

## House Proposes Slight Increase in DHS R&D

### AAAS R&D Funding Update on DHS R&D in FY 2008 House Appropriations

#### Highlights

- The Department of Homeland Security's (DHS) R&D portfolio fell sharply in 2007 because of congressional dissatisfaction with the new department's R&D efforts, but with new leadership and a new Congress the House would give DHS R&D programs a 3.3 percent increase to \$986 million in 2008 (see Table).

- Although the House would provide \$11 million less than the request for total DHS R&D, for University Programs there would be a \$10 million boost to the request to keep funding even at last year's level. DHS would support 11 university-based centers by 2008.

- Research on radiological and nuclear countermeasures would continue to increase, by 3.1 percent to \$317 million in the newly created Domestic Nuclear Detection Office (DNDO), but within main Science and Technology Directorate chemical and biological countermeasures R&D would fall 6.2 percent to \$215 million.

- The House would go along with the newly restructured S&T Directorate's plan to cut funding for most R&D areas, but the new Innovation program to develop revolutionary technological breakthroughs would see its funding jump from \$38 million to \$52 million.

#### DHS R&D in FY 2008 House Appropriations

The 110<sup>th</sup> Congress kicked off its FY 2008 appropriations process earlier this month with the House Appropriations Committee's approval of its first bill of the year, the 2008 Homeland Security appropriations bill (HR 2638). The full House is expected to debate and approve the bill the week of June 11 as the first step toward its goal of approving 11 of the 12 2008 appropriations bills by the Fourth of July. The House Homeland Security bill contains more than \$36 billion in 2008 discretionary spending for the Department of Homeland Security (DHS), \$4 billion or 14 percent more than the current year and \$2 billion more than the President's request. **Included in the bill is nearly \$1 billion (\$986 million) for DHS R&D (see Table), slightly less than the request but \$31 million or 3.3 percent more than 2007, though a steep drop from the \$1.3 billion DHS had in 2006.**<sup>1</sup>

The still-new Department of Homeland Security (DHS) continues to lead the government effort against terrorism and to coordinate government-wide responses to man-made as well as natural disasters, but is experiencing growing pains as it tries to coordinate its many activities and execute its many missions. After starting from virtually nothing four years ago and rapidly becoming the seventh-largest R&D funding agency, the department's Science and Technology (S&T) unit ran into trouble spending money, knowing where the money went, and linking R&D to the technology requirements of DHS operating units. Under

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<sup>1</sup> Note: The AAAS estimates of DHS R&D in the Table differ significantly from R&D data in the *Budget of the U.S. Government FY 2008*. AAAS has corrected inaccurate codings of non-R&D programs as R&D, added back some R&D funding left out of the Budget, and removed some non-R&D programs from the R&D data after examination of DHS budget documents. The data in the Table also differ from data in the April report *AAAS Report XXXII: R&D FY 2008* because of recent transfers out of the S&T directorate and because of 2007 supplemental appropriations enacted in May in Public Law 110-28.

the leadership of Undersecretary of S&T Jay Cohen, the new head of the DHS S&T Directorate, the entire DHS R&D operation is reorganizing. Cohen proposed an extensive restructuring of the DHS R&D portfolio in the 2008 budget request, consolidating many program lines and reshuffling others to create new program portfolios. The House Appropriations Committee has agreed to Cohen's proposal and would fund DHS R&D in 2008 under his proposed structure, as shown in the Table.

As in past years, R&D against threats from weapons of mass destruction dominates the DHS R&D portfolio (see Table and Figure 1). **Radiological and nuclear countermeasures R&D in the new Domestic Nuclear Detection Office (DNDO) would be the largest part of the DHS R&D portfolio in 2008** (see Figure 1), with nearly a third of the total investment. DNDO was carved out of the S&T Directorate last year and is now a stand-alone entity devoted to radiological and nuclear countermeasures. Its mainly applied research portfolio would climb 3.1 percent to \$317 million in 2008 within a total budget of \$516 million. (The difference between the two totals is procurement of nuclear detection devices for U.S. ports of entry, and management costs.) The 2008 House increase would have been larger, except that just a few weeks ago on May 25 DNDO received an extra \$35 million for R&D (and \$100 million for non-R&D procurement) for 2007 as part of the war supplemental bill. The House would agree with DNDO's plan for large increases in transformational R&D to try to develop breakthrough methods of detecting radiological and nuclear threats in operational settings, and in systems development of new Advanced Spectroscopic Portal (APS) systems. DNDO's R&D programs support the office's plan of deploying radiation detection technologies at all U.S. seaports and all land ports of entry by 2013 to screen 100 percent of U.S.-bound cargo for radiological or nuclear devices.

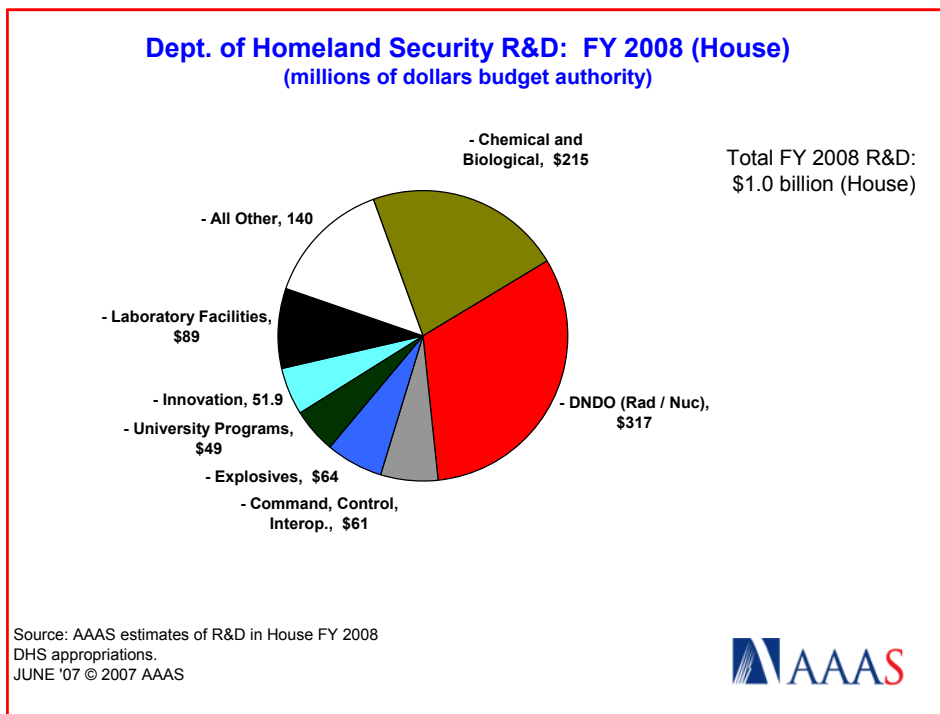


Figure 1. (click on the image for PDF)

The chemical and biological countermeasures portfolio would receive \$215 million in the House plan, \$14 million less than both 2007 and the 2008 request (see Figure 1). Although this portfolio has been larger in previous years, in 2007 DHS spins off non-R&D programs such as the BioWatch surveillance system to other DHS units, leaving behind only purely R&D programs such as development of next-generation BioWatch 3 systems to better identify bioterror attacks. Separately, in the Laboratory Facilities appropriation (\$89 million, down 16 percent), construction of the National Biodefense Analysis and Countermeasures Center (NBACC) continues toward a target completion date of 2008. NBACC will be part of a biodefense complex of DHS, NIH, and DOD facilities at Fort Detrick, Maryland. There would

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also be \$11 million in funding for preliminary work on the National Bio and Agrodefense Facility, working toward the beginning of construction in 2010 after a site selection later this year.

**Funding for University and Fellowship Programs would stay at \$49 million** in the House appropriation instead of a requested cut down to \$39 million. This program funds university-based Centers of Excellence that are multi-year university consortia to perform R&D on homeland security-related topics and also fellowships to encourage U.S. students to pursue scientific and technical degrees in areas of study related to homeland security. There are now seven DHS Centers of Excellence, and another four (on the areas of explosives detection, mitigation, and response; border security and immigration; maritime, island, and extreme/remote environment security; and natural disasters, coastal infrastructure, and emergency management) will be awarded in 2007. Two of the existing seven centers are cooperative centers, one a DHS-EPA effort and the other a DHS-Lawrence Livermore (DOE) collaboration.

The Explosives portfolio would receive the requested \$64 million in the House bill, down almost 40 percent from last year and down nearly three-quarters from 2006 as a concentrated burst of development activities to defend against shoulder-fired aircraft missiles winds down and transitions to deployment on commercial aircraft. The Innovation portfolio, a Cohen initiative to develop breakthrough technologies and highly innovative approaches to homeland security problems, would gain \$14 million or 37 percent to \$52 million in the House bill. Among the technologies this new program will tackle are tunnel detection devices, improvised explosive devices, and critical infrastructure resiliency.

#### 2008 DHS R&D Appropriations in Historical Context

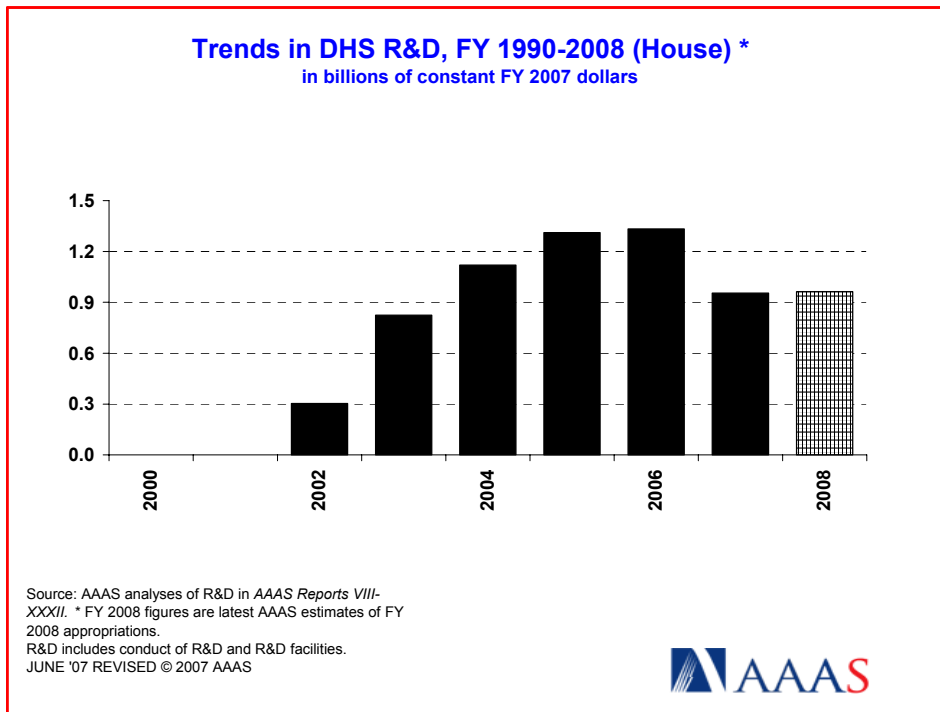


Figure 2. (click on the image for PDF)

DHS R&D, after a rapid ramp-up phase, by all accounts grew too rapidly and is now in retrenchment and reorganization. As shown in Figure 2, DHS began life with only a few R&D laboratories and programs that it inherited from USDA, DOE, and DOD, unlike the massive transfer of personnel and capabilities that happened in the rest of the new department. From a transfer of less than \$300 million of programs in 2002, DHS began rapidly creating new R&D capabilities after its foundation in FY 2003 (see Figure 2), adding portfolios on long-neglected technology areas, establishing relationships with existing national laboratories and federal laboratories, and setting up new structures for funding external R&D.

But the S&T directorate struggled to ramp up its capabilities, staffing, and spending, prompting Congress to slash its funding dramatically in 2007 and impose numerous restrictions and demands. In the 2007 appropriations process, a congressional report described the directorate as “a rudderless ship without a clear way to get back on course,” criticized its lack of clear research goals, absence of detailed budget information, mystifying accounting conventions, and even an inability to spend past appropriations it had been given. At the end of 2006, the S&T Directorate had an unusually large \$400 million in the bank from previous appropriations that it had been unable to spend, and up to one-third of its staff positions were vacant. The final 2007 appropriations bill rescinded \$125 million in these unspent R&D funds, made program cuts in most areas, and required S&T to submit a five-year research plan with priorities, performance measures, and resource needs for each R&D area.

Undersecretary for Science and Technology Jay Cohen was sworn in as the new S&T directorate leader in August 2006, midway through the bruising 2007 appropriations season and also midway through the internal deliberations on the 2008 budget. The 2008 budget marks the new leadership’s first budget proposal, and so far House appropriators appear to be in general agreement with his structural changes and his spending plans. Although the 2007 and 2008 R&D totals are well below appropriations of previous years, DHS is still working through its backlog of unspent funds; at the end of FY 2007, even after rescissions and budget cuts, the S&T Directorate still expects to have more than \$100 million in unspent funds to carry over to FY 2008. So while DHS’ appropriations history in Figure 2 is uneven, the actual outflow of money will be smoother as appropriations get stretched out into outlays over several years.

**Impacts of the DHS R&D Portfolio**

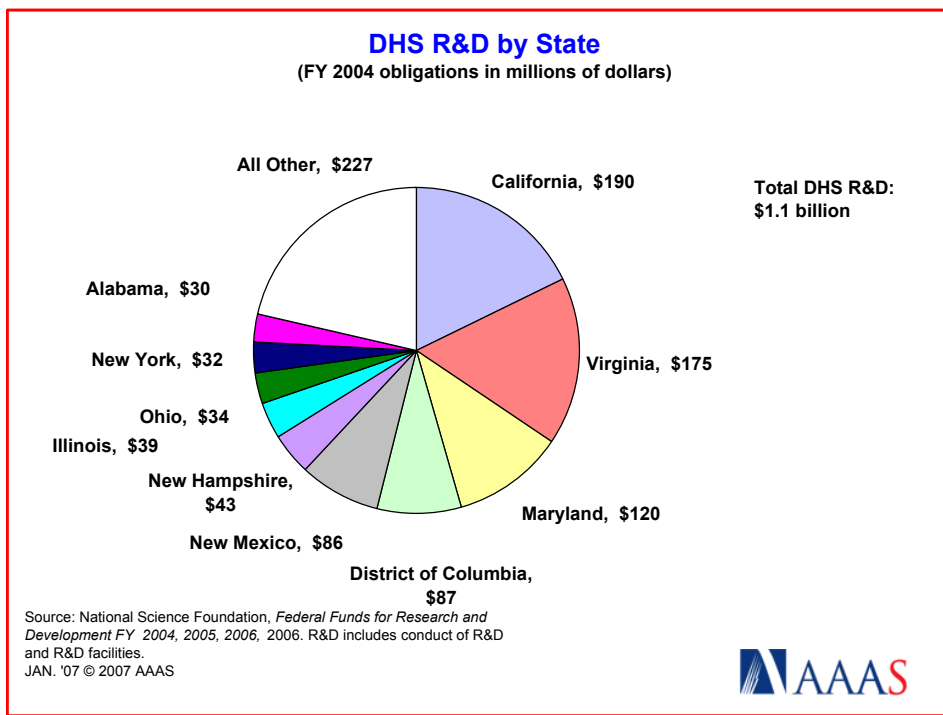


Figure 3. (click on the image for PDF)

Recently, DHS released its first data set on how it spent its initial R&D budgets. As shown in Figure 3, DHS R&D is concentrated geographically, with three states and the District of Columbia accounting for the majority of DHS R&D funding in 2004. Though it is likely that DC’s share is due to headquarters funds that eventually went to other states, Maryland and Virginia clearly benefit from the heavy concentration of contractors in the Washington, DC area, while California and New Mexico benefit from the primarily DOE-affiliated national laboratories located in these states.

DHS research, excluding development funding, is heavily oriented to the life sciences and engineering, not surprising since biological countermeasures dominated the early days of DHS R&D. Fully two-thirds of DHS investments in basic and applied research go to these two disciplines, with the remainder devoted mostly to the physical sciences (see Figure 4). This portfolio is expected to shift in 2007 and 2008 as the emphasis shifts away from biological countermeasures toward the radiological and nuclear countermeasures portfolio. The total research portfolio is expected to grow as well, as research becomes a larger part of DHS R&D and development funding shrinks.

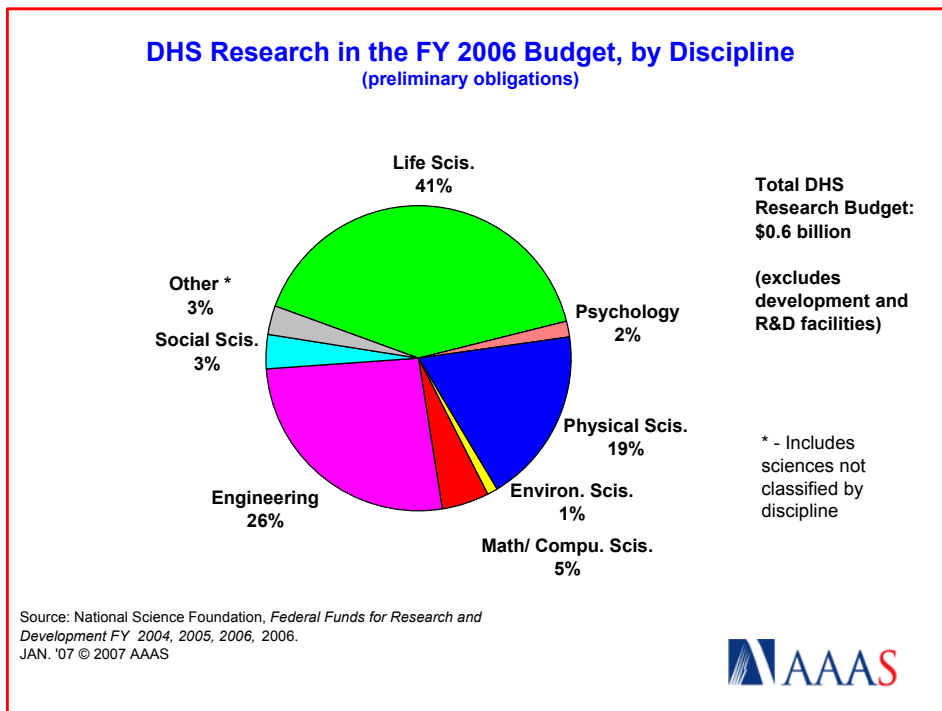


Figure 4. (click on the image for PDF)

### Next Steps and Outlook

The full House is expected to approve the Homeland Security bill this week (June 12); although many amendments are expected, few changes are likely for R&D. The Senate Appropriations Committee is expected to mark up its version of the bill within the next several weeks; it is unclear whether the Senate will share the same priorities for DHS R&D as the House. A final version of the bill is expected to reach the President's desk well before the October 1 start of FY 2008. Although the President has threatened to veto any 2008 appropriations that exceed his request, as the House version does by \$2 billion, it may be difficult for the President to veto a bill that funds politically powerful homeland security programs.

(This analysis is one of a series of AAAS R&D Funding Updates on FY 2008 congressional appropriations. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D in FY 2008 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the "FY 2008 R&D" or the "What's New" sections.)

- June 12, 2007

AAAS R&D Budget and Policy Program

AAAS R&D Web site: <http://www.aaas.org/spp/rd>



Table. DHS R&amp;D in FY 2008 House Appropriations

**Table. Department of Homeland Security  
House Appropriations Committee Action on R&D in the FY 2008 Budget  
(budget authority in millions of dollars)**

	FY 2007 Estimate	FY 2008 Request	Action by House				
			FY 2008 House	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2007 Amount	Chg. from FY 2007 Percent
DHS R&D:							
Dom. Nuclear Detection Office 1/ 2/	308	320	<b>317</b>	-3	-0.9%	9	3.1%
Science and Technology 1/ 2/ 3/	628	656	<b>646</b>	-10	-1.5%	18	2.9%
- Chemical and Biological	229	229	<b>215</b>	-14	-6.0%	-14	-6.2%
- Command, Control, Interop.	58	64	<b>61</b>	-3	-3.9%	3	6.1%
- Explosives	105	64	<b>64</b>	0	0.0%	-41	-39.4%
- Human Factors	7	13	<b>13</b>	0	0.0%	6	85.3%
- Infrastructure & Geophysical	75	24	<b>24</b>	0	0.0%	-51	-67.9%
- Innovation	38	60	<b>52</b>	-8	-13.4%	14	36.6%
- Laboratory Facilities	106	89	<b>89</b>	0	0.0%	-17	-15.9%
- Test & Eval., Standards	25	26	<b>29</b>	3	11.8%	3	12.1%
- Transition	24	25	<b>26</b>	1	5.3%	2	8.2%
- University Programs	49	39	<b>49</b>	10	25.5%	0	0.0%
- Rescissions 4/	-120	0	<b>0</b>	0	--	120	-100.0%
Coast Guard	19	20	<b>23</b>	3	--	4	18.9%
<b>Total DHS R&amp;D</b>	955	996	<b>986</b>	-11	-1.1%	31	3.3%
<b>Total Budgets (including non-R&amp;D):</b>							
Sci. & Tech.	762	799	<b>777</b>	-22	-2.8%	15	2.0%
DNDO	616	592	<b>516</b>	-76	-12.8%	-100	-16.2%

AAAS estimates based on FY 2008 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2007 and FY 2008 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.

FY 2007 figures include 2007 supplemental appropriations enacted in Public Law 110-28 and recent transfers out of S&T.

1/ Rad. & Nuc. Countermeasures transferred to the Domestic Nuclear Detection Office in 2007.

2/ R&D items only. Non-R&D components and line items are excluded.

3/ S&T Directorate proposes new account structure in FY 2008. FY 2007 adjusted for comparability.

4/ Undistributed rescissions in FY 2007 appropriations and undistributed supplemental in Public Law 110-28.

**June 12, 2007 - AAAS estimates of House Appropriations Committee-approved appropriations.**

**These figures may be amended or rejected by the full House.**