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Counterterrorism Research and Development: Funding, Priority-setting, and Coordination

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Summary

Even before the 2001 terrorist attacks, some experts questioned whether the government was prepared to conduct and use research and development (R&D) to counter terrorism. They cited inadequate planning and priority-setting and an inability to target cross-cutting priorities and eliminate unnecessary duplication. Since September 11, funding for counterterrorism R&D has doubled to about $3 billion requested for FY2003 and planning and coordination mechanisms are being developed. The President's proposal, as passed by the House in H.R. 5005, would consolidate some federal R&D programs in a Department of Homeland Security. S. 2794 is the Senate version of the President's original proposal. Alternate legislation would include more R&D in a department is (H.R. 4660 and S. 2452). The basic R&D issues concern the adequacy of planning/coordination mechanisms, including those in the Office of Science and Technology Policy and Office of Homeland Security; which counterterrorism R&D should be transferred to a new department; and how other R&D counterterrorism activities that are not transferred should be coordinated.

Funding Trends in the FY2000-FY2003 Period

The $3 billion FY2003 budget request for counterterrorism R&D is about double 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 total requested for combating terrorism for FY2003 – was requested for R&D to develop technologies to deter, prevent or mitigate terrorist acts. This is an increase over FY2002, when appropriated funds, combined with the Emergency Response Fund, totaled $36.468 billion, with R&D funding at $1.162 billion, or 3.2% of the total. **See Table 1.**

[1] OMB, *Annual Report to Congress on Combating Terrorism, FY2002*, June 24, 2002, available at [http://www.whitehouse.gov/omb/legislative/combating_terrorism06-2002.pdf]. See also: President George W. Bush, *Securing the Homeland, Strengthening the Nation*, 2002.

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	$37.3	$51.7	$83.9	$91.3	$48.4
Commerce	9.6	0	6.3	0	20.0
Energy	59.7	66.2	64.9	19.0	99.8
Environmental Protection Agency	unavailable	0	2.8	1.5	75.0
Health and Human Services	109.7	102.8	119.1	180.0	1,770.9 *NIH, $1.75B; CDC, $40M; FDA, $50M*
Justice	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	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 *Department of Health and Human Services (DHHS)*, with 60% of the total, the largest supporter of federal counterterrorism R&D, indicates the Administration's emphasis on bioterrorism. In previous years the largest recipient of such funding was the national security community. DHHS requested about $1.8 billion in FY2003 for the National Institutes of Health (NIH) for "vaccines and ... medicines for protection against bioterrorism" (OMB, pp. 17-18). FY2003 funding for counterterrorism R&D by the *national security community*, at 26% of the total, would go largely to the Defense Advanced Research Projects Agency in the Department of Defense (DOD), for war fighting applications and bioterrorism (OMB, p. 27). The request included $420 million for the Biological Counterterrorism Research Program (in part for a Center for Biological Counterterrorism at Fort Detrick), and the Biological Defense Homeland Security Support Program, for detection of bioterror events in urban areas (OMB, p.27). The Technical Support Working Group (TSWG), a State Department/DOD interagency forum that identifies, prioritizes, and coordinates interagency and international R&D for combating terrorism and conducts applied R&D to develop new technologies, would receive $49 million. TSWG also receives funding transferred from other agencies (OMB, pp. 27-28).

The *Environmental Protection Agency*'s counterterrorism R&D would be increased for "research for better techniques for cleaning up buildings contaminated by biological agents and for work on the effects of World Trade Center dust contaminants on human health ...." The *Department of Energy's* (DOE) counterterrorism R&D includes genomic sequencing, DNA-based diagnostics, advanced modeling and simulation, and microfabrication technologies, and the National Infrastructure Simulation and Analysis Center. DOE-supported R&D at federal laboratories focuses on improving security; materials used in weapons of mass destruction, especially nuclear weapons; assessing

damage at the World Trade Center site; anthrax detection/treatment for buildings; and detection of toxic agents in the air. DOE's National Nuclear Security Administration R&D focuses on nuclear, chemical, and biological detection and technologies.

The *Department of Agriculture's* Agricultural Research Service conducts counterterrorism-related research into 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. *National Science Foundation (NSF)* counterterrorism R&D focuses on infectious diseases and microbial genome sequencing related to bioterrorism; critical infrastructure protection, including $204 million for basic research on encryption technologies, energy processing systems, computing reliability, remediation robotics and modeling and simulation; Disaster Response Research Teams; and a Cybercorps Scholarship program for graduate students studying information technology.

Current Situation

Organization of the government for counterterrorism R&D priority setting and coordination is a prominent issue. Priority-setting and coordination of federally funded R&D depends on informal consultations among program managers and the use of interagency committees. Some of these committees are under the auspices of the interagency National Science and Technology Council (NSTC), which the Office of Science and Technology Policy (OSTP) manages. NSTC's Antiterrorism Task Force has working groups on rapid response, biological and chemical preparedness, nuclear and conventional explosives, "vital" infrastructure, and behavioral and educational issues. OSTP is a statutory office within the Executive Office of the President; its Director advises the President and the organization is mandated to recommend federal R&D budgets. OSTP's Director chairs the National Security Council's (NSC) Preparedness Against Weapons of Mass Destruction R&D Subgroup, which identifies gaps and duplication in R&D concerning chemical, biological, nuclear, and radiological threats. 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." 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. On May 7, 2002, the White House proposed creating an Interagency Panel on Advanced Science Security to develop guidelines to screen foreign students and scientists who apply for visas to study sensitive subjects at U.S. universities. 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. OSTP has obtained advice on counterterrorism R&D from its own federally funded R&D center and from the National Academy of Sciences, which published *Making the Nation Safer: The Role of Science and Technology in Countering Terrorism*, June 2002. The report said that fragmentation in R&D can result in missed opportunities and an inability to develop effective cross-agency programs; that there are no clear agency homes for areas requiring R&D, such as detection of agricultural pathogens and cybersecurity; that an Under Secretary for Technology be included in a homeland security department; and that a Homeland Security Institute for independent analysis and evaluation be created in the department.

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, acts to ensure coordination of governmental homeland security activities. Its core 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.

In addition to OSTP and OHS, other mechanisms coordinate some counterterrorism R&D. TSWG selects and funds applied R&D for counterterrorism technologies useful to more than one agency. Interagency coordination may develop under the new 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. The group includes the DHHS and DOD secretaries and other agency heads and is charged to recommend research on pathogens that terrorists could use.

Notwithstanding its responsibilities to help agencies set complementary and coordinated priorities, OSTP does not have budgetary authority over federal agencies and departments. OHS lacks budgetary authority, and there is uncertainty about its ability to convince agencies to take recommended actions.

Policy Analysis

Counterterrorism R&D program and policy decisions respond to the requisites of both security and the conduct of science. Given the character of today's terrorist threats, homeland security R&D involves virtually every scientific and technical discipline, and major areas of application, such as weaponry, communications, health, and transportation. The conduct of effective counterterrorism R&D compels attention to the balance between long-range and short-term applied research and to the need to develop, test, procure, and deploy technological responses. Some observers say that fragmentation of counterterrorism R&D programs and policies imperils the nation's security and requires that core R&D be consolidated in a homeland security department. For example, the Administration's *National Strategy for Homeland Security*, released in July 2002, concluded, "To date, research and development activities in support of homeland security have been underfunded, evolutionary, short-term in nature, fragmented across too many departments, and heavily reliant on spin-offs from the national security and medical sectors. Many of the involved agencies have little frontline knowledge of homeland security and little or no experience in technology acquisition and supporting research" (p. 52). Others, such as the Brookings Institution in a July 15, 2002 report, *Assessing the Department of Homeland Security*, urge caution about moving R&D to a new department. Some observers maintain that dividing R&D programs into security and civilian lines of effort risks reducing communications among researchers and jeopardizing the civilian components of such programs. They contend that advances in security-related R&D may depend upon developments in unrelated R&D and that classification of some R&D could inhibit progress. Other issues include how to coordinate counterterrorism R&D left outside a new department with R&D that would be conducted in such an agency, how to encourage industrial R&D, and how to balance the open conduct of science with a need to limit information exchange for some R&D topics.

Options and Implications for U.S. Policy

The existing counterterrorism R&D structure is being superceded. OHS's *National Strategy for Homeland Security* report listed 11 major initiatives for science and technology. The House passed H.R. 5005, an amended version of the President's proposal to create a Department of Homeland Security (DHS), with specific responsibilities for specific R&D areas and for other "emerging threats." The Senate is considering S. 2452, an alternative that would establish a department with broader counterterrorism R&D functions. Creation of a new department could involve realigned or new budget expenditures and transfer of some program responsibilities among agencies. That option might give a single agency budget authority to orchestrate and budget homeland security R&D – authority which neither the OSTP Director nor the OHS Director have. However, a DHS would compete with other agencies for funding, including those whose counterterrorism R&D functions are not transferred to a new department. A new DHS's relationships to OSTP and OHS and other interagency bodies would need to be clarified.

Role of Congress/Legislation

H.R. 5005, as passed by the House on July 26, 2002 (H.Rept. 107-609). would create a Department of Homeland Security (DHS). It appears that the existing OHS would continue; it is not clear if the existing OHS Homeland Security Council Policy Coordination Committee on R&D would continue. The proposed DHS would have four operational units. Most of DHS's research, development, test, and evaluation (RDT&E) functions would be under the jurisdiction of the Under Secretary for Science and Technology (created by Title III), who would have responsibility to fund R&D and develop countermeasures against chemical, biological, radiological, and nuclear weapons and other "emerging terrorist" threats (but not human health-related R&D); to establish a government-wide counterterrorism R&D strategy; and to coordinate with other agencies to eliminate duplication and fill unmet needs. Agencies which would have selected R&D programs transferred to DHS are DOE, DOD, the Agriculture Department, as well as R&D performed by the Coast Guard and the Transportation Security Administration, two agencies transferred intact to DHS. The DHHS Secretary, in collaboration with the DHS Secretary would set priorities for certain DHHS bioterrorism-related R&D functions. The DHS Under Secretary for Science and Technology could establish a Federally-funded Research and Development Center (FFRDC) for independent analysis and a university-based center for homeland security. The bill would create a Homeland Security Science and Technology Coordination Council to establish R&D priorities within DHS; a Homeland Security Institute to, among other things, evaluate the effectiveness of security measures; a Homeland Security Science and Technology Advisory Committee; a Technology Clearinghouse to encourage innovative solutions and screen proposals in coordination with TSWG; and a science and technology national "Net Guard," to help information systems recover after attack (Sec. 213). The Under Secretary for Science and Technology could use the expertise of any federal laboratory and could select a "headquarters" laboratory. The DHS Secretary would have special authority to waive specific procurement laws in R&D pilot projects (Sec. 731); the ability to implement a set of liability protections for manufacturers of innovative anti-terrorism technologies (Sec. 751); and authority over DHHS strategic stockpile functions as defined in P.L. 107-188 (Sec. 905). The bill would establish a statutory relationship between the OSTP and the

OHS (Sec. 910). OHS Director Ridge testified on July 15 that the Administration would support "re-framing"to add an Undersecretary for Science and Technology (the provision was not in Administration's original bill). The Congressional Budget Office estimated that DHS's newly authorized R&D activities would cost about $300 million annually. Already authorized R&D to be transferred to DHS could total almost $300 million.

A Department of National Homeland Security (DNHS), including a Directorate of Science and Technology was proposed in S. 2452 (Lieberman), which had been reported favorably in May. A substitute bill was filed and agreed to on July 25, 2002, by the Committee on Governmental Affairs. The bill is under consideration in the Senate. The Under Secretary for Science and Technology created by the bill (section 135) would have somewhat broader responsibilities than in H.R. 5005 to establish a science and technology strategy and to coordinate with other agencies, including OSTP; to develop "technology roadmaps" to achieve goals; and to establish a National Emergency Technology Guard. Selected agency functions would be transferred to the new DNHS, which would also set priorities for, and manage in collaboration with DHHS, certain DHHS bioterrorism countermeasures R&D under joint agreements between DNHS and DHHS. The bill would create a Science and Technology Council, composed of federal agency officials, to set R&D priorities and coordinate government programs. The Under Secretary would have authority to carry out RDT&E and some prototype projects; DOE's national laboratories could be used to support departmental missions. An "Acceleration Fund for Research and Development of Homeland Security Technologies," would be authorized at $200 million for FY2003, with interagency groups to establish its priorities. The bill would establish a Homeland Security Science and Technology Council, under the NSTC. To encourage technology development and deployment, the bill would create a Security Advanced Research Projects Agency (SARPA), an Office on Risk Analysis and Assessment, an Office of Technology Evaluation and Transition, and offices to deal with federal laboratory functions transferred to the new DNHS. The Under Secretary of the Directorate of Emergency Preparedness and Response would be given responsibility for "select agent" registration activities (which would affect the conduct of R&D in academic and other nongovernmental laboratories) and for DHHS strategic stockpile functions, both mandated by P.L. 107-188 (Sec. 134). Pursuant to Sec. 133, the R&D intensive Computer Security Division of NIST would be transferred to the Directorate of Critical Infrastructure Protection. R&D funding in the DNHS could total about $650 million or more. The House counterpart to the bill as originally introduced is H.R. 4660.

Resources

CRS Report RL31576. *Federal Research and Development Organization, Policy, and Funding for Counterterrorism*.

CRS Report RL30153. *Critical Infrastructures: Background, Policy, and Implementation*.

CRS Report RL31354. *Possible Impacts of Major Counterterrorism Security action son Research, Development, and Higher Education.*

"Department of Energy Programs in the President's Proposal for a Department of Homeland Security (H.R. 5005)," CRS general distribution memo by Daniel Morgan, July 5, 2002.