



April 2022

COUNTERING WEAPONS OF MASS DESTRUCTION

DHS Could Improve Its Acquisition of Key Technology and Coordination with Partners

GAO Highlights

Highlights of [GAO-22-104498](#), a report to congressional requesters

Why GAO Did This Study

Chemical, biological, radiological, and nuclear weapons have the potential to kill thousands of people. To enhance efforts to manage threats in these four areas, CWMD was established in statute in December 2018, reorganizing functions of predecessor offices in DHS. About a year later, CWMD ranked last in a review of best places to work in government.

GAO was asked to assess CWMD's ability to carry out its mission and serve federal, state, and local partners. This report (1) evaluates the extent to which CWMD continues to perform the functions of predecessor offices, (2) evaluates the extent to which CWMD has coordinated with state and local partners, and (3) describes CWMD's efforts to improve morale.

GAO reviewed strategic and implementation plans and employee surveys and interviewed CWMD officials about how the office has carried out its functions, coordinated with partners, and taken steps to improve morale. To obtain partners' views on CWMD's performance, GAO interviewed officials from other DHS components and federal agencies. GAO also selected a nongeneralizable sample of state and local partners from 15 jurisdictions based on their participation in CWMD programs covering the four threat areas.

What GAO Recommends

GAO is making four recommendations, including that CWMD should reassess its current acquisition strategy for replacing radiation portal monitors and specify its plans for convening state and local partners. DHS agrees with the four recommendations.

View [GAO-22-104498](#). For more information, contact Allison B. Bawden at (202) 512-3841 or bawdena@gao.gov or Tina Won Sherman at (202) 512-8461 or shermant@gao.gov.

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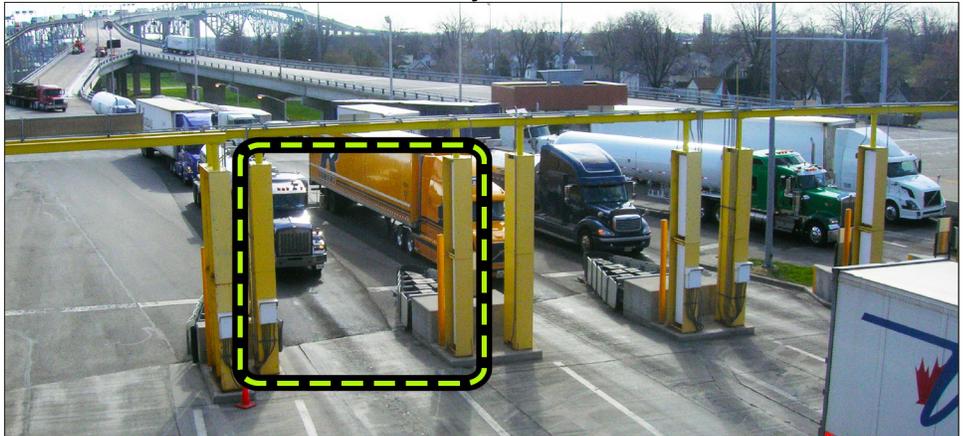
COUNTERING WEAPONS OF MASS DESTRUCTION

DHS Could Improve Its Acquisition of Key Technology and Coordination with Partners

What GAO Found

The Department of Homeland Security's (DHS) Countering Weapons of Mass Destruction Office (CWMD) continues to carry out functions of its predecessor offices. For example, CWMD continues to manage a program to acquire replacements for radiation portal monitors that U.S. Customs and Border Protection (CBP) operates at high-volume ports (see fig.). However, the new radiation portal monitors will be late to deploy and may not meet user needs. For example, CBP officials told GAO that tests of replacement monitors resulted in higher nuisance alarm rates than originally planned. Nuisance alarms result from naturally occurring radioactive materials in certain consumer goods, requiring CBP officers to conduct a secondary scan to determine that the source of the alarm is not a threat before a cargo container or vehicle can leave the port. Reducing such alarms is a key goal of the replacement program. By coordinating with CBP to reassess its current acquisition strategy, CWMD may help ensure an acceptable nuisance alarm rate, better positioning CBP to prevent radiological and nuclear threats without unduly delaying U.S. commerce.

Radiation Portal Monitor at a Land Port of Entry



Source: GAO. | [GAO-22-104498](#)

The state and local partners GAO interviewed were generally satisfied with CWMD's coordination of technology acquisition and training but said CWMD could improve in other areas, such as communicating with and convening the partners. In September 2021, CWMD issued a strategy to engage its state and local partners, but the strategy does not specify how often CWMD will communicate with and convene partners in all threat areas. Specifying this will help CWMD and its partners be prepared to deter and respond to an attack.

CWMD used employee surveys and listening sessions to identify the root causes of morale problems. CWMD also introduced town hall meetings in which employees share how they help accomplish the agency's mission. Data from 2019 and 2020 federal employee workplace surveys indicate that CWMD improved in measures of employee engagement. GAO recommended in January 2021 that DHS strengthen its plans to enhance employee engagement, an actionable measure of morale, and continues to monitor DHS's response to these recommendations.

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Abbreviations

BD21	Biological Detection for the 21st Century
CBP	U.S. Customs and Border Protection
CWMD	Countering Weapons of Mass Destruction Office
DHS	Department of Homeland Security
DNDO	Domestic Nuclear Detection Office
OHA	Office of Health Affairs

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April 19, 2022

Congressional Requesters

Chemical, biological, radiological, and nuclear weapons—collectively known as weapons of mass destruction—have the potential to kill thousands of people in a single incident. To enhance the U.S.’s ability to detect, deter, respond to, and defend against the threats these weapons pose, the Department of Homeland Security’s (DHS) Countering Weapons of Mass Destruction Office (CWMD) was formed in December 2017 and established in statute in December 2018.¹ CWMD’s formation consolidated functions that had been previously carried out by DHS’s Domestic Nuclear Detection Office (DNDO) and Office of Health Affairs (OHA) and abolished the latter two offices.²

CWMD’s primary statutory missions are coordinating with other federal efforts and developing a strategy and policy for DHS to (1) plan for, detect, and protect against the importation, possession, storage, transportation, development, or use of unauthorized chemical, biological, radiological, or nuclear materials, devices, or agents in the United States; and (2) protect against an attack using such materials, devices, or agents against U.S. people, territory or interests.³ In carrying out these missions, CWMD provides technology, training, and information to DHS partners, including U.S. Customs and Border Protection (CBP) and the Coast Guard, and to partners in state, local, tribal, and territorial jurisdictions. These partners include first responders and public health officials. CWMD also coordinates with other federal agencies, such as the Department of Defense, the Federal Bureau of Investigation, the Department of Health

¹Homeland Security Act of 2002, Pub. L. No. 107-296, title XIX, §§ 1900-1931, 116 Stat. 2135, as added by the Countering Weapons of Mass Destruction Act of 2018, Pub. L. No. 115-387, § 2(a)-(c), (e), (g) 132 Stat. 5162 (classified at 6 U.S.C. §§ 590-597, including § 591 notes). Prior to enactment, on October 6, 2017, DHS notified Congress of its intent to exercise its authority under 6 U.S.C. § 452 to consolidate some offices having chemical, biological, radiological, and nuclear functions into a new office, effective December 5, 2017.

²More specifically, according to DHS officials, the formation of CWMD consolidated DNDO, most of OHA, and chemical, biological, radiological, and nuclear policy functions formerly performed by the DHS Office of Strategy, Policy, and Plans, as well as elements of the Office of Operations Coordination.

³6 U.S.C. §§ 591g, 592. The Assistant Secretary for CWMD reports to the Secretary of Homeland Security. *Id.* at § 591.

and Human Services, and the Department of Energy's National Nuclear Security Administration.⁴

About a year after CWMD's formation, the new office ranked lowest among all federal government subcomponent offices in the 2019 Best Places to Work in the Federal Government® survey.⁵ You asked us to review CWMD's effectiveness in meeting its statutory missions, serving its partners, and addressing morale and staffing issues. This report (1) evaluates the extent to which CWMD continues to perform the functions of its predecessor offices, (2) evaluates the extent to which CWMD has coordinated with state and local partners since its formation, and (3) describes CWMD's efforts to improve morale and other staffing-related issues.

To address these three objectives, we reviewed documents that establish requirements, goals, and guiding principles for the functions that CWMD performs. These documents include the statute that established CWMD, as well as CWMD's strategic and implementation plans, such as its engagement strategy for state and local partners. We also reviewed other documents that provided information on the functions of DNDO and OHA and employee morale within CWMD. These documents included GAO reports on DNDO and OHA and employee satisfaction surveys conducted by the Office of Personnel Management.

To obtain officials' views related to our three objectives, we interviewed officials from CWMD, other DHS components, and other federal agencies. We also convened discussion groups of state and local officials

⁴The National Nuclear Security Administration is a separately organized agency within the Department of Energy that is responsible for the Department of Energy's nuclear weapons, nuclear nonproliferation, and naval reactor programs.

⁵The Partnership for Public Service and the Boston Consulting Group calculate these rankings based on responses to specific questions included in the Federal Employee Viewpoint Survey, administered by the Office of Personnel Management. The Federal Employee Viewpoint Survey measures employees' perceptions of whether, and to what extent, conditions characterizing successful organizations are present in their agencies.

that coordinate with CWMD.⁶ The discussion groups were composed of officials from police departments, fire departments, and public health offices in 15 jurisdictions. We selected these jurisdictions to represent a variety of CWMD's state and local partners that participate in CWMD programs to address chemical, biological, radiological, and nuclear threats. We convened a total of 12 discussion groups, each consisting of state and local officials from one to three jurisdictions.⁷ We determined that the views presented in these discussion groups, while not generalizable to other jurisdictions that did not participate, provided useful information on CWMD's coordination with its state and local partners. Appendix I provides additional detail on our objectives, scope, and methodology.

We conducted this performance audit from September 2020 through April 2022 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 that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

This section provides background on past functions of OHA and DNDO in the threat areas now under CWMD's responsibility, as well as CWMD's implementation plan and morale challenges within DHS generally and CWMD in particular. We have conducted work over the past 12 years evaluating the legacy functions of OHA and DNDO that are now under

⁶We use the term "local officials" to refer to city-level and county-level officials, as well as officials representing multiple municipalities. The three main programs identified by CWMD at the local level were BioWatch, the Chemical Defense Demonstration Cities Initiative, and Securing the Cities. We interviewed local partners from all of the cities and municipalities that participate in two or three of these programs. We also reached out to all five of the localities that participated in the Chemical Defense Demonstration Cities Initiative, three of which participated only in that program.

⁷These discussion groups focused on CWMD's programs as follows: five were BioWatch, two were Chemical Defense Demonstration Cities Initiative, and six were Securing the Cities. In our first discussion group, we interviewed officials who participated in both the BioWatch and Securing the Cities programs. We determined that the programs were sufficiently different that in the remainder of the discussion groups, we kept the programs separate. We count that first interview in both the BioWatch and Securing the Cities groups, bringing the total number of discussion groups to 12.

CWMD's management, as well as DHS-wide morale challenges.⁸ In July 2021, we testified on this body of work and the long-standing challenges facing CWMD.⁹

Functions of OHA

Before OHA was abolished and CWMD assumed its functions, OHA performed DHS functions related to biological and chemical threats. More specifically, OHA led DHS's biodefense activities and provided incident-specific guidance for the medical consequences of disasters. In its budget request for fiscal year 2018, DHS requested about \$111 million to carry out OHA's functions in its final year before consolidation into CWMD.¹⁰ Among its roles, OHA managed the National Biosurveillance Integration Center and the BioWatch program, in collaboration with federal, state, and local partners. OHA also managed chemical defense efforts, including the Chemical Defense Demonstration Cities Initiative.

- **National Biosurveillance Integration Center.** The National Biosurveillance Integration Center is a collaboration of 14 federal partners intended to integrate information about threats to human,

⁸GAO, *Biosurveillance: Developing a Collaboration Strategy Is Essential to Fostering Interagency Data and Resource Sharing*, [GAO-10-171](#) (Washington, D.C.: Dec. 18, 2009); *Biosurveillance: DHS Should Reevaluate Mission Need and Alternatives before Proceeding with BioWatch Generation-3 Acquisition*, [GAO-12-810](#) (Washington, D.C.: Sept. 10, 2012); *Homeland Security: DHS's Chemical, Biological, Radiological, Nuclear and Explosives Program Consolidation Proposal Could Better Consider Benefits and Limitations*, [GAO-16-603](#) (Washington, D.C.: Aug. 11, 2016); *Chemical Terrorism: A Strategy and Implementation Plan Would Help DHS Better Manage Fragmented Chemical Defense Programs and Activities*, [GAO-18-562](#) (Washington, D.C.: Aug. 22, 2018); *Biodefense: The Nation Faces Longstanding Challenges Related to Defending Against Biological Threats*, [GAO-19-635T](#) (Washington, D.C.: June 26, 2019); *Combating Nuclear Terrorism: DHS Should Address Limitations to Its Program to Secure Key Cities*, [GAO-19-327](#) (Washington, D.C.: May 13, 2019); *DHS Employee Morale: Some Improvements Made, but Additional Actions Needed to Strengthen Employee Engagement*, [GAO-21-204](#) (Washington, D.C.: Jan. 12, 2021); and *Biodefense: DHS Exploring New Methods to Replace BioWatch and Could Benefit from Additional Guidance*, [GAO-21-292](#) (Washington, D.C.: May 20, 2021), among others.

⁹GAO, *Countering Weapons of Mass Destruction: Opportunities for DHS to Better Address Longstanding Program Challenges*, [GAO-21-105332](#) (Washington, D.C.: July 16, 2021).

¹⁰CWMD's appropriation for fiscal year 2021 was about \$402 million.

animal, plant, and environmental health from thousands of sources to develop a more comprehensive picture of the threat landscape.¹¹

- **BioWatch.** Begun in 2003, BioWatch is designed to provide early indication of an aerosolized biological weapon attack, via a system of aerosol collectors deployed in more than 30 U.S. jurisdictions. The collectors draw air through filters that are then manually collected and transported to state and local public health laboratories for analysis.
- **Chemical Defense Demonstration Cities Initiative.** From 2010 through 2015, OHA managed the Chemical Defense Demonstration Cities Initiative as a pilot program in five U.S. jurisdictions to help communities define best practices to respond to a high-consequence chemical event. A June 2018 report on the initiative stated that although the initiative’s demonstration projects were held from 2010 through 2015, DHS continued to collaborate closely with these jurisdictions to analyze how areas identified for improvement were being integrated into the local homeland security enterprise.¹²

In February 2022, we testified on our body of work on strategic and programmatic challenges facing federal biodefense efforts, including CWMD’s efforts to manage the National Biosurveillance Integration Center and the BioWatch program.¹³

Functions of DNDO

Before DNDO was abolished and CWMD assumed its functions, DNDO was the primary federal entity responsible for implementing domestic efforts to counter nuclear and radiological threats. In its budget request for fiscal year 2018, the last year before its consolidation into CWMD, DHS requested about \$330 million to carry out DNDO’s functions. These functions included:

- **The Securing the Cities program.** According to DHS officials, DNDO instituted the Securing the Cities program in fiscal year 2007 to enhance the nuclear detection capabilities of federal, state, local, tribal, and territorial agencies. DNDO supported its state, local, tribal, and territorial partners in the program by funding the purchase of

¹¹The Implementing Recommendations of the 9/11 Commission Act of 2007 established the National Biosurveillance Integration Center within DHS. Pub. L. No. 110-53, title XI, § 1101, 121 Stat. 266, 375-79 (classified, as amended, at 6 U.S.C. § 195b).

¹²Department of Homeland Security, *Chemical Defense Demonstration Cities Initiative Report* (June 2018).

¹³For more information on the challenges we have identified with these federal biodefense efforts, see GAO, *Biodefense: Opportunities to Address National Strategy and Programmatic Challenges*, [GAO-22-105733](#) (Washington, D.C.: Feb. 17, 2022).

commercial radiation detection devices and other detection equipment for use by its partners, as well as by providing them detection training.

- **Nuclear forensics.** DNDO coordinated with federal departments assigned responsibility for nuclear forensics—activities to identify nuclear materials and attribute their sources. These departments include the Federal Bureau of Investigation, the Department of Defense, and the Department of Energy.
- **Technology acquisition.** DNDO also acquired technologies to support partners in DHS components such as CBP and the Coast Guard, as well as state and local partners. Detection devices provided by DNDO to these partners included personal radiation detectors (cell phone-size devices worn by first responders to alert them when radioactivity levels exceed natural levels) and radiation isotope identification devices (detectors that can identify the specific material emitting the radiation). Figure 1 shows examples of such devices.

Figure 1: Personal Radiation Detector and Radiation Isotope Identification Device

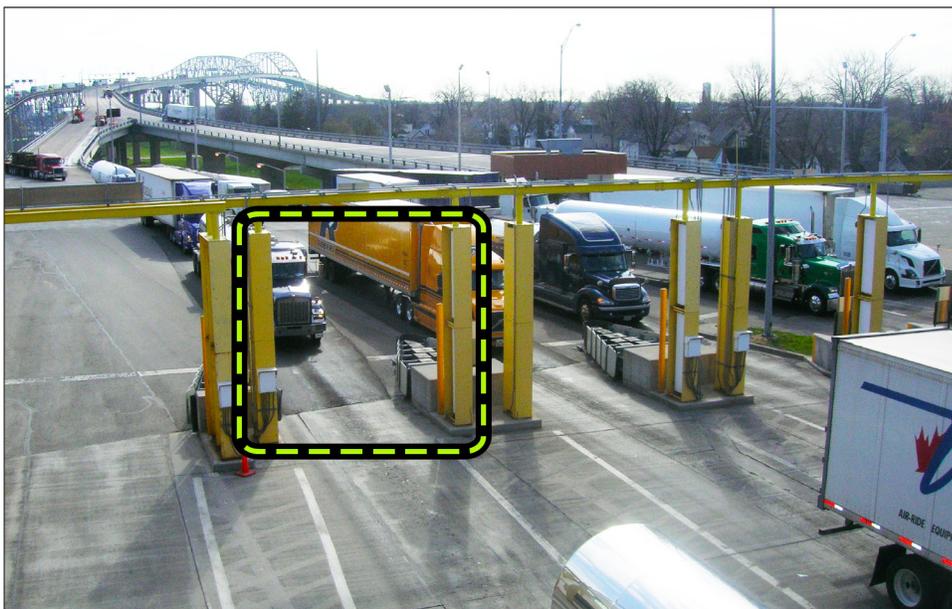


Source: Department of Homeland Security. | GAO-22-104498

DNDO also acquired and deployed radiation portal monitors for CBP to use at land and sea ports of entry. CBP uses radiation portal monitors to scan incoming cargo and vehicles for elevated radiation levels that may be indicative of smuggled nuclear or radiological materials. If an alarm is triggered, the cargo container or vehicle is directed to a secondary inspection area, where a CBP officer uses a handheld radiation detector to identify the source of the radiation. In some cases, the container or

vehicle is also sent through a second radiation portal monitor to confirm the alarm before the handheld device is used. Figure 2 shows a radiation portal monitor at a land port of entry.

Figure 2: Radiation Portal Monitor at a Land Port of Entry



Source: GAO. | GAO-22-104498

Note: The dashed yellow square highlights a single radiation portal monitor.

- **Threat and capability assessment.** DNDO engaged DHS components and federal and state partners to assess nuclear and radiological threats, and U.S. capabilities to address these threats, under a framework sometimes referred to as the Global Nuclear Detection Architecture.¹⁴ Capability assessment included assessing any gaps in the Global Nuclear Detection Architecture.

CWMD's Implementation Plan

In January 2020, CWMD issued its implementation plan, which established priorities and articulated four guiding principles for CWMD to

¹⁴The Global Nuclear Detection Architecture is a multilayered framework encompassing many different federal programs, projects, and activities to detect and deter nuclear smuggling in foreign countries, at the U.S. border, and inside the United States.

follow in carrying out its mission.¹⁵ The four guiding principles in the plan are (1) fostering a collaborative and inclusive team environment, (2) gathering subject-matter experts and relying on their expertise to find the right solution, (3) delivering operator-driven solutions and championing stakeholder needs, and (4) continuously improving the CWMD workforce environment and empowering the CWMD team. The plan also established specific goals to enable collaboration with state and local partners—for example, stating that CWMD will facilitate a steady, two-way flow of intelligence and threat reporting to partner organizations.

Morale Challenges in DHS and CWMD

As we reported in January 2021, DHS has faced challenges with low morale and low employee engagement since its inception in 2003.¹⁶ The Office of Personnel Management defines employee engagement as employees' sense of purpose that is evident in their display of dedication, persistence, and effort in their work or overall attachment to their organization and its mission. The Office of Personnel Management's Federal Employee Viewpoint Survey has consistently found that DHS employees have lower engagement than the government-wide average for federal employees. According to this survey and the Partnership for Public Service's rankings of the Best Places to Work in the Federal Government®, DHS consistently ranks lowest in this area among similarly sized federal agencies.

To measure the conditions that lead to engagement, the Office of Personnel Management calculates an employee engagement index each year based on responses to the Federal Employee Viewpoint Survey. According to DHS officials interviewed for our January 2021 report, the Office of Personnel Management focuses on engagement because it is an actionable measure of morale. As we found in 2021, CWMD ranked lowest of all DHS components in the employee engagement index measure in 2019, the year that CWMD also ranked last among all agencies' subcomponents in the Best Places to Work in the Federal Government®. In 2020, CWMD ranked 403 out of 411 agency subcomponents. Table 1 shows the average employee engagement index score for each DHS component in 2019.

¹⁵Department of Homeland Security, Countering Weapons of Mass Destruction Office, *Implementation Plan Fiscal Year 2020* (Washington, D.C.: Jan. 2, 2020).

¹⁶[GAO-21-204](#).

Table 1: Employee Engagement Index (EEI) Scores for Department of Homeland Security (DHS) Components, from the 2019 Federal Employee Viewpoint Survey

DHS component	EEI	Survey responses
U.S. Coast Guard	76.0	3,120
U.S. Citizenship and Immigration Services	73.8	11,406
Federal Law Enforcement Training Center	66.6	600
Science and Technology Directorate	66.2	195
Office of Operations Coordination	66.2	116
Federal Emergency Management Agency	65.8	2,485
Management Directorate	65.7	981
Office of the Secretary	64.8	270
U.S. Secret Service	64.5	2,749
Office of the Inspector General	62.2	405
U.S. Immigration and Customs Enforcement	62.1	8,171
Cybersecurity and Infrastructure Security Agency	61.2	1,974
Transportation Security Administration	59.9	27,356
U.S. Customs and Border Protection	57.1	16,450
Countering Weapons of Mass Destruction Office	37.6	124

Source: GAO analysis of the Office of Personnel Management's 2019 Federal Employee Viewpoint Survey data. | GAO-22-104498

CWMD Performs Functions of Its Predecessors but Has Not Completed or Continued Key Acquisition and Capability Gap Assessment Functions

CWMD continues to carry out functions of the former DNDO and OHA in the biological, chemical, nuclear, and radiological threat areas. These functions include monitoring, assessing, and sharing information on threats, as well as acquiring new technologies. However, CWMD has not completed a program to acquire new radiation portal monitors for CBP begun by DNDO, and it has not continued a DNDO assessment of gaps in nuclear and radiological detection capabilities that was valued by federal partners.

CWMD Monitors and Shares Information on Biological Threats

CWMD performs a range of information-sharing and monitoring functions formerly managed under OHA. For example, CWMD continues to manage the National Biosurveillance Integration Center, which compiles information from multiple sources—ranging from open-source reporting

and commercial data to data from federal interagency partners—into various products. These products include daily monitoring lists of high-consequence health threats and Biosurveillance Event Reports on the COVID-19 pandemic. According to CWMD officials, in fiscal year 2021, the center produced more than 635 biosurveillance reports that were distributed to 350 state, local, tribal, and territorial agencies and 27 federal departments or agencies. Moreover, CWMD has assumed new functions related to biological threats. For example, according to CWMD officials, CWMD provided support to the interagency Biodefense Steering Committee. In this role, CWMD provided input on the government-wide National Biodefense Strategy.¹⁷ In addition, DHS’s Chief Medical Officer, whose office is within CWMD, helped develop and distribute health guidance on COVID-19 protective measures and testing protocols to CBP and U.S. Immigration and Customs Enforcement officers working at U.S. borders, according to CWMD officials.

CWMD also manages the BioWatch program, formerly managed by OHA, in over 30 U.S. jurisdictions. Under this program, CWMD’s state and local partners in public health agencies monitor BioWatch collectors and collect samples from them daily to detect biological agents of concern. Regionally based jurisdictional coordinators, who are CWMD contractors, serve as liaisons between CWMD and its state and local partners, according to CWMD officials. The officials said that, during fiscal year 2021, CWMD supported more than 100 exercises and drills in BioWatch jurisdictions to test, evaluate, and improve coordination, communication, and decision-making in the event of a bioterrorist attack.

In May 2021, we reported on challenges affecting CWMD’s plans to replace the BioWatch collectors, an initiative known as Biological Detection for the 21st Century (BD21).¹⁸ We found that BD21 faced technical challenges due to inherent technology limitations. For example, we found that biological aerosol sensors that monitor the air are to provide data on biological material in the environment, but common environmental material such as pollen, soil, and diesel exhaust can emit a signal in the same range as a biological threat agent, thereby increasing

¹⁷For more information on the National Biodefense Strategy, see GAO, *National Biodefense Strategy: Additional Efforts Would Enhance Likelihood of Effective Implementation*, [GAO-20-273](#) (Washington, D.C.: Feb. 19, 2020).

¹⁸[GAO-21-292](#). Subsequently, in January 2022, CWMD’s Acting Assistant Secretary issued initial strategic guidance that directed CWMD directorates to expand the range of biological risks addressed under current and future biodetection programs.

alarm rates. We recommended that DHS should clarify its acquisition documentation and fully incorporate best practices for technology readiness assessments as it manages the BD21 program.¹⁹ DHS agreed with our recommendations, and we continue to monitor its response.

CWMD Conducts Strategic Planning for Chemical Threats

CWMD has not continued to manage the Chemical Defense Demonstration Cities Initiative, the pilot program run by OHA in five U.S. jurisdictions between 2010 and 2015.²⁰ The newly formed CWMD issued a report on this program in June 2018. As of February 2022, according to CWMD officials, work is under way to explore future options for CWMD to engage with state and local partners in the chemical threat area.

CWMD has undertaken other functions to address chemical threats. For example, according to CWMD officials, CWMD engaged with 17 U.S. cities to provide training on chemical threats to the mass transit sector. CWMD also led the effort to develop DHS's Chemical Defense Strategy, issued in December 2019. Subsequently, in September 2021, DHS issued the Chemical Defense Strategy Implementation Plan, which CWMD also took the lead in developing, as part of a workgroup that involved 16 DHS components.²¹ CWMD officials described their chemical efforts as a work in progress. In its implementation plan, CWMD established the first milestones for evaluating the achievement of its goals at the end of fiscal year 2022. These milestones include identifying federal agencies that collect chemical threat and risk data to develop a process for surveying them on information related to chemical risk, as well as developing a template and time line for incorporating threat information into chemical risk assessments. The plan also describes how CWMD will coordinate its activities in the chemical threat area with other DHS components.

¹⁹Technology readiness assessments are conducted to assess the technical maturity of potential solutions, forming part of the basis for evaluating the technologies enabling the possible materiel solutions against the capability gaps defined in the mission need statement and capability development plan.

²⁰The five jurisdictions were Baltimore; Boise; Houston; Nassau County, New York; and New Orleans.

²¹Department of Homeland Security, *Department of Homeland Security Chemical Defense Strategy* (Dec. 20, 2019); and (FOUO) *U.S. Department of Homeland Security Chemical Defense Strategy Implementation Plan* (September 2021).

CWMD Carries Out Radiological and Nuclear Detection Functions but Has Not Completed Radiation Portal Monitor Acquisition or Continued Capability Gap Analysis

CWMD continues to manage the Securing the Cities program and nuclear forensics functions formerly managed by DNDO. CWMD also continues technology acquisition functions carried out under DNDO, including acquisitions of handheld radiation detectors for use by Coast Guard and CBP partners. In addition, CWMD continues to manage efforts to enhance radiation portal monitors, but it has not completed an acquisition, begun by DNDO, of new monitors planned for use at high-volume ports, and delays and high nuisance alarm rates have complicated this effort. Moreover, CWMD has continued to produce threat assessments in support of the Global Nuclear Detection Architecture, but the assessments have not continued to include assessments of gaps in U.S. capabilities that were part of DNDO's threat assessment efforts and were valued by CWMD's federal partners.

CWMD Continues to Manage the Securing the Cities Program and Retains Some Nuclear Forensics Responsibilities

CWMD continues to manage the Securing the Cities program, formerly managed under DNDO. Since May 2019, the program has expanded its presence from five U.S. jurisdictions to 13. In June 2021, CWMD issued its most recent implementation plan for the program.²² CWMD also continues to have some responsibilities related to interagency efforts in nuclear forensics. According to CWMD officials, CWMD retains responsibilities as chair of the Nuclear Forensics Executive Council, lead for the annual nuclear forensics attribution report to Congress and the strategic plan for forensics, and as a supporter of expertise development.

CWMD Continues Acquisition Activities, but New Radiation Portal Monitors Will Be Late to Deploy and May Not Meet Users' Needs

CWMD carries out DNDO's functions related to technology acquisitions separate from the Securing the Cities program. Specifically, it continues to acquire nuclear and radiological detection technologies for partners in DHS components, particularly the Coast Guard and CBP. Officials from these DHS components provided examples of CWMD-provided technologies that meet their requirements. For example, Coast Guard officials told us that CWMD provides handheld radiation detectors as well as a new technology that allows them to transmit information from the detectors to CBP's Office of Laboratories and Scientific Services for analysis. The Coast Guard officials told us that the new transmission system filled a gap in their capabilities, enabling more secure transmission of the information to CBP. CBP officials said that CWMD helped them obtain software developed by the Department of Energy that enhances their ability to analyze the data the Coast Guard provides. According to CBP and Coast Guard officials, without these enhanced

²²The Securing the Cities Implementation Plan is required by Pub. L. No. 115-387, § 2(a)(10), 132 Stat. at 5164-66 (classified at 6 U.S.C. § 596b).

capabilities, their ability to detect smuggled nuclear or radiological material would be diminished. From 2019 through 2021, according to CWMD officials, CWMD procured over 38,000 personal radiation detectors for federal partners.

CWMD also continues to manage efforts to enhance the radiation portal monitors that CBP operates at high-volume ports. In interviews we conducted, CBP officials told us that CWMD has taken some steps to improve the existing fleet of radiation portal monitors. For example, officials in CBP's Office of Field Operations said that CWMD helped to finance and coordinate research and development conducted by the Department of Energy and a university partner to reduce nuisance alarms. Nuisance alarms result from naturally occurring radioactive materials in certain consumer and trade goods, such as ceramics, fertilizers, and granite tile. These alarms require CBP officers to conduct a secondary scan to determine that the source of the alarm is not a nuclear or radiological threat before a cargo container or vehicle can leave the port. We found in our October 2016 report on radiation portal monitors that, with more than 20 million cargo containers and more than 100 million vehicles passing through the nation's ports annually, nuisance alarms accounted for hundreds of thousands of alarms per year.²³

According to CBP officials, the research and development that CWMD coordinated resulted in new machine learning software that CBP had added to at least 60 radiation portal monitors in use at U.S. seaports.²⁴ At one of these ports, the officials said, the new software had reduced the level of nuisance alarms tenfold.²⁵ These officials also said that CBP

²³GAO, *Radiation Portal Monitors: DHS's Fleet Is Lasting Longer than Expected, and Future Acquisitions Focus on Operational Efficiencies*, [GAO-17-57](#) (Washington, D.C.: Oct. 31, 2016).

²⁴This technology, called Enhanced Radiological Nuclear Inspection and Evaluation, is a machine learning software designed to reduce nuisance alarms, simplify alarm adjudication, and provide greater threat sensitivity. Machine learning is a type of artificial intelligence, whereby a computer is given basic instructions and fed training data to learn how to predict specific outcomes.

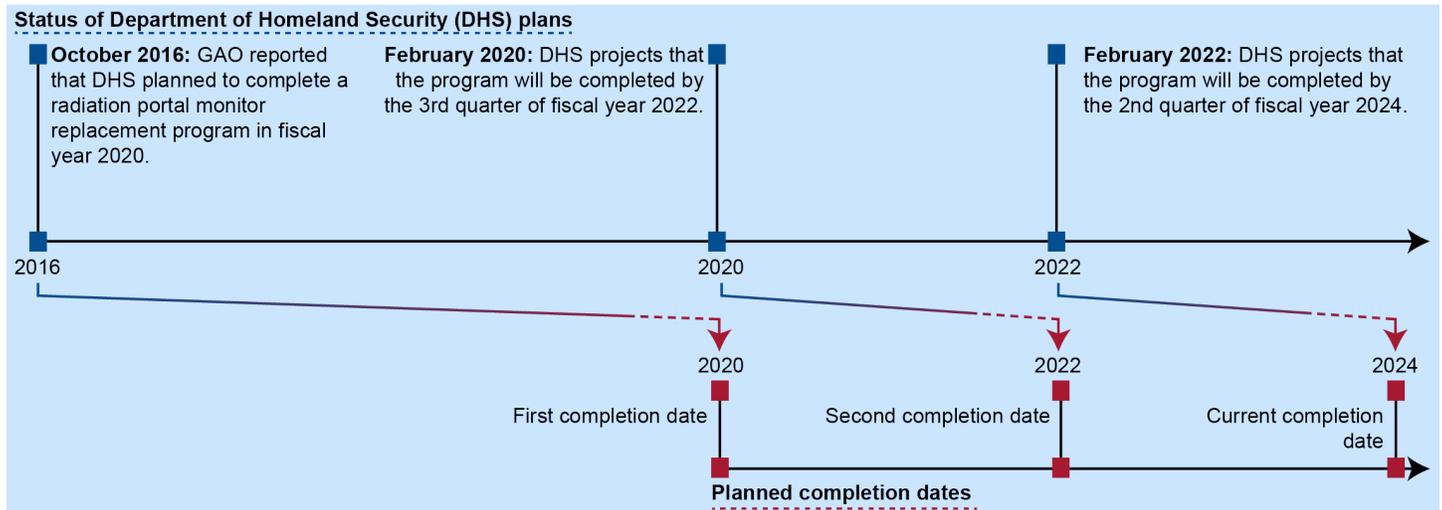
²⁵Decisions to adjust a system's detection threshold result in tradeoffs between the system's ability to detect threats (probability of detection) and the number of background events that will be incorrectly interpreted as threats (false alarm rate). For more technical details on options for optimizing detection systems' performance and the relationship between their false alarm rate and the probability of detection, see app. III in GAO, *Air Cargo Security: TSA Field Testing Should Ensure Screening Systems Meet Detection Standards*, [GAO-21-105192](#) (Washington, D.C.: July 29, 2021).

intends to deploy the software to enhance portal monitors at land borders in the future.

However, CWMD has not completed an acquisition program begun under DNDO to replace radiation portal monitors at selected high-volume ports. At the time of our October 2016 report on radiation portal monitors, DNDO planned to replace between 150 and 250 radiation portal monitors at selected high-volume ports during fiscal years 2018 through 2020.²⁶ As of February 2020, when CWMD and CBP officials signed a requirements document that identified current specifications and deployment dates for the radiation portal monitor acquisition, the deployment dates had been pushed back. At that time, DHS expected to have an initial operational capability for the new radiation portal monitors during fiscal year 2020 and full operational capability by the third quarter of fiscal year 2022. However, those expected deployment dates were pushed back. As of February 2022, according to CWMD officials, CWMD expected to reach initial operational capability for the replacement radiation portal monitors by March 2023 and final operational capability in the second quarter of fiscal year 2024. According to CWMD officials, CWMD expects to deploy 216 replacement radiation portal monitors. The program's July 2020 baseline document estimated the program's life-cycle cost to be approximately \$255 million to \$293 million. Figure 3 illustrates changes in the planned deployment schedule for these monitors.

²⁶[GAO-17-57](#).

Figure 3: Changes in the Department of Homeland Security’s Deployment Schedule for Replacement Radiation Portal Monitors



Sources: GAO and DHS. | GAO-22-104498

Moreover, CWMD’s radiation portal monitor replacement program is not on track to meet a key goal of the program: to reduce the monitors’ nuisance alarm rate. At the time of our October 2016 report, a DHS analysis indicated that new, enhanced radiation portal monitors would provide a nuisance alarm rate up to 99 percent lower than that of legacy units.²⁷ This alarm rate was expected to be low enough to implement remote operations at high-volume ports of entry, allowing CBP to monitor scanning lanes from a centralized location at each port and enabling officers and staff to be reassigned to other mission needs at the ports.

Instead, according to CBP officials, recent tests of new radiation portal monitors have yielded higher nuisance alarm rates than those of the legacy units. Moreover, in the February 2020 requirements document governing the replacement program, CBP and CWMD formally agreed on a requirement for a nuisance alarm rate that is nearly double that of the current portal monitor fleet, according to CBP officials. In testing that occurred in October 2021, CWMD said the replacement units met this requirement.

²⁷GAO-17-57.

According to CWMD and CBP officials, several factors contributed to delays in the program and increased nuisance alarm rates. For example, according to a CWMD document and CWMD officials, system evaluation tests conducted from December 2019 through February 2020 identified deficiencies that required over 100 corrective actions. In addition, CWMD identified a vendor's bid protest over a contract and a government shutdown as factors contributing to delays.

CBP officials also identified other factors that may have contributed to delays, including the range of threats that radiation portal monitors are required to detect. According to CBP officials, the specifications for the new monitors include requirements to detect threats that CBP considers improbable. CBP officials said that testing for these threats requires the development of special, complex software, which is not necessary for testing of readily available samples of nuclear and radiological materials. They said that the complexity of the testing software led to errors that required the software to be updated and contributed to delays by adding to the testing schedule.

CBP officials also said they believe that requirements to detect improbable threats have contributed to the high nuisance alarm rate yielded by the prototype monitors, compounding delays and raising concerns over the future viability of the replacement monitors. They expressed concerns about deploying new radiation portal monitors with a nuisance alarm rate that is higher than that of units currently deployed in the field, which they regard as unacceptable. The officials told us that a higher nuisance alarm rate is unacceptable because every alarm requires a labor-intensive secondary scan at the port of entry. They estimated that the higher nuisance alarm rate would result in an additional 30 to 40 minutes of secondary scanning per day per portal monitor unit.

CWMD officials disagreed that threat detection requirements for the portal monitors played a role in the delays facing the acquisition and stated that the technical grounds for these requirements have been in place since 2015. They also said that CBP's approval of the February 2020 requirements document indicated that CWMD and CBP were in agreement about requirements, and they stated that they communicate frequently with CBP officials regarding the acquisition. In addition, CWMD and CBP officials said that they may be able to use the machine learning software to decrease the nuisance alarm rate after the replacement portal monitors are deployed. However, they also said that the units would have to be deployed before this machine learning could take place and that it

was uncertain how long it would take for the nuisance alarm rate to decrease.

CWMD is in the planning stages of a second phase of the radiation portal monitor replacement, for which it says it is considering various design options, including an open systems architecture approach.²⁸ CBP officials said they have concerns about this second phase of the acquisition as well and believe that taking a new design approach may make it more complicated than the current phase. Moreover, CBP officials' concerns about the ongoing replacement program remain unresolved. The guiding principles of CWMD's implementation plan include delivering operator-driven solutions and championing stakeholder needs. Given that CWMD's current radiation portal monitor replacement program remains ongoing, and that the second phase is in early stages, coordinating with CBP to reassess its current acquisition strategy for replacement radiation portal monitors may help ensure that CWMD attains an acceptable nuisance alarm rate for CBP, the users of the monitors. This could better position CBP to prevent radiological and nuclear threats without unduly delaying U.S. commercial traffic.

CWMD Continues to Produce Nuclear Threat Assessments but Has Not Continued Analysis of Capability Gaps

CWMD produces threat assessments similar to those produced by its predecessor, DNDO. However, CWMD officials told us that CWMD's threat assessments do not include a capability gap analysis. Under the Global Nuclear Detection Architecture, DNDO produced threat and hazard identification assessments, one function of which was to evaluate gaps in U.S. nuclear and radiological detection capabilities. CWMD officials said that they have continued to perform threat assessments and deliver them to the interagency community, but those assessments no longer include a capability gap analysis. Officials in the Department of Defense and CBP said that they appreciated the threat and hazard identification assessments that DNDO delivered and found them valuable. These officials also said that analysis of capability gaps was a vital function of the threat and hazard identification assessment that no other government agency performed and that helped them determine where to focus their attention.

²⁸The open systems architecture model develops technologies that use modular components, each having their own functions. Open systems architecture allows components to be added, removed, modified, replaced, or maintained by multiple suppliers, not just the manufacturer that developed the system. See GAO, *Defense Contracting: Early Attention in the Acquisition Process Needed to Enhance Competition*, [GAO-14-395](#) (Washington, D.C.: May 5, 2014).

CWMD officials told us that prior CWMD leadership had determined that DNDO's previously completed capability gap analyses served CWMD's purposes and were no longer needed, so they decided to discontinue them. Current CWMD leadership is reconsidering this decision. Specifically, the officials said that a new strategic plan for the Global Nuclear Detection Architecture was under development and that they were discussing reconstituting the capability gap analysis function. However, the officials did not specify their plans for outreach to key stakeholders in developing the plan—including Department of Defense and CBP stakeholders who said they valued CWMD's threat assessment products and missed the gap analysis—nor did they specify a time frame for its completion.

CWMD's implementation plan specifies that CWMD will follow guiding principles that include gathering subject-matter experts and delivering operator-driven solutions. By specifying, in its new strategic plan for the Global Nuclear Detection Architecture, steps to reconstitute the capability gap analysis function, a strategy for outreach to key stakeholders in reconstituting this function, and time frames for the completion of the capability gap assessments, CWMD may ensure that it completes the effort in a manner consistent with these guiding principles.

Selected State and Local Partners Are Generally Satisfied with CWMD's Coordination in Some Areas but Identified Areas for Improvement

We conducted 12 discussion groups, composed of officials from 15 metropolitan areas, from April through July 2021.²⁹ Overall, officials in these discussion groups expressed satisfaction with CWMD's coordination in some areas but also said that other areas are in need of improvement.³⁰ These officials told us that CWMD coordinates with them to acquire technologies, as well as to arrange for training and exercises. However, they also reported inconsistencies in CWMD's communication and its support for intercity coordination. In addition, some state and local partners identified problems with CWMD's complaint resolution process.

Selected State and Local Partners Were Satisfied with CWMD's Coordination of Technology Acquisition, Training, and Exercises

State and local partners in the discussion groups generally expressed satisfaction with CWMD's coordination of technology selection and acquisition. For example, officials in all six Securing the Cities discussion groups said that CWMD worked with them to help select and acquire equipment, such as personal radiation detectors and radioisotope identification devices.³¹ Similarly, officials in three out of five BioWatch discussion groups expressed satisfaction with CWMD's provision of portable air sampling units and supplies—such as reagents, personal

²⁹These discussion groups focused on CWMD's programs as follows: five were BioWatch, two were Chemical Defense Demonstration Cities Initiative, and six were Securing the Cities. In our first discussion group, we interviewed officials who participated in both the BioWatch and Securing the Cities programs. We determined that the programs were sufficiently different that in the remainder of the discussion groups, we kept the programs separate. We count that first interview in both the BioWatch and Securing the Cities groups, bringing the total number of discussion groups to 12.

³⁰In our discussion groups, we asked officials to describe areas in which they are satisfied with CWMD's support and areas in which they think CWMD could improve. These discussion groups were semistructured, with general discussion topics, so we did not ask each group to comment on a specific set of issues. Therefore, the counts presented in this objective—for example, "officials in three out of five groups"—represent the number of groups in which officials raised a given issue.

³¹According to CWMD officials, between 2019 and 2021, CWMD procured over 9,600 personal radiation detectors for state and local partners.

protective equipment, and lab equipment—that allow for testing of the samples.³²

State and local partners in the discussion groups also generally expressed satisfaction with CWMD’s coordination of federally provided training and exercises. For example, officials in four of six Securing the Cities discussion groups said that CWMD had coordinated needed training, such as training with nuclear and radiological experts from the Counterterrorism Operations Support Center.³³ In addition, officials in four of five BioWatch discussion groups told us that their jurisdictional coordinators had been helpful during exercises by providing subject-matter expertise and coordinating materials and personnel.³⁴

Selected Partners Identified Areas in which CWMD Could Improve Coordination

Communicating with and Convening Partners

Through our discussion groups with CWMD’s state and local partners, two key areas emerged in which CWMD could coordinate more effectively with them—specifically, in communicating with and convening state and local partners, and in resolving complaints.

In our discussion groups with CWMD’s state and local partners and our review of CWMD documents, we found that CWMD’s communication with these partners varied in its consistency and formality across the different threat areas under CWMD’s jurisdiction—in some cases to the point where communication ceased entirely.

- **BioWatch.** BioWatch program officials who participated in our discussion groups generally praised CWMD for its communication with them. Officials in all five BioWatch discussion groups spoke highly of the jurisdictional coordinators and viewed them as invaluable to the program. These officials told us that the jurisdictional coordinators help keep them informed and communicate requests for extra assistance from CWMD, such as during exercises or large special events, such as the Super Bowl. However, officials in two out

³²The portable sampling units collect samples from the air at both indoor and outdoor locations. Local public health officials retrieve the samples from the units daily and take them to laboratories for testing.

³³The Counterterrorism Operations Support Center, which is within the National Nuclear Security Administration, provides training for first responders to prevent or mitigate terrorist use of radiological or nuclear devices. According to CWMD, the center provides the majority of the initial training for Securing the Cities partners.

³⁴According to CWMD officials, jurisdictional coordinators are regionally based CWMD contractors who act as liaisons between CWMD and the state and local officials who operate BioWatch.

of five BioWatch discussion groups said that while they communicated regularly with their jurisdictional coordinators, they had not heard from the CWMD program office in headquarters. Specifically, officials in one of these discussion groups indicated that more interaction at that level would be beneficial to their understanding of the national landscape and DHS's priorities.

- **Securing the Cities.** Officials in four out of six Securing the Cities discussion groups said that CWMD program officials were responsive when they reached out with questions. However, officials in three of the six discussion groups felt that communication had decreased or was otherwise lacking. For example, officials in one group said they had to initiate communication with CWMD program officials about the program.
- **Chemical Defense Demonstration Cities Initiative.** Officials in both of the Chemical Defense Demonstration Cities Initiative discussion groups said that they had not heard from CWMD officials since 2018, when CWMD was formed and issued a report about the initiative. These officials told us that they were not aware of or involved with the development of DHS's Chemical Defense Strategy or Chemical Defense Strategy Implementation Plan. Officials in both discussion groups told us that although the initiative was a pilot program and had ended, they would like to have maintained a relationship with CWMD going forward to leverage their expertise in chemical detection and follow up on action items that were identified during the initiative. They noted that their jurisdictions had been chosen for the program because of their particular risk factors for a chemical incident.

Moreover, officials in eight of 12 discussion groups said that they would appreciate CWMD convening jurisdictions to discuss programs and lessons learned. In the absence of CWMD convening the state and local partners, officials in five of these discussion groups took the initiative to reach out to their counterparts in other municipalities to learn about their programs.

According to state and local officials we interviewed, the decline in communication and intercity coordination and conventions resulted, in part, from the departure of main points of contact from DNDO and OHA after CWMD's formation. In addition, CWMD officials cited the difficulty of convening during the global pandemic as a reason for the decline in intercity coordination.

CWMD officials told us that they are taking steps to improve and formalize communication with state and local partners, as well as to

convene them. For example, in September 2021, CWMD issued its State, Local, Tribal, and Territorial Engagement Strategy.³⁵ The engagement strategy includes goals to broaden the range of stakeholders engaged on a regular basis and to deepen relationships with existing long-term partners. In particular, the strategy sets a goal that, starting by the first quarter of fiscal year 2022, CWMD will conduct semiannual meetings collectively with participants from all 13 Securing the Cities locations. In October 2021, CWMD held the first such meeting, a virtual gathering in which all 13 Securing the Cities locations participated. CWMD's engagement strategy also sets a goal of conducting a virtual conference call with all BioWatch Advisory Committee chairs to discuss current biological threats and solicit feedback on jurisdictional concerns and capability gaps by the end of fiscal year 2022.³⁶

However, unlike with Securing the Cities, CWMD's engagement strategy does not specify how often CWMD plans to meet with partners in the biological and chemical threat areas. For example, the strategy does not specify whether the BioWatch conference call will occur more than once, leaving unclear whether or how CWMD plans to have continued coordination with BioWatch partners. The strategy also does not specify with whom CWMD plans to coordinate or convene at the state and local level regarding chemical threats or how often it plans to do so.

CWMD's implementation plan establishes a goal to enable collaboration with state and local partners.³⁷ In addition, internal control standards specify that management should externally communicate the necessary quality information to achieve the entity's objectives.³⁸ Open, two-way external reporting lines allow for this communication. By specifying in the engagement strategy how often it will convene its state and local partners in each of the threat areas, CWMD can help to ensure that state and local

³⁵Department of Homeland Security, Countering Weapons of Mass Destruction Office, *State, Local, Tribal, and Territorial Engagement Strategy, FY 2022–2025* (September 2021).

³⁶Each jurisdiction that participates in BioWatch has a BioWatch Advisory Committee composed of local officials and subject-matter experts.

³⁷Department of Homeland Security, Countering Weapons of Mass Destruction Office, *Implementation Plan Fiscal Year 2020*.

³⁸GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

officials are prepared to deter, detect, and respond to the full range of threats.

Resolving Complaints

CWMD's implementation plan establishes goals to continuously improve the CWMD workplace environment and champion the needs of CWMD stakeholders. However, officials in one of six Securing the Cities discussion groups said that they were unable to get satisfactory resolution of complaints about alleged misconduct on the part of CWMD contractors, such as alleged sexist comments and emails from contractors that disparaged CWMD federal employees. The problems persisted because, according to the officials, CWMD directed them to address questions about the program to the contractors whose misconduct the state and local officials wanted to discuss.

According to the CWMD officials we interviewed, they did not become aware of the misconduct allegations until September 2021, shortly after a new federal program manager dedicated to Securing the Cities was hired. CWMD officials told us that they investigated the complaints of misconduct and took steps including removing a contractor and having all contractor communications come through the program office rather than going directly to program participants. CWMD officials said they believe a root cause of this issue and the delay in responding to it was a vacancy in the program manager position for Securing the Cities from March 2021 to July 2021, and added that they view the appointment of the new program manager as a step in the right direction. However, CWMD officials said that CWMD does not have a documented complaint resolution process for concerns raised regarding CWMD contractors. Developing and documenting a formal process for resolving complaints, such as those about CWMD contractors, can help ensure that such problems do not recur or persist, potentially improving the workplace environment and enhancing CWMD's ability to champion the needs of its stakeholders.

CWMD Has Taken Steps to Improve Employee Morale and Mission Understanding

CWMD has taken steps to identify root causes of morale problems and enhance employees' understanding of the CWMD mission.

- **Identifying root causes.** CWMD used surveys and listening sessions to gather information on the root causes of the office's low morale. According to CWMD officials we interviewed, one root cause of the low morale was the different cultures within DNDO and OHA that were merged under CWMD. For example, CWMD officials said that DNDO coordinated primarily with physicists and law enforcement officials and focused on detection and prevention; OHA coordinated with public health officials and focused on preparedness and response. As a

result, some employees had difficulty understanding how their missions should mesh under the new office structure. Moreover, CWMD employees who were former OHA employees told us they felt largely subsumed under DNDO's leadership and unable to bring forward best practices from OHA. They said a lack of effective change management and a top-down approach to the reorganization created stress and a clash of organizational cultures.

According to CWMD employees, another root cause of morale issues was frequent changes to top-level leadership. CWMD has had three assistant secretaries since its formal establishment in December 2018.³⁹ CWMD employees told us that these assistant secretaries had different visions for what CWMD should be doing, contributing to confusion among employees about the office's mission. We have previously reported that successful mergers and transformations must involve employees and their representatives from the beginning to gain their ownership for the changes that are occurring in the organization. Employee involvement strengthens the transformation process by including frontline perspectives and experiences.⁴⁰

- **Enhancing mission understanding.** According to CWMD documents and officials, CWMD has taken steps to improve employees' understanding of their shared mission. For example, CWMD officials told us that they completed a mission validation study in 2020 in which they reviewed CWMD's authorities and responsibilities and assessed the extent to which CWMD was executing its mission consistent with law and policy. CWMD has also introduced town hall meetings in which employees from different parts of the organization share what they do to help accomplish the agency's mission. As we have previously reported, successful organizations create a "line of sight" showing how team, unit, and individual performance can contribute to overall organizational results.⁴¹

Some survey data suggest that these steps to improve employee morale may be having a positive effect. Selected Federal Employee Viewpoint Survey questions related to the challenges identified above—including leadership, communication, and understanding of the mission—had an

³⁹The current assistant secretary has served two non-consecutive terms.

⁴⁰GAO, *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, [GAO-03-669](#) (Washington, D.C.: July 2, 2003).

⁴¹[GAO-03-669](#).

increase in positive responses from 2019 to 2020, as shown in table 2 below.

Table 2: Selected Federal Employee Viewpoint Survey Responses for the Countering Weapons of Mass Destruction Office, 2019 and 2020

Federal Employee Viewpoint Survey question	2019 percent positive	2020 percent positive
I know how my work relates to the agency's goals.	45%	75%
My agency is successful at accomplishing its mission.	28%	48%
In my organization, senior leaders generate high levels of motivation and commitment in the workforce.	13%	48%
Managers communicate the goals of the organization.	29%	55%
Managers promote communication among different work units (for example, about projects, goals, needed resources).	25%	54%
I have a high level of respect for my organization's senior leaders.	14%	46%
How satisfied are you with your involvement in decisions that affect your work?	20%	46%

Source: Office of Personnel Management. | GAO-22-104498

Note: The 2019 survey was administered May 23–July 5, 2019, and had an 82.7 percent response rate, with 124 surveys completed of 150 administered. The 2020 survey was administered September 24–November 5, 2020, and had a 68.4 percent response rate, with 119 surveys completed of 174 administered. “Percent positive” refers to the sum of the percentage of “agree” and “strongly agree” responses or their equivalents (“very good,” “good,” “very satisfied,” and “satisfied”).

In addition, our January 2021 report on DHS employee morale identified five key drivers of employee engagement.⁴² These key drivers each correspond to a question in the Federal Employee Viewpoint Survey. For questions included in both the 2019 and 2020 surveys, CWMD showed improvement, as seen in table 3 below.⁴³

⁴²GAO-21-204. For this prior work, we analyzed data for DHS as a whole, not CWMD specifically. Although employee engagement index scores vary across DHS components, our analyses showed that the five drivers that had the strongest association with engagement across DHS were generally also the top drivers of engagement within each component.

⁴³For two of the five key drivers that we identified, the Office of Personnel Management did not include the questions in the 2020 Federal Employee Viewpoint Survey because it added other questions related to the COVID-19 pandemic and wanted to limit the overall length of the survey. Those drivers were constructive performance conversations and an inclusive work environment.

Table 3: Responses to Federal Employee Viewpoint Survey Questions on Drivers of Employee Engagement, Countering Weapons of Mass Destruction Office, 2019 and 2020

Driver of employee engagement ^a	Federal Employee Viewpoint Survey question	2019 percent positive	2020 percent positive
Career development and training	I am given a real opportunity to improve my skills in my organization.	33%	56%
Work-life balance	My supervisor supports my need to balance work and other life issues.	66%	82%
Communication from management	How satisfied are you with the information you receive from management on what's going on in your organization?	14%	60%

Source: Office of Personnel Management. | GAO-22-104498

Note: The 2019 survey was administered May 23–July 5, 2019, and had an 82.7 percent response rate, with 124 surveys completed of 150 administered. The 2020 survey was administered September 24–November 5, 2020, and had a 68.4 percent response rate, with 119 surveys completed of 174 administered. “Percent positive” refers to the sum of the percentage of “agree” and “strongly agree” responses or their equivalents (“very good,” “good,” “very satisfied,” and “satisfied”).

^aEmployee engagement is generally defined as the sense of purpose and commitment employees feel toward their employer and its mission.

However, CWMD’s overall rankings in the Partnership for Public Service’s rankings of the Best Places to Work in the Federal Government were low again in 2020. Specifically, CWMD ranked last (403 out of 403) among all agency subcomponents in 2019, while in 2020, it ranked 403 of 411 agency subcomponents.⁴⁴ In our prior work, we found that a single survey cycle may not provide enough time to implement changes and see results because real change in improving employee engagement usually takes multiple years.⁴⁵

According to the Office of Personnel Management, a growing body of research on both private- and public-sector organizations has found that increased levels of engagement can lead to better organizational performance.⁴⁶ As we have previously testified, it is essential for DHS to

⁴⁴These rankings are calculated using a weighted formula involving three different questions from the Federal Employee Viewpoint Survey: (1) I recommend my organization as a good place to work; (2) considering everything, how satisfied are you with your job; and (3) considering everything, how satisfied are you with your organization.

⁴⁵GAO, *Federal Workforce: Additional Analysis and Sharing of Promising Practices Could Improve Employee Engagement and Performance*, [GAO-15-585](#) (Washington, D.C.: July 14, 2015).

⁴⁶Office of Personnel Management, *2014 Federal Employee Viewpoint Survey Results: Employees Influencing Change: Government-wide Management Report* (Washington, D.C.: 2014).

improve employee engagement, given its impact on agency performance and the importance of DHS's missions.⁴⁷ For that reason, we recommended in our January 2021 report that DHS take specific actions to strengthen its plans for enhancing employee engagement. DHS concurred with our recommendations and implemented our first recommendation through written guidance issued by the Office of the Chief Human Capital Officer in March 2021, which required component engagement action plans to contain elements related to employee engagement that we recommended they contain. We continue to monitor DHS's response to the other two recommendations.⁴⁸

Conclusions

CWMD plays a key role in defending the United States against chemical, biological, radiological, and nuclear threats. The office has continued to perform important functions that its federal, state, and local partners we interviewed reported as useful, including technology acquisition and the coordination of training and exercises. It has also taken steps to improve employees' morale and a shared understanding of its mission.

However, CWMD's effort to acquire radiation portal monitors for CBP's use at U.S. ports of entry has experienced significant delays since we last reported on it in October 2016. Moreover, the requirements currently governing the acquisition could mean accepting replacement portal monitors that have a higher nuisance alarm rate than the monitors currently in the field. One of the key reasons that DHS undertook the current replacement effort was to decrease the nuisance alarm rate, given that more than 20 million cargo containers pass through the nation's ports every year. By coordinating with CBP to reassess its current acquisition strategy for replacement radiation portal monitors, CWMD may help ensure that the monitors they acquire attain an acceptable nuisance alarm rate for their CBP users, better positioning CBP to prevent

⁴⁷GAO, *Department of Homeland Security: Employee Morale Survey Scores Highlight Progress and Continued Challenges*, [GAO-20-349T](#) (Washington, D.C.: Jan. 14, 2020).

⁴⁸[GAO-21-204](#). Specifically, we recommended that DHS (1) should, through its planned written guidance to components on the employee engagement action planning process, establish the elements required in component engagement action plans, including leveraging information such as their key drivers to identify root causes, setting output-based implementation targets, and setting goals through outcome-based performance measures; (2) should, through its planned written guidance to components on the employee engagement action planning process, require the approval of the Office of the Chief Human Capital Officer and the heads of the components to finalize the employee engagement action plans; and (3) should monitor components' implementation of the Office of Personnel Management action planning cycle to ensure the components review and assess the results of their actions to adjust, reprioritize, and identify new actions needed to improve employee engagement.

radiological and nuclear threats without unduly delaying U.S. commercial traffic.

CWMD's partners in the Department of Defense and CBP told us that they valued the capability gap analysis function that DNDO performed as part of its responsibilities under the Global Nuclear Detection Architecture. However, CWMD has allowed this key function to lapse. CWMD officials said that they are discussing reconstituting gap analysis as part of their new strategic plan for the Global Nuclear Detection Architecture. However, they did not specify their plans for outreach to stakeholders, nor did they specify a time frame for completing the effort. By specifying, in its new strategic plan for the Global Nuclear Detection Architecture, steps to reconstitute the capability gap analysis function, a strategy for outreach to key stakeholders in reconstituting this function, and time frames for the completion of the capability gap assessments, CWMD can help ensure that its plan is consistent with CWMD's guiding principles of gathering subject-matter experts and delivering operator-driven solutions.

CWMD's state and local partners are on the front lines of the mission to address chemical, biological, radiological, and nuclear threats. These partners expressed satisfaction with CWMD's coordination with them. Moreover, CWMD has made progress by formalizing plans to meet with and convene its state and local partners. These plans specify regular time frames for convening its Securing the Cities partners. However, CWMD's plans would benefit from a similar degree of specificity regarding convening BioWatch and chemical partners. By specifying, in its State, Local, Tribal, and Territorial Engagement Strategy, its plans to convene state and local partners across all threat areas—chemical, biological, radiological, and nuclear—CWMD can help ensure that these partners are prepared to deter, detect, and respond to the full range of threats in these areas.

Finally, a formal process for resolving complaints from state and local partners about CWMD contractors may help improve the workplace environment and enhance CWMD's ability to champion the needs of its stakeholders.

Recommendations for Executive Action

We are making the following four recommendations to CWMD:

The Assistant Secretary for CWMD should coordinate with CBP to reassess its current acquisition strategy for replacement radiation portal monitors to ensure that the selected technology or technologies meet

CBP's needs, including with respect to nuisance alarm rates.
(Recommendation 1)

The Assistant Secretary for CWMD should specify, in the new strategic plan for the Global Nuclear Detection Architecture, steps to reconstitute the capability gap analysis function, a strategy for outreach to key stakeholders in reconstituting this function, and time frames for the completion of the capability gap assessments. (Recommendation 2)

The Assistant Secretary for CWMD should specify in CWMD's State, Local, Tribal, and Territorial Engagement Strategy how often CWMD will convene its state and local partners in the chemical, biological, radiological, and nuclear threat areas. (Recommendation 3)

The Assistant Secretary for CWMD should develop and document a formal process for resolving complaints about CWMD contractors.
(Recommendation 4)

Agency Comments

We provided a draft of this report to DHS for review and comment. In its comments, reproduced in appendix II, DHS agreed with our recommendations and identified steps that it is taking or plans to take to address them. The agency also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Homeland Security, and other interested parties. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov>.

If you or your staff have any questions about this report, please contact Allison B. Bawden at (202) 512-3841 or bawdena@gao.gov or Tina Won Sherman at (202) 512-8461 or shermant@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 III.



Allison B. Bawden
Director, Natural Resources and Environment



Tina Won Sherman
Director, Homeland Security and Justice

List of Requesters

The Honorable Gary C. Peters
Chairman

The Honorable Rob Portman
Ranking Member
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Ron Johnson
Ranking Member
Permanent Subcommittee on Investigations
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Bennie G. Thompson
Chairman
Committee on Homeland Security
House of Representatives

The Honorable Mike Rogers
House of Representatives

Appendix I: Objectives, Scope, and Methodology

This report (1) evaluates the extent to which the Department of Homeland Security's (DHS) Countering Weapons of Mass Destruction Office (CWMD) continues to perform the functions of its predecessor offices, (2) evaluates the extent to which CWMD has coordinated with state and local partners since its formation, and (3) describes CWMD's efforts to improve morale and other staffing-related issues.

To evaluate the extent to which CWMD continues to perform the functions of its predecessor offices, we reviewed DHS and CWMD documents that detail authorities, responsibilities, and functions of CWMD and the predecessor offices, the Domestic Nuclear Detection Office (DNDO) and the Office of Health Affairs (OHA). To identify CWMD's legal authorities and responsibilities, we reviewed the statute that established CWMD, the Countering Weapons of Mass Destruction Act of 2018.¹ To identify CWMD's functions, we reviewed documents including DHS's 2020 report to Congress on the department's chemical, biological, radiological, and nuclear functions; CWMD's strategy document for 2020–2024; and CWMD's implementation plan for fiscal year 2020.² The documents we reviewed to evaluate CWMD's performance of its functions include documents that establish requirements, goals, and guiding principles for CWMD functions, including DHS's Chemical Defense Strategy; the related chemical defense implementation plan; CWMD's engagement strategy for state, local, tribal, and territorial partners; documents that describe and establish requirements for CWMD's technology acquisition plans; reports on the National Biosurveillance Integration Center's biosurveillance activities; and a strategy memorandum on the Global Nuclear Detection Architecture. To compare CWMD's functions with those of its predecessors, we reviewed documents including past GAO reports on DNDO's and OHA's programs related to chemical, biological, radiological, and nuclear threats. In addition, to obtain federal officials' views on CWMD's performance of its functions compared with the performance of its predecessor offices, we interviewed officials from CWMD, U.S. Customs and Border Protection (CBP), the Coast Guard,

¹Countering Weapons of Mass Destruction Act of 2018, Pub. L. No. 115-387, 132 Stat. 5162.

²Department of Homeland Security, *U.S. Department of Homeland Security Chemical, Biological, Radiological, and Nuclear (CBRN) Report to Congress for Fiscal Year 2019* (Washington, D.C.: July 31, 2020); *Countering Weapons of Mass Destruction Office Strategy 2020–2024*; and *Department of Homeland Security Countering Weapons of Mass Destruction Office Implementation Plan Fiscal Year 2020* (Washington, D.C.: Jan. 2, 2020).

the Department of Defense, and the National Nuclear Security Administration.

To evaluate the extent to which CWMD has coordinated with state and local partners since its formation, we reviewed CWMD documents that detail areas in which CWMD coordinates with those partners and establish goals and guiding principles for engaging with them. These documents include CWMD's State, Local, Tribal, and Territorial Engagement Strategy for Fiscal Years 2022–2025; the CWMD Implementation Plan; and the Chemical Defense Demonstration Cities Initiative Report.³ In addition, we interviewed CWMD officials to discuss the three main programs in which CWMD coordinates or has coordinated with state and local partners across the range of chemical, biological, radiological, and nuclear threats: BioWatch, the Chemical Defense Demonstration Cities Initiative, and Securing the Cities.

To learn the perspectives of CWMD's state and local partners in these three programs, we requested lists of the jurisdictions in which each of these programs operate, along with points of contact in each. We then formed discussion groups to gather the perspectives of CWMD's state and local partners. To determine the composition of these discussion groups, we reviewed lists of jurisdictions that participated in each of the three programs. We selected all of the local partners that participate in two or three of these programs. We also reached out to all five of the localities that participated in the Chemical Defense Demonstration Cities Initiative, three of which participated only in that program. We then grouped the jurisdictions based on population and time zones. Because only five local partners participated in the Chemical Defense Demonstration Cities Initiative, we grouped them into their own two groups. In total, we held 12 discussion groups from April through July 2021 that consisted of officials from police departments, fire departments, and public health offices from 15 metropolitan areas, with one to three jurisdictions in each discussion group. These discussion groups focused on CWMD's programs as follows: five were BioWatch, two were Chemical Defense Demonstration Cities Initiative, and six were Securing the

³Department of Homeland Security, Countering Weapons of Mass Destruction Office, *State, Local, Tribal, and Territorial Engagement Strategy, Fiscal Years 2022–2025* (September 2021); Department of Homeland Security Countering Weapons of Mass Destruction Office *Implementation Plan Fiscal Year 2020*; *Chemical Defense Demonstration Cities Initiative Report* (June 2018).

Cities.⁴ We determined that the views presented in these discussion groups, while not generalizable to other jurisdictions that did not participate in the discussion groups, provide useful information on CWMD's coordination with its state and local partners.

To describe CWMD's efforts to improve morale and other staffing-related issues, we reviewed results from the 2019 and 2020 Federal Employee Viewpoint Surveys and documents including past GAO reports on employee morale at DHS and other federal agencies. We determined that the Federal Employee Viewpoint Survey data were reliable for purposes of describing trends in employee morale. We also reviewed internal CWMD documents, such as notes from employee listening sessions, and interviewed CWMD officials about the root causes of the low survey scores on morale-related issues and steps CWMD has taken to improve morale.

We conducted this performance audit from September 2020 through April 2022 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 that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

⁴In our first discussion group, we interviewed officials who participated in both the BioWatch and Securing the Cities programs. We determined that the programs were sufficiently different that in the remainder of the discussion groups, we kept the programs separate. We count that first interview in both the BioWatch and Securing the Cities groups, bringing the total number of discussion groups to 12.

Appendix II: Comments from the Department of Homeland Security

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



**Homeland
Security**

April 1, 2022

Allison B. Bawden
Director, Natural Resources and Environment
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Tina Won Sherman
Director, Homeland Security and Justice
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: Management Response to Draft Report GAO-22-104498, "COUNTERING WEAPONS OF MASS DESTRUCTION: DHS Could Improve Its Acquisition of Key Technology and Coordination with Partners"

Dear Mses. Bawden and Sherman,

Thank you for the opportunity to comment on this draft report. The U.S. Department of Homeland Security (DHS or the Department) 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 recognition of the key role DHS's Countering Weapons of Mass Destruction Office (CWMD) has in defending the United States against chemical, biological, radiological, and nuclear (CBRN) threats. The creation of CWMD, formed in December 2017 and established in statute in December 2018, brought together policy, scientific, technical, acquisition, and operational expertise and functions from five disparate headquarters elements into one unified office, creating a Departmental focal point for the counter-WMD mission space.

Accordingly, CWMD strengthens DHS-wide coordination and Federal interagency cooperation, and provides direct support to DHS, Federal interagency, and state, local, tribal, and territorial (SLTT) partners. CWMD remains committed to safeguarding the

**Appendix II: Comments from the Department
of Homeland Security**

homeland against CBRN and health security threats through timely, responsive support to operational partners.

The draft report contained four recommendations with which the Department concurs. Attached find our detailed response to each recommendation. DHS previously submitted technical comments addressing several accuracy, contextual, and other issues under a separate cover for GAO's consideration.

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  Digitally signed by JIM H
CRUMPACKER
Date: 2022.04.01 08:52:33 -04'00'

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

Attachment

**Attachment: Management Response to Recommendations
Contained in GAO-22-104498**

GAO recommended that the Assistant Secretary for CWMD:

Recommendation 1: Coordinate with CBP [U.S. Customs and Border Protection] to reassess its current acquisition strategy for replacement radiation portal monitors to ensure that the selected technology or technologies meet CBP’s needs, including with respect to nuisance alarm rates.

Response: Concur. In November 2021, CWMD initiated coordination with CBP to reassess the acquisition strategy for replacement radiation portal monitors (RPMs), beginning with a meeting between the CWMD Chief of Staff (COS)/Component Acquisition Executive (CAE) and the CBP Executive Director of Cargo and Conveyance Security and Requirements Director. Following that meeting, the CWMD COS/CAE issued a memorandum, “Radiation Portal Technology Enhancement & Replacement Analysis of Alternative/Alternatives Analysis [AoA/AA] Initiation,” dated November 15, 2021, directing the evaluation of technology enhancement and replacement options for RPMs deployed at ports of entry. A copy of this memorandum was provided to GAO under a separate cover on April 1, 2022.

More specifically, this memorandum directed the CWMD Strategy, Plans, and Policy Directorate (SPP) Analysis and Reporting Division (ARD) to lead development and execution of the AoA/AA, and involve an independent, non-profit, Federally Funded Research and Development Center study team and working groups comprising members from the CWMD Radiation Portal Technology Enhancement and Replacement Program Office, CBP, the CWMD Program Integration and Mission Support Organization, and others, as appropriate, to maintain objectivity. This AoA/AA effort will assess the functional and/or operational urgency to recapitalize the RPM fleet (or a portion thereof) and compare alternatives that could meet CBP’s needs, including with respect to nuisance alarm rates.

DHS requests that the GAO consider this recommendation resolved and closed, as implemented.

Recommendation 2: Specify, in the new strategic plan for the Global Nuclear Detection Architecture [GNDA], steps to reconstitute the capability gap analysis function, a strategy for outreach to key stakeholders in reconstituting this function, and time frames for the completion of the capability gap assessments.

Response: Concur. The GNDA Strategy is a five-year interagency strategy intended to help Federal and SLTT partners prevent radiological and nuclear terrorism. CWMD SPP

is currently drafting an updated GNDA Strategy that, once complete, will include goals and objectives regarding GNDA partners optimizing the use of detection technologies, in collaboration with intelligence and law enforcement information, to prevent and deter radiological and nuclear terrorism. The new GNDA strategy will also draw attention to needed analytic capabilities as they relate to interagency radiological and nuclear detection and reporting.

A separate document being developed, also led by CWMD SPP, will more holistically describe next steps to reconstitute the various analyses, including capability gap assessments. Once complete, this document will also address architecture development and investment following the March 11, 2022, Consolidated Appropriations Act of 2022, which included \$5 million for risk and capability assessment work.

It is also important to clarify that while the GNDA Strategy is currently being developed CWMD is already soliciting feedback from interagency partners on restoring a capability gap analysis function. For example, CWMD SPP conducted one-on-one interviews with all Federal GNDA partners in March 2022 to obtain their perspectives on how best to approach this effort.

Estimated Completion Date (ECD): December 30, 2022.

Recommendation 3: Specify in CWMD's State, Local, Tribal, and Territorial Engagement Strategy how often CWMD will convene its state and local partners in the chemical, biological, radiological, and nuclear threat areas.

Response: Concur. CWMD SPP is finalizing the CWMD SLTT Engagement Strategy Implementation Plan (IP) for fiscal years 2022-2025. Once complete, the final IP will articulate specific actions and milestones across the full spectrum of the chemical, biological, radiological, and nuclear mission area, to include the frequency with which CWMD SLTT convening bodies (e.g. Securing the Cities Jurisdictions, Biowatch Partners, and SLTT Key Medical Stakeholders) are held. ECD: September 30, 2022.

Recommendation 4: Develop and document a formal process for resolving complaints related to CWMD contractors.

Response: Concur. The CWMD COS will lead development of a standard operating procedure (SOP) which, once complete, will outline a formal process for resolving complaints related to CWMD contractors. Further, the SOP will describe a consistent process that will improve reporting and management review of complaints related to CWMD contractors, including timeframes, outcomes of complaints, and lessons learned. ECD: June 30, 2022.

Appendix III: GAO Contacts and Staff Acknowledgments

GAO Contacts

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Tina Won Sherman, (202) 512-8461 or shermant@gao.gov

Staff Acknowledgments

In addition to the contacts named above, key contributors were Ben Atwater (Assistant Director); Ned Woodward (Assistant Director); William Bauder; Joseph Cook; Christopher P. Currie; Pamela Davidson; Ellen Fried; Kathryn Godfrey; Leslie Gordon; Rob Grace (Analyst in Charge); Joe Kirschbaum; Susanna Kuebler; Sasan J. "Jon" Najmi; Daniel Speer; Sara Sullivan; Sarah Veale; and Kelsey N. Wilson.

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