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Report to the Chairman, Subcommittee on Emergency Preparedness, Response, and Communications, Committee on Homeland Security, House of Representatives

August 2018

CHEMICAL TERRORISM

A Strategy and Implementation Plan Would Help DHS Better Manage Fragmented Chemical Defense Programs and Activities

GAO-18-562

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GAO Highlights

Highlights of GAO-18-562, a report to the Chairman, Subcommittee on Emergency Preparedness, Response, and Communications, Committee on Homeland Security, House of Representatives

Why GAO Did This Study

Recent chemical attacks abroad and the threat of using chemical weapons against the West by the Islamic State of Iraq and Syria (ISIS) have raised concerns about the potential for chemical attacks occurring in the United States. DHS's chemical defense responsibilities include, among others, managing and coordinating federal efforts to prevent and protect against domestic chemical attacks.

GAO was asked to examine DHS's chemical defense programs and activities. This report examines (1) DHS programs and activities to prevent and protect against domestic chemical attacks and (2) the extent to which DHS has integrated and coordinated all of its chemical defense programs and activities. GAO reviewed documentation and interviewed officials from relevant DHS offices and components and reviewed DHS strategy and planning documents and federal laws and directives related to chemical defense.

What GAO Recommends

GAO recommends that the Assistant Secretary for the CWMD Office develop a strategy and implementation plan to help DHS guide, support, integrate, and coordinate chemical defense programs and activities. DHS concurred with the recommendation and identified actions to address it.

View GAO-18-562. For more information, contact Christopher P. Currie at (404) 679-1875 or CurrieC@gao.gov.

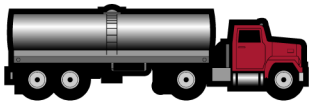
What GAO Found

The Department of Homeland Security (DHS) manages several programs and activities designed to prevent and protect against domestic attacks using chemical agents (see figure). Some DHS components have programs that focus on chemical defense, such as the Science and Technology Directorate's (S&T) chemical hazard characterization. Others have chemical defense responsibilities as part of their broader missions, such as U.S. Customs and Border Protection (CBP), which interdicts chemical agents at the border. DHS recently consolidated some chemical defense programs and activities into a new Countering Weapons of Mass Destruction (CWMD) Office.

However, GAO found and DHS officials acknowledged that DHS has not fully integrated and coordinated its chemical defense programs and activities. Several components—including CBP, U.S. Coast Guard, the Office of Health Affairs, and S&T—have conducted similar activities, such as acquiring chemical detectors or assisting local jurisdictions with preparedness, separately, without DHS-wide direction and coordination. As components carry out chemical defense activities to meet mission needs, there is a risk that DHS may miss an opportunity to leverage resources and share information that could lead to greater effectiveness addressing chemical threats. It is too early to tell the extent to which the new CWMD Office will enhance the integration of DHS's chemical defense programs and activities. Given the breadth of DHS's chemical defense responsibilities, a strategy and implementation plan would help the CWMD Office (1) mitigate the risk of fragmentation among DHS programs and activities, and (2) establish goals and identify resources to achieve these goals, consistent with the Government Performance and Results Modernization Act of 2010. This would also be consistent with a 2012 DHS effort, since abandoned, to develop a strategy and implementation plan for all chemical defense activities, from prevention to recovery. DHS officials stated the 2012 effort was not completed because of leadership changes and competing priorities.

Examples of Chemical Agents Used in Attacks and Their Effects

Toxic industrial and commercial chemicals



Example: Chlorine

Exposure to chlorine can cause nose, throat, and eye irritation; chest pain; vomiting; lung injury; and death.

Chemical warfare agents

Example: Sarin

Exposure to sarin can lead to loss of consciousness, seizures, paralysis, respiratory failure, and death.

Chemical toxins of biological origin

Example: Ricin

Exposure to ricin can lead to vomiting and diarrhea, blood in the urine, seizures, organ failure, and death.

Source: GAO summary of National Academies, Department of Homeland Security, and Centers for Disease Control and Prevention information; Art Explosion (clip art); Steve Hurst, hosted by the U.S. Department of Agriculture–Natural Resources Conservation Service Plant List of Accepted Nomenclature, Taxonomy and Symbols (PLANTS) Database (adapted photograph). | GAO-18-562

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Abbreviations

CBP	U.S. Customs and Border Protection
CBRN	chemical, biological, radiological, and nuclear
CDP	Chemical Defense Program
CFATS	Chemical Facility Anti-Terrorism Standards
COTS	Commercial-off-the-shelf
CSAC	Chemical Security Analysis Center
CTRA	Chemical Terrorism Risk Assessment
CWMD	Countering Weapons of Mass Destruction
DHS	Department of Homeland Security
FEMA	Federal Emergency Management Agency
FPS	Federal Protective Service
GAO	United States Government Accountability Office
GPRA	Government Performance and Results Act of 1993
GPRAMA	GPRA Modernization Act of 2010
HSPD	Homeland Security Presidential Directive
ISIS	Islamic State of Iraq and Syria
I&A	Office of Intelligence and Analysis
OHA	Office of Health Affairs
NPPD	National Protection and Programs Directorate
PPD	Presidential Policy Directive
S&T	Science and Technology Directorate
SOPD	Sector Outreach and Programs Division
TSA	Transportation Security Administration

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
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August 22, 2018

The Honorable Daniel M. Donovan, Jr.
Chairman
Subcommittee on Emergency Preparedness, Response, and Communications
Committee on Homeland Security
House of Representatives

Dear Mr. Chairman:

Recent chemical attacks in Malaysia and Syria, a thwarted chemical attack in Australia, and the threat of using chemical weapons against the West by the Islamic State of Iraq and Syria (ISIS) have sparked concerns about the potential for chemical attacks occurring in the United States. In March 2017, an exiled relative of the leader of North Korea was killed in Malaysia after he was allegedly exposed to the chemical nerve agent VX. In April 2017, a chemical attack in Syria using the nerve agent sarin killed approximately 100 people and injured hundreds more. In July 2017, Australian police foiled an alleged terrorist plot to bring down a plane by using a device that would have generated an explosion and released a toxic gas inside the plane. Similarly, according to Department of Homeland Security (DHS) officials, ISIS has become increasingly interested in conducting and inspiring chemical attacks in the West, with the goal of increasing fear, enhancing the lethal nature of attacks, and adding greater complexity into response efforts.

According to the National Academies and DHS, chemical attacks involve releasing toxic chemicals with the intent to do harm.[1] In addition, according to DHS, ISIS-inspired homegrown extremists or other domestic actors who choose to pursue chemical attacks could use toxic chemicals and crude methods to release them, such as releasing toxic gases from a pressurized tank by breaching the tank with an improvised explosive device. For example, facilities containing toxic chemicals or the trucks, vessels, or rail cars used to transport these chemicals could be attacked to cause a chemical release. Toxic chemicals that could be used in an

[1]National Academies and Department of Homeland Security, *Chemical Attack: Warfare Agents, Industrial Chemicals, and Toxins* (Washington, D.C.: National Academy of Sciences, 2004), available at https://www.dhs.gov/sites/default/files/publications/prep_chemical_fact_sheet.pdf.

attack include industrial and commercial chemicals, such as chlorine or ammonia, and chemical toxins of biological origin, such as ricin.

DHS has a number of chemical defense responsibilities, programs, and activities spread across its various components. They include, for example, being responsible for managing domestic chemical incidents; developing and implementing chemical detection technology; providing chemical preparedness guidance and support to state, local, territorial, and tribal partners; and regulating and supporting the security of facilities that use or store certain chemicals.[2] DHS's efforts to address a terrorist chemical attack involve a wide range of components including the Countering Weapons of Mass Destruction (CWMD) Office, the National Protection and Programs Directorate (NPPD), the Science and Technology Directorate (S&T), the Federal Emergency Management Agency (FEMA), U.S. Customs and Border Protection (CBP), the Transportation Security Administration (TSA), and the U.S. Coast Guard.

In light of the range of DHS components involved in chemical defense and concerns that some terrorist organizations have threatened to use chemical agents to attack the United States, you asked us to examine DHS' chemical defense efforts and whether these programs and activities are positioned to address the threat of chemical terrorism. This report examines (1) DHS programs and activities to prevent and protect against domestic chemical attacks and (2) the extent to which DHS has integrated and coordinated all of its chemical defense programs and activities.

To meet our two objectives, we reviewed and discussed with DHS officials relevant legislation, presidential directives, and DHS documentation to understand DHS's responsibilities related to domestic chemical defense. We reviewed, among others, the Homeland Security Act of 2002; the DHS Appropriations Act, 2007; the Protecting and Securing Chemical Facilities from Terrorist Attacks Act of 2014; the 2007 Homeland Security Presidential Directive on domestic chemical defense; the 2003 Homeland Security Presidential Directive on management of domestic incidents; the 2011 Presidential Policy Directive on national preparedness; the 2007 Homeland Security Presidential Directive on medical countermeasures against weapons of mass destruction; the 2013

[2]For purposes of this report, chemical defense includes any government program and activity for preventing, protecting against, mitigating, responding to, and recovering from a chemical attack.

Presidential Policy Directive on critical infrastructure security and resilience; the 2004 Homeland Security Presidential Directive on defense of U.S. agriculture and food; the 2014 DHS Quadrennial Homeland Security Review; the Fiscal Years 2014–2018 DHS Strategic Plan; the 2013 DHS National Infrastructure Protection Plan; and the 2016 DHS National Response Framework.[3]

To identify the programs and activities that DHS has to prevent and protect against chemical attacks, we reviewed DHS documentation and interviewed DHS officials. Specifically, we reviewed a 2016 DHS presidential transition issue paper that identified DHS components as having activities intended to reduce the risk of chemicals being used as weapons.[4] Also, we reviewed documentation provided by DHS and interviewed officials from the following components: the Office of Health Affairs (OHA), S&T, NPPD, FEMA, CBP, TSA, the Office of Intelligence and Analysis, the U.S. Coast Guard, and the U.S. Secret Service. For example, we reviewed documentation and interviewed officials from OHA's Chemical Defense Program about chemical defense demonstration projects it conducted from fiscal year 2009 through fiscal year 2017 in five jurisdictions: Baltimore, Maryland; Boise, Idaho; Houston, Texas; New Orleans, Louisiana; and Nassau County, New York. We also reviewed documentation and interviewed officials from S&T's

[3]See Pub. L. No. 107-296, tit. III, V, 116 Stat. 2135, 2163-77, 2212-15 (classified, as amended, at 6 U.S.C. §§ 181-195f, 311-321q); Pub. L. No. 109-295, § 550, 120 Stat. 1355, 1388-89 (2006) (formerly classified at 6 U.S.C. § 121 note); Pub. L. No. 113-254, §§ 2—5, 128 Stat. 2898, 2898-2919, adding Title XXI—Chemical Facility Anti-Terrorism Standards—to the Homeland Security Act of 2002, and repealing section 550 of DHS Appropriations Act, 2007 (classified at 6 U.S.C. §§ 621-29); Homeland Security Presidential Directive 22 (HSPD-22) on domestic chemical defense (Washington, D.C.: December 21, 2007); Homeland Security Presidential Directive 5 (HSPD-5) on management of domestic incidents (Washington, D.C.: February 28, 2003); Presidential Policy Directive 8 (PPD-8) on national preparedness (Washington, D.C.: March 30, 2011); Homeland Security Presidential Directive 18 (HSPD-18) on medical countermeasures against weapons of mass destruction (Washington, D.C.: January 31, 2007); Presidential Policy Directive 21 (PPD-21) on critical infrastructure security and resilience (Washington, D.C.: February 12, 2013); Homeland Security Presidential Directive 9 (HSPD-9) on defense of U.S. agriculture and food (Washington, D.C.: January 30, 2004); Department of Homeland Security, Quadrennial Homeland Security Review Report (Washington, D.C.: June 2014); DHS, Fiscal Years 2014-2018 Strategic Plan (Washington, D.C.); DHS, National Infrastructure Protection Plan: Partnering for Critical Infrastructure Security and Resilience (Washington, D.C.: 2013); and DHS, National Response Framework (Washington, D.C.: June 2016).

[4]Following the November 2016 presidential election, the Department of Homeland Security developed a transition paper for the new administration, "DHS Activities to Mitigate the Risk of Chemicals Used as Weapons."

Chemical and Biological Defense Division on its chemical detection work conducted in 2016 and 2017 in New York and New Jersey. In addition, we reviewed documentation and interviewed officials from S&T's Chemical Security Analysis Center on its work analyzing chemical threats and risks, such as the Chemical Terrorism Risk Assessment, which is used to determine the risk associated with different terrorist scenarios and to assess how proposed measures might reduce that risk.[5] Further, we reviewed documentation and interviewed officials from NPPD's Infrastructure Security Compliance Division on its Chemical Facility Anti-Terrorism Standards (CFATS) program, which regulates security at certain chemical facilities, and reviewed our related body of work, including recent reports.[6] Moreover, we reviewed documentation and interviewed officials from NPPD's Office of Infrastructure Protection on its Sector Outreach and Programs Division (SOPD) that represents DHS as the sector-specific agency for the chemical sector and works in conjunction with other NPPD divisions to assure the security of the chemical sector.[7] In addition, we reviewed documentation and interviewed officials representing NPPD's Federal Protective Service. Moreover, we reviewed documentation and interviewed officials from the new CWMD Office on its efforts to consolidate some of DHS's chemical, biological, radiological, and nuclear programs, including the status of initial steps to establish the office's mission, integrated strategic goals, structure, plans, processes, and procedures.

[5]CSAC is part of S&T's Office of National Laboratories. This office oversees a network of five DHS laboratories, including CSAC, whose mission is to strengthen national homeland security by developing science and technology solutions that address dangerous threats and homeland security vulnerabilities.

[6]GAO, *Critical Infrastructure Protection: DHS Efforts to Assess Chemical Security Risk and Gather Feedback on Facility Outreach Can Be Strengthened*, GAO-13-353 (Washington, D.C.: April 5, 2013); *Critical Infrastructure Protection: DHS Action Needed to Verify Some Chemical Facility Information and Manage Compliance Process*, GAO-15-614 (Washington, D.C.: July 22, 2015); and *Critical Infrastructure Protection: DHS Has Fully Implemented Its Chemical Security Expedited Approval Program, and Participation to Date Has Been Limited*, GAO-17-502 (Washington, D.C.: June 29, 2015).

[7]The chemical sector is one of 16 critical infrastructure sectors designated under Presidential Policy Directive 21. The Department of Homeland Security, identified as the sector-specific agency for the chemical sector, leads the chemical sector's public-private partnership and works with companies to develop tools and resources that enhance the sector's security and resilience. The other 15 critical infrastructure sectors are the commercial facilities sector; communications sector; critical manufacturing sector; dams sector; defense industrial base sector; emergency services sector; energy sector; financial services sector; food and agriculture sector; government facilities sector; healthcare and public health sector; information technology sector; nuclear reactors, materials, and waste sector; transportation systems sector; and water and wastewater systems sector.

To assess the extent to which DHS has integrated and coordinated all of its chemical defense programs and activities, we reviewed DHS documentation and interviewed DHS officials on the department's efforts. Specifically, we examined DHS's 2017 action to consolidate some chemical, biological, radiological, and nuclear functions into one office and a 2012 DHS effort to develop a strategy and related implementation plan to integrate and coordinate the department's chemical defense programs and activities. In so doing, we reviewed the 2012 DHS strategy for responding to and recovering from a chemical attack, which the department approved for limited departmental use and distribution.[8] In addition, we examined the extent of DHS's efforts to integrate and coordinate its chemical defense programs and activities relative to the laws and presidential directives cited above that set forth DHS responsibilities regarding chemical defense, national preparedness, and critical infrastructure protection, and the DHS chemical response and recovery strategy and other planning documents cited above.[9] We also compared the extent of these DHS efforts with criteria in the Government Performance and Results Act of 1993 (GPRA), as updated by the GPRA Modernization Act of 2010 (GPRAMA).[10] This act provides guidance for federal departments and agencies to establish strategies and plans for achieving results, develop measurable goals and related measures, and identify resources that will be required to achieve the goals.

We conducted this performance audit from January 2017 through August 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe

[8]Department of Homeland Security, DHS Strategy for Improving the National Response and Short-Term Recovery from a Catastrophic Chemical Attack (Washington, D.C.: November 2012).

[9]The presidential directives set policy and guide and inform federal domestic defense efforts, including chemical efforts; the Quadrennial Homeland Security Review and DHS Strategic Plan provide guidance for DHS's components; and the National Infrastructure Protection Plan provides guidance for critical infrastructure, including chemical sector infrastructure.

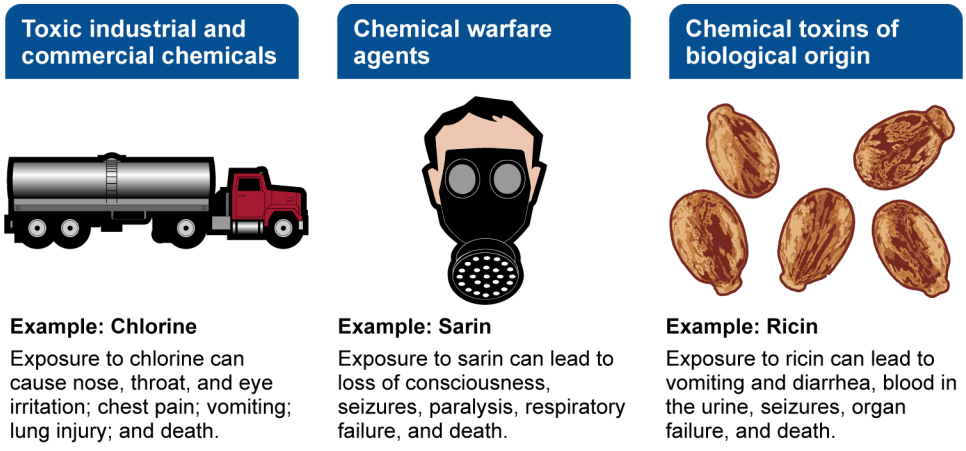
[10]The performance planning and reporting framework originally put into place by the Government Performance and Results Act of 1993 (GPRA), and updated by the GPRA Modernization Act of 2010 (GPRAMA), provides important tools that could help decision makers address challenges facing the federal government and facilitate efforts to reform the federal government and make it more efficient, effective, and accountable. See Pub. L. No. 103-62, 107 Stat. 285 (1993) and Pub. L. No. 111-352, 124 Stat. 3866 (2011).

that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Chemical attacks have emerged as a prominent homeland security risk because of recent attacks abroad using chemical agents and the interest of ISIS in conducting and inspiring chemical attacks against the West. DHS's OHA officials have stated that nationwide preparedness for a chemical attack is critical to prevent, protect against, mitigate, respond to, and recover from such an attack because it could occur abruptly, with many victims falling ill quickly, and with a window of opportunity of a few hours to respond effectively. Also, recent incidents in Malaysia and the United Kingdom demonstrate that chemical agents can be used to target individuals and can contaminate other individuals near the attack area. Chemicals that have been used in attacks include chlorine, sarin, and ricin, all of which can have deadly or debilitating consequences for individuals exposed to them; see figure 1.

Figure 1: Examples of Chemical Agents Used in Attacks and Their Effects



Source: GAO summary of National Academies, Department of Homeland Security, and Centers for Disease Control and Prevention information; Art Explosion (clip art); Steve Hurst, hosted by the U.S. Department of Agriculture–Natural Resources Conservation Service Plant List of Accepted Nomenclature, Taxonomy and Symbols (PLANTS) Database (adapted photograph). | GAO-18-562

Note: The United States and most nations around the world do not accept the use of chemical warfare agents or chemical weapons as a legitimate method of war. See 18 U.S.C. §§ 175, 229 (biological and chemical weapons criminal statutes). The 1997 Chemical Weapons Convention bans the production, possession, and use of chemical weapons. The 1925 Geneva Protocol outlaws the use of chemical weapons in war.

Laws and Presidential Directives Guiding DHS's Chemical Defense Efforts

Various laws guide DHS's efforts to defend the nation from chemical threats and attacks.[11] For example, under the Homeland Security Act of 2002, as amended, the Secretary of Homeland Security, through the Under Secretary for Science and Technology, has various responsibilities, to include conducting national research and developing, testing, evaluating, and procuring technology and systems for preventing the importation of chemical and other weapons and material; and detecting, preventing, protecting against, and responding to terrorist attacks.[12] Under former Section 550 of the DHS Appropriations Act, 2007, DHS established the CFATS program to, among other things, identify chemical facilities and assess the security risk posed by each, categorize the facilities into risk-based tiers, and inspect the high-risk facilities to ensure compliance with regulatory requirements.[13]

DHS's responsibilities with regard to chemical defense are also guided by various presidential directives promulgated following the September 11, 2001, terror attacks against the United States; see table 1.

[11]See, e.g., 18 U.S.C. § 229 (chemical weapons criminal statute).

[12]Homeland Security Act of 2002, Pub. L. No. 107-296, tit. III, § 302, 116 Stat. 2135, 2163, as amended by Implementing Recommendations of the 9/11 Commission Act of 2007, Pub. L. No. 110-53, tit. V, subtit. D, § 531(b)(1)(C), 121 Stat. 266, 334 (classified, as amended, at 6 U.S.C. § 182).

[13]Pub. L. No. 109-295, § 550, 120 Stat. at 1388-89 (formerly classified at 6 U.S.C. § 121 note). The Protecting and Securing Chemical Facilities from Terrorist Attacks Act of 2014, enacted in December 2014, repealed section 550 of the DHS Appropriations Act, 2007, and revised and reauthorized the CFATS program for an additional 4 years. Pub. L. No. 113-254, §§ 2—5, 128 Stat. 2898, 2898-2919, adding Title XXI—Chemical Facility Anti-Terrorism Standards—to the Homeland Security Act of 2002, and repealing section 550 of DHS Appropriations Act, 2007 (classified at 6 U.S.C. §§ 621-29).

Table 1: Presidential Directives Guiding the Department of Homeland Security's (DHS) Chemical Defense Programs and Activities

Presidential Directives	Year Enacted	DHS's Chemical Defense Responsibilities
Homeland Security Presidential Directive 22 (HSPD-22) on domestic chemical defense	2007	This directive establishes a national chemical policy and directs federal actions to strengthen the ability of the United States to prevent, protect, respond to, and recover from chemical attacks. HSPD-22 gives the Secretary of Homeland Security responsibility for managing chemical incidents and for coordinating domestic federal efforts related to these incidents.
Homeland Security Presidential Directive 5 (HSPD-5) on management of domestic incidents	2003	This directive establishes a single, comprehensive national incident management system and a national response plan. This directive gives the Secretary responsibility for managing domestic incidents, including incidents related to chemical terrorism.
Presidential Policy Directive 8 (PPD-8) on national preparedness	2011	This directive gives the Secretary responsibility for coordinating a comprehensive campaign to build and sustain national preparedness, including preparedness for a chemical attack. Under PPD-8, the Secretary is responsible for, among other things, coordinating domestic all-hazards preparedness efforts of federal departments and agencies in consultation with other levels of government, nongovernmental organizations, private sector partners, and the public.
Homeland Security Presidential Directive 18 (HSPD-18) on medical countermeasures against weapons of mass destruction	2007	This directive gives the Secretary responsibility for developing a strategic, integrated chemical, biological, radiological, and nuclear (CBRN) risk assessment that integrates the findings of the intelligence and law enforcement communities with input from the scientific, medical, and public health communities. HSPD-18 notes that it is the policy of the United States to draw upon the potential of the scientific community in the public and private sectors to address medical countermeasure requirements relating to CBRN threats.
Presidential Policy Directive 21 (PPD-21) on critical infrastructure security and resilience	2013	This directive gives the Secretary responsibility for coordinating the overall federal effort to promote the security and resilience of the nation's critical infrastructure. PPD-21 also recognizes that DHS evaluates national capabilities, opportunities, and challenges in protecting critical infrastructure; analyzes threats to, vulnerabilities of, and potential consequences from all hazards on critical infrastructure; identifies security and resilience functions that are necessary for effective stakeholder engagement with all critical infrastructure sectors; integrates and coordinates federal cross-sector security and resilience activities; and identifies and analyzes key interdependencies among critical infrastructure sectors, among other things. This directive also divides the nation's critical infrastructure into 16 sectors and identifies lead agencies (i.e., sector-specific agencies) responsible for coordinating security activities in each of those sectors. Under this directive, DHS was designated the sector-specific agency for the chemical sector.
Homeland Security Presidential Directive 9 (HSPD-9) on defense of U.S. agriculture and food	2004	This directive establishes a national policy on defending agriculture and food systems against terrorist attacks and other emergencies. It is to be implemented in a manner consistent with HSPD-7, superseded by PPD-21, which gives the Secretary responsibility for, among other things, coordinating the overall national effort to enhance the protection of the U.S. critical infrastructure.

Source: GAO analysis of presidential directives. | GAO-18-562

Our Work on Duplication, Overlap, and Fragmentation of Federal Programs

In 2010, Public Law 111-139 included a provision for us to identify and report annually on programs, agencies, offices, and initiatives—either within departments or government-wide—with duplicative goals and activities.[14] In our annual reports to Congress from 2011 through 2018 in fulfillment of this provision, we described areas in which we found evidence of duplication, overlap, and fragmentation among federal programs, including those managed by DHS.[15] To supplement these reports, we developed a guide to identify options to reduce or better manage the negative effects of duplication, overlap, and fragmentation, and evaluate the potential trade-offs and unintended consequences of these options.[16] In this report, we use the following definitions:

- Duplication occurs when two or more agencies or programs are engaged in the same activities or provide the same services to the same beneficiaries.
- Overlap occurs when multiple programs have similar goals, engage in similar activities or strategies to achieve those goals, or target similar beneficiaries. Overlap may result from statutory or other limitations beyond the agency's control.
- Fragmentation occurs when more than one agency (or more than one organization within an agency) is involved in the same broad area of national interest and opportunities exist to improve service delivery.

[14]Pub. L. No. 111-139, tit. II, § 21, 124 Stat. 8, 29-30 (2010) (codified at 31 U.S.C. § 712 note).

[15]See GAO's Duplication and Cost Savings webpage for links to the annual reports from 2011 through 2018 and related testimonies: https://www.gao.gov/duplication/overview.

[16]GAO, *Fragmentation, Overlap, and Duplication: An Evaluation and Management Guide*, GAO-15-49SP (Washington, D.C.: Apr. 14, 2015).

DHS Has Several Chemical Defense Programs and Activities Intended to Prevent and Protect Against Chemical Attacks

DHS manages several programs and activities designed to prevent and protect against domestic chemical attacks. Prior to December 2017, for example, three DHS components—OHA, S&T, and NPPD—had specific programs and activities focused on chemical defense. In December 2017, DHS created the CWMD Office, which, as discussed later in this report, consolidated the majority of OHA and some other DHS programs and activities intended to counter weapons of mass destruction such as chemical weapons. Other DHS components—such as CBP, the Coast Guard, and TSA—have chemical defense programs and activities as part of their broader missions. These components address potential chemical attacks as part of an all-hazards approach to address a wide range of threats and hazards. Appendix I discusses in greater detail DHS's programs and activities that focus on chemical defense, and appendix II discusses DHS components that have chemical defense responsibilities as part of an all-hazards approach.[17] Table 2 identifies the chemical defense responsibilities of each DHS component, and whether that component has a specific chemical defense program or an all-hazards approach to chemical defense.

[17]For the purposes of this section of the report, we focus only on chemical attack prevention and protection activities.

Table 2: Department of Homeland Security (DHS) Components Involved in Chemical Defense through Specific Programs or an All-Hazards Approach

DHS Component	Chemical Defense Responsibilities	Specific Chemical Defense Program	All-Hazards Approach to Chemical Defense
Countering Weapons of Mass Destruction (CWMD) Office	The CWMD Office is responsible for leading DHS efforts intended to counter, among other things, chemical attacks. As of December 2017, the CWMD Office subsumed the majority of the Office of Health Affairs, which was responsible for the public health impact of national threats and hazards, including the impact of chemical releases, and advised the Secretary and other DHS leaders on medical and health security issues including chemical attacks. Within the Office of Health Affairs, the Chemical Defense Program worked to enhance federal, state, and local risk awareness and planning and response mechanisms for addressing a chemical incident.	Yes	
Science and Technology Directorate (S&T)	S&T monitors and evaluates current and emerging national threats, characterizes hazards in terms of feasibility and impact and conducts research and development to more completely characterize the risk and identify and focus technological solutions to decrease the risk to the nation. S&T's Homeland Security Advanced Research Projects Agency includes the Chemical and Biological Defense Division that supports state and local jurisdictions. S&T's Office of National Laboratories includes the Chemical Security Analysis Center that, among other things, identifies and characterizes the chemical threat against the nation through analysis and scientific assessment. In May 2018, the Secretary delegated responsibility for conducting the non-research and development functions related to the Chemical Terrorism Risk Assessment to the CWMD Office.	Yes	
National Protection and Programs Directorate (NPPD)	NPPD is responsible for leading the national effort to strengthen the security and resilience of the nation's physical and cyber infrastructure. It has a regulatory and nonregulatory role regarding chemical facilities.		
	The Infrastructure Security Compliance Division is responsible for implementing the Chemical Facility Anti-Terrorism Standards program which regulates high-risk facilities that make, store, or distribute, and use certain chemicals.	Yes	
	NPPD's Sector Outreach and Programs Division (SOPD), in the Office of Infrastructure Protection, represents DHS as the sector-specific agency for the chemical sector. In this capacity, SOPD is responsible for providing institutional knowledge and specialized expertise, as well as leading, facilitating, or supporting the security and resilience programs and associated activities of its designated critical infrastructure sector in the all-hazards environment.	Yes	
	NPPD's Federal Protective Service (FPS) is responsible for the security of government buildings and the employees and public that use them. FPS conducts facility security assessments of the buildings and properties it protects that cover all types of hazards, including a chemical attack.		Yes

DHS Component	Chemical Defense Responsibilities	Specific Chemical Defense Program	All-Hazards Approach to Chemical Defense
Federal Emergency Management Agency (FEMA)	FEMA supports citizens and first responders in improving national capabilities to prepare for, protect against, respond to, recover from, and mitigate all hazards, including a chemical release.		Yes
U.S. Customs and Border Protection (CBP)	CBP is responsible for facilitating lawful international travel and trade while keeping terrorists and their weapons from entering the United States. CBP is responsible for detecting and interdicting hazardous material, including hazardous chemicals, in high-risk shipments.		Yes
U.S. Coast Guard	The Coast Guard is responsible for search and rescue; port, waterway, and coastal security; and homeland defense readiness. The Coast Guard conducts vessel inspections; performs incident response, including incidents involving oil or chemical releases; and interdicts drugs and hazardous material in the coastal zones and navigable waterways of the United States and its territories. The Coast Guard also regulates security at certain chemical facilities and other facilities possessing hazardous materials under the Maritime Transportation Security Act. These facilities are not regulated under the CFATS program.		Yes
Office of Intelligence and Analysis (I&A)	I&A provides DHS with timely intelligence and information including information on signs and symptoms of chemical poisoning, and emerging chemical threats.		Yes
Transportation Security Administration (TSA)	TSA is responsible for protecting the nation's transportation sector including security of commercial transportation of bulk quantities of hazardous materials. TSA's responsibility in chemical defense includes transportation by air, freight rail, and highway motor carriers.		Yes
U.S. Secret Service	The Secret Service is responsible for protecting its protectees and designated fixed sites and temporary venues from all threats and hazards, including chemical releases.		Yes

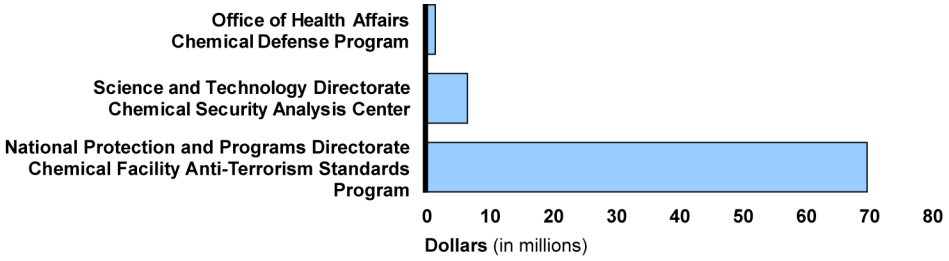
Source: GAO analysis of DHS information. | GAO-18-562

Figure 2 shows that fiscal year 2017 funding levels for three of the programs that focus on chemical defense totaled $77.3 million. Specifically, about $1.3 million in appropriated funds was available for OHA for its Chemical Defense Program activities and S&T had access to about $6.4 million in appropriated funds for its Chemical Security Analysis Center activities. The CFATS program had access to about $69.6 million in appropriated funds—or 90 percent of the $77.3 million for the three programs—to regulate high-risk facilities that produce, store, or use certain chemicals.[18] OHA officials stated that their efforts regarding

[18]DHS did not have data available on the amount of funding for its nonregulatory chemical sector activities because DHS funding data on activities associated with its role as a sector-specific agency is not broken out by sector. Under PPD-21, there are 16 critical infrastructure sectors and DHS is the sector-specific agency for 7 of the 16 sectors and is the co-sector-specific agency for 2 other sectors.

weapons of mass destruction over the last few years had focused mostly on biological threats rather than chemical threats. For example, $77.2 million in fiscal year 2017 appropriated funds supported OHA's BioWatch Program to provide detection and early warning of the intentional release of selected aerosolized biological agents in more than 30 jurisdictions nationwide. By contrast, as stated above, OHA and S&T had access to about $7.7 million in fiscal year 2017 appropriated funds for chemical defense efforts.

Figure 2: Fiscal Year 2017 Funding for Three Department of Homeland Security (DHS) Chemical Defense Programs



Source: GAO analysis of DHS data. | GAO-18-562

We could not determine the level of funding for components that treated chemical defense as part of their missions under an all-hazards approach because those components do not have chemical defense funding that can be isolated from funding for their other responsibilities. For example, among other things, CBP identifies and interdicts hazardous chemicals at and between ports of entry as part of its overall mission to protect the United States from threats entering the country.

A Chemical Strategy and Implementation Plan Would Enhance DHS Efforts to Integrate and Coordinate Its Chemical Defense Programs and Activities

DHS's chemical defense programs and activities have been fragmented and not well coordinated, but DHS recently created the CWMD Office to, among other things, promote better integration and coordination among these programs and activities. While it is too early to tell the extent to which this new office will enhance this integration and coordination, developing a chemical defense strategy and related implementation plan would further assist DHS's efforts.

DHS's Efforts to Address Chemical Attacks Have Been Fragmented and Not Well Coordinated

DHS's chemical defense programs and activities have been fragmented and not well coordinated across the department. As listed in table 2 above, we identified nine separate DHS organizational units that have roles and responsibilities that involve conducting some chemical defense programs and activities, either as a direct mission activity or as part of their broader missions under an all-hazards approach. We also found examples of components conducting similar but separate chemical defense activities without DHS-wide direction and coordination.

- OHA and S&T—two components with specific chemical defense programs—both conducted similar but separate projects to assist local jurisdictions with preparedness. Specifically, from fiscal years 2009 to 2017, OHA's Chemical Defense Program conducted chemical demonstration projects in five jurisdictions—Baltimore, Maryland; Boise, Idaho; Houston, Texas; New Orleans, Louisiana; and Nassau County, New York—to assist the jurisdictions in enhancing their preparedness for a large-scale chemical terrorist attack. According to OHA officials, they worked with local officials in one jurisdiction to install and test chemical detectors without having department-wide direction on these detectors' requirements. Also, according to S&T officials, the Chemical and Biological Defense Division worked with three jurisdictions in New York and New Jersey to help them purchase and install chemical detectors for their transit systems beginning in

2016 again without having department-wide direction on chemical detector requirements.[19]

- The Secret Service, CBP, and the Coast Guard—three components with chemical defense activities that are part of their all-hazards approach—also conducted separate acquisitions of chemical detection or identification equipment, according to officials from those components. For example, according to Secret Service officials, the agency has purchased chemical detectors that agents use for personal protection of protectees and assessing the safety of designated fixed sites and temporary venues. Also, according to CBP officials, CBP has purchased chemical detectors for identifying chemical agents at ports of entry nationwide.[20] Finally, according to Coast Guard officials, the agency has purchased chemical detectors for use in maritime locations subject to Coast Guard jurisdiction.

Officials from OHA, S&T, and the CWMD Office acknowledged that chemical defense activities had been fragmented and not well-coordinated. They stated that this fragmentation occurred because DHS had no department-wide leadership and direction for chemical defense activities.

We recognize that equipment, such as chemical detectors, may be designed to meet the specific needs of components when they carry out their missions under different operating conditions, such as an enclosed space by CBP or on open waterways by the Coast Guard. Nevertheless, when fragmented programs and activities that are within the same department and are responsible for the same or similar functions are executed without a mechanism to coordinate them, the department may

[19]According to S&T officials, some of the equipment was purchased with funds provided by the local jurisdictions and FEMA grant money. FEMA provides preparedness grants to state and local governments for any type of all-hazards preparedness activity, including chemical preparedness. According to FEMA data, in fiscal year 2016, states used about $3.5 million, local governments used about $48.5 million, and tribal and territorial governments used about $80,000 in preparedness grant funding for chemical prevention, protection, mitigation, response, and recovery efforts.

[20]Ports of entry are facilities that provide for the controlled entry into or departure from the United States. Specifically, a port of entry is any officially designated location (seaport, airport, or land border location) where DHS officers or employees are assigned to clear passengers and merchandise, collect duties, and enforce customs laws, and where DHS officers inspect persons entering or applying for admission into, or departing the United States pursuant to U.S. immigration law and travel controls.

miss opportunities to leverage resources and share information that leads to greater effectiveness.

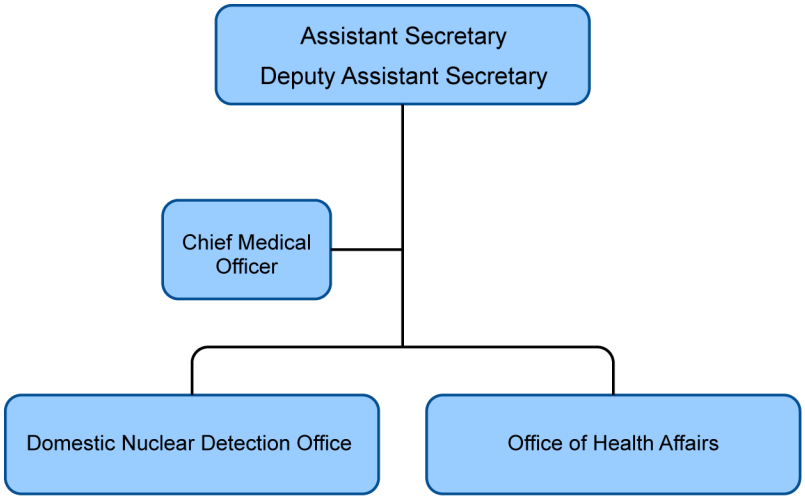
DHS Has Begun to Consolidate Some Chemical Defense Programs and Activities

As discussed earlier, DHS has taken action to consolidate some chemical defense programs and activities. Specifically, in December 2017, DHS consolidated some of its chemical, biological, radiological, and nuclear defense programs and activities under the CWMD Office.[21] The CWMD Office consolidated the Domestic Nuclear Detection Office; the majority of OHA; selected elements of the Science and Technology Directorate, such as elements involved in chemical, biological, and integrated terrorism risk assessments and material threat assessments; and certain personnel from the DHS Office of Strategy, Policy, and Plans and the Office of Operations Coordination with expertise on chemical, biological, radiological, and nuclear issues.[22] According to officials from the CWMD Office, the fiscal year 2018 funding for the office is $457 million. Of this funding, OHA contributed about $121.6 million and the Domestic Nuclear Detection Office contributed about $335.4 million. Figure 3 shows the initial organizational structure of the CWMD Office as of June 2018.

[21]DHS's fiscal year 2017 budget request proposed consolidating chemical, biological, radiological, nuclear, and explosives efforts into a new office. The explanatory statement accompanying the Consolidated Appropriations Act, 2017, stated that this proposed consolidation was not congressionally authorized and therefore amounts appropriated for these activities were provided for the component which had received such appropriations previously. 163 Cong. Rec. H3327, H3807 (daily ed. May 3, 2017). On October 6, 2017, DHS notified Congress of its intent to exercise its authority under section 872 of the Homeland Security Act of 2002 to consolidate some offices having chemical, biological, radiological, and nuclear functions into a new office, effective December 5, 2017. DHS did not include explosives functions under this office. Under section 872 of the Homeland Security Act of 2002, the Secretary has the authority to reorganize the department's functions and organizational units either (1) independently, 60 days after providing notice of such an action to the appropriate congressional committees with an explanation of the rationale for the action, or (2) through the President's submission of a reorganization plan. See 6 U.S.C. § 452. The Assistant Secretary for CWMD told us that, while the Secretary's reorganization authority appears broad, legislative action might be required for any action that would (1) abolish an agency, entity, organizational unit, program, or function expressly created by Congress or (2) do more than move a function or establish, consolidate, alter, or discontinue an organizational unit. According to DHS's CWMD web page, DHS is currently working with Congress to determine the ultimate organization and authorities of the CWMD office. See https://www.dhs.gov/countering-weapons-mass-destruction-office.

[22]In May 2018, the Secretary delegated responsibility for conducting the non-research and development functions related to the Chemical Terrorism Risk Assessment to the CWMD Office. Prior to this decision, S&T had been responsible for this assessment.

Figure 3: Organizational Chart of the Countering Weapons of Mass Destruction Office



Source: Countering Weapons of Mass Destruction Office. | GAO-18-562

As of July 2018, according to the Assistant Secretary of CWMD, his office supported by DHS leadership is working to develop and implement its initial structure, plans, processes, and procedures.[23] To guide the initial consolidation, officials representing the CWMD Office said they plan to use the key practices for successful transformations and reorganizations identified in our past work.[24] For example, they noted that they intend to establish integrated strategic goals, consistent with one of these key practices—establish a coherent mission and integrated strategic goals to guide the transformation. These officials stated that the goals include those intended to enhance the nation's ability to prevent attacks using weapons of mass destruction, including toxic chemical agents; support operational components in closing capability gaps; and invest in and develop innovative technologies to meet technical requirements and improve operations. They noted that the latter might include networked

[23]According to the Assistant Secretary, the office is conducting this work consistent with the notice DHS sent to Congress in October 2017 on the intention to create the CWMD Office, pursuant to section 872 of the Homeland Security Act of 2002.

[24]GAO, *Highlights of a GAO Forum Mergers and Transformations: Lessons Learned for a Department of Homeland Security and Other Federal Agencies*, GAO-03-293SP (Washington, D.C.: Nov. 14, 2002); and *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, GAO-03-669 (Washington, D.C.: July 2, 2003).

chemical detectors that could be used by various components to help them carry out their mission responsibilities in the future. However, the officials stated that all of the new office's efforts were in the initial planning stages and none had been finalized. They further stated that the initial setup of the CWMD Office covering the efforts to consolidate OHA and the Domestic Nuclear Detection Office may not be completed until the end of fiscal year 2018.

It is still too early to determine the extent to which the creation of the CWMD Office will help address the fragmentation and lack of coordination on chemical defense efforts that we have identified. Our prior work on key steps for assisting mergers and transformations shows that transformation can take years to complete.[25] One factor that could complicate this transformation is that the consolidation of chemical defense programs and activities is limited to certain components within DHS, such as OHA, and not others, such as some parts of S&T and NPPD. Officials from the CWMD Office stated that they intend to address this issue by coordinating the office's chemical security efforts with other DHS components that are not covered by the consolidation, such as those S&T functions that are responsible for developing chemical detector requirements. These officials also stated that they intend to address fragmentation by coordinating with and supporting DHS components that have chemical defense responsibilities as part of their missions under an all-hazards approach, such as the Federal Protective Service, CBP, TSA, the Coast Guard, and the Secret Service. Furthermore, the officials stated that they plan to coordinate DHS's chemical defense efforts with other government agencies having chemical programs and activities at the federal and local levels.

[25]GAO-03-293SP and GAO-03-669.

DHS's Prior Efforts and Recent Reorganization Offer an Opportunity for More Strategic Coordination

In October 2011, the Secretary of Homeland Security designated FEMA to coordinate the development of a strategy and implementation plan to enhance federal, state, local, tribal and territorial government agencies' ability to respond to and recover from a catastrophic chemical attack.[26] In November 2012, DHS issued a chemical response and recovery strategy that examined core capabilities and identified areas where improvements were needed.[27] The strategy identified a need for, among other things, (1) a common set of catastrophic chemical attack planning assumptions, (2) a formally established DHS oversight body responsible for chemical incident response and recovery, (3) a more rapid way to identify the wide range of chemical agents and contaminants that comprise chemical threats, and (4) reserve capacity for mass casualty medical care. The strategy also identified the principal actions needed to fill these gaps.

For example, with regard to identifying the range of chemical agents and contaminants that comprise chemical threats, the strategy focused on the capacity to screen, search for, and detect chemical hazards (and noted that this area was cross-cutting with prevention and protection). The strategy stated that, among other things, the Centers for Disease Control and Prevention, the Department of Agriculture and Food and Drug Administration, the Department of Defense, the Environmental Protection Agency, and DHS components, including the Coast Guard, provide screening, search, and detection capabilities. However, the strategy noted that "DHS does not have the requirement to test, verify, and validate commercial-off-the-shelf (COTS) chemical detection equipment purchased and fielded by its various constituent agencies and components, nor by the first responder community."

[26]FEMA led a team of subject matter experts from across DHS, including OHA and S&T. The team used three high-risk scenarios, based on the Chemical Terrorism Risk Assessment, to focus on how DHS and its partners would respond to and recover from these attacks. The three scenarios represented targets and chemicals that could result in a range of severe and life-threatening injuries, as well as disruption to critical public services, such as transportation, medical services, and food distribution. The three scenarios represented a chemical supply chain attack (catastrophic venting of a chlorine railcar); an indoor chemical release (nerve agent attack on a subway station); and food contamination (cyanide contamination of the milk supply).

[27]Department of Homeland Security, Strategy for Improving the National Response and Short-Term Recovery from a Catastrophic Chemical Attack (Washington, D.C.: August 21, 2012).

According to a November 2012 memorandum transmitting the response and recovery strategy to DHS employees, the distribution of the strategy was only to be used for internal discussion purposes and was not to be distributed outside of DHS because it had not been vetted by other federal agencies and state, local, tribal, and territorial partners. The memorandum and the strategy further stated that DHS was developing a companion strategy focused on improving the national capacity to prevent, protect against, and mitigate catastrophic chemical threats and attacks and noted that once this document was complete, DHS would engage with its partners to solicit comments and feedback. The strategy also stated that DHS intended to develop a separate implementation plan that would define potential solutions for any gaps identified, program any needed budget initiatives, and discuss programs to enhance DHS's core capabilities and close any gaps.

DHS officials representing OHA and S&T told us that DHS had intended to move forward with the companion strategy and the accompanying implementation plan but the strategy and plan were never completed because of changes in leadership and other competing priorities within DHS. At the time of our discussion and prior to the establishment of the CWMD Office, OHA officials also noted that DHS did not have a singular entity or office responsible for chemical preparedness. An official representing S&T also said that the consolidation of some chemical, biological, radiological, and nuclear efforts may help bring order to chemical defense efforts because DHS did not have an entity in charge of these efforts or a strategy for guiding them.

Now that DHS has established the CWMD Office as the focal point for chemical, biological, radiological, and nuclear programs and activities, DHS has an opportunity to develop a chemical defense strategy and related implementation plan to better integrate and coordinate the department's programs and activities to prevent, protect against, mitigate, respond to, and recover from a chemical attack. The Government Performance and Results Act of 1993 (GPRA), as updated by the GPRA Modernization Act of 2010 (GPRAMA), includes principles for agencies to focus on the performance and results of programs by putting elements of a strategy and plan in place such as (1) establishing measurable goals and related measures, (2) developing strategies and plans for achieving results, and (3) identifying the resources that will be required to achieve the goals. Although GPRAMA applies to the department or agency level, in our prior work we have reported that these provisions can serve as leading practices for strategic planning at lower levels within federal

agencies, such as planning for individual divisions, programs, or initiatives.[28]

Our past work has also shown that a strategy is a starting point and basic underpinning to better manage federal programs and activities such as DHS's chemical defense efforts.[29] A strategy can serve as a basis for guiding operations and can help policy makers, including congressional decision makers and agency officials, make decisions about programs and activities. It can also be useful in providing accountability and guiding resource and policy decisions, particularly in relation to issues that are national in scope and cross agency jurisdictions, such as chemical defense. When multiple agencies are working to address aspects of the same problem, there is a risk that duplication, overlap, and fragmentation among programs can result in wasting scarce funds, confuse and frustrate program customers, and limit overall program effectiveness. A strategy and implementation plan for DHS' chemical defense programs and activities would help mitigate these risks. Specifically, a strategy and implementation plan would help DHS further define its chemical defense capability, including opportunities to leverage resources and capabilities and provide a roadmap for addressing any identified gaps. By defining DHS's chemical defense capability, a strategy and implementation plan may also better position the CWMD Office and other components to work collaboratively and strategically with other organizations, including other federal agencies and state, local, tribal, and territorial jurisdictions.

Officials from the CWMD Office agreed that the establishment of the new office was intended to provide leadership to and help guide, support, integrate, and coordinate DHS's chemical defense efforts and that a strategy and implementation plan could help DHS better integrate and coordinate its fragmented chemical defense programs and activities.

[28]See GAO, *Environmental Justice: EPA Needs to Take Additional Actions to Help Ensure Effective Implementation*, GAO-12-77 (Washington, D.C.: Oct. 6, 2011).

[29]GAO, *Combating Terrorism: Evaluation of Selected Characteristics in National Strategies Related to Terrorism,* GAO-04-408T (Washington, D.C.: Feb. 3, 2004); *Prescription Drugs: Strategic Framework Would Promote Accountability and Enhance Efforts to Enforce the Prohibitions on Personal Importation*, GAO-05-372 (Washington, D.C.: Sept. 8, 2005); *Managing for Results: Practices for Effective Agency Strategic Reviews*, GAO-15-602 (Washington, D.C.: July 29, 2015); and *Countering Violent Extremism: Actions Needed to Define Strategy and Assess Progress of Federal Efforts*, GAO-17-300 (Washington, D.C.: Apr. 6, 2017).

Conclusions

Recent chemical attacks abroad and the threat of ISIS to use chemical weapons against the West have sparked concerns about the potential for chemical attacks occurring in the United States. DHS components have developed and implemented a number of separate chemical defense programs and activities that, according to DHS officials, have been fragmented and not well coordinated within the department. In December 2017, DHS consolidated some of its programs and activities related to weapons of mass destruction, including those related to chemical defense, by establishing the new CWMD Office. It is too early to tell whether and to what extent this office will help address fragmentation and the lack of coordination across all DHS's weapons of mass destruction efforts, including chemical efforts. However, as part of its consolidation, the CWMD Office would benefit from developing a strategy and implementation plan to guide, support, integrate, and coordinate DHS's programs and activities to prevent, protect against, mitigate, respond to, and recover from a chemical attack. A strategy and implementation plan would also help the CWMD Office guide DHS's efforts to address fragmentation and coordination issues and would be consistent with the office's aim to establish a coherent mission and integrated strategic goals.

Recommendation for Executive Action

The Assistant Secretary for Countering Weapons of Mass Destruction should develop a strategy and implementation plan to help the Department of Homeland Security, among other things, guide, support, integrate and coordinate its chemical defense programs and activities; leverage resources and capabilities; and provide a roadmap for addressing any identified gaps. (Recommendation 1)

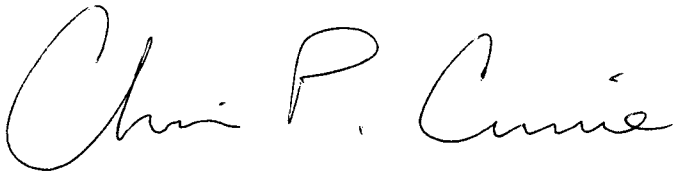
Agency Comments and GAO Evaluation

We provided a draft of this report to DHS for review and comment. DHS provided comments, which are reproduced in full in appendix III and technical comments, which we incorporated as appropriate. DHS concurred with our recommendation and noted that the Assistant Secretary for CWMD will coordinate with the DHS Under Secretary for Strategy, Policy, and Plans and other stakeholders to develop a strategy and implementation plan that will better integrate and direct DHS chemical defense programs and activities. DHS estimated that it will complete this effort by September 2019. These actions, if fully implemented, should address the intent of this recommendation.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the appropriate congressional committees, the Secretary of Homeland Security, and other interested parties. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (404) 679-1875 or CurrieC@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.

Sincerely yours,



Chris P. Currie
Director, Homeland Security and Justice

Appendix I: Department of Homeland Security Chemical Defense Programs

At the time our review began, the Department of Homeland Security (DHS) had three headquarters components with programs and activities focused on chemical defense. These were the Office of Health Affairs' (OHA) Chemical Defense Program; the Science and Technology Directorate's (S&T) Chemical and Biological Defense Division and Chemical Security Analysis Center (CSAC); and the National Protection and Programs Directorate's (NPPD) Chemical Facility Anti-Terrorism Standards (CFATS) program and Sector Outreach and Programs Division. Each component had dedicated funding to manage the particular chemical defense program or activity (with the exception of the Sector Outreach and Programs Division because this division funds DHS activities related to all critical infrastructure sectors, including the chemical sector). On December 7, 2017, DHS established the Countering Weapons of Mass Destruction (CWMD) Office, which incorporated most of OHA and selected elements of S&T, together with other DHS programs and activities related to countering chemical, biological, radiological, and nuclear threats. According to DHS, the CWMD Office was created to, among other things, elevate and streamline DHS's efforts to prevent terrorists and other national security threat actors from using harmful agents, such as chemical agents, to harm Americans and U.S. interests.[1]

Office of Health Affairs, Chemical Defense Program

OHA, which was subsumed by the CWMD Office in December 2017, was responsible for enhancing federal, state, and local risk awareness and planning and response mechanisms in the event of a chemical incident through the Chemical Defense Program. This program provided medical and technical expertise to OHA leadership and chemical defense stakeholders including DHS leadership, DHS components, the intelligence community, federal interagency partners, and professional and academic preparedness organizations. The program's efforts focused on optimizing local preparedness and response to chemical incidents that exceed the local communities' capacity and capability to act during the first critical hours by providing guidance and tools for first responders and supporting chemical exercises for preparedness. DHS's Chief Medical Officer was responsible for managing OHA.

The Chemical Defense Program expended about $8.3 million between fiscal years 2009 and 2017 in chemical demonstration projects and

[1]Department of Homeland Security, Notice of Countering Weapons of Mass Destruction Office Reorganization Pursuant to §872 of the Homeland Security Act of 2002 (Washington, D.C.: October 6, 2017).

follow-on funding to assist five jurisdictions in their chemical preparedness: Baltimore, Maryland; Boise, Idaho; Houston, Texas; New Orleans, Louisiana; and Nassau County, New York.[2] For example, in Baltimore, OHA assisted the Maryland Transit Administration with the selection and installation of chemical detection equipment to integrate new technology into community emergency response and planning. In the other four locales, OHA assisted these partners in conducting multiple scenarios specific to each city based on high-risk factors identified by the Chemical Terrorism Risk Assessment (CTRA), which is a risk assessment produced by CSAC every 2 years. Such scenarios included indoor and outdoor scenarios in which persons were "exposed" to either an inhalant or a substance on their skin. Figure 4 summarizes the scenarios conducted in each city and some of the lessons learned.

[2]According to OHA officials, no direct grant funding was provided to the communities. The Chemical Defense Program provided the technical expertise and subject matter expert team to facilitate the exercises and produce final documents for the community to use for future preparedness activities.

Figure 4: Summary of Chemical Defense Program's Five-City Demonstration Projects

Location	Description	Lessons learned
Baltimore, MD 	The Office of Health Affairs (OHA), in conjunction with the city of Baltimore and the Maryland Transit Administration, ran three scenarios in a Baltimore subway station that included chemical detectors, various simulated chemical releases, and estimated casualties and illness.	• Training is needed for state and local entities and first responders. • Involvement of key stakeholders early and often in the process is necessary.
Boise, ID 	OHA, in conjunction with state and local officials from Boise, including the local fire department and hazmat team, conducted two scenarios in a large arena. The scenarios included a chemical release inside the arena and a traffic accident near the arena that caused a chemical release.	• A community plan is needed to help with hospital overflow. • State and local officials need pre-scripted messages to inform and guide the public inside and outside the arena during chemical incidents. • Training is needed for state and local entities regarding chemical defense.
Houston, TX 	OHA, in conjunction with federal, state, and local officials from Houston, conducted three scenarios that included the derailment of a train carrying chemicals, the rupturing of a large chemical tanker near a port, and an aerial chemical release over a stadium.	• Need to improve protective procedures for initial isolation of the large affected area. • Need to better inform law enforcement personnel about the speed, toxicity, and volume of chemicals. • Need to update community preparedness materials to include life-saving actions in a chemical incident.
New Orleans, LA 	OHA, in conjunction with federal, state, and local officials from New Orleans, conducted two scenarios that included a commercial truck crashing into a tanker rail car, and a chemical tanker ship that experienced steering failure and hit the riverbank causing a chemical release over parts of the city.	• Need to implement cross-agency training and integration. • Need to invest in pre-disaster planning for post-disaster recovery. • Need to integrate resilience-driven community decision making.
Nassau County, NY 	OHA, in conjunction with officials from Nassau County, conducted a scenario that included the release of a chemical in a coliseum holding over 500 people.	• Public health officials need to coordinate with first responder agencies. • Additional interagency planning and agency responsibility need to be discussed, understood, and applied to training.

Source: GAO summary of Department of Homeland Security information. | GAO-18-562

According to OHA summary documentation, a key finding from this work was that timely decisions and actions save lives and manage resources in response to a chemical incident. Since the completion of the five-city project, OHA has been working to, among other things, continue to develop a lessons learned document based on the project, as well as a

related concept of operations, that state and local jurisdictions could use to respond to chemical incidents.

As of December 7, 2017, OHA was consolidated into the CWMD Office and its functions transferred to the new office, according to officials from the CWMD Office. The Chief Medical Officer is no longer responsible for managing OHA but serves as an advisor to the Assistant Secretary for Countering Weapons of Mass Destruction and as the principal advisor to the Secretary and the Administrator of FEMA on medical and public health issues related to natural disasters, acts of terrorism, and other man-made disasters, among other things.

Science and Technology Directorate, Chemical Defense Activities

S&T's Homeland Security Advanced Research Projects Agency includes the Chemical and Biological Defense Division, which supports state and local jurisdictions by, for example, providing them help in modeling potential chemical attacks. The Chemical and Biological Defense Division worked with the City of New York to develop chemical detection modeling by simulating a chemical attack. As a result of the simulation, New York City officials wanted to implement mechanisms to prevent the potential consequences of a chemical attack in a large city.

S&T's Office of National Laboratories includes the CSAC, which identifies and characterizes the chemical threat against the nation through analysis and scientific assessment. CSAC is responsible for producing, among other things, the CTRA, a comprehensive evaluation of the risks associated with domestic toxic chemical releases produced every 2 years. CSAC officials chair the Interagency Chemical Risk Assessment Working Group that meets to develop the CTRA, identify chemical hazards, and produce a list of priority chemicals. This working group is comprised of DHS components, federal partners, and private industry officials that share industry information to ensure accurate and timely threat and risk information is included in the CTRA. To complement the CTRA, CSAC developed a standalone CTRA desktop tool that DHS components can use to conduct risk-based modeling of a potential chemical attack and provide results to DHS components, such as the U.S. Secret Service, for advance planning of large-scale events.

In addition, CSAC conducts tailored risk assessments addressing emerging threats such as fentanyl, a synthetic opioid that has caused numerous deaths across the United States. CSAC sends these assessments, along with other intelligence and threat information, to relevant DHS components, federal agencies, state and local partners,

and private entities so this information can be used in planning and decision making. Officials from eight DHS components we spoke with said they use CSAC information in their work and that CSAC products are useful.

CSAC conducted two exercises, known as Jack Rabbit I and II, to experimentally characterize the effects of a large-scale chemical release and to understand the reason for the differences seen between real-world events and modeling predictions.[3] These exercises were intended to strengthen industry standards in chemical transportation, as well as response and recovery plans. Outputs and data from these exercises have been used to write first responder guidelines for these types of events and are being taught in nationwide fire and hazmat courses. The fiscal year 2018 President's Budget request did not ask for an appropriation to fund CSAC. However, the Consolidated Appropriations Act, 2018, did provide funding for CSAC.[4] Furthermore, in May 2018, the Secretary delegated responsibility for conducting the non-research and development functions related to the Chemical Terrorism Risk Assessment to the CWMD Office.

National Protection and Programs Directorate, Chemical Facility Anti-Terrorism Standards (CFATS) Program and Other Chemical Facility Security Activities

The CFATS program uses a multitiered risk assessment process to determine a facility's risk profile by requiring facilities in possession of specific quantities of designated chemicals of interest to complete an online questionnaire.[5] CFATS program officials said they also use CSAC data as part of the process for making decisions about which facilities should be covered by CFATS, and their level of risk. If CFATS officials make a determination that a facility is high-risk, the facility must submit a vulnerability assessment and a site security plan or an alternative security program for DHS approval that includes security measures to meet risk-

[3]The Jack Rabbit I program analyzed the release of chlorine and was conducted in 2010. Jack Rabbit II began in 2013 and was led by DHS and consisted of a series of large-scale outdoor chlorine release trials conducted with a team of partners from government, private industry, and academia.

[4]See Explanatory Statement, 164 Cong. Rec. H2045, H2562 (daily ed. March 22, 2018), accompanying Pub. L. No. 115-141, 132 Stat. 348. In particular, $1.9 million was provided for CSAC under Science and Technology—Laboratory Facilities; and approximately $4.4 million was provided under Research, Development, and Innovation for CSAC Research and Development.

[5]DHS assigns high-risk facilities to one of four risk tiers, where Tier 1 represents facilities with the highest risk and Tier 4 represents facilities with the lowest risk.

based performance standards.[6] We previously reported on various aspects of the CFATS program and identified challenges that DHS was experiencing in implementing and managing the program.[7] We made a number of recommendations to strengthen the program to include, among other things, that DHS verify that certain data reported by facilities is accurate, enhance its risk assessment approach to incorporate all elements of risk, conduct a peer review of the program to validate and verify DHS's risk assessment approach, and document processes and procedures for managing compliance with site security plans. DHS agreed with all of these recommendations and has either fully implemented them or taken action to address them.

The Sector Outreach and Programs Division works to enhance the security and resilience of chemical facilities that may or may not be considered high-risk under the CFATS program and plays a nonregulatory role as the sector-specific agency for the chemical sector. The Sector Outreach and Programs Division works with the chemical sector through the Chemical Sector Coordinating Council, the Chemical Government Coordinating Council, and others in a public-private

[6]As of February 2018, a total of 29,195 chemical facilities (which also includes chemical facilities new to the CFATS program) were assessed using DHS's revised risk assessment methodology, with 3,500 (or 12 percent) of these facilities designated as high-risk and required to develop and implement a site security plan under the CFATS program.

[7]GAO, *Critical Infrastructure Protection: DHS Is Taking Action to Better Manage Its Chemical Security Program, but It Is Too Early to Assess Results*, GAO-12-515T (Washington, D.C.: July 26, 2012); *Critical Infrastructure Protection: DHS Efforts to Assess Chemical Security Risk and Gather Feedback on Facility Outreach Can Be Strengthened*, GAO-13-353 (Washington, D.C.: Apr. 5, 2013); *Critical Infrastructure Protection: DHS Efforts to Identify, Prioritize, Assess, and Inspect Chemical Facilities,* GAO-14-365T (Washington, D.C.: Feb. 27, 2014); *Critical Infrastructure Protection: Observations on DHS Efforts to Implement and Manage Its Chemical Security Program,* GAO-14-608T (Washington, D.C.: May 14, 2014); *Critical Infrastructure Protection: DHS Action Needed to Verify Some Chemical Facility Information and Manage Compliance Process*, GAO-15-614 (Washington, D.C., July 22, 2015); *Critical Infrastructure Protection: Improvements Needed for DHS's Chemical Facility Whistleblower Report Process,* GAO-16-572, (Washington, D.C.: Jul. 12, 2016); and *Critical Infrastructure Protection: DHS Has Implemented Its Chemical Security Expedited Approval Program and Participation Has Been Limited*, GAO-17-502 (Washington, D.C.: June 29, 2017).

partnership to share information on facility security and resilience.[8] In addition, the division and the coordinating councils help enhance the security and resilience of chemical facilities that may or may not be considered high-risk under the CFATS program. The division and councils are to collaborate with federal agencies, chemical facilities, and state, local, tribal, and territorial entities to, among other things, assess risks and share information on chemical threats and chemical facility security and resilience. Further, the Protective Security Coordination Division in the Office of Infrastructure Protection works with facility owners and operators to conduct voluntary assessments at facilities.

[8]The chemical sector is one of 16 critical infrastructure sectors designated under Presidential Policy Directive (PPD) 21. The Department of Homeland Security, identified as the sector-specific agency for the chemical sector, leads the chemical sector's public-private partnership and works with companies to develop tools and resources that enhance the sector's security and resilience. The other 15 critical infrastructure sectors are commercial facilities; communications; critical manufacturing; dams; defense industrial base; emergency services; energy; financial services; food and agriculture; government facilities; healthcare and public health; information technology; nuclear reactors, materials, and waste; transportation systems; and water and wastewater systems.

Appendix II: Department of Homeland Security Components' Chemical Defense Responsibilities as Part of an All-Hazards Approach

Department of Homeland Security (DHS) components conduct various prevention and protection activities related to chemical defense. These activities are managed by individual components as part of their overall mission under an all-hazards approach.

- **U.S. Coast Guard** - The Coast Guard uses fixed and portable chemical detectors to identify and interdict hazardous chemicals as part of its maritime prevention and protection activities. It also responds to hazardous material and chemical releases in U.S. waterways.[1] The Coast Guard also staffs the 24-hour National Response Center, which is the national point of contact for reporting all oil and hazardous materials releases into the water, including chemicals that are discharged into the environment. The National Response Center also takes maritime reports of suspicious activity and security breaches at facilities regulated by the Maritime Transportation Security Act of 2002.[2] Under this act, the Coast Guard regulates security at certain chemical facilities and other facilities possessing hazardous materials.
- **U.S. Customs and Border Protection (CBP)** - CBP interdicts hazardous chemicals at U.S. borders and ports of entry as part of its overall mission to protect the United States from threats entering the country. Among other things, CBP has deployed chemical detectors to point of entry nationwide that were intended for narcotics detection, but can also be used by CBP officers to presumptively identify a limited number of chemicals. Also, CBP's National Targeting Center helps to screen and identify high-risk packages that may contain hazardous materials at ports of entry. In addition, CBP's Laboratories and Scientific Services Directorate manages seven nationally accredited field laboratories, where staff detect, analyze, and identify hazardous substances, including those that could be weapons of mass destruction. When CBP officers send suspected chemical weapons, narcotics, and other hazardous materials to the labs, the labs use various confirmatory analysis technologies, such as infrared spectroscopy and mass spectrometry, to positively identify them. Also, the Directorate has a 24-hour Teleforensic Center for on-call scientific

[1]U.S. waterways include rivers and coastal areas.

[2]The Maritime Transportation Security Act of 2002 was enacted to amend the Merchant Marine Act, 1936, to establish a program to ensure greater security, for United States seaports, and for other purposes. Pub. L. No. 107-295, 116 Stat. 2064.

support for CBP officers who have questions on suspected chemical agents.

- **Federal Emergency Management Agency (FEMA)** - FEMA provides preparedness grants to state and local governments for any type of all-hazards preparedness activity, including chemical preparedness.[3] According to FEMA data, in fiscal year 2016, states used about $3.5 million, local municipalities used about $48.5 million, and tribal and territorial municipalities used about $80,000 in preparedness grant funding for chemical defense including prevention and protection activities, as well as mitigation, response, and recovery efforts related to a chemical attack.
- **Office of Intelligence and Analysis (I&A)** - I&A gathers intelligence information on all homeland security threats including chemical threats. Such threat information is compiled and disseminated to relevant DHS components and federal agencies. For example, I&A works with CSAC to provide intelligence information for the CTRA and writes the threat portion of that assessment. I&A also receives information from CSAC on high-risk gaps in intelligence to help better inform chemical defense intelligence reporting. Also, the Under Secretary of I&A serves as the Vice-Chair of the Counterterrorism Advisory Board. This board is responsible for coordinating, facilitating, and sharing information regarding DHS's activities related to mitigating current, emerging, perceived, or possible terrorist threats, including chemical threats; and providing timely and accurate advice and recommendations to the Secretary and Deputy Secretary of Homeland Security on counterterrorism issues.[4]
- **NPPD's Federal Protective Service (FPS)** - FPS secures federally-owned and leased space in various facilities across the country. Federal facilities are assigned a facility security level determination ranging from a Level 1 (low risk) to a Level 5 (high risk). As part of its responsibility, FPS is to conduct Facility Security Assessments of the buildings and properties it protects that cover all types of hazards including a chemical release, in accordance with Interagency Security

[3]The Homeland Security Grant Program generally allows state, local, tribal and territorial recipients and sub-recipients to use grant funds in the area of chemical threat prevention, protection, mitigation, response and recovery. This funding cannot be used by a federal agency.

[4]The Under Secretary for Strategy, Policy, and Plans also serves as the Vice-Chair of the Counterterrorism Advisory Board.

Committee standards and guidelines.[5] FPS is to conduct these assessments at least once every 5 years for Level 1 and 2 facilities, and at least once every 3 years for Level 3, 4, and 5 facilities. FPS conducts the assessments using a Modified Infrastructure Survey Tool.

- **Transportation Security Administration (TSA)** - TSA efforts to address the threat of chemical terrorism have been focused on the commercial transportation of bulk quantities of hazardous materials and testing related to the release of commercially transported chemicals that could be used as weapons of mass destruction. TSA's activities with respect to hazardous materials transportation aim to reduce the vulnerability of shipments of certain hazardous materials through the voluntary implementation of operational practices by motor carriers and railroads, and ensure a secure transfer of custody of hazardous materials to and from rail cars at chemical facilities. Also, in May 2003, TSA began requiring that all commercial motor vehicle operators licensed to transport hazardous materials, including toxic chemicals, must successfully complete a comprehensive background check conducted by TSA. According to TSA documents, approximately 1.5 million of the nation's estimated 6 million commercial drivers have successfully completed the vetting process. Additionally, TSA has also recently partnered with five mass transit and passenger rail venues, together with other DHS components such as DHS's Science and Technology Directorate and the U.S. Secret Service, to test chemical detection technologies for such venues. In addition, TSA is responsible for the Transportation Sector Security Risk Assessment, which examines the potential threat, vulnerabilities, and consequences of a terrorist attack involving the nation's transportation systems. This assessment's risk calculations for several hundred specific risk scenarios, including chemical weapons attacks, are based on the elements of threat, vulnerability and consequence using a combination of subject matter expert judgments and modeling results.
- **U.S. Secret Service** - The Secret Service is responsible for protecting its protectees and designated fixed sites and temporary venues from all threats and hazards, including chemical threats. For example, the Secret Service conducts security assessments of sites, which may involve chemical detection, and coordinates with other agencies for preparedness or response to threats and hazard incidents. In addition,

[5]DHS, The Risk Management Process for Federal Facilities: An Interagency Security Committee Standard, 2nd Edition (Washington, D.C.: November 2016)

the Secret Service has a Hazardous Agent Mitigation Medical Emergency Response team, dedicated to responding to numerous hazards, including chemical threats and incidents.

Appendix III: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528

Homeland Security

August 13, 2018

Chris P. Currie
Director, Homeland Security and Justice
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: Management's Response to Draft Report GAO-18-562, "CHEMICAL TERRORISM: A Strategy and Implementation Plan Would Help DHS Better Manage Fragmented Chemical Defense Programs and Activities"

Dear Mr. Currie:

Thank you for the opportunity to review and comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

The Department is pleased to note GAO's positive recognition of its efforts to coordinate chemical defense programs and activities toward greater effectiveness and unity of effort. This includes DHS's components working closely with federal, state, local, tribal, territorial, and private sector partners to (1) safeguard chemical facilities, (2) disrupt terrorist efforts to develop and use chemical agents as weapons, and (3) help communities prepare to respond to the consequences of a high impact chemical incident. DHS is committed to countering attempts by terrorists or other threat actors to carry out an attack against the United States or its interests using a weapon of mass destruction.

The draft report contained one recommendation, with which the Department concurs. Attached find our detailed response to the recommendation. Technical comments were previously provided under separate cover.

Again, thank you for the opportunity to review and comment on this draft report. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.

Sincerely,

JIM H. CRUMPACKER, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

Attachment

Attachment: Management Response to Recommendations Contained in GAO-18-562

GAO recommended that the Assistant Secretary for Countering Weapons of Mass Destruction (CWMD):

Recommendation: Develop a strategy and implementation plan to help the Department of Homeland Security, among other things, guide, support, integrate and coordinate its chemical defense programs and activities; leverage resources and capabilities; and provide a roadmap for addressing any identified gaps.

Response: Concur. In December 2017, the Department formed the CWMD Office, which will elevate and streamline DHS efforts to prevent terrorists and other National Security threat actors from using harmful agents, such as chemical, biological, radiological, and nuclear materials and devices to harm Americans and U.S. interests. The office consolidates DHS functions and will lead the Department's efforts to counter weapons of mass destruction threats. It will also allow for greater policy coordination and strategic planning, as well as provide greater visibility for this critically important function. The Assistant Secretary for CWMD will coordinate with the DHS Under Secretary for Strategy, Policy, and Plans and other stakeholders to develop a strategy and implementation plan that will better integrate and direct DHS chemical defense programs and activities.

Estimated Completion Date: September 30, 2019.

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Appendix IV: GAO Contacts and Staff Acknowledgements

GAO Contacts

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Staff Acknowledgements

In addition to the contact named above, John Mortin (Assistant Director), Juan Tapia-Videla (Analyst-in-Charge), Michelle Fejfar, Ashley Grant, Imoni Hampton, Eric Hauswirth, Tom Lombardi, Sasan J. “Jon” Najmi, Claire Peachey, and Kay Vyas made key contributions to this report.