMB) *Annual Report to Congress on Combating Terrorism, FY2002*, 5.5% of the FY2003 budget request for combating terrorism was for R&D. **See Table 1.** Since

[1] See [http://www.ostp.gov/html/budget/2004/2004.html]. See also CRS Report RL31576, *Federal Research and Development Organization, Policy, and Funding for Counterterrorism;* and CRS Report RL31354, *Possible Impacts of Major Counter Terrorism Security Actions on Research, Development, and Higher Education.*

most FY2003 appropriations have not been enacted, the current continuing resolution continues funding at the FY2002 level.

Table 1. Research and Development (R&D) to Combat Terrorism, By Agency, FY2000-FY2003 (Request), Dollars in Millions

Agency	FY2000 Actual	FY2001 Actual	FY2002 Enacted	Emergency Response Fund, FY2002*	FY2003 Request
Agriculture (USDA)	$37.3	$51.7	$83.9	$91.3	$48.4
Commerce (DOC)	9.6	0	6.3	0	20.0
Energy (DOE)	59.7	66.2	64.9	19.0	99.8
Environmental Protection Agency (EPA)	unavailable	0	2.8	1.5	75.0
Health and Human Services (DHHS)	109.7	102.8	119.1	180.0	1,771.1 (*NIH, $1.75B; CDC, $40.0M; FDA, $50.0M*)
Justice (DOJ)	45.2	11.4	66.1	0	36.1
National Science Foundation	unavailable	7.0	7.0	0	27.0
National Security	190.0	298.9	385.5	11.0	767.2
Transportation (DOT)	50.7	50.2	58.3	64.0	59.3
Treasury	2.1	1.2	1.1	0	1.1
Total	**$511.3**	**$589.4**	**$795.2**	**$366.8**	**$2,905.2**

Sources: OMB, *Annual Report to Congress on Combating Terrorism, FY2001*, p. 27 for column labeled FY2000. The rest of the data is from the FY2002 OMB report, op. cit., p. 26.
*Funds were included in the FY2002 emergency supplemental appropriations law, P.L. 107-38

Highlights of the FY2003 R&D funding request were described in OMB's FY2002 terrorism report and are summarized below, beginning with the largest programs. The *Department of Health and Human Services (DHHS)*, with 60% of the FY2003 request, manages most of the federal civilian effort against bioterrorism. The FY2003 request for *national security* counterterrorism R&D, at 26% of the total, was largely for the *Department of Defense* (DOD), including the Defense Advanced Research Projects Agency (DARPA). The *Department of Energy's* (DOE) R&D includes R&D on security, materials, detection of toxic agents, genomic sequencing, DNA-based diagnostics, and microfabrication technologies. The *Environmental Protection Agency* (EPA) focuses on toxic materials research. The *Department of Agriculture's* (USDA) counterterrorism R&D focuses on plant and animal diseases. In the *Commerce Department*, R&D at the National Institute of Standards and Technology (NIST) deals with protecting information systems. There is also the *Technical Support Working Group (TSWG)*, a State Department/DOD group that coordinates interagency work on new technologies to combat terrorism (funding requested at $49 million for FY2003).

Creation of a Department of Homeland Security and Other Laws

On November 25, 2002, the President signed the Homeland Security Act of 2002, P.L. 107-296 (H.R. 5005), which created a Department of Homeland Security (DHS), and, as one of its four directorates, a Directorate on Science and Technology, headed by an Under Secretary. DHS estimates its R&D funding for FY2003 at $761 million. This has

not yet been appropriated. The FY2004 request is about $1 billion, with $803 million for the S&T directorate, mostly for development leading to technologies. **See Table 2**.

Table 2. DHS's R&D Funding

R&D Program or Unit	FY2003 Funding	*FY2004 Budget Categories Established by DHS*	*FY2004 Budget Request*
New Funding			
Nat'l. Bio-Weapons Defense. Analysis Cntr.	Presidential request at $420 million	*Biological Countermeasures and the new National Biodefense Analysis and Countermeasures Program*	*$365 million*
not applicable	not applicable	*Radiological/Nuclear Countermeasures*	*$137 million*
not applicable	not applicable	*Chemical/High Explosives Countermeasures*	*$65 million*
not applicable	not applicable	*Threat and Vulnerability Testing and Assessments*	*$90 million*
not applicable	not applicable	*Standards (for responder detection devices and equipment)*	*$25 million*
not applicable	not applicable	*Conventional Missions (RDT&E for border/transportation security and for emergency preparedness)*	*$55 million*
Homeland Security Institute	not available	*University Programs, Homeland Security Institute, rapid prototyping*	*$62 million*
University Center for Homeland Security	not available		
Contracts with other FFRDCs	not available		
HSARPA and Acceleration Fund for R&D	$500 million was authorized for the fund	*Advancing and Harnessing Science and Technology, includes HSARPA*	*($350 million)**
Total Requested for DHS S&T	***$561 million***	***Total Requested for DHS S&T***	***$803 million***
Funding Transferred From Other Agencies to DHS for Other R&D Activities			
Coast Guard R&D, from DOT	$24 million, + 10% of HSARPA's Acceleration Fund for R&D	Coast Guard R&D, from DOT	[$24 million estimated]
NISAC, from DOE	$20 million	NISAC, from DOE	[$20 million, estimated]
Other R&D, from DOE	Not available, previously estimated at $100 million	Other R&D, from DOE	not available
Plum Island, from USDA	$25 million	Plum Island, from USDA	[$25 million estimated]
TSA Aviation Security, from DOT	Not available, previously estimated at $130 million	*Included under "Border and Transportation Security"*	*$65 million*
DHS R&D Funding by Character of Work			
Basic Research in DHS	*$47 million*	*Basic Research in DHS*	*$47 million*
Applied Research in DHS	*$64 million*	*Applied Research in DHS*	*$126 million*
Development in DHS	*$537 million*	*Development in DHS*	*$663 million*
Facilities/Equipment in DHS	*$113 million*	*Facilities/Equipment in DHS*	*$165 million*
Grand Total Requested for DHS R&D	***$761 million***	***Grand Total Requested for DHS R&D***	***$1,001 million***

Source: Data in roman is estimated by CRS. Data in italics is from OMB, *Analytical Perspectives, Budget, FY2004*, pp. 183-184 or the DHS budget at [http://www.dhs.gov/dhspublic/display?theme=47&content=426]. Information in [ ] is based on conversations with OMB staff, 2/4/03. Totals may not add due to rounding and non-reported data. Interviews with OMB staff indicate that S&T funding is to be managed by the S&T Directorate, which might also manage some of the other transferred R&D funding. These funding details are subject to change as additional information is made available.

**This cross-cutting category consists of funding from programs above that were already counted in the $803 million total.*

Pursuant to P.L. 107-296, most of DHS's research, development, test, and evaluation (RDT&E) is under jurisdiction of the Under Secretary for Science and Technology (S&T), created by Title III. On January 10, 2003, Dr. Charles McQueary, an engineer, recently retired as President of General Dynamics Advanced Technology Systems, was nominated to this position. Among the Under Secretary's responsibilities are to: coordinate DHS's S&T missions; in consultation with other agencies, develop a strategic plan for federal civilian countermeasures to threats, including research; except for human health-related R&D, conduct and coordinate DHS's intramural and extramural R&D and coordinate with other federal agencies to carry out DHS R&D; establish national R&D priorities to prevent importation of chemical, biological, radiological, nuclear and related weapons and terrorist attacks; collaborate with DOE regarding using national laboratories; collaborate with the Secretaries of Agriculture and of Health and Human Services to identify select agents (but not to assume their responsibilities to enforce select agent rules); develop guidelines to disseminate DHS's research and transfer technology; and support U.S. S&T leadership. The law authorized a 20-member Homeland Security Science and Technology Advisory Committee to provide advice and recommend research. Members, appointed by the Under Secretary, who may use the National Research Council for assistance in selection of members, are to include representatives of emergency first-responders, citizen groups, economically disadvantaged communities, and experts in emergency response, research, engineering, business, and management consulting. To the extent possible, DHS's research is to be unclassified.

Title III transferred to DHS DOE programs in: chemical and biological security R&D; nuclear smuggling and proliferation detection; nuclear assessment and materials protection; biological and environmental research related to microbial pathogens; the Environmental Measurements Laboratory; and the advanced scientific computing research program and activities at Lawrence Livermore National Laboratory. DHS was mandated to incorporate a newly created National Bio-Weapons Defense Analysis Center and USDA's Plum Island Animal Disease Center, but USDA may continue to conduct R&D at the facility. Since the Coast Guard and Transportation Security Administration (TSA) were transferred to DHS, DHS has responsibility for their R&D. The DHS Secretary was given responsibility to collaborate with the DHHS Secretary in setting priorities for DHHS's human health-related R&D on "countermeasures for chemical, biological, radiological, and nuclear and other emerging terrorist threats."

Several analysis and evaluation units were authorized in DHS. Pursuant to Title III, the Under Secretary may establish or contract with one or more Federally Funded R&D Centers (FFRDC) for independent analysis of homeland security issues. A Homeland Security Advanced Research Projects Agency (HSARPA) will administer an Acceleration Fund, authorized at $500 million in FY 2003, to support homeland security RDT&E in businesses, FFRDCs, and universities. Extramural funding is to be competitive and merit-reviewed, but distributed to as many U.S. areas as practicable. One or more university-based centers for homeland security is required to be established and has to meet 15 specific criteria. Regarding intramural R&D, the Under Secretary may use any federal laboratory and may establish a headquarters laboratory. Selection criteria for a headquarters laboratory are to be determined in consultation with the National Academy of Sciences and other experts. DHS's Office for National Laboratories will "network" federal laboratories. A Homeland Security Institute FFRDC was authorized to: conduct risk analysis and policy research to determine vulnerabilities of, and alternative security approaches for, critical infrastructures; improve interoperability of tools for field operators and first responders; and test prototype technologies. The Institute may use the National Infrastructure Simulation and Analysis Center (NISAC),

which was transferred from DOE. A Technology Clearinghouse was authorized to support innovative solutions to enhance homeland security; it is to coordinate with TSWG.

Other parts of P.L. 107-296 also deal with R&D and science and technology. Among the functions of the Special Assistant to the Secretary, created by Sec. 102, is working with the private sector to develop innovative technologies for homeland security. The DHS Secretary, with the National Security Council and OSTP, is to establish uniform procedures to handle critical infrastructure information that is voluntarily submitted to the Government in good faith that will not be subject to disclosure under the Freedom of Information Act. The law codified an existing Office of Science and Technology in the National Institute of Justice and also authorized local technology centers to support training and RDT&E for equipment to counter terrorism (Sec. 232 and 235). The DHS Secretary was given special acquisition authority for basic, applied, and advanced R&D (Sec. 833). Sec. 1003 authorized NIST to conduct research on information security vulnerability and improvements. The DHS Under Secretary for Information Analysis and Infrastructure Protection was authorized to establish a "NET Guard,'' comprised of S&T volunteers, to assist in recovery from attacks on information systems (Sec. 224). OSTP's Director was mandated to report to Congress on effects of changes in visa procedures on the issuance of student visas (Sec. 428). According to Sec. 1712, OSTP's Director is to advise the President on homeland security, and to consult and cooperate with the Office of Homeland Security (see below).

In other legislation, P.L. 107-305, "The Cyber Security Research and Development Act," (H.R. 3394), authorized $903 million over five years for new research and training programs at the National Science Foundation and NIST for R&D and training to prevent and combat terrorist attacks on private and government computers.

Coordination Mechanisms Created Before Authorization of DHS

The Office of Science and Technology Policy (OSTP) is a statutory office in the Executive Office of the President (EOP); its Director advises the President and recommends federal R&D budgets. OSTP's Director has chaired the National Security Council's Preparedness Against Weapons of Mass Destruction R&D Subgroup (comprised of 16 agencies), which helps plan R&D relating to chemical, biological, nuclear, and radiological threats. OSTP manages the interagency National Science and Technology Council (NSTC), which created an Antiterrorism Task Force, and a Committee on Homeland and National Security to set R&D priorities for biological and chemical preparedness, nuclear and conventional explosives counter measures, border technologies, behavioral and educational issues, and so forth. OSTP's interagency work has focused on such topics as anthrax, regulations to restrict access to research using biological "select agents," and access to "sensitive but unclassified" scientific information. Homeland Security Presidential Directive-2, October 29, 2001, required OSTP to help develop policy for foreign student visas, access to "sensitive" courses, and advanced technology for border control. Pursuant to Executive Order 13231, OSTP works with the interagency President's Critical Infrastructure Board to recommend priorities and budgets for information security R&D. The OHS, in the EOP, created on October 8, 2001 by Executive Order 13228, did not list R&D among its responsibilities. The Homeland Security Council (HSC), also created then to coordinate homeland security activities, includes as members the heads of DoD and HHS, but not OSTP's Director or the Secretaries of Commerce and of Energy. The interagency HSC Policy Coordination Committees on R&D is headed by OSTP's assistant director for national security. Neither OSTP or OHS have budgetary authority over federal agencies.

The working group on bioterrorism prevention, preparedness, and response, established by Section 108 of P.L. 107-188, the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, consists of the DHHS and DOD Secretaries and other agency heads. One of its functions is to recommend "research on pathogens likely to be used in a biological threat or attack on the civilian population ...."

Critiques of Priority-Setting and Coordination Mechanisms Before Authorization of a Department of Homeland Security. Before passage of P.L. 107-296, some critics alleged that effective counterterrorism R&D required better coordination than the aforementioned groups could provide and that R&D priorities should reflect intelligence and threat estimates, as well as balance between long-range and short-term applied R&D to hasten deployment of technological responses. Some observers said that, to overcome fragmentation of R&D, core R&D should be consolidated in a homeland security agency (a position taken by the Administration in its *National Strategy for Homeland Security*, July 2002), or called for creation of a Secretary for Technology and a homeland security "think tank" (for example, the National Academies in *Making the Nation Safer: The Role of Science and Technology in Countering Terrorism*, June 2002). The Brookings Institution in *Assessing the Department of Homeland Security*, July 15, 2002, urged caution about R&D in DHS since federal homeland security R&D priorities were unclear.

Oversight Issues

The DHS is not yet fully operational. Many of its S&T activities are to be transferred to the new department by March 1, 2003, and others by June 1, 2003, according to the Administrations's reorganization plan issued on Nov. 25, 2002.

Coordination of federal homeland security R&D may be an issue. DHS's FY2004 R&D budget request includes about $800 million for new programs and $200 million for transferred programs; this is one-third of the federal budget request for R&D to combat terrorism. DHS's FY2003 appropriation has not yet been enacted (S&T was requested at $761 million). DHS has some authority to coordinate and help set priorities for other federal homeland security R&D, including human health-related R&D, through the Secretary and the Under Secretary. However, the heads of other agencies that handle R&D have no formal role in DHS's R&D priority-setting and coordination processes and their role relative to the DHS Secretary remains to be determined. DHS's effectiveness in planning and coordinating R&D may depend upon its ability to exert influence on other agencies and the quality of its interactions with existing counterterrorism coordination mechanisms in OSTP, NSTC, OHS, and interagency committees.

Additionally, there is the issue of whether DHS scientists will be housed together physically or will remain separate and operate essentially as a "virtual group." Physical proximity may promote mission effectiveness, but has the potential to separate DHS scientists from their counterparts in other agencies and the possibility of distorting scientific communication, which many say is essential to progress. There is also the issue of how Congress will conduct oversight of the DHS's multifaceted R&D activities, and, related to this, the level of appropriations that will be made available to fund the authorized programs. In addition, in response to criticism of P.L. 107-296, legislation has been introduced to revise eligibility criteria so that more institutions can compete for funding for DHS's academic-based homeland security center (S. 28, S. 41, H.J.Res. 2).