

DHS Receives Modest R&D Boost in 2006

AAAS R&D Funding Update on R&D in FY 2006 DHS Final Appropriations

Highlights

- **The final Department of Homeland Security (DHS) budget for FY 2006 provides \$1.3 billion for R&D, a 3.1 percent increase** that slows recent growth in the DHS R&D portfolio (see Table).
- **R&D to develop countermeasures against weapons of mass destruction continue to dominate the DHS R&D portfolio.** The final DHS budget contains \$210 million for radiological and nuclear countermeasures R&D (nearly double 2005 funding), including a new Domestic Nuclear Detection Office (DNDO). The largest portfolio continues to be biological countermeasures with \$376 million.
- There are large increases for R&D on more conventional threats, including \$44 million for explosive countermeasures (more than double 2005 funding), \$109 million for R&D to counter portable anti-aircraft missiles (up 79 percent), and \$40 million for critical infrastructure protection R&D.
- **To offset increases in priority areas, there are cuts in other areas of the DHS R&D portfolio,** including threat and vulnerability assessments (down 35 percent to \$43 million), standards development (down 13 percent to \$35 million), rapid prototyping (down more than half to \$35 million), cybersecurity, and aviation security.

DHS R&D in FY 2006 Final Appropriations: Modest Boost to \$1.3 Billion

On October 18, President Bush signed into law the final version of the FY 2006 Homeland Security (HS) appropriations bill (HR 2360). But in December, appropriators included a 1 percent across-the-board cut for all discretionary programs, including homeland security programs, in the final Defense bill. Together, the bills provide **\$1.3 billion for DHS R&D in FY 2006, an increase of 3.1 percent or \$38 million** that is more substantial than most other R&D agencies received in tough budgetary times, but is well off the double-digit percentage gains of past years (see Table).

Although congressional appropriators stuck to their earlier proposals for \$30.8 billion in discretionary funding for DHS in FY 2006, an increase of \$1.4 billion (excluding disaster relief supplementals and Bioshield funding), they shifted some additional money toward R&D programs in House-Senate conference, resulting in a final 3.1 percent boost in DHS R&D compared to the 1.9 percent Senate and 1.3 percent House increases from June. But the final appropriation is a slight cut from DHS' own 3.6 percent requested increase. (For details of the President's request for DHS R&D, please see Chapter 12 of *AAAS Report XXX: R&D FY 2006* or the February 25 DHS R&D Funding Update.)

R&D in the Directorate of Science and Technology

In FY 2006, nearly all DHS R&D programs have their home in the **Directorate of Science and Technology (S&T)**. This Directorate has responsibility for setting homeland-security R&D goals and priorities, coordinating homeland security R&D throughout the federal government, funding 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. DHS proposed to finish consolidating all R&D activities within the S&T Directorate, but Congress keeps Coast Guard (CG) R&D separate within the Coast Guard appropriation at \$18 million. But Transportation Security Administration (TSA) R&D, which

like the Coast Guard transferred to DHS from the Department of Transportation (DOT) in 2003, moves to the S&T Directorate in 2006 (see Table).

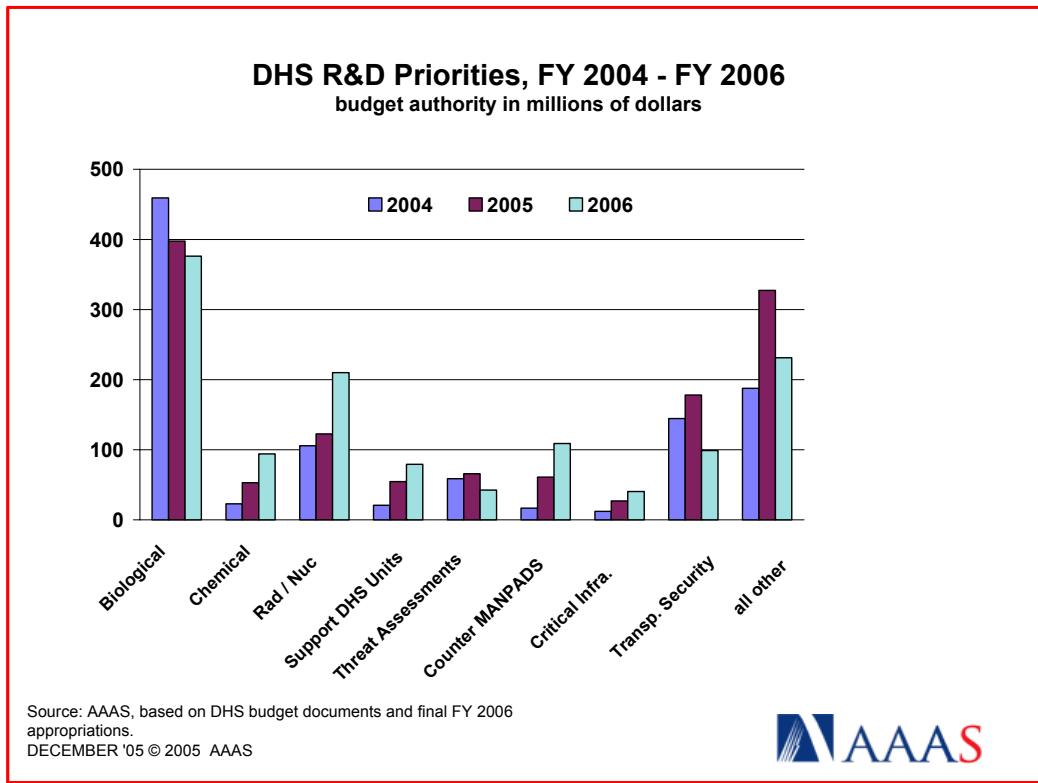


Figure 1. (click on the image for PDF)

There are dramatic shifts in DHS R&D priorities in 2006 (see Figure 1). The top priorities in the DHS R&D portfolio are clearly radiological and nuclear countermeasures (increasing 71 percent to \$210 million in FY 2006), including the establishment of a Domestic Nuclear Detection Office (DNDO); chemical countermeasures (climbing 78 percent to \$94 million); explosives countermeasures (up 121 percent to \$44 million) and R&D to counter portable anti-aircraft missiles (up 79 percent to \$109 million).

Within radiological and nuclear countermeasures, nearly all the funds go for \$191 million in start-up money for R&D in the new Domestic Nuclear Detection Office (DNDO), down from the \$227 million request. The DNDO will develop, acquire, and support a domestic system to detect and report terrorist attempts to transport or use radiological or nuclear materials. DNDO will be staffed with a multi-agency team and will coordinate its efforts with the intelligence community, and hopes to fund R&D, develop new technologies, and transition these technologies to field use. An additional \$125 million in non-R&D procurement funds for radiation portal monitors at the nation’s ports of entry brings the total DNDO budget to \$315 million. The large DNDO appropriation comes as something of a surprise, since both the House and the Senate had expressed doubt as to whether the new office could realistically spend such large sums in its first year. But these doubts appear to have been resolved in appropriators’ minds, although the final HS bill retains language making half of the funding conditional on DHS submitting for General Accountability Office (GAO) review a multi-year budget, staffing, and organizational plan that clearly outlines how DHS proposes to spend the new funds.

The explosives countermeasures portfolio more than doubles from \$20 million to \$44 million. The final appropriation allocates \$30 million specifically for three air cargo screening pilot projects using new detection technologies.

The Counter MANPADS portfolio nearly doubles to \$109 million (up 78.5 percent). Man Portable Air Defense Systems (MANPADS) are shoulder-mounted portable air missiles that have been used (unsuccessfully so far) against passenger aircraft. Fears of a successful MANPADS attack against commercial aircraft have jump-started DHS' Counter MANPADS effort. The increased FY 2006 investment will allow DHS to develop, prototype, and test promising technologies in aircraft to give policymakers a range of options on how to most effectively protect commercial aviation. The Department of Defense (DOD) also has a CounterMANPADS R&D effort, though smaller at \$19 million in 2006.

Another area due for a large increase is R&D for Support of DHS Components, up 45 percent to \$79 million. This R&D portfolio represents S&T Directorate programs that support the missions and capabilities of other DHS units, such as the Border Patrol, the Secret Service, and the Emergency Preparedness and Response directorate. Key technologies explored in this portfolio are border surveillance technologies, container shipping security, disaster modeling and simulation capabilities, and protective equipment.

Large increases for the priorities above are offset by cuts in other areas of the DHS R&D portfolio, including threat and vulnerability assessments (down 35 percent to \$43 million), standards development (down 13 percent to \$35 million), rapid prototyping (down 54 percent to \$35 million), cybersecurity, and aviation security (see Figure 1). TSA R&D programs in aviation security, funded at \$187 million in FY 2005, move to the S&T Directorate at \$99 million in FY 2006, a dramatic reduction, although some TSA R&D areas migrate to the explosive countermeasures portfolio. But Congress also adds funds to some areas that were proposed for cuts in the DHS request, including a 50 percent boost for critical infrastructure R&D to \$40 million instead of a proposed cut, and an increase for R&D in interoperable communications technology for first responders to \$26 million instead of flat funding of \$21 million.

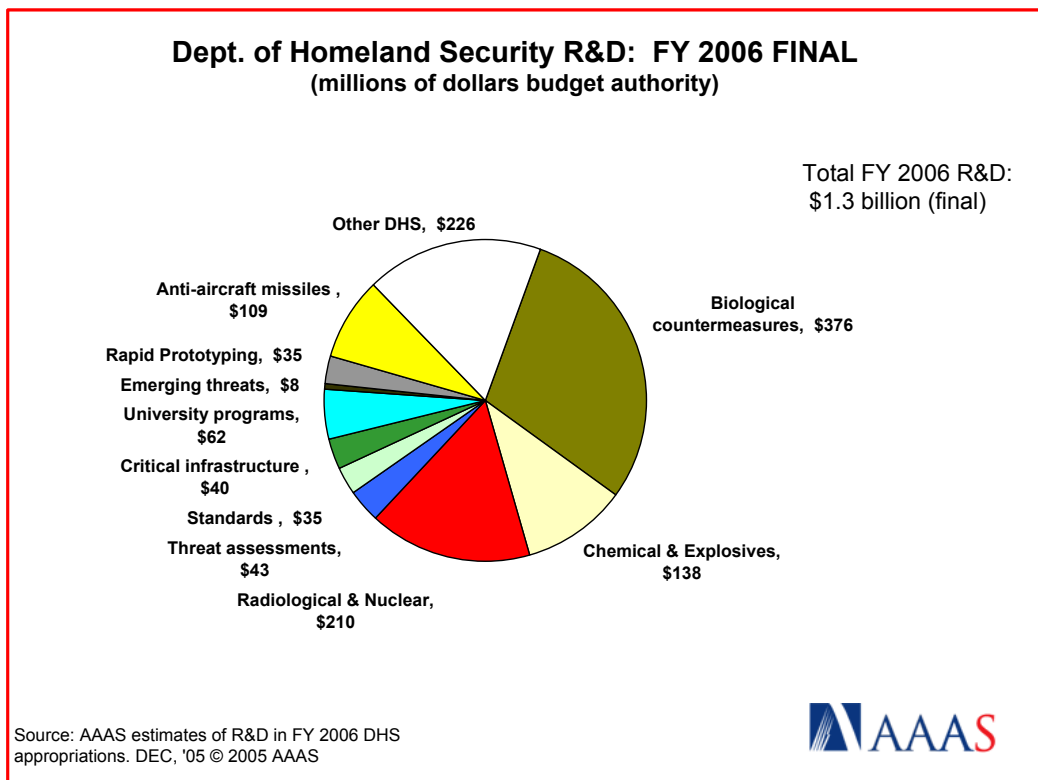


Figure 2. (click on the image for PDF)

The largest part of the DHS R&D portfolio continues to be biological countermeasures, with an investment of \$376 million in FY 2006, nearly even with 2005 (see Figure 2). Although there is no new money, construction of the National Biodefense Analysis and Countermeasures Center (NBACC) at Fort

Detrick, Maryland continues in FY 2006 with previously appropriated funds toward a target completion date of 2008. The FY 2006 appropriation contains \$23 million in new funds to start construction of a new National Bio and Agrodefense Facility (NBAF), a \$450 million total project with a scheduled completion of 2010 to enhance DHS capabilities to respond to food or animal-borne terrorist threats and to replace DHS' existing facility on Plum Island, New York. The new facility signals a higher DHS priority on agroterrorism in cooperation with similar efforts underway at the U.S. Department of Agriculture (USDA).

Congress agrees with the request to make modest cuts to \$62 million for University Programs and Fellowship Programs, down from \$70 million in FY 2005 but still well above \$22 million in 2004. The report language explains this cut by noting that the program did not spend \$45 million in FY 2005 funds by the end of the year, allowing total FY 2006 funding to exceed \$100 million. This program funds several university-based centers of excellence and is a funding source dedicated exclusively to funding university-based research. DHS has already designated four university-based centers for homeland security; the fourth, awarded to the University of Maryland and its partners earlier this year, focuses on behavioral and social aspects of terrorism. Another focuses on threat assessments and two focus on agro-terrorism. The fifth center, awarded in December 2005 to Johns Hopkins University and its partners, will focus on preparations and responses to terrorist attacks, and will be followed by three other centers to be awarded by the end of FY 2006. The program also funds cooperative centers awarded in collaboration with other federal agencies for research areas of mutual interest: the first was a joint DHS-EPA award to Michigan State University and partners for a center on microbial risk assessment, followed by two more cooperative centers by the end of FY 2006. This program also funds fellowships and scholarships that fund graduate education and research opportunities for scientists and engineers.

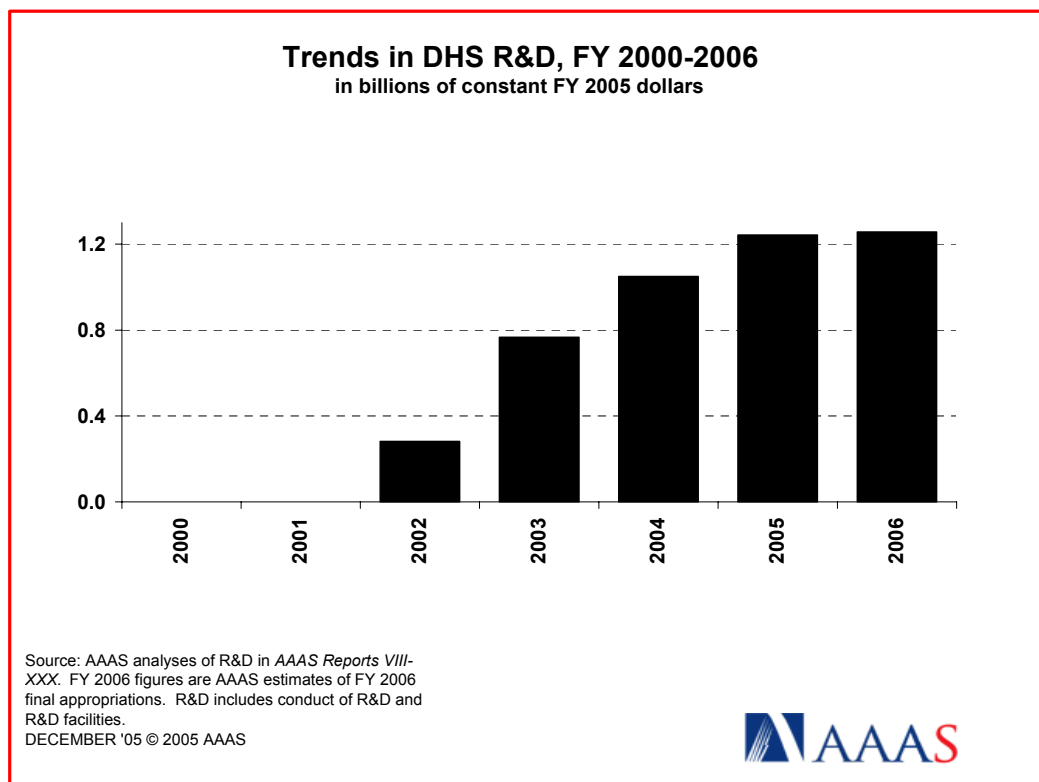


Figure 3. (click on the image for PDF)

Most of the above S&T directorate funds will be spent in federal laboratories or federally funded R&D centers (FFRDCs; government-owned, contractor-operated laboratories). DHS has an Office for National Laboratories that coordinates DHS interactions with DOE national laboratories possessing expertise in homeland security. Over the past year, DHS has set up its own FFRDC, a new Homeland Security Institute (HSI), and has also consolidated R&D activities at laboratories it inherited from other departments. The

extramural R&D portfolio in the S&T directorate is managed by **the Homeland Security Advanced Research Projects Agency (HSARPA)**, modeled on the Defense Advanced Research Projects Agency (DARPA) in the Department of Defense (DOD). HSARPA awards extramural grants for basic and applied research to promote revolutionary changes in homeland security technologies; develops and tests potential homeland security technologies; and accelerates or prototypes the development of homeland security technologies to get them ready for deployment. HSARPA administers DHS' Small Business Innovation Research (SBIR) program, which provides competitively awarded exploratory and development grants to small businesses and has an estimated budget of \$23 million in FY 2005 and slightly more in 2006.

Next Steps and Possible Impacts

The final DHS R&D appropriation represents a slowdown from recent gains in the DHS R&D portfolio (see Figure 3). In its short history, the DHS R&D portfolio has expanded from nothing to an approximately \$300 million transfer of other agencies' R&D programs in FY 2002 followed by dramatic gains in 2003, 2004, and 2005 primarily for the creation of new R&D capabilities. Now that the start-up phase of DHS appears to be complete, the department's R&D portfolio has entered a mature phase in which large increases are no longer assured.

(This analysis is one of a series of AAAS R&D Funding Updates on FY 2006 congressional appropriations. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D in FY 2006 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the "FY 2006 R&D" or the "What's New" sections.)

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Table. DHS R&D in FY 2006 Final Appropriations

**Table. Department of Homeland Security
Congressional Action on R&D in the FY 2006 Budget
(budget authority in millions of dollars)**

	FY 2005 Estimate	FY 2006 Request	FY 2006 FINAL	House-Senate Conference			
				Chg. from Request		Chg. from FY 2005	
				Amount	Percent	Amount	Percent
DHS R&D:							
Border & Transp. Security (TSA) 1/	178	0	0	0	--	-178	-100.0%
Science and Technology	1,047	1,287	1,263	-24	-1.8%	216	20.7%
- <i>Biological Countermeasures</i>	363	362	376	14	3.8%	14	3.7%
- <i>NBACC</i> 2/	35	0	0	0	--	-35	-100.0%
- <i>Chemical Countermeasures</i>	53	102	94	-8	-7.8%	41	77.5%
- <i>Explosives Countermeasures</i>	20	15	44	29	196.3%	24	121.1%
- <i>Radiological & Nuclear Ctrmeas.</i> 3/	123	246	210	-36	-14.8%	87	71.3%
- <i>Threat & Vulnerability Assess.</i>	66	47	43	-4	-9.4%	-23	-35.3%
- <i>Standards</i>	40	36	35	-1	-2.4%	-5	-12.7%
- <i>Support of DHS Components</i>	55	94	79	-14	-15.4%	25	44.9%
- <i>University Programs</i>	70	64	62	-1	-1.9%	-8	-10.9%
- <i>Emerging Threats</i>	11	11	8	-3	-24.6%	-3	-26.3%
- <i>Rapid Prototyping</i>	76	21	35	14	65.8%	-41	-54.4%
- <i>Counter MANPADS</i>	61	110	109	-1	-1.0%	48	78.5%
- <i>SAFETY Act</i>	10	6	7	1	23.8%	-3	-30.7%
- <i>Interoperable Communic.</i>	21	21	26	6	28.0%	5	24.9%
- <i>Critical Infrastructure</i>	27	21	40	20	94.2%	13	49.6%
- <i>Cybersecurity</i>	18	17	17	0	-1.0%	-1	-8.2%
- <i>R&D Consolidation</i> 1/	0	117	99	-18	-15.4%	99	--
- <i>Rescission</i>	0	0	-20	-20	--	-20	--
Coast Guard 1/	18	0	18	18	--	0	0.5%
Total DHS R&D	1,243	1,287	1,281	-6	-0.4%	38	3.1%
<i>Selected non-R&D items:</i>							
<i>Biodefense countermeasures (BioShield)</i>	<i>2,508</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>--</i>	<i>-2,508</i>	<i>-100.0%</i>

AAAS estimates based on FY 2005 and FY 2006 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2005 and FY 2006 request figures based on OMB R&D data and supplemental agency budget data.

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

BioShield funding has already been provided in FY 2005 advance appropriations.

1/ FY 2006 budget proposes to consolidate TSA and CG R&D within S&T Directorate. FY 2006 Final maintains separate CG R&D.

2/ Construction funds for National Biodefense Analysis and Countermeasures Center.

3/ Includes \$227 million in FY 2006 request and \$193 million in FY 2006 Conf. for the Domestic Nuclear Detection Office (DNDO).

Does not include \$125 million in non-R&D procurement funds transferred from Customs and Border Protection.

FY 2006 Final figures include emergency supplementals and general reductions in the final Defense bill.

December 29, 2005 - AAAS estimates of final FY 2006 appropriations bills.