

# Triadic Response to Biological Incidents: A Recommendation

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*“Our lack of preparation is a real emergency.”*

—Former U.S. Senator Sam Nunn<sup>1</sup>

*Throughout history, there have been biological incidents for which society has been unable to sufficiently respond or adequately contain. For example, the bubonic plague is a biological disaster originating in Biblical times and extending through three pandemics, with the last epidemic occurring in the United States from 1924 to 1925.<sup>2</sup> Influenza pandemics, avian influenza (or the bird flu), the Influenza A H1N1 virus subtype (or the swine flu), and severe acute respiratory syndrome (SARS) have also presented unintentional biological hazards.*

According to the Chemical and Biological Weapons Nonproliferation Program, James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies, Monterey, California, these are but a few of the more than 415 biological incidents cataloged from 1900 to 1999.<sup>3</sup> More than 30 of the 415 incidents were terrorist-related incidents involving the use of a biological weapon.<sup>4</sup> The anthrax attacks that took place in the United States in 2001 represent just one example of the continuing threat of intentional, terrorist-related biological incidents. The anthrax attacks, which killed five people and sickened an additional 22 to 63, are collectively acknowledged as the worst biological terrorist attack in U.S. history.<sup>5,6</sup>

The impact of biological incidents may far exceed the capabilities of local or state responders. According to an *American Foreign Policy Interests* article entitled “U.S. Disaster Recovery Readiness for a Biological Terrorist Incident: Part Two,” a “first-time experience for the local emergency management administrators . . . could place inordinate stress on inexperienced personnel, untested contingency plans, and asynchronous coordinative linkages between private health care organizations and governmental agencies.”<sup>7</sup> Regardless of whether a biological incident is the result of an unintentional act or a terrorist attack, the inability of local or state officials to quickly isolate, contain, and react to the incident endangers lives, threatens infrastructure, and may damage the psychological well-being of our Nation.<sup>8</sup> Due to the potential for such significant and far-reaching impacts, a triadic approach to biological incident response

(involving local, state, and federal officials) should be prepared in an attempt to limit damage. According to the U.S. Department of Health and Human Services, events surrounding the 11 September 2001 and subsequent attacks have revealed the need to develop the infrastructure and tools necessary to respond to potential future terrorist events, including bioterrorist attacks.<sup>9</sup>

## Impact of Biological Incidents

During the Great Pandemic of 1918–1919, influenza killed an estimated 30 to 50 million people, including more than 675,000 Americans.<sup>10</sup> Figure 1 illustrates the worldwide distribution of the 1918 influenza outbreak and indicates significant concentrations of cases in the United States and Europe. Unfortunately, a lack of knowledge contributed to the spread of the disease. According to the conventional medical wisdom of 1918, influenza was spread by bacteria. However, medical science had only begun to understand the complexities of microorganisms and their role in disease. Influenza was incorrectly attributed to *Pfeiffer's bacillus*, in spite of the fact that researchers continually failed to find the bacterium during autopsies. Consequently, treatments were ineffective.<sup>11</sup> Furthermore, the use of antibiotics to treat the influenza would also have been unsuccessful due to the need for a vaccine to combat the disease. Unfortunately, the mutating nature of the virus, coupled with the lack of transmission identifiers, causes a slow identification process. In addition, the ever-changing nature of the influenza virus makes the development of a vaccine difficult.<sup>12</sup> While the Great Pandemic was a naturally occurring biological



**Figure 1. Geographic distribution of the 1918 influenza outbreak**

incident, the United States has also been the victim of biological agents used in an intentional terroristic nature.

Following the 11 September 2001 terrorist attacks on the United States, anthrax attacks occurred in four metropolitan areas—New York, New York; Washington, D.C; Trenton/Princeton, New Jersey; and Boca Raton, Florida. These attacks raised public concern regarding response capabilities at local and national levels.<sup>13</sup> A photo editor at American Media, Incorporated (AMI) in Boca Raton died of inhalation anthrax on 5 October 2001. Shortly thereafter, an AMI mailroom employee became ill and was also hospitalized with inhalation anthrax.<sup>14,15</sup> By the end of November 2001, the statistics were sobering—an estimated 22 to 63 people had been infected with pulmonary or cutaneous forms of anthrax.<sup>16</sup>

Beyond the toll taken on human life, the anthrax attacks also accounted for a significant cost in terms of disruption and decontamination. In addition to the costs stemming from direct remediation efforts, further costs resulted from disruptions to the U.S. Postal Service. The total cost of cleanup in the Washington, D.C., area alone exceeded \$24 million.<sup>17,18</sup> However, when all U.S. Postal Service and additional personnel costs are eventually calculated, the total cost for response to the anthrax attacks may exceed \$3 billion.

The first bioterrorist attack on the United States in the 21st century revealed the government's difficulty in responding to such incidents and highlighted the need for immediate

training of law enforcement and government officials—even in the midst of the crisis. Due to the unconventional delivery method and conflicting initial and subsequent exposure estimates, government agencies disseminated confusing and contradictory information to the public.<sup>19,20</sup> The circumstances surrounding the anthrax attacks and the resulting problems with local, state, and federal agency response indicated the need for a combined effort in addressing the complex issues encountered in a biological incident.

### **Combined Response Actions**

The government response to the anthrax attacks should not have come entirely as a surprise.<sup>21</sup> Local jurisdictions had purchased chemical and biological response equipment without the benefit of formal threat and risk assessments based on valid threat data, indicating that these agencies had acted without first identifying the problem.<sup>22</sup> Furthermore, the Dark Winter Exercise, which was conducted in June 2001, indicated that the Nation was woefully unprepared for a biological attack based on a smallpox scenario. The following shortcomings were identified during the exercise:<sup>23</sup>

- An attack could threaten vital national security interests.
- Current organizational structures and bureaucracies are not designed to deal with the response management of a biological incident.
- There is no existing U.S. health care surge capability—even when hospitals and the pharmaceutical and vaccine industries are taken into account.

- Working with the media is an immediate challenge.
- The use of a contagious pathogen as a bioweapon presents catastrophic challenges to political, cultural, operational, and legal systems.

An important additional lesson learned from the Dark Winter Exercise was that a response to this level of incident or attack greatly strains ad hoc relationships between state and federal agencies involved in the response. Moreover, this strain on relationships overwhelms the decisionmaking processes and the strategies, plans, and information systems required for a coherent response. The identification of these problem areas leads to the recognition of the need for a well-developed, preplanned response by local, state, and federal agencies.<sup>24</sup> Finally, the exercise also indicated that such a biological event would result in massive civilian casualties, cause a breakdown in essential institutions and services, prompt civil disorder, lead to violations of the democratic processes, and compromise national security.<sup>25</sup>

In 1998, the U.S. Congress approved the establishment of 10 National Guard civil support teams expressly to assist civil authorities in the event of a weapons of mass destruction incident. Congress later authorized the establishment of additional civil support teams. The current civil support team total is 55, with a team located in each state (and two in California), the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.<sup>26</sup> In addition, the National Guard also acquired the Chemical-Biological Incident Response Force duties from the Marine Corps.<sup>27</sup> Consequently, the vast majority of response capability is now under National Guard mission command. Because the National Guard is a state (as opposed to a Department of Defense [DOD]) asset, the use of a civil support team falls under the purview of the state governor. This arrangement negatively impacts the time it takes to respond to an immediate weapons of mass destruction threat.

Although the Federal Bureau of Investigation (FBI) has specific weapons of mass destruction response capabilities, the agency responds in support of FBI investigations.<sup>28</sup> Thus, opportunities for a coordinated joint local, state, and federal response to a biological incident are limited. This situation is typical of local and state relationships with federal agencies; the main form of federal support is advice on how to handle the situation.<sup>29</sup> From a mission command perspective, as well as the perspective of personnel and equipment brought to bear, the response to a biological incident should be determined before the incident actually occurs in order to limit the damage to people, the infrastructure, and the psychological well-being of the Nation. For these reasons and the results identified during the Dark Winter Exercise, there is a need for a triadic response to these types of incidents.

### **Whole-of-Government Response**

Although many hospitals and other urban facilities have adopted plans that address biological incidents, their inability to fund and maintain required response capabilities is a hindrance to effectively handling potential situations.<sup>30</sup> But the cost of failing to properly prepare for a biological incident

may be exponentially greater than the cost of emergency preparedness programs designed to assist in responding to these incidents. In addition, the impact of a biological incident for which local or state agencies are unprepared may include political destabilization and social disruption.<sup>31</sup> Severe psychological effects may also occur.<sup>32</sup> Based on the need for immediate response capabilities to reduce these impacts, a combined, whole-of-government approach designed around local, state, and federal agencies should be included as an established and integrated aspect. This would allow the specific expertise and required resources to be brought to bear against biological incidents—regardless of whether those incidents are terroristic in nature.<sup>33</sup> While the need for preparedness is evident, that need must be weighed against budgetary restrictions and the likelihood that an incident will occur.

Given the constraints of current budget shortfalls and the statistically low threat of biological incidents, most local and state agencies cannot afford the equipment and training necessary to maintain an adequate response capability.<sup>34</sup> However, a partnership between local and state agencies and the federal government can be formed to create a quick-reaction team capable of immediately responding to biological incidents when they occur. Under such a partnership, the three levels of government must work together in an effective and efficient manner to prevent the additional loss of life and the possible economic impacts on infrastructure and sources of food and water.<sup>35</sup>

Due to the relatively lengthy incubation period of some diseases, local responses to biological incidents may take place without the direct knowledge of the actual precipitating incident. This can result in slow response times. Moreover, once the original incident has been recognized, the myriad of initial response actions required to prevent additional problems (surveillance, additional diagnoses, the establishment of prophylaxis and treatment regimes, and the provision of mortuary facilities) quickly exceeds local capabilities.<sup>36</sup> These local issues and actions occur in parallel with required state response actions.

States are responsible for coordinating resources and actions across the various local jurisdictions. In addition, state agencies are responsible for delivering federal assistance to local areas within a disaster region, which further taxes an already overburdened state system.<sup>37</sup> When responding local or state agencies become overwhelmed, they determine whether to call upon the federal government to coordinate, assist, or direct responses.<sup>38</sup> Requests for federal assistance are usually made by the state governor when local and state resources and capabilities are insufficient to contain the crisis.<sup>39</sup>

Factors that may be used to determine the requested level of participation from the federal government include the intended target, the potential consequences, and the capabilities of local or state authorities. It is this last factor for which a predetermined federal government response may be needed.

The Department of Health and Human Services is the federal agency with responsibility for medical and public health response.<sup>40</sup> However, DOD is responsible for supporting state agencies when the capacity of the state to respond is exceeded, when the mission is DOD-eligible, and when the request falls under DOD.<sup>41</sup> Although DOD is restricted from enforcing civilian law during domestic incidents, the agency is not restricted from supporting civil authorities—even if that support aids in enforcement.<sup>42</sup> According to the provisions of the *National Response Framework*,<sup>43</sup> “Many DOD components and agencies are authorized to respond to save lives, protect property and the environment, and mitigate human suffering under imminently serious conditions, as well as to provide support under their separate established authorities, as appropriate.”<sup>44</sup> The use of DOD resources is further based on an evaluation of the legality, lethality, risk, cost, and impact on readiness. And more importantly, the aspect of appropriateness in using DOD personnel and resources in responding to a biological incident within the United States must also be considered.<sup>45</sup>

There are four separate situations for which the military may be called upon to assist domestic law enforcement agencies involved in handling a threat or act of terrorism:<sup>46</sup>

- Providing technical support and assistance to law enforcement and other crisis response personnel.
- Interdicting an event and apprehending those responsible.
- Restoring law and order following an incident.
- Abating the consequences of a terrorist act.

The first two situations represent crisis response actions, while the other two are considered consequence management actions.<sup>47</sup> Furthermore, the capability that DOD brings to a biological response may itself deter hostile actors.<sup>48</sup> For these reasons, the federal government—especially DOD—must be included in immediate, whole-of-government responses to biological incidents.

Regardless of where DOD personnel are deployed in support of biological incidents, the Secretary of Defense remains in command of DOD forces.<sup>49</sup> However, this mission command caveat should not preclude the use of DOD personnel and resources to protect the United States or defend our national security interests. The combination of local, state, and federal agencies in an immediate and combined response is vital in addressing local, state, and national concerns across the spectrum of biological incident response.

## Conclusion

More than 400 biological incidents were recorded in the United States from 1900 to 1999.<sup>50</sup> A lack of preparation for these types of incidents constitutes a real emergency at local, state, and federal levels.<sup>51</sup> Consequently, a prepared, triadic response capability that includes local, state, and federal assets is required to protect U.S. national security interests.

The use of the federal government as a predetermined first responder is a prudent step in precluding the escalation

of a biological incident beyond the capabilities of local and state first responders.<sup>52</sup> Without federal expertise and support, the social and economic costs of an incident may be insurmountable and the United States may suffer great harm. The inclusion of the federal government—specifically DOD—allows for a known response structure without the need for local and state agencies to maintain the complete response system in their budgets.

## Endnotes:

<sup>1</sup>Sam Nunn, “Combating Terrorism: Federal Response to a Biological Weapons Attack,” testimony before the House Government Reform Committee, Subcommittee on National Security, Veterans Affairs, and International Relations, 23 July 2001.

<sup>2</sup>“Bubonic Plague,” *New World Encyclopedia*, 29 September 2008, <[http://www.newworldencyclopedia.org/entry/Bubonic\\_plague](http://www.newworldencyclopedia.org/entry/Bubonic_plague)>, accessed on 7 November 2011.

<sup>3</sup>Jonathan B. Tucker, “Historical Trends Related to Bioterrorism: An Empirical Analysis,” *Emerging Infectious Diseases*, Vol. 5., No. 4, August 1999, <[http://wwwnc.cdc.gov/eid/article/5/4/99-0406\\_article.htm](http://wwwnc.cdc.gov/eid/article/5/4/99-0406_article.htm)>, accessed on 7 November 2011.

<sup>4</sup>Ibid.

<sup>5</sup>Robert J. Blendon et al., “The Impact of Anthrax Attacks on the American Public,” *Medscape General Medicine*, 2002, <<http://www.medscape.com/viewarticle/430197>>, accessed on 7 November 2011.

<sup>6</sup>Tyler C. Cymet and Gary J. Kerkvliet, “What is the True Number of Victims of the Postal Anthrax Attack of 2001?” *The Journal of the American Osteopathic Association*, Vol. 104, No. 11, 1 November 2004, <<http://www.jaoa.org/cgi/content/full/104/11/452>>, accessed on 7 November 2011.

<sup>7</sup>Joseph W. Foxell Jr. and Robert E. McCreight, “U.S. Disaster Recovery Readiness for a Biological Terrorist Incident: Part Two,” *American Foreign Policy Interests*, Vol. 24, Issue 2, April 2002, EBSCO Host Connection, <<http://connection.ebscohost.com/c/articles/10910127/u-s-disaster-recovery-readiness-biological-terrorist-incident-part-two>>, accessed on 7 November 2011.

<sup>8</sup>Ibid.

<sup>9</sup>“Performance and Accountability Report: Fiscal Year 2002,” U.S. Department of Health and Human Services, <<http://www.hhs.gov/of/reports/account/acct02/sect1/progperform.html>>, accessed on 7 November 2011.

<sup>10</sup>“The Great Pandemic: The United States in 1918–1919,” U.S. Department of Health and Human Services, <[http://1918.pandemicflu.gov/the\\_pandemic/03.htm](http://1918.pandemicflu.gov/the_pandemic/03.htm)>, accessed on 7 November 2011.

<sup>11</sup>Ibid.

<sup>12</sup>Caroline Ash and Leslie Roberts, “Influenza: The State of Our Ignorance,” *Science*, Vol. 312, No. 5772, 21 April 2006.

<sup>13</sup>Blendon et al., 2002.

<sup>14</sup>Cymet and Kerkvliet, 2004.

<sup>15</sup>David Heyman, “Lessons From the Anthrax Attacks: Implications for U.S. Bioterrorism Preparedness,” Center for Strategic and International Studies and Defense Threat Reduction Agency, April 2002, <<http://www.fas.org/irp/threat/cbw/dtra02.pdf>>, accessed on 7 November 2011.

<sup>16</sup>Cymet and Kerkvliet, 2004.

<sup>17</sup>Heyman, 2002.

<sup>18</sup>“Capitol Hill Anthrax: EPA’s Cleanup Was Successful; Opportunities Exist To Enhance Contract Oversight,” Report to the Chairman, Committee on Finance, U.S. Senate, U.S. General

Accounting Office, June 2003, <<http://www.gao.gov/new.items/d03686.pdf>>, accessed on 7 November 2011.

<sup>19</sup>“Anthrax in America: A Chronology and Analysis of the Fall 2001 Attacks,” working paper, Center for Counterproliferation Research, November 2002, <<http://www.ndu.edu/centercounter/ANTHRAX%20CHRONOLOGY.pdf>>, accessed on 7 November 2011.

<sup>20</sup>Heyman, 2002.

<sup>21</sup>Ibid.

<sup>22</sup>Steve Bowman, “Homeland Security: The Department of Defense’s Role,” Report for Congress, Congressional Research Service, 14 May 2003.

<sup>23</sup>“Exercise Overview,” *Dark Winter*, Center for Biosecurity, University of Pittsburg Medical Center, 2011, <[http://www.upmc-biosecurity.org/website/events/2001\\_darkwinter/index.html](http://www.upmc-biosecurity.org/website/events/2001_darkwinter/index.html)>, accessed on 7 November 2011.

<sup>24</sup>Ibid.

<sup>25</sup>Ibid.

<sup>26</sup>“Homeland Defense: National Guard Bureau Needs To Clarify Civil Support Teams’ Mission and Address Management Challenges,” report to the Chairman, Subcommittee on National Security, Emerging Threats, and International Relations; Committee on Government Reform; House of Representatives, U.S. Government Accountability Office, May 2006, <<http://www.gao.gov/new.items/d06498.pdf>>, accessed on 7 November 2011.

<sup>27</sup>Joe Pappalardo, “Marines To Hand Off Decontamination Duties to Guard,” *National Defense*, National Defense Industrial Association, January 2005, <[http://www.nationaldefensemagazine.org/archive/2005/January/Pages/Marines\\_to\\_Hand\\_Off5914.aspx](http://www.nationaldefensemagazine.org/archive/2005/January/Pages/Marines_to_Hand_Off5914.aspx)>, accessed on 7 November 2011.

<sup>28</sup>Joseph W. Foxell Jr. and Robert E. McCreight, “U.S. Disaster Recovery Readiness for a Biological Terrorist Incident: Part Four,” *American Foreign Policy Interests*, Vol. 24, Issue 4, August 2002, EBSCO Host Connection, <<http://connection.ebscohost.com/c/articles/10910158/u-s-disaster-recovery-readiness-biological-terrorist-incident-part-four>>, accessed on 7 November 2011.

<sup>29</sup>Ibid.

<sup>30</sup>“Hospital Preparedness: Most Urban Hospitals Have Emergency Plans But Lack Certain Capacities for Bioterrorism,” Report to Congressional Committees, U.S. General Accounting Office, August 2003, <<http://www.gao.gov/new.items/d03924.pdf>>, accessed on 7 November 2011.

<sup>31</sup>Foxell and McCreight, Part Four, 2002.

<sup>32</sup>Jeffrey D. Brake, “Terrorism and the Military’s Role in Domestic Crisis Management: Background and Issues for Congress,” Report for Congress, Congressional Research Service, 27 January 2003, <<http://www.au.af.mil/au/awc/awcgate/crs/rl30938.pdf>>, accessed on 7 November 2011.

<sup>33</sup>Ibid.

<sup>34</sup>“Combating Terrorism: Analysis of Potential Emergency Response Equipment and Sustainment Costs,” Report to Congressional Requesters, Government Accounting Office, June 1999, <<http://www.gao.gov/archive/1999/ns99151.pdf>>, accessed on 7 November 2011.

<sup>35</sup>“Exercise Overview,” *Dark Winter*, 2011.

<sup>36</sup>Heyman, 2002.

<sup>37</sup>Ibid.

<sup>38</sup>Brake, 2003.

<sup>39</sup>Heyman, 2002.

<sup>40</sup>Ibid.

<sup>41</sup>“Overview: ESF and Support Annexes Coordinating Federal Assistance in Support of the National Response Framework,” U.S. Department of Homeland Security, January 2008, <<http://www.fema.gov/pdf/emergency/nrf/nrf-overview.pdf>>, accessed on 8 November 2011.

<sup>42</sup>Brake, 2003.

<sup>43</sup>*National Response Framework*, U.S. Department of Homeland Security, January 2008.

<sup>44</sup>“Overview: ESF and Support Annexes Coordinating Federal Assistance in Support of the National Response Framework,” January 2008.

<sup>45</sup>DOD Directive 3025.18, *Defense Support of Civil Authorities (DSCA)*, 29 December 2010.

<sup>46</sup>Brake, 2003.

<sup>47</sup>Ibid.

<sup>48</sup>Foxell and McCreight, Part Two, 2002.

<sup>49</sup>“Overview: ESF and Support Annexes Coordinating Federal Assistance in Support of the National Response Framework,” January 2008.

<sup>50</sup>Tucker, 1999.

<sup>51</sup>Nunn, 2001.

<sup>52</sup>Heyman, 2001.

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