

GAO

Testimony

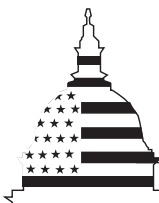
Before the Committee on Governmental Affairs,
U.S. Senate

For Release on Delivery
Expected at 9:30 a.m.,
Wednesday, October 17, 2001

COMBATING TERRORISM

Considerations for Investing Resources in Chemical and Biological Preparedness

Statement of Henry L. Hinton, Jr.
Managing Director, Defense Capabilities and Management



G A O

Accountability * Integrity * Reliability

Report Documentation Page		
Report Date 00OCT2001	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle COMBATING TERRORISM: Considerations for Investing Resources in Chemical and Biological Preparedness	Contract Number	
	Grant Number	
	Program Element Number	
Author(s) Henry L. Hinton, Jr.	Project Number	
	Task Number	
	Work Unit Number	
Performing Organization Name(s) and Address(es) General Accounting Office, PO Box 37050, Washington, DC 20013	Performing Organization Report Number GAO-02-162t	
Sponsoring/Monitoring Agency Name(s) and Address(es)	Sponsor/Monitor's Acronym(s)	
	Sponsor/Monitor's Report Number(s)	
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes		
Abstract I appreciate the opportunity to be here today to discuss GAOs work on efforts to prepare for and respond to chemical and biological terrorist attacks. With the coordinated terrorist attacks against the World Trade Center and the Pentagon on September 11, 2001, the threat of terrorism rose to the top of the countrys national security and law enforcement agendas. With the current investigations into anthrax incidents, the threat remains at the top of those agendas. My comments are based upon four of our recent reports. 1 The first report was on the West Nile Virus outbreak in New York City and its implications for public health preparedness. The second was on federal teams that could respond to chemical, biological, radiological, or nuclear terrorist attacks. The third was on federal research and preparedness programs specific to biological terrorism. And finally, the fourth report summarized our overall work on combating terrorism over the last 5 years. In these reports, and the earlier work that preceded them, we have taken a detailed look at programs to prepare for and respond to terrorism, including chemical and biological terrorism.		
Subject Terms		
Report Classification unclassified	Classification of this page unclassified	

Classification of Abstract unclassified	Limitation of Abstract SAR
Number of Pages 16	

Mr. Chairman and Members of the Committee

I appreciate the opportunity to be here today to discuss GAO's work on efforts to prepare for and respond to chemical and biological terrorist attacks. With the coordinated terrorist attacks against the World Trade Center and the Pentagon on September 11, 2001, the threat of terrorism rose to the top of the country's national security and law enforcement agendas. With the current investigations into anthrax incidents, the threat remains at the top of those agendas. My comments are based upon four of our recent reports.¹ The first report was on the West Nile Virus outbreak in New York City and its implications for public health preparedness. The second was on federal teams that could respond to chemical, biological, radiological, or nuclear terrorist attacks. The third was on federal research and preparedness programs specific to biological terrorism. And finally, the fourth report summarized our overall work on combating terrorism over the last 5 years. In these reports, and the earlier work that preceded them, we have taken a detailed look at programs to prepare for and respond to terrorism, including chemical and biological terrorism.²

My statement, after providing some background, will first discuss the growing uncertainties regarding the terrorist threat and the need for a risk management approach. Next, I will discuss some of the specific federal programs to prepare for and respond to chemical and biological agents or weapons. Third, I will discuss some of the problems identified in evaluations of chemical and biological preparedness. Finally, I will make some suggestions for the Congress to consider for investing resources in chemical and biological preparedness.

In summary, the nature of the terrorist threat appears to be more uncertain since the September 11 attacks. Preparing for all possible contingencies is not practical, so a risk management approach should be used. This would include a threat assessment to determine which chemical or biological agents are of most concern. The federal government has a

¹The four reports discussed are *West Nile Virus Outbreak: Lessons for Public Health Preparedness* (GAO/HEHS-00-180, Sept. 11, 2000); *Combating Terrorism: Federal Response Teams Provide Varied Capabilities; Opportunities Remain to Improve Coordination* (GAO-01-14, Nov. 30, 2000); *Bioterrorism: Federal Research and Preparedness Activities* (GAO-01-915, Sept. 28, 2001); and *Combating Terrorism: Selected Challenges and Related Recommendations* (GAO-01-822, Sept. 20, 2001).

²A more complete list of GAO products related to terrorism appears at the end of this statement.

variety of programs to prepare for and respond to chemical and biological terrorism, including response teams, support laboratories, training and equipment programs, and research efforts. Evaluations of chemical and biological preparedness have identified a number of problems and their solutions. Some of these solutions to improve the response to chemical and biological terrorism have broad applicability across a variety of contingencies while other response requirements are applicable to only a specific type of attack. For example, efforts to improve public health surveillance would be useful in any disease outbreak, whereas efforts to provide vaccines for smallpox would be useful only if terrorists used smallpox in a biological attack. The Congress faces competing demands for spending as it seeks to invest resources to better prepare our nation for chemical and biological terrorism. Funding to combat terrorism, which was originally budgeted to be less than \$13 billion, may exceed \$50 billion for fiscal year 2002, including supplemental emergency contingency funding. Given the uncertainty of the chemical and biological threat, the Congress may want to initially invest resources in efforts with broad applicability over those that are only applicable under a specific type of chemical or biological attack. As threat information becomes more certain, it may be more appropriate to invest in efforts only applicable to specific chemical or biological agents.

Background on Federal Policies, Plans, and Coordination Problems

Federal programs to prepare for and respond to chemical and biological terrorist attacks operate under an umbrella of various policies and contingency plans. Federal policies on combating terrorism are laid out in a series of presidential directives and implementing guidance.³ These documents divide the federal response to terrorist attacks into two categories—crisis management and consequence management. Crisis management includes efforts to stop a terrorist attack, arrest terrorists, and gather evidence for criminal prosecution. Crisis management is led by the Department of Justice, through the Federal Bureau of Investigation. All federal agencies and departments, as needed, would support the Department of Justice and the Federal Bureau of Investigation on-scene commander. Consequence management includes efforts to provide medical treatment and emergency services, evacuate people from dangerous areas, and restore government services. Consequence

³For a compendium of relevant federal policy and planning documents for combating terrorism, see app. I of [GAO-01-822](#). In addition to documents mentioned in that report, the President signed Executive Order 13228 on Oct. 8, 2001, which established a new Office of Homeland Security.

management activities of the federal government are led by the Federal Emergency Management Agency in support of state and local authorities. Unlike crisis management, the federal government does not have primary responsibility for consequence management; state and local authorities do. Crisis and consequence management activities may overlap and run concurrently during the emergency response and are dependent upon the nature of the incident.

In a chemical or biological terrorist incident, the federal government would operate under one or more contingency plans. The U.S. Government Interagency Domestic Terrorism Concept of Operations Plan establishes conceptual guidelines for assessing and monitoring a developing threat, notifying appropriate agencies concerning the nature of the threat, and deploying necessary advisory and technical resources to assist the lead federal agency in facilitating interdepartmental coordination of crisis and consequence management activities. In the event that the President declares a national emergency, the Federal Emergency Management Agency also would coordinate the federal response using a generic disaster contingency plan called the Federal Response Plan. This plan—which has an annex specific for terrorism—outlines the roles of federal agencies in consequence management during terrorist attacks. More specifically, the plan outlines the planning assumptions, policies, concept of operation, organizational structures, and specific assignment of responsibilities to lead departments and agencies in providing federal assistance. The plan categorizes the types of assistance into specific “emergency support functions.” Examples of emergency support functions include mass care and health and medical services. In addition, several individual agencies have their own contingency plans or guidance specific to their activities.⁴

Our September 20, 2001, report found significant coordination and fragmentation problems across the various federal agencies that combat terrorism.⁵ In May 1998, the President established a National Coordinator within the National Security Council to better lead and coordinate these federal programs; however, the position’s functions were never detailed in

⁴An example of agency-specific guidance would be the U.S. Coast Guard’s Interim Guidance Regarding Coast Guard Response to Weapons of Mass Destruction Incidents of June 2000. For a list of additional plans and guidance by individual agencies, see app. II of [GAO-01-822](#).

⁵[GAO-01-822](#), pp. 31-43.

either an executive order or legislation. Many of the overall leadership and coordination functions that we had identified as critical were not given to the National Coordinator. In fact, several agencies performed interagency functions that we believed would have been performed more appropriately above the level of individual agencies. The interagency roles of these various agencies were not always clear and sometimes overlapped, which led to a fragmented approach. For example, the Department of Justice, the National Security Council, the Federal Bureau of Investigation, and the Federal Emergency Management Agency all had been developing or planning to develop potentially duplicative national strategies to combat terrorism. In a more recent report and testimony, we provide additional examples of coordination difficulties specific to biological terrorism.⁶

To improve overall leadership and coordination of federal efforts to combat terrorism, the President announced the creation of an Office of Homeland Security on September 20, 2001, and specified its functions in Executive Order 13228 on October 8, 2001. These actions represent potentially significant steps toward improved coordination of federal activities and are generally consistent with our recent recommendations.⁷ Some questions that remain to be addressed include how this new office will be structured, what authority the Director will have, and how this effort can be institutionalized and sustained over time.

New Uncertainties Regarding the Terrorist Threat

There appears to be additional uncertainties about the terrorist threat in general since the September 11 attacks. Before those attacks, the Federal Bureau of Investigation had identified the largest domestic threat to be the “lone wolf” terrorist—an individual who operated alone. U.S. intelligence agencies had reported an increased possibility that terrorists would use chemical or biological weapons in the next decade. However, terrorists would have to overcome significant technical and operational challenges to successfully produce and release chemical or biological agents of sufficient quality and quantity to kill or injure large numbers of people

⁶For example, fragmentation is evident in the different threat lists of biological agents developed by federal departments and agencies (see [GAO-01-915](#), p.18). Our recent testimony, *Bioterrorism: Public Health and Medical Preparedness* ([GAO-02-141T](#), Oct. 9, 2001) also included a graphic representation of the complicated coordination networks involved (see its app. III, fig. 1).

⁷Our recent summary report highlighted a number of important characteristics and responsibilities necessary for a single focal point, such as the Office of Homeland Security, to improve coordination and accountability (see [GAO-01-822](#), pp. 41-42).

without substantial assistance from a foreign government sponsor. In most cases, specialized knowledge is required in the manufacturing process and in improvising an effective delivery device for most chemical and nearly all biological agents that could be used in terrorist attacks. Moreover, some of the required components of chemical agents and highly infective strains of biological agents are difficult to obtain. Finally, terrorists may have to overcome other obstacles to successfully launch an attack that would result in mass casualties, such as unfavorable meteorological conditions and personal safety risks.

On September 11, terrorists redefined the term “weapon of mass destruction.” Up to that point, that term generally referred to chemical, biological, radiological, or nuclear agents or weapons. As clearly shown on September 11, a terrorist attack would not have to fit that definition to result in mass casualties, destruction of critical infrastructures, economic losses, and disruption of daily life nationwide. The attack increased the uncertainties regarding the threat, although terrorists would still face the technical challenges described above in conducting chemical or biological attacks. The uncertainty has increased because the attacks on the World Trade Center and the Pentagon were conducted by a large group of conspirators rather than one individual. In addition, the terrorists were executing a long-planned coordinated attack, showing a level of sophistication that may not have been anticipated by the Federal Bureau of Investigation—the agency responsible for monitoring national security threats within the United States. Also, the terrorists were willing to commit suicide in the attacks, showing no concern for their own personal safety, which was considered one of the barriers to using chemical or biological agents. And most recently, the threat of anthrax has gone from a series of hoaxes to actual cases under investigation by the Federal Bureau of Investigation.

Given the uncertainty about the threat, we continue to believe that a risk management approach is necessary to enhance domestic preparedness against terrorist threats. Risk management is a systematic and analytical process to consider the likelihood that a threat will endanger an asset, individual, or function and to identify actions to reduce the risk and mitigate the consequences of an attack. While the risk cannot be eliminated entirely, enhancing protection from known or potential threats can reduce the risk. This approach includes three key elements: a threat assessment, a vulnerability assessment, and a criticality assessment (assessing the importance or significance of a target). This approach would include a threat assessment to determine which chemical or biological agents are of most concern. Without the benefits that a risk

management approach provides, many agencies have been relying on worst case chemical, biological, radiological, or nuclear scenarios to generate countermeasures or establish their programs. By using worst case scenarios, the federal government is focusing on vulnerabilities (which are unlimited) rather than credible threats (which are limited). As stated in our recent testimony, a risk management approach could help the United States prepare for the threats it faces and allow us to focus finite resources on areas of greatest need.⁸

Federal Programs to Respond to Chemical and Biological Terrorism

A terrorist attack using chemical or biological weapons presents an array of complex issues to state and local first responders. These responders would include police, firefighters, emergency medical services, and hazardous material technicians. They must identify the agent used so as to rapidly decontaminate victims and apply appropriate medical treatments. If the incident overwhelms state and local response capabilities, they may call on federal agencies to provide assistance. To provide such assistance, the federal government has a variety of programs to prepare for and respond to chemical and biological terrorism, including response teams, support laboratories, training and equipment programs, and research efforts, as follows.

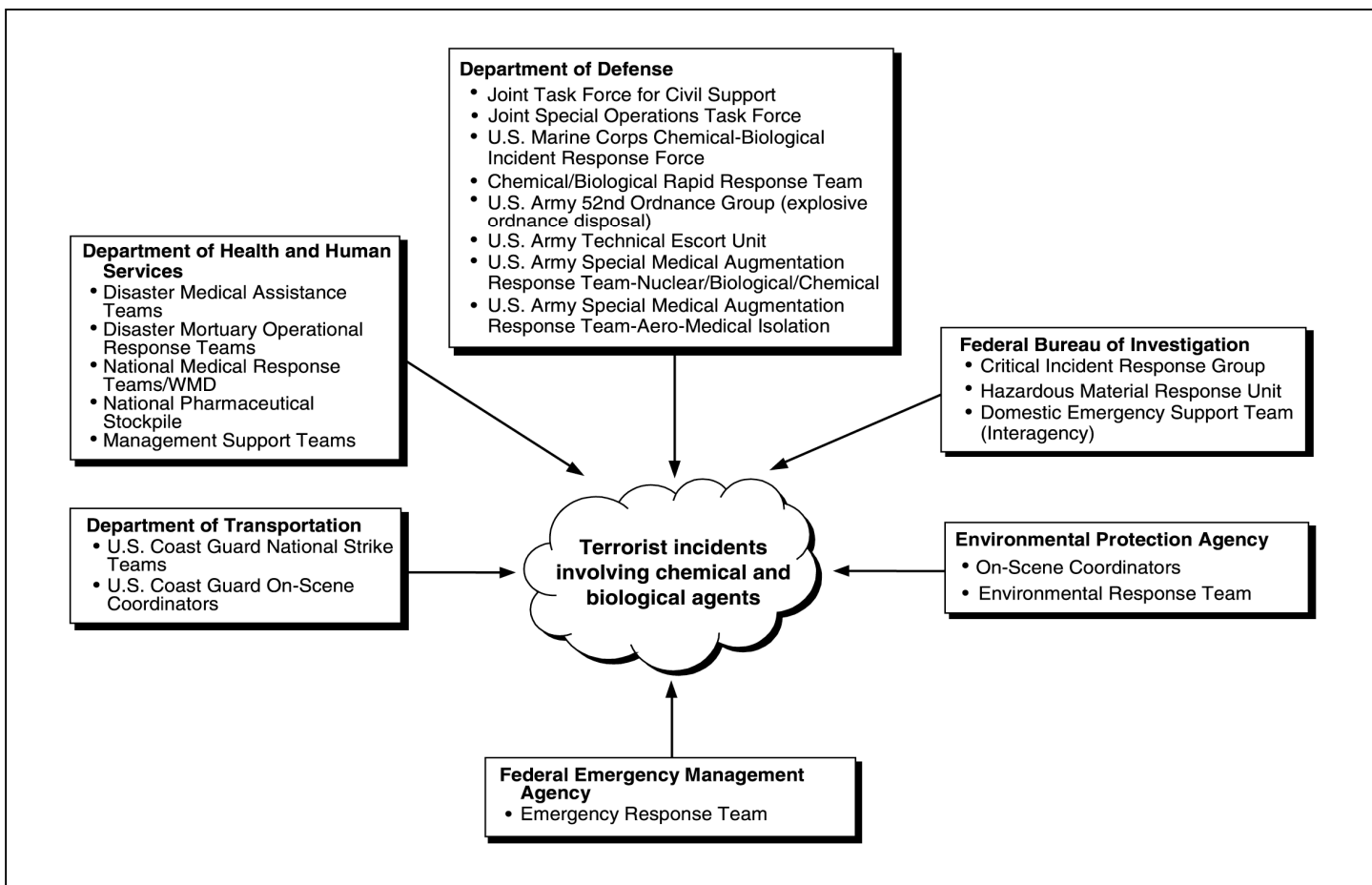
- Federal agencies have special teams that can respond to terrorist incidents involving chemical or biological agents or weapons. These teams perform a wide variety of functions, such as hands-on response; providing technical advice to state, local, or federal authorities; or coordinating the response efforts of other federal teams. Figure 1 shows selected federal teams that could respond to a chemical or biological terrorist incident.⁹
- Federal agencies also have laboratories that may support response teams by performing tests to analyze and test samples of chemical and biological agents. In some incidents, these laboratories may perform functions that enable federal response teams to perform their role. For example, when a diagnosis is confirmed at a laboratory, response teams can begin to treat victims appropriately.
- Federal agencies also have programs to train and equip state and local authorities to respond to chemical and biological terrorism. The programs

⁸*Homeland Security: Key Elements of a Risk Management Approach* (GAO-02-150T, Oct. 12, 2001).

⁹For a more detailed description of these federal teams, including their mission, authority, personnel, and response times, see GAO-01-14, app. I.

- have improved domestic preparedness by training and equipping over 273,000 first responders. The programs also have included exercises to allow first responders to interact with themselves and federal responders.
- Finally, federal agencies have a number of research and development projects underway to combat terrorism. Examples of recently developed and fielded technologies include products to detect and identify chemical and biological weapons. Additional research and/or development projects include chemical monitoring devices and new or improved vaccines, antibiotics, and antivirals.

Figure 1: Federal Response Teams for Chemical and Biological Terrorism



Note: This figure includes federal teams for both crisis and consequence management in a terrorist incident involving chemical or biological agents. Federal agencies have additional teams not shown that might be used in conventional, radiological, or nuclear incidents.

Source: GAO analysis.

Characteristics of Chemical Terrorism

There are a variety of chemical agents potentially used by terrorists. These chemical agents could be dispersed as a gas, vapor, liquid, or aerosol. A chemical agent could be disseminated by explosive or mechanical delivery. Some chemicals disperse rapidly and others remain toxic for days or weeks and require decontamination and clean up. Rapid exposure to a highly concentrated agent would increase the number of casualties. Federal, state, and local officials generally agree that a chemical terrorist incident would look like a major hazardous material emergency. According to the International Association of Fire Chiefs, over 600 local and state hazardous material teams will be the first to respond to a chemical incident. If local responders are unable to manage the situation or are overwhelmed, the incident commander has access to state and federal assets. A variety of federal teams could be deployed to provide assistance.¹⁰

Characteristics of Biological Terrorism

Terrorists also can potentially use a variety of biological agents. Biological agents must be disseminated by some means that infects enough individuals to initiate a disease epidemic. According to a wide range of experts in science, health, intelligence, and biological warfare and a technical report, the most effective way to disseminate a biological agent is by aerosol. This method allows the simultaneous respiratory infection of a large number of people. A few biological agents (e.g., plague and smallpox) are communicable and can be spread beyond those directly affected by the weapon or dissemination device. The release of a biological agent or weapon may not be known for several days until victims present themselves to medical personnel in doctors' offices, clinics, and emergency rooms where the symptoms might easily be confused with influenza or other less virulent illnesses. Accordingly, the critical detection of the biological agent begins with the public health infrastructure that detects outbreaks of illness, identifies the sources and modes of transmission, and performs rapid agent laboratory identification. Once diagnosis of a biological agent is confirmed, treating victims may require the use of federal consequence management teams and the items from the National Pharmaceutical Stockpile. Again, a variety of federal teams could be deployed to provide assistance.¹¹

¹⁰For a detailed discussion of what teams would perform what functions in a chemical terrorist incident, see [GAO-01-14](#), app. III.

¹¹For a detailed discussion of what teams would perform what functions in a biological terrorist incident, see [GAO-01-14](#), app. IV.

Problems Identified in Preparing for Chemical and Biological Terrorism

We have identified a number of problems that require solutions in order to improve preparedness for chemical and biological terrorism. Some of these are included in our recent reports and testimony. For example, our report on the West Nile Virus outbreak identified specific weaknesses in the public health system that need to be addressed to improve preparedness for biological terrorism.¹² Our recent report on biological terrorism examined evaluations of the effectiveness of federal programs to prepare state and local authorities.¹³ For this statement, we also conducted an analysis of federal exercise evaluations to identify problems associated with chemical and biological terrorism that needed to be solved. In doing this, we examined 50 evaluations representing 40 separate exercises with chemical or biological scenarios.

Based upon our review, the problems and their solutions fell into two categories. These categories were (1) generic problems and solutions that are generally applicable to any type of terrorist incident, major accident, or natural disaster, and (2) problems and solutions that are applicable to both chemical and biological terrorist events. Specific examples of each category follow.

The first category of problems and their solutions are generally applicable to any type of terrorist incident. These would apply not only to chemical and biological terrorism but also to all hazards including emergencies unrelated to terrorism, such as major accidents or natural disasters.

- Command and control. The roles, responsibilities, and the legal authority to plan and carry out a response to a weapon of mass destruction terrorist incident are not always clear, which could result in a delayed and inadequate response.
- Planning and operations. State and local emergency operations plans do not always conform to federal plans. The operational procedures for requesting federal assistance are not always compatible with state and local procedures.
- Resource management and logistics. State and local governments can be overwhelmed with the resource management and logistical requirements of managing a large incident, particularly after the arrival of additional state and federal assets. For example, state and local officials could have

¹²See [GAO/HEHS-00-180](#).

¹³See [GAO-01-915](#).

difficulty providing support to numerous military units that might be needed.

- Communication. Interoperability difficulties exist at the interagency and intergovernmental levels. Also, the public health community lacks robust communication systems, protocols, equipment, and facilities.
- Exercises. Many exercises focus primarily on crisis management, which often ends in a successful tactical resolution of the incident and do not include more likely scenarios where terrorist attacks are successful, requiring a consequence management exercise component.
- Mass casualties. Overall planning and integration among agencies are needed for mass casualty management, including conventional terrorist incidents. Also, medical surge capacity for any type of weapon of mass destruction event may be limited. Disposition of bodies would also be an issue.

The second category of problems and their solutions are applicable to chemical or biological incidents. They would not be relevant in a conventional, radiological, or nuclear terrorist incident; however, they would be relevant in other chemical or biological events not related to terrorism, such as an accidental release of chemicals or a natural outbreak of a disease. They vary in their level of applicability, with some only being applicable to specific chemical or biological agents.

- Public health surveillance. Basic capacity for public health surveillance is lacking. Improved public health-coordinated surveillance for biological terrorism and emerging infectious diseases is an urgent preparedness requirement at the local level.
- Detection and risk assessment. The capability of first responders and specialized response teams to rapidly and accurately detect, recognize, and identify chemical or biological agents and assess the associated health risks can be slow. Also, following the release of a chemical or biological agent, emergency hazardous material teams do not always conduct a downwind analysis of the toxic cloud, which could delay a decision to evacuate potentially affected populations.
- Protective equipment and training. First responders often lack special personal protective equipment (level-A protective clothing and masks) to safeguard them from chemical or biological agents and could become contaminated themselves. Training curricula deal with the technical level of response, such as treatment protocols, but do not describe operational guidelines and strategies for responding to large-scale public health emergencies. Physicians sometimes lack adequate training to recognize chemical and biological agents.

-
- Chemical and biological-specific planning. Emergency operations plans and “all-hazard” plans do not adequately address the response to a large-scale chemical or biological terrorism event. Plans often do not address chemical or biological incidents.
 - Hospital notification and decontamination. Delays could occur in the notification of local hospitals that a biological incident has occurred. By the time the hospitals are notified, they could become contaminated by self-referred patients, have to close, and not treat other victims. First responders could become victims themselves and contaminate emergency rooms.
 - Distribution of pharmaceuticals. State and local health officials have found it difficult to break down and distribute tons of medical supplies contained in push-packages from the National Pharmaceutical Stockpile.
 - Vaccines and pharmaceuticals. Some pharmaceuticals, such as antibiotics, are generic and can be used to treat several different biological agents, whereas others, such as vaccines, are agent-specific. An example would be the smallpox vaccine, which would only be useful if terrorists used smallpox in an attack.
 - Laboratories. Even a small outbreak of an emerging disease would strain resources. There is a need for broadening laboratory capabilities, ensuring adequate staffing and expertise, and improving the ability to deal with surges in testing needs.
 - Medical and veterinary coordination. Problems exist in communication between public health officials and veterinary officials. The local and state veterinary disaster response plan may not adequately address the impact of a biological incident on the animal population, which could have dramatic health, economic, and public relations implications.
 - Quarantine. Quarantine would be resource-intensive and would require a well-planned strategy to implement and sustain. Questions that have to be addressed include implementation authority, enforcement, logistics, financial support, and the psychological ramifications of quarantine.

Suggestions to Consider for Investing Resources

The Congress may want to consider several factors before investing resources in the rapidly growing budget for combating terrorism. Even before September 11, funding to combat terrorism had increased 78 percent from the fiscal year 1998 level of about \$7.2 billion to the proposed fiscal year 2002 budget of about \$12.8 billion. After September 11, the Congress approved the President’s request for \$20 billion in emergency assistance and provided an additional \$20 billion to supplement existing contingency funds. Thus, terrorism-related funding in fiscal year 2002 may exceed \$50 billion. Further, a number of additional funding proposals have been introduced in the Congress that could further raise that amount.

The challenge facing the Congress and the nation is to invest new resources where they will make the most difference in protecting people and responding to terrorist attacks, including those involving chemical and biological agents or weapons. The terrorist attacks of September 11 have profoundly changed the management agendas of the Congress, the White House, federal agencies, and state and local governments. However, as we respond to the urgent priorities and the enduring requirements of combating terrorism, our nation still must address the short-term and long-term fiscal challenges that were present before September 11 and that remain today. It is important to remember that the long-term pressures on the budget from competing programs have not lessened. In fact, long-term pressures have increased due to the slowing economy and the spending levels expected for fiscal year 2002. As a result, the ultimate task of addressing today's urgent needs without unduly exacerbating our long-range fiscal challenges has become more difficult.

As discussed above, the nature of the threat appears to have become more uncertain since the September 11 attacks. Despite this uncertainty, preparing for all possible contingencies is not practical because vulnerabilities are unlimited, so a risk management approach is needed to help focus resource investments. Efforts to better prepare for chemical and biological attacks include solutions that have broad applicability across a variety of contingencies and solutions that are applicable to only a specific type of attack. For example, efforts to improve public health surveillance would be useful in any disease outbreak, whereas efforts to provide vaccines for smallpox would be useful only if terrorists used smallpox in a biological attack. Given the uncertainty of the chemical and biological terrorist threat and continued fiscal concerns, the Congress may want to initially invest resources in efforts with broad applicability rather than those that are only applicable under a specific type of chemical or biological attack. As threat information becomes more certain, it may be more appropriate to invest in efforts only applicable to specific chemical or biological agents. This approach would focus finite resources on areas of greatest need using a risk management approach.

Scope and Methodology

As stated initially, this testimony is based largely upon recent GAO reports. In addition, we sought to determine what types of problems might arise in responding to chemical and biological terrorist attacks. To do so, we analyzed after-action reports and other evaluations from federal exercises that simulated chemical and biological terrorist attacks. The scope of this analysis was governmentwide. Our methodology initially identified and catalogued after-action reports and evaluations from federal

exercises over the last 6 fiscal years (fiscal years 1996 to 2001). The analysis was limited to those 50 after-action reports (representing 40 different exercises) that had a chemical and/or biological terrorism component. The analysis did not include exercises involving radiological and/or nuclear agents, and it does not represent all federal after-action reports for combating terrorism exercises during that period. We then identified specific problems and issues associated with chemical and biological terrorism exercises. We compared those specific problems and solutions to determine which ones were specific to chemical and to biological incidents.

Mr. Chairman, this concludes my prepared statement. I would be happy to respond to any questions you or other members of the Committee may have.

Contact and Acknowledgments

For further information about this testimony, please contact me at (202) 512-4300. For information specifically on biological terrorism please contact Janet Heinrich at (202) 512-7250. Stephen L. Caldwell, Mark A. Pross, James C. Lawson, Harry L. Purdy, Jason G. Venner, and M. Jane Hunt made key contributions to this statement.

Related GAO Products

Homeland Security: Key Elements of a Risk Management Approach ([GAO-02-150T](#), Oct. 12, 2001).

Bioterrorism: Review of Public Health Preparedness Programs ([GAO-02-149T](#), Oct. 10, 2001).

Bioterrorism: Public Health and Medical Preparedness ([GAO-02-141T](#), Oct. 9, 2001).

Bioterrorism: Coordination and Preparedness ([GAO-02-129T](#), Oct. 5, 2001).

Bioterrorism: Federal Research and Preparedness Activities ([GAO-01-915](#), Sept. 28, 2001).

Combating Terrorism: Selected Challenges and Related Recommendations ([GAO-01-822](#), Sept. 20, 2001).

Combating Terrorism: Comments on H.R. 525 to Create a President's Council on Domestic Terrorism Preparedness ([GAO-01-555T](#), May 9, 2001).

Combating Terrorism: Accountability Over Medical Supplies Needs Further Improvement ([GAO-01-666T](#), May 1, 2001).

Combating Terrorism: Observations on Options to Improve the Federal Response ([GAO-01-660T](#), Apr. 24, 2001).

Combating Terrorism: Accountability Over Medical Supplies Needs Further Improvement ([GAO-01-463](#), Mar. 30, 2001).

Combating Terrorism: Comments on Counterterrorism Leadership and National Strategy ([GAO-01-556T](#), Mar. 27, 2001).

Combating Terrorism: FEMA Continues to Make Progress in Coordinating Preparedness and Response ([GAO-01-15](#), Mar. 20, 2001).

Combating Terrorism: Federal Response Teams Provide Varied Capabilities; Opportunities Remain to Improve Coordination ([GAO-01-14](#), Nov. 30, 2000).

West Nile Virus Outbreak: Lessons for Public Health Preparedness ([GAO/HEHS-00-180](#), Sept. 11, 2000).

Combating Terrorism: Linking Threats to Strategies and Resources ([GAO/T-NSIAD-00-218](#), July 26, 2000).

Chemical and Biological Defense: Observations on Nonmedical Chemical and Biological R&D Programs ([GAO/T-NSIAD-00-130](#), Mar. 22, 2000).

Combating Terrorism: Need to Eliminate Duplicate Federal Weapons of Mass Destruction Training ([GAO/NSIAD-00-64](#), Mar. 21, 2000).

Combating Terrorism: Chemical and Biological Medical Supplies Are Poorly Managed ([GAO/T-HEHS/AIMD-00-59](#), Mar. 8, 2000).

Combating Terrorism: Chemical and Biological Medical Supplies Are Poorly Managed ([GAO/HEHS/AIMD-00-36](#), Oct. 29, 1999).

Food Safety: Agencies Should Further Test Plans for Responding to Deliberate Contamination ([GAO/RCED-00-3](#), Oct. 27, 1999).