



Observations and Lessons Learned From Anthrax Responses

National Response Team

INTERIM REPORT

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National Response Team Observations and Lessons Learned from Anthrax Responses

This report provides a distillation of observations made by member agencies of the U.S. National Response Team (NRT) regarding response efforts to the recent anthrax events throughout the United States. Many NRT member agencies are currently engaged in National Oil and Hazardous Substances Pollution Contingency Plan (NCP) response efforts to environmental threats. The recent anthrax incidents are significant because they test the capabilities of federal responses nationwide without the structure of the Federal Response Plan (FRP) to support these responses. Drawing from the observations made by NRT member agencies, the Preparedness Committee has compiled a series of lessons learned. This report also includes preliminary recommendations for action by NRT and other federal government agencies. While some of these recommendations can be implemented immediately, many merit additional discussion and review for further consideration.

The observations addressed in this report cover the period from the initial response of the Federal Government in early October through the middle of November 2001. As such, this initial report has been prepared without the benefit of additional On-Scene Coordinator (OSC) reports. As these OSC reports are completed, it is anticipated that additional National Response System (NRS) assessments of the ongoing federal response will follow.

The report is divided into two sections. Section 1 provides a brief overview of the anthrax events and the response efforts of federal agencies under the NRS. Section 2 presents the lessons learned derived from the observations. The lessons learned are divided into two groups: "Authority, Plans, and Interagency Coordination for Response to Biological/Etiological Agents Released into the Environment", and "Response Operations". Please note that no particular rank ordering or prioritization has been assigned to the lessons learned within each group. Please also be aware that the purpose of the Lessons Learned process is to improve our capability to respond to emergencies, not to assign fault or second-guess decisions made and actions taken during the emergencies.

1. OVERVIEW OF INCIDENTS AND THE NRS

1.1 Summary of Events

On Friday, October 5, 2001, a photo editor at American Media, Incorporated (AMI) in Boca Raton, Florida, died of inhalation anthrax. This was the first reported case of inhalation anthrax in the United States since 1978. Shortly afterwards, a mailroom employee at AMI became ill and was also hospitalized for inhalation anthrax. These developments greatly concerned authorities and a thorough investigation immediately ensued in which numerous soil and air samples were taken from the locations where the victims had traveled in the preceding weeks. Several sites containing traces of anthrax were found at the headquarters of AMI in Boca Raton, Florida. Friends, family members, and co-workers of the victims were tested and placed on prophylactic¹ antibiotics. During this time, it was discovered through the results of nasal swab testing that a third AMI employee had been exposed to anthrax, but had not contracted the illness. As investigators examined the possibility of victim exposure through contaminated mail, traces of anthrax were found at several nearby U.S. postal facilities in and around West Palm Beach, Florida.

The focus of the anthrax investigations soon turned to other areas of the country, particularly the Northeast, as new cases of both the inhalation and cutaneous (skin) forms

¹ Preventative or precautionary.

emerged in New York, New Jersey, and Washington, DC. On October 12, 2001, it was announced that an assistant to Tom Brokaw of NBC News had contracted skin anthrax after opening a letter containing a powdery substance postmarked in Florida. A few days later, a personal assistant to Dan Rather of CBS News was also diagnosed with skin anthrax after opening a similar letter. Investigators discovered anthrax at several other facilities in the New York area, including the second floor mailroom at ABC News headquarters, the Manhattan Office of New York Governor George Pataki, New York City Hall, the *New York Post* Headquarters, and the U.S. Postal Service's (USPS) Morgan Processing and Distribution Center. Anthrax spores were also found at several U.S. postal facilities throughout the New Jersey area, including ones located in Trenton, Jackson Township, Hamilton Township, Rocky Hill, and Princeton Borough. Exposure to the bacteria by postal workers in New Jersey resulted in two cases of inhalation anthrax and three of the cutaneous form.

The Washington, DC area was heavily impacted by the anthrax attacks as well. A letter containing anthrax was sent to the office of U.S. Senate Majority Leader Thomas A. Daschle. This led to the evacuation and closing of over a dozen Senate offices in the Hart and Dirksen Senate Office Buildings as investigators attempted to determine the extent of contamination throughout the facilities. Staff members and Senators were tested for possible exposure and placed on antibiotics as a precautionary measure. Traces of anthrax were discovered at several other facilities throughout the District of Columbia, including the U.S. State Department, the U.S. Supreme Court,

EPA Confirmed Anthrax-Contaminated Sites

(as of December 31, 2001)

Florida:

*American Media, Incorporated, Boca Raton, FL
Two U.S. Postal Facilities, Boca Raton, FL*

*Three U.S. Postal Facilities, Lake Worth, FL
U.S. Postal Facility, West Palm Beach, FL*

New York/New Jersey Area:

*ABC News Headquarters, NY
CBS News Headquarters, NY
Manhattan Office of Governor George Pataki, NY
NBC News Headquarters, NY
New York City Hall, NY
New York Post, NY
U.S. Postal Facility, Morgan Processing Center, NY*

*Regional Mail Center, Hamilton Township, NJ
Mail Processing and Distribution Center, Bellmawr, NJ
U.S. Postal Facility, Rocky Hill, NJ
U.S. Postal Facility, Jackson Township, NJ
U.S. Postal Facility, Princeton Borough, NJ
Two U.S. Postal Facilities, Trenton, NJ*

Washington DC Metro Area:

*Brentwood Postal Facility, Washington, DC
Congressional Mail Processing Center, Washington, DC
Corporation of National Services, Washington, DC
DIA, Bolling Air Force Base, Washington, DC
Dirksen Senate Office Building, Washington, DC
Economic Research Service, USDA, Washington, DC
FBI Mailroom, Washington, DC
FCC Mailroom, Washington, DC
FDA Offices, Washington, DC
Friendship Postal Facility, Washington, DC
Hart Senate Office Building, Washington, DC
HHS Mailroom, Washington, DC
Howard University Main Mailroom, Washington, DC
Longworth House Office Building, Washington, DC
NASA, Washington, DC
OPM, Washington, DC
South Building Mailroom, USDA, Washington, DC
Three GSA Offices, Washington, DC*

*U.S. State Department, Washington, DC
U.S. Supreme Court Mailroom, Washington, DC
U.S. Treasury, ATF Mailroom, Washington, DC
VA Hospital Mailroom, Washington, DC
CIA Mail-Sorting Facility, Langley, VA
Dulles Retail Postal Facility, Dulles, VA
Forest Service Mailroom, USDA, Rosslyn, VA
GSA Warehouse, Alexandria, VA
Pentagon Postal Facility, Arlington, VA
FBI Mail Facility, Springfield, MD
U.S. State Department Mail-Handling Facility, Sterling, VA
Bolling Air Force Base, White House Mail Facility, MD
DOJ Mail Facility, Jessup, MD
Ford House Office Building, Washington, DC
DOJ Mail Facility, Landover, MD
U.S. Supreme Court Mail Facility, Prince Georges County, MD
Walter Reed Army Institute of Research, Silver Spring, MD*

Other Areas:

*Postal Machine Repair Facility, Indianapolis, IN
Stamp Fulfillment Services Building, Kansas City, MO*

*U.S. Postal Facility, Raleigh, NC
U.S. Postal Distribution Center, Wallingford, CT*

the Ford and Longworth House Office Buildings, the Brentwood postal facility, and various other U.S. Government buildings. Investigators also detected the presence of anthrax at several outlying facilities in the Washington, DC area. Among these were the Sterling and Dulles postal facilities in Virginia, and a Department of Justice (DOJ) postal facility in Maryland. Additionally, an anthrax-laced letter addressed to Senator Patrick J. Leahy was discovered at the General Services Administration (GSA) warehouse in Northern Virginia.

Other areas of the country have also been affected by the recent anthrax events. Investigators have confirmed the presence of anthrax at the Stamp Fulfillment Services building in Kansas City, Missouri; a postal machine repair facility in Indianapolis, Indiana; and a postal facility in Raleigh, North Carolina. A comprehensive list of locations where anthrax contamination has been discovered is provided in the table above. As of the date of this report, the last victim of inhalation anthrax was an elderly woman in Oxford, Connecticut. Authorities continue to examine these and other cases as remediation and cleanup efforts continue across the country. In addition, scarce response resources were diverted from actual events to evaluate potential exposures that turned out to be hoaxes or anxiety-based, as state, local, and federal agencies responded to thousands of reports of anthrax. For example, between October 1 and 16, 2001, the Federal Bureau of Investigation (FBI) responded to more than 2,300 incidents, or suspected incidents, involving anthrax or other dangerous agents.

One of the turning points for the technical response to the anthrax incidents was the discovery in October 2001, of two postal workers at the Brentwood postal facility in Washington, DC, who were seriously ill (and later died of inhalation anthrax). The situation of anthrax from unopened letters affecting the health of workers handling the mail had not been encountered before, so the threat to workers from unopened letters passing through a facility was unknown. Following the discovery of these new cases of anthrax, the Centers for Disease Control and Prevention (CDC) and other public health professionals reassessed their approach to the threat and to the application of existing medical tenets to these incidents. On October 22, 2001, CDC issued a new advisory regarding medical treatment of decontamination and cleanup workers. In addition, as medical knowledge regarding the threats associated with limited numbers of spores continued to evolve, the approach of various medical and scientific professionals regarding “hot zones” and other aspects of threat determination evolved as well.

1.2 ESF #10 and Response to the Anthrax Events

Interagency planning for response to terrorist incidents had assumed that the FRP would provide the mechanism for response to consequences of terrorism. The FRP and Emergency Support Function (ESF) #10 were not activated for these incidents, however, because no Governor asked for a Presidential declaration of a major disaster.

1.3 NRT Member Agency Response to the Anthrax Events

Most NRT member agencies were involved in the response in some way. The U.S. Environmental Protection Agency (EPA) and other NRT member agencies became involved in the response to anthrax because it is considered to be a pollutant or contaminant under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Based on the executive orders assigning roles and responsibilities for federal agencies in implementing CERCLA, federal agencies are responsible for non-emergency cleanup of their own facilities. In addition, CDC, as the national leader for developing and applying disease prevention and control, and for environmental health issues, was the lead federal public health agency for this response. CDC supported federal responders, as well as local and state public health professionals, in assessing and responding to the threats presented by the anthrax releases. The following table

provides a general description of the roles and activities of NRT member agencies during the anthrax responses:

NRT Member Department/Agency	Role and Activities
DOD	Through the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), provided on-site support to EPA and other agencies in responding to early threats of anthrax, as well as extensive analytical support through its Ft. Detrick, MD facility. Also provided technical support to EPA in testing the efficacy of response techniques and developed educational outreach efforts for the public and responders.
DOJ/FBI	As the lead agency for crisis management, led the criminal investigation of the anthrax releases. The FBI investigated thousands of reports of anthrax. DOJ also responded to several incidents of contamination or potential contamination at several facilities in the Washington, DC area.
DOL/OSHA	As the lead agency for worker health and safety, provided on-site and off-site technical support to ensure health and safety of response and cleanup workers and to disseminate information to U.S. workplaces. Worked on-site with EPA, CDC, USPS, and cleanup contractors to evaluate and advise on work procedures and Personal Protective Equipment (PPE). Evaluated sampling methods and results. Provided technical support in developing testing protocols for worker exposure to anthrax. Developed information and guidance for U.S. workplaces about anthrax hazards and suggested controls, and disseminated this information via OSHA's web site and compliance assistance hotline.
DOT	Issued emergency exemptions and approvals to facilitate clean up and disposal of potentially anthrax-contaminated materials. Coordinated with federal, state, and local authorities, including CDC, EPA, and USPS on proper transportation of anthrax-contaminated material; including mail delivery.
EPA	Served as the Federal OSC in the response in Regions I, II, III, IV, V, and VII. In this capacity, led cleanups in Florida and Washington, DC (Regions III and IV). Provided technical support and assistance to other federal agencies with contaminated properties, including massive assistance for the Capitol Hill response efforts. In addition, oversaw private-sector sampling and cleanup efforts when requested by the FBI.
FEMA	Assisted the Office of Homeland Security (OHS) in establishing and supporting a Consequence Management Emergency Support Team (EST).
GSA	Coordinated with numerous affected federal departments and agencies to assist them in responding to anthrax contamination, providing them with access to contractor support and, as necessary, assisting agencies in obtaining logistical services and support.

HHS	CDC and HHS Secretary played key roles in the response to the anthrax incidents by assessing and identifying the nature of the threat through its epidemiological processes and providing information to the affected agencies and the general public. CDC provided technical assessments of the nature of the threat and advisories on the use of PPE and other actions for responders and USPS employees.
State Department	Working with CDC and EPA, assessed the vulnerability of its overseas embassies and sampled potentially affected mailrooms. Also responded to contamination at one of its Washington, DC facilities.
USCG	Through the USCG Atlantic Strike Team (AST), provided significant support for the Region III response to the contamination on Capitol Hill. The AST established and staffed an Incident Command System/Unified Command (ICS/UC) structure for the Capitol Hill response and provided technical assistance to EPA, including air monitoring, sampling, and health and safety support, at this and other anthrax responses.
USDA	Responded to anthrax contamination at several of its Washington, DC facilities. Also provided screening assistance to other federal agencies in the DC area. Animal and Plant Health Inspection Service (APHIS) and Agricultural Research Service (ARS) labs continue to analyze CDC and EPA samples at the time of this report.

1.4 NRT Response to the Anthrax Events

Under the NCP, the NRT is responsible for national response and preparedness planning, for coordinating regional planning, and for providing policy guidance and support to the Regional Response Teams (RRTs). The NRT can be activated as an emergency response team because of the threat itself (e.g., when a hazardous substance release involves a substantial threat to public health) or if requested by an RRT or any NRT member. The NRT activated on October 29, 2001, with an information-sharing conference call to discuss NRT member agency activities in response to the incidents, other operations, including day-to-day activities that were being affected by anthrax issues, and mailroom operations. In addition, the affected RRTs were invited to participate in the regularly scheduled meetings of the NRT.

2. OBSERVATIONS AND LESSONS LEARNED

Authority, Plans, and Interagency Coordination for Response to Biological/Etiological Agents Released into the Environment

While NRS federal agencies have the statutory authority to respond to biological/etiologi cal agents that are released into the environment, challenges with understanding how that authority should be implemented and gaps in planning and exercises prevented the response from being carried out as smoothly as it might have been. Please note that no particular rank ordering or prioritization has been assigned to these lessons learned.

2.1 Title: Federal Plans and Agency Roles

Observation: While the need for NRS agencies to respond to protect public health and the environment from the imminent and substantial threat presented by the anthrax incidents was generally agreed-upon by NRT member agencies, there was some confusion regarding which

federal laws and plans were appropriate to the response action and which federal agencies had the technical capability and the financial resources to be involved in the anthrax response effort.

Discussion: Many plans (e.g., the CONPLAN, the NCP, and the FRP) currently exist to deal with terrorist incidents having environmental and public health impacts. The applicability of the NCP to biological terrorist incidents is derived from the CERCLA definition of pollutants and contaminants, which includes etiological agents.² Under CERCLA, EPA can respond when the release (or threat of release) into the environment of such pollutants and contaminants poses an imminent and substantial danger to public health or welfare.³ Because the anthrax releases did pose such danger to public health, and had been released into the environment (since it did not originate in the contaminated buildings, but was merely discovered there), CERCLA and NCP response authorities applied. The application of the NCP to these events was consistent with EPA's policy to use CERCLA section 104 to respond to all biological contaminants, including disease-causing agents.

Several questions were raised regarding the response by some NRT agencies. First, not all NRT agencies were aware of EPA's interpretation regarding response to biological contaminants. In addition, not all NRT agencies were aware of or have policies consistent with this EPA policy.

Second, there was some confusion as to how the response under the NCP was to be coordinated with other federal plans. According to the U.S. Government Interagency Domestic Terrorism Concept of Operations Plan (CONPLAN), the FBI has the overall lead agency authority for response to a terrorist incident. At the various sites, EPA OSCs were uncertain whether they were responsible only for providing technical assistance to the FBI (as directed under the CONPLAN and Presidential Decision Directive (PDD) 62) or for implementing their roles under the NCP, (including overall protection of public health and welfare). Furthermore, responders from some federal agencies appeared to be unaware of the procedures established under the CONPLAN and NCP and therefore did not follow these plans in coordinating with other federal agencies. For example, the FBI maintained control over all data and information it had collected until it relinquished control of the crime scene to environmental responders and public health professionals, despite previous commitments to work with consequence management agencies. At times, this led to a duplication of effort in data collection and site characterization, and could have impaired responders' ability to effectively plan for their response efforts. In addition, integration of public health information (e.g., clinical data) into either crisis or consequence management operations was not timely, which is essential for effective and efficient response. Expected coordination mechanisms and centers (e.g., a Joint Operations Center, Disaster Field Office) were not established. These problems might have been overcome with activation of the FRP or by following the processes outlined in the CONPLAN.

² CERCLA 101(33) defines pollutant and contaminant as, "Any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction), or physical deformations, in such organisms or their offspring..."

³ CERCLA 104(a) reads, "Whenever...there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare, the President is authorized to act, consistent with the national contingency plan, to remove or arrange for the removal of, and provide for remedial action relating to such hazardous substance, pollutant, or contaminant at any time (including its removal from any contaminated resource), or take any other response measure consistent with the national contingency plan which the President deems necessary to protect the public health or welfare or the environment."

Third, some federal personnel involved in the responses questioned whether federal agencies other than EPA and U.S. Coast Guard (USCG) (e.g., HHS/CDC, USDA, FDA, DOD) should have had a more formal role in the response structure to provide support for this event. EPA OSCs responding to these incidents did rely heavily upon the assistance provided by health professionals within CDC, who are accustomed to dealing with outbreaks of disease and addressing biological contamination. However, the question was raised as to whether such agencies that have familiarity with biohazards and the ability to connect the disciplines of public health and environmental response should have had a formally defined role in the response. For example, some EPA OSCs suggested that agencies with experienced public health professionals should be designated as special teams under the NCP, with the potential to serve as Scientific Support Coordinators (SSCs) for incidents involving biological agents

Fourth, because many of the anthrax events occurred in workplaces, questions were raised as to the role of the employers in controlling the threat. Furthermore, employers and workers expected OSHA rather than CDC or the FBI to disseminate information and guidance about the anthrax threat and potential means of control. As a result, despite the coordination and level of effort delivered by NRT member agencies, some U.S. workplaces perceived a lack of national information and assistance.

Finally, in the initial days and weeks of the response, there was some confusion over who was in charge of the response effort in federal buildings -- the property owner, the EPA or USCG as OSC, or some other organization. The appropriate roles for response are set forth in Executive Order (EO) 12580, which addresses Superfund implementation. According to EO 12580, the authority for emergency response under CERCLA section 104 is delegated to the U.S. Department of Energy (DOE) and U.S. Department of Defense (DOD) when the release is on their property. When the release is on the property of other federal agencies, the authority for response is delegated to the head of the affected federal agency when the release situation is considered by the Federal OSC to be a non-emergency. Affected Federal agencies were concerned about the timeliness and communication of the OSC's determination that the anthrax releases in the federal buildings did not pose an "emergency", and that the agencies to whom those buildings belonged would have the lead for the response, with support from EPA and other NRT agencies as needed.

Lesson Learned: There is a need for greater coordination among NRS agencies and other entities involved in counter-terrorism planning and response (especially law enforcement agencies, such as the FBI). The roles of various federal agencies in planning for and responding to terrorist incidents involving biological agents need to be reviewed and more clearly and formally defined, followed with adequate education and training on how the plans should be implemented.

Recommendations: In coordination with OHS, the NRT should review NRS roles and responsibilities for responding to bioterrorist incidents. The NRT should review the NCP, CONPLAN, and other relevant plans to identify conflicts or duplications in coverage. The NRT should also develop recommendations based on this review and work with OHS to develop a plan to implement these recommendations.

The NRT should work with OHS to determine how to develop, disseminate, and use training and reference materials for the appropriate federal agencies on the procedures that should be followed under the federal plans for response to terrorist incidents.

In addition, the NRT should consider whether more formal roles for technical support within the ICS structure should be redefined, and whether EO 12580 and the NCP would have to be revised to accomplish this. Establishing a formal protocol for such technical support would help ensure that all agencies involved in a response recognize and can prepare for their role. The NRT should also consider whether additional special teams need to be developed to address public health issues. If

so, the NRT should consider whether a national framework for integrating the special teams identified in the NCP into a multi-agency, multi-discipline team is needed.

The NRT should work to improve public health risk communications before, during, and after an incident. Communication of information regarding incidents that primarily or only affect workplaces should be disseminated through OSHA as the lead agency for worker health and safety. NRT member agencies should coordinate with each other to more effectively utilize trained risk communication spokespersons (e.g., medically trained federal, state, and local health officials) in providing a unified, credible voice to disseminate this information in a timely manner. The NRT should encourage the use of a Joint Information Center (JIC) as the best mechanism to coordinate communications to the public. The NRT should compile existing risk communications information and make it available to NRT agencies and the public.

Building on the experience of EPA during the World Trade Center incident, the NRT should formalize processes to compile and coordinate incident data and risk thresholds for human health effects.

2.2 Title: NRS Biohazard Preparedness

Observation: The NRS has not adequately planned, trained, and exercised for responding to biohazards.

Discussion: Even though the key NRT member agencies agreed in 1997 that the NRS would provide the framework for the environmental response to bioterrorist events (through the development of the CONPLAN and the Biodecontamination Plan, the creation of the Terrorism Incident Annex to the FRP, and the revision of ESF #10), this information has not been effectively communicated throughout the NRS. In addition, resources available for training and exercises for biohazard response have been inconsistent across NRS agencies. Furthermore, the domestic preparedness planning and exercises that are being conducted under the Nunn–Lugar–Domenici Act do not effectively address the role of the NRS in a terrorist response. Consequently, responses at the local level did not adequately acknowledge the role of the OSC and the NRS authorities. Application of the existing NRS plans and procedures to biological responses left significant gaps to be overcome as the responses evolved.

Lesson Learned: The NRT should emphasize the review and revision as necessary of plans, training, and exercises to ensure appropriate coverage of biohazards

Recommendation: The NRT should coordinate with OHS to verify and promote the role of the NRS in providing national response capability in future biological incidents and to determine the adequacy of NRS plans, training, and exercises for ensuring the appropriate level of response. Specifically, the NRT should determine methods for informing those organizations charged with training state and local responders on the NRS and how it functions under the appropriate plans (i.e., NCP, FRP, CONPLAN). Furthermore, the NRT should evaluate whether NRS plans need to be developed or revised to address future biohazard incidents. For example, the NRT should consider whether a response plan separate from the NCP (along the lines of the Federal Radiological Emergency Response Plan [FRERP] for radiological incidents) should be developed, or whether the NCP should be revised to include an additional subpart for biological response (similar to Subparts D and E for oil and hazardous substance responses). All NRS planning entities (the NRT, RRTs, ACs, SERCs, and LEPCs) should assess the adequacy of their plans for future responses and revise them as appropriate, being sure to include public health officials in these efforts. In addition to these planning efforts, the NRT should determine how to enhance training and exercise activities to test these plans. For example, it may be appropriate for EPA and other NRS agencies to seek additional counter-terrorism resources (e.g., FTE, funding) to

conduct such activities. DOJ should also include the participation of NRS agencies in state and local training exercises.

Response Operations

This section discusses the adequacy of current information available to NRS federal agencies for establishing standards for cleanup operations and for responder training and protection (medical monitoring, PPE, decontamination, etc.).

2.3 Title: NRT Operations

Observation: The timeliness and efficiency of the NRT's response to the quickly evolving anthrax events were questioned by some members of the NRS.

Discussion: The NRT has seldom been activated for direct response support to the RRTs and OSCs. In the responses to the anthrax releases, a number of issues arose that required interagency coordination (e.g., ensuring that the health and safety of responders were adequately protected and development of assessment and cleanup procedures). Several EPA RRT Co-chairs suggested that the NRT should have been timelier in its response to requests for assistance. The NRT did not activate until 7 days after the first request from the RRTs.

Lesson Learned: The NRT should reexamine its planning and response roles to ensure that the needs of the RRTs and OSCs are effectively addressed.

Recommendation: The NRT should review its responsibilities under 40 CFR 300.110, including 40 CFR 300.110(j), which states the conditions under which the NRT should be activated as an emergency response team. The NRT should continue its efforts to develop procedures that will allow it to activate in a timely and efficient manner to support the RRTs and OSCs.

2.4 Title: NRS Agency Information Sharing

Observation: Although some NRS agencies (other than those providing OSCs) had much expertise and information on bioagents prior to the anthrax events, this information and technical knowledge were not widely and consistently disseminated among all NRS agencies.

Discussion: One of the main purposes and strengths of the NRS is its ability to provide OSC agencies with the support and resources of the broader federal infrastructure. This strength, however, has not yet been fully applied to biological incidents. For example, while the U.S. Department of Agriculture (USDA) has years of experience in dealing with anthrax, the potential for utilizing this experience was not immediately apparent to the EPA OSCs and other environmental responders dealing with the deliberate anthrax releases. In addition, DOD's experiences and resources for dealing with weaponized biological agents were not widely understood within the NRS. Certain offices within NRS agencies that are not typically involved in chemical responses may be able to provide much-needed expertise in dealing with biological agents (e.g., EPA's Office of Prevention, Pesticides, and Toxic Substances). In some cases, information regarding the bioagent capabilities of NRS agencies was not disseminated to the OSCs or other entities in the response organization effort (e.g., CDC's Health Alert Network, a nationwide communications system for the distribution of health alerts, dissemination of prevention guidelines and other information, and national disease surveillance, is not typically distributed to environmental responders). In other cases, however, EPA immediately coordinated with USAMRIID to provide timely and updated information to the OSCs. Furthermore, some NRT member agencies and OSCs were unaware of the existence of the Bio-Decon Decision Tree, an EPA led, multi-agency product developed over three years ago, which could have served as a potentially useful tool. In

an attempt overcome the inconsistent distribution of information existing prior to the anthrax events, the NRT served as a mechanism during the response efforts to rapidly and effectively disseminate existing bioagent information by acting as a conduit to link OSCs and RRTs with USAMRIID, DOD, USDA, and HHS technical experts. In addition, the NRT compiled the developing field response protocols for dealing with anthrax. The purpose of these efforts was to make this information widely available to NRS agencies and to provide quality assurance by looking for inconsistencies within the NRS.

Lesson Learned: There is a need to improve the pre-incident sharing and adaptation of existing information and technology for biological responses among agencies of the NRT.

Recommendation: Based on the evolving information and guidance adapted by NRT member agencies from the current response efforts, the NRT should continue to develop technical assistance documents that outline the best cleanup techniques and practices for responding to anthrax incidents. In addition, the NRT should work to ensure more effective coordination and information sharing among public health and environmental response professionals. One possible way to accomplish this is to add the National Response Center (NRC) to the CDC's Health Alert Network. Furthermore, information regarding the Bio-Decon Decision Tree should be widely shared among all NRT agencies. Finally, the NRT should consider the development of a compendium or database of assets available within the Federal Government for responses to incidents involving bioagents.

2.5 Title: Scientific Data on Anthrax Contamination and Remediation

Observation: Due to a lack of basic scientific information in a number of areas (e.g., threshold levels, detection limits, decontamination technologies), public health may not be fully and effectively protected against anthrax releases.

Discussion: In order to limit the ability of terrorists to disrupt normal societal functions, responders must immediately identify and remove threats posed by biological agents. As of the date of this report, this is not fully possible because assessment and cleanup technologies for anthrax have not been developed to meet the immediate needs of responders. For example, current detection technologies and medical knowledge do not allow responders to immediately determine with confidence whether an area contains anthrax contamination or whether the number of spores present poses a threat to public health. Emerging technologies that may provide a timely assessment for spore detection and spore concentration have not been thoroughly tested for efficacy and are not widely available. As a result, during the anthrax incidents, responders had to rely on existing hazmat protocols and public health protocols developed for the detection and tracking of natural outbreaks of disease. In addition, environmental fate and transport processes and the industrial processes at work in the distribution of the contaminants were not fully understood, which at times prevented effective site characterization and risk assessment. With respect to cleanup, there is a lack of information regarding both the appropriate technologies and whether such technologies are effective in protecting public health. Unlike oil or chemicals, bioagents can regenerate and change form under some circumstances if decontamination or cleanup does not adequately control the organism. The two leading cleanup technologies considered for the Capitol Hill response, foam and chlorine dioxide, had not been fully tested for efficacy. Furthermore, the lack of scientific certainty regarding threshold threat levels impaired responders' ability to know what cleanup levels were needed to ensure full protection.

Lesson Learned: The existing environmental cleanup approaches to accidental hazardous substance releases, and the public health system's approach to natural outbreaks of disease cannot necessarily be applied without adaptation in cases of deliberate releases of biological contaminants. Additional technology development is needed to ensure that environmental

responders and public health professionals can respond quickly and effectively to incidents of biological terrorism.

Recommendation: The NRT should work within the technical support working group (Research & Development) of the homeland security structure to immediately pursue additional funding and assistance for researching and developing assessment and cleanup technologies for biological releases. In addition, the NRT should utilize the knowledge and experience of its member agencies to develop a technical assistance document on the use of currently available technologies to assess and remediate biologically contaminated sites following terrorist incidents.

2.6 Title: Responder Health and Safety

Observation: NRS responders were potentially put at risk during the responses to the anthrax incidents.

Discussion: The health and safety of all NRS responders are primary concerns. NRS responders were potentially put at risk because, as previously mentioned, basic scientific information needed for response to anthrax incidents is lacking in a number of areas, including medical monitoring, pre-response screening, response medical care, and training. Prior to these responses, there was no common understanding regarding the establishment of “hot zones” for anthrax-contaminated areas and no agreement regarding action levels. In addition, there was no interagency consensus on which worker health and safety standards or practices would be applied to NRS responders (e.g., laboratory health and safety protocols, HAZWOPER, OSHA’s 1910.134 respiratory standards). Medical surveillance protocols, therefore, were not established prior to the response. This led to confusion and indecision on whether pre-entry screening, on-scene physicians, and/or post-response treatment and follow-up were necessary. By the time these protocols had been established in mid-response, some responders could have already been exposed to harm. Furthermore, there was concern during the sustained response effort on whether responders should continue the use of antibiotics as a precautionary measure or whether alternative methods of protection were necessary and more desirable (i.e., vaccination program).

Lesson Learned: The response to biological agents presents potential responder health and safety risks and challenges that differ from those associated with traditional hazmat response.

Recommendation: The NRT should develop a list of potential biological agents to which the NRS is most likely to respond and ensure that worker health and safety protocols are established for each agent. In addition, the NRT should provide OSCs with the guidance needed to fulfill their responsibilities under 40 CFR 300.135(l) and 40 CFR 300.150 with respect to worker health and safety during responses to biological contaminants. Furthermore, the NRT should examine the efficacy of alternative methods of protection against bioagents, such as a vaccination program, for responders involved with sustained response efforts.

2.7 Title: Responder Training

Observation: There is a lack of adequate and consistent training for criminal investigators, environmental investigators/responders, and public health professionals responding to incidents involving biological agents.

Discussion: Because releases of biological agents involved criminal, environmental, and public health investigations, all three communities were involved in the responses to the anthrax releases and potential releases. In many cases, the three communities of responders did not share similar training, experience, and requirements, and decisions had to be made regarding health and safety protocol implementation at each site. With local citizens increasingly concerned about potential

threats and local responders increasingly aware of potential risks, the U.S. Department of Transportation's (DOT) Research and Special Programs Administration (RSPA) received several requests for technician-level training funded by Hazardous Materials Emergency Preparedness (HMEP) grants. In an example of an excellent outcome, HMEP grantees were able to shift training funds to technician-level training at a time when resources from other agencies were not available due to the status of congressional appropriations. Additional trained hazmat technicians were available for the anthrax investigation teams used in several locations. HAZWOPER requirements were initially considered to provide the most appropriate methods for responding to uncontrolled and unknown hazards. There is some concern, however, that existing HAZWOPER training standards may not be the most appropriate mechanism to ensure that responders are adequately protected.

Lesson Learned: A mechanism is needed that will ensure adequate, consistent, and uniform training for all NRS members involved in the responses to biological incidents.

Recommendation: The NRT should review existing training requirements and procedures to identify appropriate training standards and programs for responses to biological agents. Existing programs (e.g., HMEP Grants program, National Emergency Training Center (NETC), National Institute for Environmental Health Studies (NIEHS) worker environmental training program) should also be reviewed for adequacy and consistency in responding to biological incidents. Law enforcement officials, environmental investigators, first responders, and public health professionals should receive proper training before responding to biologically contaminated sites.