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**Memorandum**

March 31, 2008

**TO:** House Committee on Homeland Security  
Attention: Majority Staff

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**SUBJECT:** Comments on *Coordination of Homeland Security Science and Technology*

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This memorandum responds to your request for comments on the Department of Homeland Security (DHS) report *Coordination of Homeland Security Science and Technology*. You requested that these comments address both the subject matter of the report and larger issues, such as the process by which the report might have been compiled. As we discussed, because of the time constraints of your request, the comments provided here are based on an initial reading of the report. Further analysis of the report might yield additional commentary.

Strategic planning in homeland security science and technology has been a topic of congressional interest. Section 302 of the Homeland Security Act of 2002 (P.L. 107-296) vested in the DHS Under Secretary for Science and Technology the responsibility to coordinate homeland security research and development (R&D) across the federal government, including the development of national policy and a strategic plan. While several strategic plans or strategies dealing with aspects of homeland security and homeland security R&D have been released, they have generally applied to only one or a limited number of agencies and to a limited policy area.<sup>1</sup>

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<sup>1</sup> For example, see Executive Office of the President, Office of Science and Technology Policy, and Department of Homeland Security, Science and Technology Directorate, *The National Plan for* (continued...)

According to DHS, past efforts by the Under Secretary for Science and Technology to develop a national homeland security R&D plan have been stymied by resistance from other agencies. In March 2007, Under Secretary Cohen testified that a draft plan existed that had been in preparation for about two years, but it was “perceived by the other departments and agencies as mandat[ing] what they would do for Homeland Security ... how they, through their efforts, could contribute to Homeland Security.” As a result, he said, “it had a very difficult time coming to fruition.”<sup>2</sup>

Where previous Under Secretaries interpreted the Section 302 requirement as developing a national homeland security R&D plan that other agencies concurred with, Under Secretary Cohen stated that he would reinterpret consultation as giving other agencies an opportunity to comment. Under that interpretation, Under Secretary Cohen stated he would “work to get this through OMB ... to the best of my ability before the end of [FY2007].”<sup>3</sup> In December 2007, the S&T Directorate released *Coordination of Homeland Security Science and Technology*.<sup>4</sup>

*Coordination of Homeland Security Science and Technology* is, according to its foreword, a “descriptive baseline for homeland security research and development measures across the federal government ... developed with the cooperation of [other] federal agencies” and is a “first step in developing a more prescriptive plan.” *Coordination of Homeland Security Science and Technology* asserts that the baseline contained within the document “will be used to provide an overarching strategy for addressing the science and technology needs for homeland security.”<sup>5</sup> It is not a national homeland security R&D policy or a national homeland security R&D strategic plan. It is a compilation of science and technology requirements, gaps, strategic goals, and agency roles, responsibilities, accomplishments and ongoing activities, apparently inferred or extracted from a variety of existing strategies, plans, directives, and other sources.<sup>6</sup>

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<sup>1</sup> (...continued)

*Research and Development in Support of Critical Infrastructure Protection, 2004*, April 8, 2005.

<sup>2</sup> Under Secretary for Science and Technology Jay M. Cohen, Department of Homeland Security, testimony before the House Committee on Science and Technology, Subcommittee on Technology and Innovation, March 8, 2007.

<sup>3</sup> Under Secretary for Science and Technology Jay M. Cohen, Department of Homeland Security, testimony before the House Committee on Homeland Security, Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology, June 27, 2007.

<sup>4</sup> Department of Homeland Security, *Coordination of Homeland Security Science and Technology*, December 2007 (revised January 2008).

<sup>5</sup> Department of Homeland Security, *Coordination of Homeland Security Science and Technology*, p. 7.

<sup>6</sup> The following plans and strategies are listed as contributing to the identification of homeland security science and technology needs: *The National Strategy for Combating Terrorism*; *The National Strategy for Homeland Security*; *The Strategy for Homeland Defense and Civil Support*; *The National Response Plan*; *The National Infrastructure Protection Plan*; *The National Strategy for the Physical Protection of Critical Infrastructures and Key Assets*; *The National Plan for Research and Development in Support of Critical Infrastructure Protection*; *The Federal Plan for Cyber Security and Information Assurance Research and Development*; *The National Strategy to* (continued...)

The material presented in *Coordination of Homeland Security Science and Technology* differs from that in governmental national strategy documents and federal agency planning documents both in scope and in detail. National strategy documents tend, in general, to focus on particular goals or responses to particular threats. Examples include *The National Strategy to Secure Cyberspace*<sup>7</sup> and *The National Strategy for Maritime Security*.<sup>8</sup> In contrast, *Coordination of Homeland Security Science and Technology* attempts to take a comprehensive view of homeland security R&D needs, describing needs across different goals and threats. Agency planning documents, such as the DHS S&T Directorate's *Strategic Plan with Attachments*,<sup>9</sup> often are focused on programmatic details, future budgets, and other resource allocation. In contrast, *Coordination of Homeland Security Science and Technology* provides no estimates of budgetary or resource requirements and provides overviews of programs rather than details of program content.

*Coordination of Homeland Security Science and Technology* is “the Department of Homeland Security’s strategic vision for [homeland security] science and technology.”<sup>10</sup> As such, it does not appear to be a consensus document although it contains descriptions of the accomplishments and ongoing activities of other federal agencies. Instead, it appears to be mainly DHS’s perspective on what the needs, gaps, and solutions might be for homeland security R&D between now and 2015.

## Comments on the Report

**Research Topics Addressed.** *Coordination of Homeland Security Science and Technology* is divided into ten chapters, each focusing on a “specific research initiative” in a “priority homeland security area,” each characterized by national goals and priorities. The chapter titles are:

- Defense of Humans Against Biological Threat Agents,
- Defense of Animals, Plants, and Food Against Biological Threat Agents,
- Defense Against Chemical Threats,
- Defense Against Explosives and Weapons,

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<sup>6</sup> (...continued)

*Combat Weapons of Mass Destruction; The National Strategy to Secure Cyberspace; The National Pandemic Response Plan; The Biological Defense Strategy; The National Biological Integrated Surveillance System; The National Agricultural Security Plan; and The National Improvised Explosive Device (IED) Strategy.* Not all of these plans or strategies are publicly available (*Coordination of Homeland Security Science and Technology*, p. 7).

<sup>7</sup> The President's Critical Infrastructure Protection Board, *The National Strategy to Secure Cyberspace*, February 2003.

<sup>8</sup> Department of Homeland Security and Department of Defense, *The National Strategy for Maritime Security*, September 2005.

<sup>9</sup> Department of Homeland Security, Science and Technology Directorate, *Strategic Plan with Attachments*, May 2007. Attachment 1 to the strategic plan is the five year research and development plan that provides budgetary requirements and program milestones (Department of Homeland Security, Science and Technology Directorate, *Five Year Research and Development Plan, Fiscal Years 2007-2011*, May 2007).

<sup>10</sup> Department of Homeland Security, *Coordination of Homeland Security Science and Technology*, p. 3.

- Critical Infrastructure Protection and Cyber Security,
- Emergency Preparedness and Response,
- Border and Transportation Security,
- Threat and Vulnerability Analysis,
- Social, Behavioral, and Economic Sciences, and
- Future Homeland Security Science and Technology Workforce.

The document does not describe the process that was used to identify these particular topics as an appropriate focus for a chapter. The ten topics are not equal in scope. Some, like Defense of Humans Against Biological Threat Agents, focus on a particular threat. Others, like Border and Transportation Security, focus on a particular sector. Specific disciplines are highlighted in the chapter titled Social, Behavioral, and Economic Sciences. The topic of the final chapter, workforce development, is not a threat, a sector, or a discipline.

Some threats often discussed as having homeland security R&D relevance are not addressed in any chapter. The DHS Domestic Nuclear Detection Office (DNDO) conducts R&D programs focused on nuclear and radiological threats, and its absence in the document is notable. Research and development activities supported by the Department of Energy's National Nuclear Security Administration are similarly absent.

While the document describes itself as the DHS strategic vision of homeland security science and technology,<sup>11</sup> it may be that the contents more accurately reflect the view of the S&T Directorate. The chapter topics of *Coordination of Homeland Security Science and Technology* correlate closely with the areas the S&T Directorate has R&D programs. When DNDO was authorized by the SAFE Port Act (P.L. 109-347, Sec. 501), responsibility for DHS R&D on radiological and nuclear countermeasures was removed from the Under Secretary for Science and Technology and transferred to the Director of DNDO.

The transferal of this authority may have affected the development of *Coordination of Homeland Security Science and Technology* in several ways. One effect might be that coordination and cooperation between the S&T Directorate and DNDO were needed to garner the necessary information on requirements, gaps, and strategic goals in the radiological and nuclear defense arena. Another might be that contacts between the S&T Directorate and those agencies that are conducting homeland security radiological and nuclear defense research are absent or attenuated. Thus, while the S&T Directorate may have (through the interagency process) a good understanding of other agency investment and activities in homeland security R&D in areas where they implement DHS R&D investment, they may not have a similar understanding in the radiological and nuclear defense area.

**Lack of Definition in Terminology.** *Coordination of Homeland Security Science and Technology* brings together information on homeland security research and development from disparate sources. From this information, strategic goals with near-, mid-, and long-term priorities are developed and described. The context for these priorities is not fully explained in the document.

The near-, mid-, and long-term priorities could be interpreted in multiple ways. For example, one interpretation might be that these priorities are to be met sequentially to

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<sup>11</sup> *Coordination of Homeland Security Science and Technology*, p. 3.

achieve the strategic goal. In this framework, each priority is a target to direct effort towards and achieve.

Alternatively, these priorities might be descriptions of targets to be met simultaneously, in parallel. In this framework, near-term goals might be met through investment of development funding, mid-term goals might represent advanced research, and long-term goals might represent investment in basic research. Thus, with a diverse investment portfolio, each priority might be met in its time frame through a unified federal effort.

These two interpretations might have conflicting resource implications, as a long-term priority in the first framework would be unattainable without initially meeting the near-term goal, while in the second framework the long-term priorities could be met even if the near-term priorities continued to be unfulfilled.

A uniform definition of these terms is not provided within the document, and it is possible that the agencies and contributors to the document may have differing interpretations of the meaning of these terms. This would complicate consolidation of the priorities, as they would not be directly comparable, and challenge the allocation of budgetary resources both within DHS and in other agencies.

**Comparisons between and within Research Topics.** A key component of a strategic plan or a coordination document is the ability to compare the value of alternative investments either within the same research area or in different ones. The document gives no indication of the relative importance of the ten chapter topics. Therefore, it is difficult to determine whether the effort being devoted to each topic is appropriate, too much, or too little.

*Coordination of Homeland Security Science and Technology* does not contain budgetary information or any other criteria, such as staffing levels that would allow the reader to judge the effort put forth by each agency on each topic. Instead, the document qualitatively describes the achievements and accomplishments of the various agencies. While these descriptions do provide a sense of the activities under way, it is not clear from the document whether the descriptions provide a complete accounting of agency activities, an accounting of selected programs, or highlights of particularly notable accomplishments. Additionally, the document does not describe whether each agency's accomplishments should be viewed as equivalent in importance, scope, or magnitude. The qualitative nature of the agency accomplishments and activities and the lack of detail regarding how they were collated into the document make it difficult to assess the relative agency efforts.

**Correspondence Between Strategies and Strategic Goals.** *Coordination of Homeland Security Science and Technology* draws upon a series of national plans and strategies, but it is not clear how these national plans and strategies were integrated into the document. For example, the roles and responsibilities of the various federal agencies are laid out in each chapter, but linkages between these roles and responsibilities and the different national plans and strategies are not uniformly and unambiguously made. While, for example, roles and responsibilities in response to a biological attack are clearly linked to specific presidential directives, the discussion of roles and responsibilities for border and transportation security does not reference any controlling documentation. Thus, the origin of these agency obligations is unclear and potentially incomplete in description.

Similarly, the strategic goals and priorities enunciated in the document are not uniformly linked to an extant strategic document or plan. For example, the strategic goals and priorities with respect to defense against biological attack have explicit linkage to the President's Homeland Security Decision Directives, but those related to border and transportation security do not explicitly link to existing national strategies, such as the National Strategy for Maritime Security. While such linkages may exist, they are not clearly identified or highlighted in the document.

Within the document, the relationship of the near-, mid-, and long-term priorities to the agency accomplishments and ongoing activities is not always made plain. How the various accomplishments and activities have addressed, are addressing, or will address the enunciated priorities is not always clearly expressed. Instead, some of the accomplishments and ongoing activities appear to be more in line with either non-S&T or non-R&D activities, such as the Department of Justice sharing information with border agencies, or part of an agency's core mission, such as the Department of Commerce's development of tools, guidance, and performance criteria for building codes and standards.

**Application of Strategic Goals.** *Coordination of Homeland Security Science and Technology* provides a series of strategic goals and priorities to be met in future years. These priorities are mainly to address gaps in capability or unmet research needs. The document, when it describes the priorities, is not consistent in identifying what agency would be responsible for meeting these near-, mid-, and long-term goals.

To some extent, the lack of identification of agency responsibility likely arises from the stated nonprescriptive nature of the document. Many of the particular actions to be undertaken to meet a priority are identifiable as to be executed within DHS. In other cases, the federal government is identified as the agent through which these goals will be met. Since this document reflects DHS's vision of homeland security research and development needs, it may be that DHS views these priorities as targets for its own research programs, in coordination with those of other agencies, to meet. Alternatively, it may be that DHS perceives meeting these goals as remaining largely the responsibility of other agencies, with only some DHS participation.

**Lack of Prescriptive Nature.** As mentioned above, *Coordination of Homeland Security Science and Technology* is expressly intended to not be a prescriptive document. Since it is not a prescriptive document, it does not direct other agency activities. Because of this, policymakers may not view *Coordination of Homeland Security Science and Technology* as meeting the statutory requirement for a national homeland security R&D policy and strategic plan. They may instead require a prescriptive document that defines federal agency activities in homeland security research and development.

A prescriptive document would likely include quantitative information that might be used for strategic assessment or coordination of resource allocation across agencies, between R&D types (basic research, applied research, and development), between R&D styles (traditional R&D versus innovation), and between research performers (academia, industry, federal laboratories, and nonprofits). Such coordination would be inherently prescriptive in nature, as it would require critical decisions about increasing or decreasing budgetary investment and approaches between agencies.

Additionally, the document's lack of a prescriptive nature precludes it from assigning responsibilities to meet certain priorities to particular agencies. Thus, *Coordination of*

*Homeland Security Science and Technology* does not integrate all of the R&D activities required through the various homeland security-related national strategies and plans. Instead, it generates a baseline for the federal government to assess its progress towards fulfilling the requirements of those strategies.

On the other hand, the document's lack of prescriptive language may make it more likely that other federal agencies will accept or adopt its strategic goals and priorities. If so, this may allow for informal coordination of agency efforts independent of oversight from DHS or any other particular agency. The absence of prescriptive language may ameliorate any perception that DHS is encroaching on their real or perceived areas of authority or responsibility.

**Benefits of Its Existence.** The publication of *Coordination of Homeland Security Science and Technology* may have beneficial policy and oversight ramifications even if the document does not provide a coherent, complete strategic plan for federal homeland security R&D. As mentioned above, national strategies and interagency research plans have tended to be very high-level and lacking in detail or to be tightly focused in particular policy areas. Thus, this document may be seen to be meeting its goal of providing a baseline for further refinement and comparison, rather than meeting the requirements of P.L. 107-296, Sec. 302.

The statement of these strategic goals and high-level priorities also may provide a foundation from which agencies may adjust their current activities and goals. While various agencies may not fully concur with the statements in *Coordination of Homeland Security Science and Technology*, the agencies may adopt those portions that they agree with and incorporate them in their own internal planning processes. This may result in interagency R&D synergies because of the common framework underlying their R&D policy development process.

The consolidation of federal agency accomplishments and activities into a single document may also provide oversight benefits. Policymakers armed with a more complete understanding of the current and past activities of agencies in this area may be able to identify unmet needs that were not previously evident or important activities currently underway.

**Relevance to the Quadrennial Homeland Security Review.** *Coordination of Homeland Security Science and Technology* states that the Quadrennial Homeland Security Review will be a driver updating the document and assessing progress toward meeting these goals.<sup>12</sup> As planned by DHS, the Quadrennial Homeland Security Review will provide opportunity to update strategic goals in response to new legislation, policies, and plans; information regarding threats and vulnerabilities; and success at meeting performance measures. The DHS also expects that the annual budget cycle will provide opportunities for input into the coordination document.<sup>13</sup>

The DHS' successful update of the document will likely depend on the level of cooperation and coordination other agencies extend towards DHS in participating in the Quadrennial Homeland Security Review. This interagency activity and input may greatly strengthen the scope and quality of the document. On the other hand, previous attempts at

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<sup>12</sup> *Coordination of Homeland Security Science and Technology*, p. 5.

<sup>13</sup> *Coordination of Homeland Security Science and Technology*, p. 6.

developing a strategic plan have been hampered in the interagency process. Policymakers might choose to bolster the updating process by statutorily requiring input by other agencies into a coordination or strategic document; requiring the coordination or strategic document be developed at a higher policy level, such as the Office of Science and Technology Policy, the Homeland Security Council, or the National Science and Technology Council; or increasing the authority of the Under Secretary of Science and Technology in this regard.

The Quadrennial Homeland Security Review process may provide an opportunity to strategically assess the value of the many initiatives underway. A comprehensive approach to homeland security may identify where the funding of particular priorities will yield definitive advantages because of the synergistic nature of the investment across the federal government. It also may successfully identify where unnecessary duplication is occurring in attempting to meet research needs and fill capability gaps. This was not attempted in the *Coordination of Homeland Security Science and Technology*, but it may be in the Quadrennial Homeland Security Review. Such assessment may need to occur at a policy level above the level of the Under Secretary for Science and Technology or independently within the agencies participating in homeland security R&D to minimize agency resistance.

If you have any further questions regarding this topic or questions regarding the information in this memorandum, please contact Dana A. Shea at x7-6844, Daniel Morgan at x7-5849, or John D. Moteff at x7-1435.