

GAO

Testimony

Before the Select Committee on Intelligence, U.S. Senate, and the Permanent Select Committee on Intelligence, House of Representatives

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DIFFUSE SECURITY  
THREATS

Information on U.S.  
Domestic Anthrax Attacks

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Mr. Chairman and Members of the Joint Committee:

As you requested in your letter of October 31, 2002, we are pleased to submit our statement for the record on the anthrax threat. We collected this information as part of several ongoing and completed projects dealing with the anthrax threat, the anthrax vaccine, and technologies to detect and identify anthrax spores,<sup>1</sup> that is, anthrax in a powder form. As you requested, my testimony will focus on the following questions: (1) How easy is it to produce and weaponize anthrax? (2) What studies were conducted to test mail as a weapon delivery system? And (3) what is the status of the United States Postal Service's (USPS) efforts to detect anthrax in the mail? You also requested that we provide an overview of federal law enforcement agencies' initial investigation in response to the October 2001 anthrax attack and how these agencies are preparing for similar incidents in the future.

In conducting our work on anthrax production processes, we identified and consulted with a wide range of current and retired experts in anthrax and biological weapons production processes from the U.S. Army's Dugway Proving Grounds, Utah, a principal site of biological weapons testing; the U.S. Army Medical Research Institute of Infectious Diseases, Ft. Detrick, Maryland; the Institute of Genomic Research, Bethesda, Maryland; the University of Arizona, Tucson, Arizona; and the United Kingdom.

In conducting our work on USPS's efforts to detect anthrax in the mail, we reviewed documents associated with USPS efforts to procure anthrax detection devices, met with USPS officials, and also met with industry experts and vendors representing the technologies USPS is considering. We also met with officials of the Canadian Defense Research Establishment Suffield (DRES) and observed the results of their tests of anthrax in mail in an office setting.

Finally, in conducting our work on how law enforcement agencies responded to the October 2001 anthrax attack, we contacted representatives from the Federal Emergency Management Agency; the Environmental Protection Agency's (EPA) Office of Criminal

<sup>1</sup>See U.S. General Accounting Office, *Diffuse Security Threats: Technologies for Mail Sanitization Exist, but Challenges Remain*, GAO-02-365 (Washington, D.C.: April 23, 2002) and *Diffuse Security Threats: USPS Air Filtration Systems Need More Testing and Cost Benefit Analysis before Implementation*, GAO-02-838 (Washington, D.C.: August 22, 2002).

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Enforcement, Forensics and Training (OCEFT); the Federal Bureau of Investigation's (FBI) Weapons of Mass Destruction Unit and Washington Field Office; USPS's Manager for Environmental Management, Incident Commander for the Brentwood facility, and Postal Inspector; and the Department of Health and Human Services' Office of Public Health Preparedness and Centers for Disease Control and Prevention (CDC).

The work on which this statement is based began in November 2001 and has continued through November 2002, and it was conducted in accordance with generally accepted government auditing standards.

## Background

As of October 2002, intelligence assessments have not changed since 1990 for chemical and biological warfare threats on the battlefield or by terrorists. This is especially true, intelligence analysts told us, in terms of the numbers of countries suspected of developing anthrax spores, the types of biological agents these countries are known to possess, and their ability to weaponize and deliver such agents.<sup>2</sup> Unfortunately, for assessing a similar nonbattlefield threat, there are no current data on which to base an estimate apart from data on the October 2001 attack.

As to the terrorist threat, according to officials at the State Department's Diplomatic Security and at the Central Intelligence Agency, no clear evidence exists at this time that U.S. missions or interests overseas are threatened by foreign states or terrorist attacks using chemical and biological agents. According to these officials, terrorist attacks involving the use of conventional bombs are considered the greatest threat to U.S. overseas missions.<sup>3</sup>

In 1998, at least 12 U.S. abortion clinics received letters that claimed to contain anthrax powder, followed by more than 35 such letters in 1999 and over 30 in 2000. All of these were found to be hoaxes. In addition, DOD committed to a program on December 15, 1997, to vaccinate the entire military because it considered anthrax powder to be a major battlefield

<sup>2</sup>See also U.S. General Accounting Office, *Medical Readiness: Safety and Efficacy of the Anthrax Vaccine*, GAO/T-NSIAD-99-148 (Washington, D.C.: April 29, 1999).

<sup>3</sup>See U.S. General Accounting Office, *State Department: Serious Problems in the Anthrax Vaccine Immunization Program*, GAO-01-21 (December 13, 2000).

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threat.<sup>4</sup> Simultaneously, the American public was introduced to biological warfare threats in a series of evening prime-time television addresses, including one by then-Secretary of Defense William Cohen, showing the relative power of bio-weapons. There was much attendant publicity, both about the importance of the threat and concerns about the safety and efficacy of the vaccine. From 1998 to September 2001, more than 400 anthrax powder hoaxes occurred in the United States. While much attention has been paid to the anthrax letters sent in October 2001, more than 750 hoax letters involving anthrax threats were sent worldwide in October and November 2001. According to a non-profit center specializing in issues related to weapons of mass destruction, a single group, called the Army of God, sent more than 550 hoax letters to abortion clinics in the United States.

## Ease of Production of Anthrax Spores

As you know, many conflicting statements have been made in public testimony before Congress and in the press concerning the ease or difficulty with which terrorists or a lone scientist could effectively disseminate, on U.S. soil, a chemical or biological agent, specifically anthrax, and cause mass casualties. As to the biological agents, all of the experts we met with agreed that while a laboratory scientist may be able to grow cultures of some bio-agents, the production and use of most biological warfare agents would require a relatively high degree of sophistication in terms of both expertise and equipment.

According to technical experts in the many fields associated with biological agents, including those formerly with state-sponsored offensive biological weapons programs, it would be very difficult for a terrorist to overcome major technical and operational challenges to effectively and successfully weaponize and deliver a biological warfare agent to cause mass casualties.<sup>5</sup> If terrorists could overcome these obstacles, experts believe that those without a prior knowledge of these agents would have to conduct extensive experimentation to perfect their skills, which would

<sup>4</sup>In July 2000, DOD ordered a temporary slowdown of its program because the U.S. anthrax vaccine manufacturer could not win Food and Drug Administration (FDA) approval of its manufacturing process and facilities. In January 2002, FDA approved the U.S. manufacturer's facilities and vaccine manufacturing process and DOD announced the resumption of its anthrax vaccination program in June 2002.

<sup>5</sup>See U.S. General Accounting Office, *Combating Terrorism: Need for Comprehensive Threat and Risk Assessments of Chemical and Biological Attacks*, GAO/NSIAD-99-163 (Washington, D.C.: September 7, 1999).

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result in their increased risk of discovery. Specialized knowledge is needed to acquire the right biological warfare agent, process it, improvise a weapon or device, and effectively deliver it to cause mass casualties.

To make high-quality anthrax powder, a number of challenging steps and specialties are involved:

- Acquisition of a virulent strain of anthrax (such as the Ames strain), by (1) locally isolating a strain from a dead animal, (2) purchasing a small sample from an organization that already possessed it, or (3) stealing or by other means obtain it from a laboratory known to possess it.
- Culturing or growing the organism to yield a large quantity, which could be done in commercially available fermenters or on agar plates (if fermented, the result is a slurry or liquid concentrate; if on an agar plate, the result is a wet paste).
- Harvesting, washing, and concentrating the cultured sample, typically done in a centrifuge, which also removes most of the liquid and results in a wet paste.<sup>6</sup>
- Drying and grinding or milling the sample to sufficiently small size,<sup>7</sup> including milling the spores to achieve the required particle size, and, possibly, adding appropriate chemicals to prevent aggregation of spores and to reduce static charge.<sup>8</sup>
- Testing to confirm dispersion patterns and potency to cause mass casualties, unless the perpetrators are highly confident of their abilities.

## Studies Conducted to Test Mail as a Delivery System for Anthrax

Prior to 1998, the military did not envision mail as a delivery system for anthrax powder. In 1998, SAIC, a defense contractor, asked a scientist from the former U.S. offensive biological weapons program, to articulate in a paper several scenarios for delivery of biological warfare agents to support decontamination and containment. One of these scenarios included anthrax powder being sent through the mail. According to this

<sup>6</sup>Experts told us that anthrax production is not an exact science. The yield and quality of each batch is variable even when produced legitimately in a highly sophisticated facility.

<sup>7</sup>There are several drying and milling methods. Some will greatly increase the static charge, and some will reduce the efficiency of the production. Any anthrax powder of < 5 microns is essentially a vapor.

<sup>8</sup>While it has been suggested that static charge could be reduced without adding chemicals, we have not been provided data to support this assertion. At this point, containment becomes imperative if the perpetrator wants to leave no evidence and protect himself or herself.

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paper, if a letter contained more than 2 to 3 grams of powder, it would be relatively easy to detect by its visible shape. In addition, the author believed, by sending the anthrax in a letter, the area of contamination would be limited, so decontamination procedures could be implemented successfully. In this paper, however, the operational environment of automated mail processing was not considered.

In Canada, the first Canadian anthrax hoax letter incident occurred on January 30, 2001, at the Citizenship and Immigration Office. Since no experimental study on which to base a realistic assessment of the threat posed by these "anthrax letters" could be found, Defense Research Establishment Suffield (DRES), a Canadian defense research and development organization, undertook a series of experiments to determine the extent of the hazard. This study was an attempt to (1) mimic what might occur in an office or mailroom if an envelope containing anthrax powder was received and opened and (2) estimate the aerosol release of the anthrax powder from the letters. This study also did not consider the operational environment of automated mail processing. Although this study was not published until October 1, 2001, DRES officials provided a schedule of briefings that were conducted through the spring and summer of 2001, when the results of the study were discussed.

The results indicated that dispersion of spores in an office setting would be far more effective than had initially been suspected. Significant numbers of aerosolized particles (>99% in the 2.5 to 10 micron size range) were released when envelopes, containing 0.1 or 1.0 grams of anthrax powder, were opened. A lethal dose could be inhaled within seconds of opening such an envelope. In addition, the powder quickly spread throughout the room so that if other workers were present, depending on their location and the airflow within the office, they would also be likely to inhale a lethal dose. The results also indicated that envelopes with corners not totally sealed could pose a threat to individuals in the mail-handling system. However, it is important to note that the scientists were only evaluating the anthrax threat that could result from opening an anthrax-contaminated letter. They did not evaluate whether the mail going through the pinch rollers in a postal sorting machine could also result in secondary contamination. Although these results are significant with respect to local area contamination, overall, the mail as a means of producing mass casualties remains an inefficient method of dissemination as compared with the various military technologies. Nonetheless, in terms of public concerns and economic damage, anthrax powder in the mail represents a potentially significant problem.

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## USPS Efforts to Detect Anthrax in the Mail

USPS has been pursuing several approaches, including procedural changes and a number of currently available technologies, to reduce risk through early detection of biohazards, primarily anthrax. USPS has identified several key areas of focus, including (1) redesign of mail collection boxes for both risk reduction and detection, (2) development of technology and procedures to reduce the volume of “anonymous” mail, (3) deployment of vacuum/filtration technology on automated sorting equipment, (4) use of mass spectrometry for detection, and (5) pursuit of a variety of technologies to aid investigators in finding whoever was responsible for earlier anthrax attacks through the mail and deterring future attempts at placing biohazards in the mail.

To date, USPS has focused on systemwide detection technology—centered mainly on Polymerase Chain Reaction (PCR) detection—placed on the initial operation in processing facilities for mail with the greatest risk, which is picked up at collection boxes, residences, and small businesses.<sup>9</sup> USPS continues to face challenges in developing this technology for its operational environment. USPS continues to work with the manufacturers of several different technologies and is conducting additional testing and prototyping to fully determine the viability of these technologies in a mail processing environment. We are continuing to monitor USPS efforts to procure and deploy these technologies.

The USPS efforts to defend against biological agents illustrate a key aspect of homeland defense—namely, the distinction between reactive and proactive operational environments. Prior to the October 2001 letters containing anthrax powder, the vast majority of technologies and techniques for defending against biological agent attacks were based on a post-release reaction approach. This post-release approach assumed that the delivery of the biological warfare agent would be via a known weapon system; that the target would be an active military site; that the soldiers at the site would be protected by adequate training, clothing, and prophylaxis; and that a high number of false positive detections would not hinder the site’s operations in any significant way.

The USPS efforts illustrate a completely new proactive environment and concept of operations for these techniques and technologies. The USPS

<sup>9</sup>PCR technology is able to detect small quantities of DNA with a particular genetic sequence (e.g., anthrax) and is the nucleus of the biohazard detection system (BDS) specifically designed for USPS.



environment is a civilian one, in which the assumptions are that affected people would not have the full protection and training that would be available in a battlefield setting; that the biological warfare agent would have to be intercepted prior to its release, to minimize the impact on both humans and operations; that the delivery mechanism may not be obvious; and that the rate of false positive detection must be minimal in order to avoid unnecessary interruption to normal mail processing activities. As we stated earlier, overcoming the lack of data on the threat in this domestic civilian environment will be critical to USPS success in establishing a biological agent defense.

## Overview of Law Enforcement's Initial Response to the Anthrax Attack

The FBI as lead investigative agency is currently investigating a series of bioterrorism incidents using anthrax spores that were sent through the mail and which resulted in 22 anthrax cases, including five deaths, since October 3, 2001. This is the first time the FBI has conducted this kind of investigation. The FBI's investigative team includes criminal investigators with scientific knowledge. In addition, the FBI has reached out to the scientific community to gain additional scientific knowledge about anthrax. Further, the FBI's HAZMAT Response Team was used to gather evidence at various crime scenes contaminated by anthrax utilizing Personal Protection Equipment.<sup>10</sup> The FBI also utilized the expertise of (1) EPA's Office of Criminal Enforcement, Forensics and Training (OCEFT) to assist in gathering evidence at one of the crime scenes, the Senate Hart Building; (2) USPS's Postal Inspector in collecting evidence involving the contamination of the mail system; (3) CDC and the Florida health unit that initially reported the first anthrax case; and (4) Department of Defense laboratories.

The FBI had previously been made aware of numerous anthrax incidents throughout the United States, which were random in nature and determined to be hoaxes. Because this was the first time the FBI responded to an actual anthrax attack, there was some confusion about the investigative roles and responsibilities of relevant agencies. As a result, the FBI recognized the need for increased coordination with public health officials, including CDC, and other investigative agencies. The CDC particularly is a key agency in any biological terrorist threat because it is

<sup>10</sup>The FBI has 17 Field Offices that have HAZMAT Response Teams that are fully trained and equipped to respond to a hazardous material incident. These teams work in conjunction with the state and local first responders, to assess and evaluate the incident and provide direction to obtain evidence that could be used in subsequent prosecutions.

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able to identify biological agents and has the tools to investigate and respond quickly.

## Current Efforts to Prepare for Future Bioterrorist Attacks

The anthrax investigation has prompted the FBI and other investigative agencies to focus additional attention on the chemical and biological threat. Some of these efforts include (1) agreements among the FBI, other federal agencies, and state and local governments delineating each organization's role; (2) increasing liaison efforts with public health officials; (3) preparation by the FBI and CDC of a handbook for conducting investigations involving biological agents; and (4) identification of key state and local officials needing security clearances to allow access to classified information.

Mr. Chairman, thank you for giving us the opportunity to submit this statement. If you have any questions on the statement or follow-up questions, we will be happy to respond.

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