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Homeland Security and Counterterrorism Research and Development: Funding and Organization

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Summary

Questions concerning whether the government is adequately prepared to conduct research and development (R&D) to counter terrorism have focused on priority-setting, coordination, and the need to link R&D to terrorist threats. Since September 11, 2001, planning and coordination mechanisms have been developed in the White House's Office of Homeland Security (OHS) and Office of Science and Technology Policy (OSTP), and in individual agencies. P.L. 107-296, the Homeland Security Act of 2002 (H.R. 5005) consolidates some federal R&D programs in a new Department of Homeland Security (DHS). DHS's R&D funding responsibilities are estimated to total over \$800 million annually. Funds have not yet been appropriated for DHS for FY2003. P.L. 107-305 (H.R. 3394), funds new cybersecurity R&D to deal with terrorist attacks. Current policy issues focus on implementation, and deal with coordination of priority-setting between DHS, other agencies, and existing R&D coordination bodies; and mechanisms for congressional oversight of homeland security and counterterrorism R&D. This report will be updated as events warrant.

Funding for Federal Counterterrorism R&D

The \$3 billion FY2003 budget request for counterterrorism R&D is 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*,¹ about \$2.905 billion – or 5.5% of the request for combating terrorism for FY2003 – was for R&D to develop technologies to deter, prevent or mitigate terrorist acts. **See Table 1.** Since most FY2003 appropriations have not been enacted, the current

¹ OMB, *Annual Report to Congress on Combating Terrorism, FY2002*, June 24, 2002, http://www.whitehouse.gov/omb/legislative/combating_terrorism06-2002.pdf. See also: White House, *Securing the Homeland, Strengthening the Nation*, 2002 and CRS Report RL31576, *Federal Research and Development Organization, Policy, and Funding for Counterterrorism*.

continuing resolution continues funding at the FY2002 level for most R&D. See **Table 2** for an estimate of DHS R&D funding.

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

Agency	FY2000 Actual	FY2001 Actual	FY2002 Enacted	Emergency Response Fund	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	1,770.9 <i>NIH, \$1.75B; CDC, \$40M; FDA, \$50M</i>
Justice (DOJ)	45.2	11.4	66.1	0	36.1
National Science Foundation (NSF)	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	\$2,905.23

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.

The FY2003 funding request for agency programs was described in OMB's FY2002 terrorism report. Highlights are summarized below, beginning with the largest programs. The *Department of Health and Human Services (DHHS)*, with 60% of the FY2003 R&D funding 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)*, for war fighting applications and bioterrorism, and for the Defense Advanced Research Projects Agency. The *Technical Support Working Group (TSWG)*, a State Department/DOD group that identifies, prioritizes, and coordinates interagency and international R&D to combat terrorism and helps develop new technologies, would also receive \$49 million and some funding transferred from other agencies. The *Department of Energy's (DOE)* R&D includes federal laboratories' work dealing with improving security; materials used in weapons of mass destruction, especially nuclear weapons; anthrax detection/treatment for buildings; detection of airborne toxic agents, genomic sequencing, DNA-based diagnostics, and microfabrication technologies. The *Environmental Protection Agency's (EPA)* R&D focuses on "research for better techniques for cleaning up buildings contaminated by biological agents" The *Department of Agriculture's (USDA)*, Agricultural Research Service's counterterrorism R&D focuses on plant, pest, and animal diseases. In the *Commerce Department*, R&D at the National Institute of Standards and Technology (NIST) focuses on protecting information systems.

Development of Priority-setting and Coordination Mechanisms

Counterterrorism R&D involves most scientific and technical disciplines, and major areas of application, such as weaponry, communications, health, and transportation. Homeland security R&D is a subset of counterterrorism R&D, which also includes

defense and foreign countermeasures R&D. There are many links between R&D conducted to defend security at home and to defend security abroad. Legislative actions dealing with organization of R&D in the new DHS responded to critiques about the organization of domestic and foreign countermeasures R&D.

Coordination Mechanisms Before Authorization of DHS. Before authorization of the Department of Homeland Security (DHS) in P.L. 107-296, which is discussed below, counterterrorism R&D priority-setting and coordination depended upon interagency committees for some topics and informal consultations among program managers. The Office of Science and Technology Policy (OSTP) is a statutory office within the Executive Office of the President; its Director advises the President and recommends federal R&D budgets. OSTP's Director chairs the National Security Council's Preparedness Against Weapons of Mass Destruction R&D Subgroup (comprised of 16 agencies), which identifies gaps and duplication in R&D concerning chemical, biological, nuclear, and radiological threats. OSTP manages the interagency National Science and Technology Council (NSTC), which created an Antiterrorism Task Force, with working groups on rapid response, biological and chemical preparedness, nuclear and conventional explosives, "vital" infrastructure, and behavioral and educational issues. OSTP has worked on interagency tasks concerning anthrax detection/cleanup and the development of policy guidelines for agency 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 Office of Homeland Security (OHS), in the Executive Office of the President, created on October 8, 2001, by Executive Order 13228, did not list R&D among its major responsibilities. The Homeland Security Council (HSC), also created then, was to coordinate governmental homeland security activities. Its membership includes the heads of some agencies responsible for counterterrorism R&D, such as the Secretaries of Defense, Health and Human Services, and Transportation, but not the OSTP Director or the Secretaries of Commerce and of Energy. R&D is a topic of one of the interagency HSC Policy Coordination Committees; the committee head is OSTP's assistant director for national security. OSTP's Director has testified that he interacts closely with OHS. Neither OSTP or OHS have budgetary authority over federal agencies and departments.

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. Some critics contended that the conduct of effective counterterrorism R&D required better coordination than the aforementioned groups could provide, and said that R&D priorities should reflect intelligence and threat estimates, as well as balance between long-range and short-term applied research and development to hasten deployment of technological responses. For

instance, some observers said that fragmentation of R&D weakened national security and recommended that core R&D 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). Others, such as the Brookings Institution in a July 15, 2002 report, *Assessing the Department of Homeland Security*, urged caution about moving R&D to a DHS since federal homeland security R&D priorities were unclear.

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). The 107th Congress had considered previous versions of H.R. 5005 and other bills. With respect to R&D, the bills differed on how much authority DHS would have to set priorities for, and to fund, human-health terrorism-related R&D in the National Institutes of Health; the extent of DHS’s responsibility to coordinate federal agency counterterrorism R&D; the kinds of evaluation and analysis support units DHS should have; which R&D programs would be transferred to DHS; and whether the DHS secretary would be given biological select agent identification and monitoring responsibilities.

Most of the DHS’s research, development, test, and evaluation (RDT&E) is under the jurisdiction of the Under Secretary for Science and Technology (S&T), the head of the Directorate of Science and Technology (created by Title III). The Under Secretary’s R&D responsibilities are: to coordinate DHS’s S&T missions; in consultation with other agencies, to develop a strategic plan for federal civilian countermeasures to terrorist threats, including research; except for human health-related R&D, to conduct and coordinate intramural and extramural R&D to support DHS and to coordinate with other federal agencies to carry out the department’s R&D; to establish national R&D priorities to prevent importation of chemical, biological, radiological, nuclear and related weapons and terrorist attacks; to collaborate with the Secretary of Energy regarding using national laboratories; to collaborate with the Secretaries of Agriculture and Health and Human Services to identify select agents (but not to assume their responsibilities to enforce select agent rules); to develop guidelines to disseminate the department’s research findings and transfer technology; and to support U.S. S&T leadership. Among the functions of the Special Assistant to the Secretary, created by Sec. 102, are working with the private sector and other federally funded R&D entities to develop innovative approaches to produce technologies for homeland security.

Transferred to the DHS are 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 will 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 (Sec. 310). Since the Coast Guard and Transportation Security Administration (TSA) will be transferred to DHS, DHS is responsible for their R&D. Sec. 304 gives the Secretary of Homeland Security 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 R&D analysis, and evaluation units are created in DHS. Pursuant to Title III, the Under Secretary may establish or contract with one or more Federally Funded R&D Centers, (FFRDC) to provide independent analysis of homeland security issues. A Homeland Security Advanced Research Projects Agency (HSARPA), is created to administer an Acceleration Fund, authorized at \$500 million in FY 2003, to award funds to businesses, FFRDCs, and universities, for R&D and to test homeland security technologies. Not less than 10% of the fund annually is to support Coast Guard R&D, through FY2005. Extramural funding is to be competitive and merit-reviewed, but distributed to as many areas of the United States as practicable. One or more university-based centers for homeland security is to be established and have to meet 15 specific criteria. Regarding intramural R&D, the Under Secretary may use any federal laboratory and may establish a headquarters laboratory and additional laboratories. Selection criteria for a headquarters laboratory are to be determined in consultation with the National Academy of Sciences and other experts. A DHS Office for National Laboratories will "network" the use of federal laboratories. A Homeland Security Institute is created as an FFRDC to: conduct risk analysis and economic and policy research to determine vulnerabilities of critical infrastructures and to assess the costs of alternative security approaches; identify common standards to 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 is transferred from DOE, and other units. A Technology Clearinghouse will support innovative solutions to enhance homeland security; it is to coordinate with TSWG.

With respect to priority-setting, Title III of P.L. 107-296 authorizes a 20-member Homeland Security Science and Technology Advisory Committee to provide advice and recommend research areas important to security. Members, appointed by the Under Secretary, assisted by the National Research Council, shall include representatives of emergency first-responders, citizen groups, economically disadvantaged communities, and experts in emergency response, research, engineering, business, and management consulting. The Committee, which reports annually to Congress, will sunset after three years; its meetings are exempt from the Federal Advisory Committee Act.

There are other provisions. To the extent possible, DHS's research is to be unclassified (Sec. 306). The DHS Secretary, in consultation with the National Security Council and OSTP, is to establish uniform procedures for handling critical infrastructure information that is voluntarily submitted to the Government and which will not be subject to disclosure under the Freedom of Information Act. The law creates an Office of Science and Technology in the National Institute of Justice, in the Department of Justice, and also local technology centers to support training, and RDT&E for equipment to counter terrorism (Sec. 232 and 235). A pilot program gives the DHS Secretary special acquisition authority for basic, applied, and advanced R&D (Sec. 833). Homeland security R&D information may be exchanged with other countries (Sec. 879). Sec. 1003 authorizes NIST to conduct research on information security vulnerability and ways to improve it. The DHS Under Secretary for Information Analysis and Infrastructure Protection may establish a "NET Guard," comprised of S&T volunteers, to assist local communities to recover from attacks on information systems (Sec. 224). The OSTP Director is to report to Congress on the effect of changes in visa procedures on the issuance of student visas

(Sec. 428). According to Sec. 1712, homeland security is added to the list of topics on which the OSTP Director advises the President, and OHS is added to the list of agencies the OSTP Director consults and cooperates with. DHS's R&D budget authority is estimated at about \$800 million. **See Table 2.**

Table 2. Estimate of DHS's R&D Funding

R&D Program or Unit	FY2003 Funding Estimate
TSA Aviation Security, transferred from DOT	\$130 million
Coast Guard R&D, transferred from DOT	\$24 million, plus 10% of the Acceleration Fund for R&D
NISAC, transferred from DOE	\$20 million
Other R&D transferred from DOE	\$100 million
Plum Island, transferred from USDA	\$25 million
Nat'l. Bio-Weapons Def. Analysis Cntr.	Unknown, requested by the President at \$420 million; probably will be less
HSARPA and Acceleration Fund for R&D	Minimum of \$500 million for the fund
Homeland Security Institute	Unknown
University Center for Homeland Security	Unknown
Contracts with other FFRDCs	Unknown

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.

Oversight Issues

Several issues may surface in the 108th Congress relating to homeland security R&D. One is coordination. DHS's R&D budget authority (including the \$500 million Acceleration Fund) is estimated to total over \$800 million (or more if the new Bio-Weapons Analysis Center is funded). About \$300 million is for existing transferred programs; no FY2003 funds have been appropriated. DHS does not have direct authority over defense, national security, or health R&D, the largest components of requested FY2003 counterterrorism funding. However, it has some authority to coordinate and help set priorities for federal agency R&D relating to homeland security, including human health-related R&D, through the Secretary and the Under Secretary. Other federal agency heads have no formal role in DHS's R&D priority-setting and coordination processes and their actual role relative to the DHS secretary remains to be determined. DHS's effectiveness in coordinating R&D outside the agency may depend upon its ability to exert influence on other agencies and the quality of its interactions with existing coordination mechanisms, such as those in OSTP, NSTC, OHS, and other interagency committees. Another issue is whether scientists who will work for DHS (from federal laboratories and in analysis/evaluation units) will be housed together physically or will stay separate and operate essentially as a "virtual group." While physical proximity may promote mission effectiveness, it has the potential to separate DHS scientists from their counterparts in other agencies and the possibility of distorting scientific communications which many maintain are essential to progress. A third issue is how Congress will conduct oversight of the DHS's multifaceted R&D activities, whether in one oversight committee or by splitting jurisdiction among existing committees, and, related to this, is the question of the level of appropriations that will be made available to fund the authorized programs.