PROTECT AND DEFEND: ADEQUACY OF THE DEPARTMENT OF DEFENSE ROLE PRESCRIBED IN THE FEDERAL RESPONSE TO A CHEMICAL OR BIOLOGICAL TERRORIST ATTACK AGAINST THE HOMELAND

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by

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

PROTECT AND DEFEND: ADEQUACY OF THE DEPARTMENT OF DEFENSE ROLE PRESCRIBED IN THE FEDERAL RESPONSE TO A CHEMICAL OR BIOLOGICAL TERRORIST ATTACK AGAINST THE HOMELAND, by MAJ Richard A. Demaree, 233 pages.

President Bush's Executive Order 13228 establishes within the Executive Office of the President an Office of Homeland Security (OHS). The order directs the OHS to develop, coordinate, and implement a national strategy to secure the United States from terrorist attacks. One type of terrorist attack the United States may find itself responding to and recovering from is one involving chemical or biological Weapons of Mass Effects. This study finds that the "not if, but when" school of thought is no longer the view of the alarmist, but the realist. The Federal Emergency Management Agency's *Federal Response Plan* (*FRP*), which coordinates the response of twenty-seven federal agencies and departments, inadequately addresses the role of the Department of Defense (DOD). This study finds there are roles necessitated by a chemical or biological terrorist attack against the homeland that are not prescribed to DOD in the *FRP* or in the supporting response plans of the Environmental Protection Agency, Department of Health and Human Services, or Federal Bureau of Investigation. Furthermore, this study finds some of those roles are feasible, suitable, and acceptable for the military. Those roles include chemical and biological protection, disease surveillance, epidemiological investigation, laboratory support, veterinary services, mental health services, civil disturbance support, disease containment, and coordination. This study recommends DOD resolve its dual use dilemma so that it is feasible for military assets to support the Lead Federal Agency while remaining ready to fight and win the nations wars.

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CHAPTER 1

INTRODUCTION

Primary Research Question

Is the prescribed role of the Department of Defense (DOD) in the April 1999 version of the *Federal Response Plan* (*FRP*) when responding to the terrorist employment of a chemical or biological weapon of mass effects (WME) against the homeland adequate to meet the challenge?

Secondary Research Questions

Answering this study's primary research question requires investigating the following secondary research questions:

1. What is DOD's prescribed role in the *FRP* when responding to a terrorist attack involving a chemical/biological WME against the homeland?

2. What is DOD's prescribed role in the national security strategy when responding to a terrorist attack involving a chemical/biological WME against the homeland?

3. What are the relevant DOD capabilities?

4. What is the nature of the terrorist threat against the homeland?

5. What national vulnerabilities exist that complicate terrorism aimed at the homeland?

6. How has the national and international environment changed to increase the threat of a chemical or biological WME attack?

7. What are the potential results of a terrorist attack involving a chemical or biological WME?

8. Are DOD's capabilities adequate to meet the challenge the threat poses?

9. What fundamental changes must the Federal Emergency Management Agency (FEMA) make to the *FRP* in order to incorporate a role for DOD that is necessary, feasible, acceptable, and suitable?

Background

In his first State of the Union Address following the September 2001 terrorist attacks against the World Trade Center and subsequent anthrax attacks, President Bush reiterated that "[o]ur first priority must always be the security of our nation" and asserted that two key challenges to homeland security were bioterrorism and emergency response.[1] The ability of the U.S. government to prevent, detect, prepare, protect, respond and recover decisively to terrorist attacks against its citizens is one of the biggest challenges facing the nation today. Consequently, the federal government finds its roles and responsibilities expanding in the wake of the September 2001 terrorist attacks. One of the most significant events has been President Bush establishing the Office of Homeland Security in October 2001. An important component of the homeland security strategy will be the role filled by the DOD in response and recovery from a terrorist attack; an attack that will likely involve chemical or biological weapons. It is imperative to examine whether DOD's role in response to and recovery from a chemical or biological terrorist attack against the homeland is adequate.

Even before the destruction of the World Trade Center towers and the subsequent anthrax attacks, terrorist incidents over the last decade increased concern regarding an attack against the homeland. Incidents fueling those concerns were the first attack against the World Trade Center in 1993 (6 killed and 1,000 injured), the bombing of the Alfred P. Murrah Building in Oklahoma City in 1995 (165 killed), and the Centennial Park bombing in Atlanta in 1996 (2 killed, interrupting Olympics). These incidents refuted past maxims about terrorism, one being "terrorists want a lot of people watching and a lot of people listening and not a lot of people dead."[2]

Terrorists traditionally employ the tools of kidnapping, bombing, attacks on installations, hijackings, hostage taking, assassinations, and shootings. However, several trends in terrorist activity over the last thirty-three years point to the potential use of chemical and biological

weapons by terrorists in the future. Trends include an increase in lethality, an increase in religiously inspired terrorism, targeting to create more spectacular events, an increase in blackmail and extortion, increasing amateurization of perpetrators, growing competence of professional terrorists, and the growth of state sponsored terrorism.[3] The reality of a terrorist using a chemical or biological weapon came in March 1995, when the cult Aum Shinrikyo released sarin in a Japanese subway killing 12 and sending over 5,000 to Tokyo hospitals. The Aum Shinrikyo attack is just one example of an organization demonstrating both the intent and the capability of employing a chemical or biological weapon.

The mass effects of a chemical or biological weapon make it an effective terrorist tool. These weapons can cause mass casualties, contamination, panic, economic damage, degradation of response capabilities, loss of strategic position, social-psychological damage, and political change.[4] The ability to cause one or a combination of these effects makes chemical and biological weapons attractive to perpetrators of terrorism. Their use as weapons of mass effects, not simply weapons of mass destruction, requires an adequate federal response to terrorist employment of chemical or biological weapons.

The 1988 Robert T. Stafford Disaster and Relief Emergency Assistance Act and Executive Orders 12148 (Federal Emergency Management) and 12656 (Assignment of Emergency Preparedness Responsibilities) establish FEMA primarily responsible for "coordinating federal emergency preparedness, planning, management, and disaster assistance functions."[5] It is the lead agency for disaster response and recovery. In that role, FEMA developed the *FRP* in April 1992, designing it to address a disaster or emergency necessitating federal assistance. The plan's purpose was to "facilitate the delivery of all types of Federal response assistance to states to help them deal with the consequences of significant disasters."[6] FEMA would rewrite the *FRP* after the federal government attempted to formalize a national strategy for domestic preparedness against terrorism.

In June 1995, President Clinton signed Presidential Decision Directive-39 (PDD-39), the U.S. policy on counterterrorism. The policy announced the U.S. will "deter, defeat, and respond vigorously to all terrorist attacks on our territory and against our citizens, or facilities, whether they occur domestically …or on foreign territory."[7] Specifically, it charged FEMA to "ensure that the *FRP* is adequate to respond to the consequences of terrorism directed against large populations in the U.S., including terrorism involving weapons of mass destruction."[8]

The *FRP*'s twelve Emergency Support Functions (ESF) which are annexes describing the missions, policies, concept of operations, and responsibilities of the primary and support agencies involved in the implementation of key response functions that supplement state and local activities, incorporated responses to weapons of mass destruction. The Hazardous Materials Annex (ESF #10) expanded the definition of hazardous material to include "certain chemical, biological, and other weapons of mass destruction (WMD)."[9] The *FRP* had previously defined hazardous materials broadly to include "oil and hazardous substances."[10] As a response to PDD-39 and various executive orders, FEMA revised the *FRP* in April 1999. It defined a weapon of mass destruction as any device intended to cause death or serious bodily injury to a significant number of people through: (1) conventional explosive effects, (2) release of toxic or poisonous chemicals or their precursors, (3) a disease organism, or (4) radiation or radioactivity. However, even with the revised *FRP*'s added emphasis on chemical and biological weapons of mass destruction, the specified DOD roles remained unchanged from the 1992 version to the 1999 version.

Both versions of the ESF #10 listed only two DOD responsibilities: "(1) direct response actions for releases of substances from its vessels, facilities, and vehicles and (2) provide personnel and equipment to other organizations and state and local governments, as requested, if consistent with DOD operational requirements."[11] This is the central problem this study

addresses. The DOD could potentially provide a significant amount of support and assistance to civil authorities, yet the *FRP* does not engage these capabilities.

Many organizations have been critical of FEMA and DOD efforts in developing a federal response to a terrorist attack using a chemical or biological WME. Several organizations that provide analysis of national security matters, like the Stimson Group, the U.S. General Accounting Office (GAO), and the RAND Corporation, have questioned the federal government's efforts and others have concluded they are "wasteful and ill-conceived."[12] This study will focus on those efforts as they pertain to DOD, in order to determine if they adequately meet the challenges faced by the nation if a terrorist attacks the homeland with a chemical or biological WME.

Definitions

Consequence Management. This study uses the definition found in FEMA's Terrorist Incident Annex to the *FRP*. It is the "measures to protect public health and safety, restore essential government services, and provide emergency relief to governments, businesses and individuals affected by the consequences of terrorism. Other relevant documents use the same definition such as the Federal Bureau of Investigation's *U.S. Government Interagency Domestic Terrorism Concept of the Operations Plan*. Contrary to some experts assertions, PDD-39 does not define consequence management but simply states that FEMA "shall ensure that the *FRP* is adequate to respond to the consequences of terrorism directed against large populations in the U.S., including terrorism involving weapons of mass destruction."[13]

Federal Response Plan (*FRP*). The FEMA plan designed to address the consequences of any disaster or emergency situation in which there is a need for federal assistance under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended in 42 U.S. Code (USC) 5121, *et seq*. It "establishes a process and structure for the systematic, coordinated, and

effective delivery of federal assistance to address the consequences of any major disaster or emergency."[14] The purpose includes:

1. Setting forth fundamental policies, planning assumptions, a concept of operations, response and recovery actions, and Federal agency responsibilities

2. Describing the array of Federal response, recovery, and mitigation resources available to augment State and local efforts to save lives; protect public health, safety, and property; and aid affected individuals and communities in rebuilding after a disaster

3. Organizing the types of federal response assistance that a State is most likely to need under 12 ESFs, each of which has a designated primary agency

4. Describing the process and methodology for implementing and managing Federal recovery and mitigation programs and support/technical services

5. Addressing linkages to other Federal emergency operations plans developed for specific incidents

6. Providing a focus for interagency and intergovernmental emergency preparedness, planning, training, exercising, coordination, and information exchange

7. Serving as the foundation for the development of detailed supplemental plans and procedures to implement Federal response and recovery activities rapidly and efficiently.[15]

Homeland. This study defines the homeland as the Robert T. Stafford Act does to mean the fifty states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands.[16]

Response and Recovery. Executive Order 13228 establishing the Office of Homeland Security (OHS) defines response and recovery as those efforts necessary to ensure the following:

1. Rapid restoration of transportation systems, energy production, transmission, and distribution systems; telecommunications; other utilities; and other critical infrastructure facilities after disruption by a terrorist threat or attack

2. Rapid restoration of public and private critical information systems after disruption by a terrorist threat or attack

3. Stabilization of U.S. financial markets and management of the immediate economic and financial consequences of an incident

4. Federal plans and programs providing medical, financial, and other assistance to victims of terrorist attacks and their families

5. Containment and removal of biological, chemical, radiological, explosive, or other hazardous materials in the event of a terrorist threat or attack involving such hazards and the coordination of efforts to mitigate the effects of such an attack.[17]

Roles. The definition provided by Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, suffices for this study. Roles are the assigned or approved responsibilities, objectives, missions, or tasks given to individuals, offices, or organizations.[18]

State-Sponsored Terrorism. This study uses the definition from reports of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction Terrorism (Gilmore Commission). It refers to the active involvement of a foreign government in training, arming, providing logistical or intelligence assistance, or giving sanctuary to an otherwise autonomous terrorist group for the purpose of carrying out violent acts on behalf of that government.[19] State-sponsored terrorism is regarded as a form of surrogate warfare.

Terrorism. This study uses the definition applied by the RAND Corporation for several years and also adopted by the Gilmore Commission. It is the unlawful use of force or violence, or the threat of force or violence against persons or property to intimidate or coerce a government or a civilian population to further political or social objectives. It is any act calculated to create an atmosphere of fear and alarm and to coerce others into actions they otherwise would not undertake or into refraining from actions that they desired to take.[20] All terrorist acts are crimes.

Many would also be violations of the rules of war, if a state of war existed. Terrorist actions are generally carried out in a way to achieve maximum publicity. The perpetrators are usually members of an organized group, cult, paramilitary organization, or they are lone actors and individuals with the intent and potentially the capability to carry out a terrorist attack. Unlike other criminals, terrorists often claim credit for their acts. Finally, terrorist acts intend to produce effects beyond the immediate physical damage that they cause.

This definition is consistent with the Immigration and Nationality Act of 1952 that defines terrorist activity as any "activity which is unlawful under the laws of the place where it is committed (or which, if it had been committed in the U.S., would be unlawful under the laws of the U.S. or any state)."[21] The Immigration and Nationality Act includes in its definition the following activities: the seizing or detaining, and threatening to kill, injure, or continue to detain, another individual to compel a third person (including a governmental organization) to do or abstain from doing any act as a condition for release; hijacking or sabotage of any conveyance; assassination; use of any biological agent, chemical agent, or nuclear device; use of explosives, firearms, or other devices with intent to endanger the safety of one or more individuals or to cause substantial damage to property.

Weapon of Mass Destruction (WMD). When referred to, this study will use the definition provided in House Resolution 525. It defines WMD as "any weapon or device that is intended, or has the capability to cause death or serious bodily injury to a significant number of people through the release, dissemination, or impact of toxic or poisonous chemicals or their precursors, a disease organism, or radiation or radioactivity."[22] Weapons of mass destruction are a subset of weapons of mass effects.

Weapons of Mass Effects (WME). Any weapon or device that is intended or capable of causing mass casualties, contamination, panic, economic damage, degraded response capabilities, loss of strategic position, social-psychological damage, and political change.[23]

The casualties a chemical or biological weapon can produce measure in the thousands. As seen in the Aum Shinrikyo attack, although only twelve died, over five thousand sought treatment in area hosptials. Where some experts define mass casualties to mean a hundred or sometimes a thousand deaths, this study uses the term to mean any incident where the number of casualties exceeds the local medical capability to manage the crisis effectively.[24]

The contamination resulting from a chemical or biological attack can render areas unlivable for an extended period of time, reduce people's quality of life, and raise other disease rates. An attack can compromise the integrity of water supplies and jeopardize the safety of public travel.

Attacks against civilian populations trigger fear and panic. After a chemical or biological attack, people fearing contamination will likely overwhelm hospitals. Following the Japanese subway attack in 1995, Japanese authorities reported that of the 5,000 people examined in hospitals in the first 24 hours, 73.9 percent showed no evidence of agent exposure.[25]

A chemical and biological attack can degrade response capabilities as the first responders to an incident, including police, firefighters, and paramedics may end up becoming casualties unless appropriately equipped and trained. Potentially roads and air space may become congested further degrading subsequent state and federal responses.

The use of chemical and biological weapons may have serious implications for the domestic and international economy. An attack can cause death and injury to workers, destruction of plants, and contamination of work places, as well as trigger a run on financial and equity markets. One effect on the U.S.'s economy caused by the 11 September 2001 terrorist attacks was the Dow Jones Industrial Average losing 600 points the first day it opened after the attack.[26]

An attack or credible threat of attack could potentially deter the nation from entering a regional crisis in which its national interests are threatened. Terrorists may attack key U.S.

institutions or political leaders directly and target armed forces or force-projection capabilities to prevent military action. The threat of an attack could also cause an existing coalition to collapse as U.S. allies view their alliance with America increasing the likelihood of a chemical or biological attack against itself.

A chemical and biological attack may cause great social-psychological damage and political change. Public terror afterward will be more intense than the Cold War fear of nuclear attack increasing sentiments of xenophobia, isolationism, or vengeance.[27] To the extent the federal government cannot prevent an attack or respond effectively, people may begin to lose confidence in government and national leadership. Fear may lead society to demand action from its government, and such action could lead to significant curtailment of civil liberties as seen with the Alien and Sedition Acts of 1790, Japanese internment during World War II, and McCarthyism during the 1950s.

Assumptions

This study assumes that DOD will continue to have a vital role in responding to a chemical/biological WME attack as the government re-evaluates the issue of homeland security, domestic preparedness, and federal responses following the September 2001 terrorist attacks. Even before the attacks, the U.S. House of Representatives introduced two bills addressing homeland security and domestic preparedness. The first bill, introduced in February 2001 as House Resolution 525 (HR 525), the Preparedness Against Terrorism Act of 2001, proposed amending the Robert T. Stafford Disaster Relief and Emergency Assistance Act to "provide for improved [f]ederal efforts to prepare for and respond to terrorist attacks."[28] The second bill was House Resolution 1292 (HR 1292), The Homeland Security Act of 2001, introduced in March 2001. Similar to PDD-39, HR 1292 identified consequence management as one critical aspect of homeland security and defined it as "activities carried out by government entities that are designed to respond to and mitigate the effects of a domestic attack against the [U.S.]."[29] The bill

specified that one component of the strategy shall provide "for the selective use of personnel and assets of the Armed Force in circumstances in which those personnel and assets would provide unique capability and could be used without infringing on the civil liberties of the people of the [U.S.]."[30]

The impact of those two House resolutions could be significant. Collectively, they address inefficiencies and shortfalls in the federal response to a disaster by developing a foundation for a national homeland security strategy and also amending the Stafford Act. Although the resolutions signal the potential for sweeping changes in domestic response and preparedness strategies, this analysis assumes that the DOD will continue to have a vital role in responding to a chemical or biological WME attack. In addition to these two legislative actions to improve homeland security, the executive branch has acted as well.

This study assumes the newly established Office of Homeland Security (OHS) will continue to plan for a DOD role in response and recovery and use the *FRP* as its baseline strategy. On 8 October 2001, President Bush issued Executive Order 13228 (EO 13228) establishing the Office of Homeland Security (OHS) and the Homeland Security Council (HSC). The executive order blends several aspects of HRs 525, 1292, and 1158 (introduced as HR 1158 The National Homeland Security Agency Act in March 2001). The Executive Order directs the OHS to coordinate federal efforts to detect, prepare for, prevent, protect against, respond to, and recover from terrorist attacks within the U.S.[31]

Regarding its response and recovery role, EO 13228 tasks the OHS to coordinate efforts to respond to and promote recovery from terrorist threats or attacks within the U.S. Specifically, it is to coordinate efforts to ensure rapid restoration of critical infrastructure after disruption by a terrorist threat or attack, coordinate efforts to ensure rapid restoration of public and private critical information systems, coordinate containment and removal of biological, chemical, radiological, explosive, or other hazardous materials in the event of a terrorist threat or attack, and

coordinate efforts to mitigate the effects of such an attack.[32] This study assumes that in the execution of its response and recovery function, the OHS will continue to employ the capabilities of DOD. Further, it assumes that as the OHS proceeds to improve the federal response, it will simply update the *FRP* or use it as a base plan for other federal response plans.

This study assumes that the *FRP* will not prescribe roles that will exceed DOD's current capabilities. Although the OHS Director may determine the need for a capability that does not currently exist within DOD, at present, he does not have the legal authority to direct the military to develop that capability.[33]

The study's final assumption is that there exists the potential for terrorist employment of chemical or biological weapons against the homeland until the U.S. war against terrorist is terminated. On 20 September 2001, the president announced to a joint session of Congress that "our war on terror begins with al Qaeda, but it does not end there. It will not end until every terrorist group of global reach has been found, stopped and defeated."[34] Until the President's strategic objective is achieved, the threat of a terrorist attack, whether chemical/biological or otherwise, is a reality.

Limitations

Several DOD documents concerning the nature of the chemical/biological threat and federal response capabilities are classified. The *1997 DOD Report to Congress: Domestic Preparedness Program in the Defense Against Weapons of Mass Destruction*, section 1.3, addresses the types and characteristics of chemical and biological threats against U.S. citizens and government asset, and it outlines the response capabilities of civilian agencies. However, both assessments are classified. In order for this study to remain unclassified, it does not review or incorporate these classified DOD's assessments. All information in this study is derived from the public domain. The impact of this limitation is offset through the use of open source documents that are works of executive departments, agencies, and commissions involving DOD coordination

and often with Secretary of Defense endorsement, such as the *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan*. These open source documents provide sufficient material on the nature of the chemical/biological threat and federal response capabilities in order to determine the adequacy of the DOD role in the *FRP*.

Since the September 2001 terrorist attacks, both U.S. government and nongovernment internet sites have begun removing sensitive documents and reports about chemical/biological warfare and response capabilities that could prove useful to terrorists planning further attacks.[35] Prior to those attacks, researchers, analysts, and academia used open source material because many did not have access to classified reports. This study minimizes the weaknesses caused by these recent restrictions by using previously published sources that document the same information presented on internet sources.

Another limitation is the lack of analytical research, and subsequent critical review, into the U.S. anthrax attacks occurring after the September 2001 World Trade Center destruction. Prior to those attacks, two opposing views dominated the chemical and biological terrorism discussion: the alarmist view, that is the not if, but when school of thought, and the complacent view, defined by assertions about the technical difficulties in acquiring, producing, and delivering chemical and biological weapons and the terrorists' lack of motivation to use those weapons.[36] It is yet to be seen whether the 2001 U.S. anthrax attacks changed the convictions of the analysts and experts in the complacency camp. As a result, this study adopts the opposing view as the realist view and builds the body of evidence regarding the nature of the threat around that view.

Delimitations

This study limits its focus to one federal agency's role, DOD, within one federal response plan, the FEMA's *FRP*. The national strategy for the response and recovery from a terrorist attack against the homeland is complex and outlined in many documents including PDDs, executive memorandums and orders, public law, congressional acts, federal agency directives and

instructions, and federal agency response plans. The FEMA *FRP* is just one component of this complex strategy. Despite the existence of other federal agency response plans, like the Environmental Protection Agency's *National Oil and Hazardous Substances Pollution Contingency Plan* or the Federal Bureau of Investigation's *U.S. Government Interagency Domestic Terrorism Concept of the Operations Plan*, FEMA's *FRP* is the focus of this study since it is the Lead Federal Agency (LFA) agency for domestic disaster response and recovery. The *FRP* itself is very comprehensive as it covers roles and responsibilities for twenty-seven different federal agencies. This study will limit the scope by focusing on one, DOD.

There are several roles DOD can have across the spectrum of areas in the homeland security strategy. President Bush's EO 13228 outlines seven distinct OHS functions that comprise the strategy--each potentially including a role for DOD. They are detection, prevention, protection, preparedness, response and recovery, incident management, and continuity of government. This study will only focus on response and recovery. Because the destructive methods and means terrorists may employ are numerous, limiting the type of attack is necessary.

This study will focus on a chemical or biological attack. It will not include nuclear or radiological WMD employment or direct attacks similar to the World Trace Center strike. Regarding the former type, the Department of Energy response plan, the *Federal Radiological Emergency Response Plan*, outlines the federal government response to those incidents. As a result, the primary focus of this study is on the *FRP*'s Terrorist Incident Annex and the Emergency Support Functions specifically referenced in the annex, ESF #10 (Hazardous Materials) and ESF #8 (Health and Medical Services). This study will solely focus on terrorist use of chemical and biological weapons which became a national security concern in the fall of 2001.

The terrorist attacks in September 2001 and the subsequent anthrax attacks made homeland security a vital component of the national security strategy. Consequently, the face of

that strategy is continually changing as demonstrated by the President's issuance of EO 13228. Therefore, this study will only incorporate changes to the strategy that are implemented as of 1 January 2002. Additionally, because the analytical literature on the World Trade Center and anthrax attacks is immature at the time of writing this study, they will not be the primary case studies used for analysis. However, there are general references to the attacks in order to reinforce interpretations and observations.

Importance

Response and recovery, more broadly homeland security, have became an important issue in national security after the September 2001 destruction of the World Trade Center, preceded by the bombings of the Oklahoma City Murrah federal building in 1995 and Atlanta's Olympic Park in 1996. Concern over the possibility of a terrorist acquiring and using a chemical or biological WME rose after the Aum Shinrikyo sarin attack in a Japanese subway in March 1995 and even more after the fall 2001 anthrax attacks in the U.S.

The nation's leadership recognized the importance of evolving the nation's security strategy toward combating terrorism and homeland security, including response and recovery from a chemical or biological attack, even before September 2001. Evidence includes introductions of HR 525, Preparedness Against Terrorism Act of 2001, and HR 1292, The Homeland Security Act of 2001, in February and March 2001. In addition to congressional concern, DOD and the military services had been analyzing and assessing their roles in homeland security as well, before the World Trade Center attacks. For example, in August 2001, the U.S. Army War College's Center for Strategic Leadership sponsored a Consequence Management Symposium gathering eighty subject matter experts to "examine the evolving policy and infrastructure of consequence management" and homeland security.[37] The September 2001 terrorist attacks only accelerated the urgency for action.

The national attention on response to and recovery from a chemical or biological terrorist attack further demonstrates the importance of this study. President Bush establishing the OHS in October 2001 and assigning coordination of the nation's response to and recovery from a terrorist incident as one of its primary responsibilities is just one example. There have been national conferences, such as the Biodefense Mobilization Conference in Seattle, Washington (April 2001), and the First Annual Global Conference on Biological/Chemical Terrorism in Crystal City, Virginia (February 2002).[38] Responding to a chemical or biological attack is not only important to the federal government, but state and local as well. It was a topic at the U.S. Conference of Mayors winter meeting in January 2002.[39] This study addresses the need for a critical analysis of this emerging strategy.

Terrorist chemical or biological attacks aside, populations collocated with industrial facilities and the reality of disease outbreaks are additional reasons the federal response must be adequate. In its 600K Report, the Chemical Safety and Hazard Investigation Board determined that between 1987 and 1996, a hazardous chemical incident occurred in 95 percent (3,145) of the 3,300 U.S. counties for a total of 605,000 unique incidents resulting in 2,565 deaths and 22,949 injuries.[40] The reality of disease outbreaks became evident with the West Nile virus outbreak in New York state during the fall of 1999 that resulted in seven dead and sixty-two confirmed cases. Although a relatively small outbreak in terms of human cases, it still taxed the federal, state, and local laboratory resources to the point that officials indicated the Center for Disease Control would have been unable to respond to another outbreak had one occurred at the same time.[41]

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[3]Jeffrey D. Simon, *Terrorists and the Potential Use of Biological Weapons*, (Santa Monica, CA: RAND, December 1989), 5, RAND R-3771-AFMIC.

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[5]Federal Emergency Management Agency, *Federal Response Plan* (Washington, D.C.: April 1999), 3.

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[7]President, Decision Directive 39, "U.S. Policy on Counterterrorism," June 21, 1995; available from http://www.fas.org; Internet; accessed on 1 September 2001.

[8]Ibid.

[9]Federal Emergency Management Agency, *Federal Response Plan* (Washington, D.C., April 1999), ESF #10-1 to ESF #10-2.

[10]Federal Emergency Management Agency, *Federal Response Plan* (Washington, D.C., April 1992), ESF #10.

[11]FEMA, *Federal Response Plan (1999),* ESF #10-15.

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[13]Presidential Decision Directive 39.

[14]FEMA, *Federal Response Plan (1999),* 1.

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[16]The Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C, section 5121.

[17]President, Executive Order, "Establishing the Office of Homeland Security and the Home-land Security Council, Executive Order 13228," *Federal Register* Vol. 66, No. 196 (10 October 2001): 51812.

[18]Department of Defense, Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, D.C.: 23 March 1994), 294.

[19]Gilmore Commission, *First Annual Report to The President and The Congress of the Advisory Panel To Assess Domestic Response Capabilities For Terrorism Involving Weapons Of Mass Destruction, I. Assessing the Threat* (Washington, D.C.: RAND, 15 December 1999), iv.

[20]This definition derived from combining those used by Bruce Hoffman and Donna Kim Hoffman, "The RAND-St Andrews Chronology of International Terrorist Incidents, 1995," *Terrorism and Political Violence* 8, no. 3 (autumn 1996), 89; and modified by the Gilmore Commission, *First Annual Report to The President and The Congress of the Advisory Panel To*

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[21]*Immigrations and Nationality Act, U.S. Code*, Title 8, section 212.

[22]Congress, House, *National Homeland Security Agency Act*, 107th Cong., 1st Sess., H.R. 525, 6; available from http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname-=107_cong_bills&docid=f:h525ih.txt.pdf; Internet; accessed on 13 February 2002.

[23]Falkenrath, A*merica's Achilles' Heel: Nuclear, Biological, and Chemical Terrorism and Covert Attack*. Although Falkenrath does not specifically present these as outcomes of a Weapon of Mass Effects, but rather as potential consequences of chemical or biological attack, they provide a framework for discussion. As of the time of this study, it has not been possible to find documented definitions of WME, but rather continuous references to the topic.

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[26]Government Accounting Office, *"Homeland Security: A Framework for Addressing the Nation's Efforts,"* (Washington, D.C.: U.S. Government Accounting Office, 21 September 2001), 2, GAO-01-15.

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[29]Congress, House, *Homeland Security Strategy Act of 2001*, 107th Cong., 1st Sess.,

H.R. 1292, 2; available from http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=107_cong_bills&docid=f:h1292ih.txt.pdf; Internet; accessed on 12 February 2002.

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[31]President, Executive Order, "Establishing the Office of Homeland Security and the Home-land Security Council, Executive Order 13228," *Federal Register* Vol. 66, No. 196 (10 October 2001): 51812.

[32]Ibid., 51814.

[33]Ibid., passium.

[34]President, *Address to a Joint Session of Congress*, 20 September 2001; available from http://www.whitehouse.gov/news/releases/2001/09/20010920-8.html; Internet; accessed on 13 November 2001.

[35]"Intelligence Data Pulled From Websites." BBC News. 5 October 2001; available from http://news.bbc.co.uk/hi/english/sci/tech/newsid_1580000/1580863.stm; Internet; accessed on 3 December 2001.

[36]Falkenrath, 27.

[37]Bert B. Tussing and Jeffrey C. Reynolds, "Consequence Management Symposium," *Issues Paper 09-01*, (Carlisle, PA: Center for Strategic Leadership, September 2001).

[38]Conference notices; available from http://www.bioterrorissm-defense.com/default.html and http://www.bio-defense.org; Internet; accessed on 2 February 2002.

[39]Agenda available from http://www.usmayors.org/70thWinterMeeting/default.asp; Internet.

[40]Chemical Health and Safety Investigation Board, *The 600K Report, Commercial Chemical Incidents in the United States, 1987-1996*, Special Congressional Summary (Washington, D.C.: Chemical Health and Safety Investigation Board, February 1999), 10-11.

[41]Government Accounting Office, *West Nile Virus Outbreak: Lessons for Public Health Preparedness* (Washington, D.C.: U.S. Government Accounting Office, 11 September 2000), 21, GAO/HEHS-00-180.

CHAPTER 2

LITERATURE REVIEW

Introduction

There are several analyses that provide a spectrum of viewpoints, theories, and opinions concerning the national strategy to respond and recover from the a chemical or biological attack and the nature of the terrorist chemical/biological threat. In order to incorporate a variety of those views, this study examines five works.

The first study, authored by Amy Smithson and Leslie-Anne Levy is a critical review of the chemical and biological terrorist threat and the planned federal response to such attacks. The study was published by the Henry L. Stimson, a "community of analysts devoted to offering practical solutions to problems of national and international security", taking a non-partisan view and non-ideological approach to issues.[1] The report's analysis is widely cited. Smithson is a recognized expert regarding threat analysis and federal response assessment, testifying frequently before both House and Senate committees.

The second work reviewed are the reports of the United States Commission on National Security/21st Century, or the Hart-Rudman Commission. This DOD commissioned study examined whether today's federal institutions are designed appropriately for the changing world. Co-chaired by Senators Gary Hart and Warren Rudman, the commission conducted its work in three distinct phases. The first phase described the world emerging in the first quarter of the twenty-first century from a national security aspect, the second prescribed a national security strategy appropriate to that emerging world, and in the third phase the panel proposed necessary changes to the national security structure in order to implement the prescribed strategy effectively.[2]

The third subject of review is comprised of the several studies conducted by the United States Government Accounting Office (GAO). The GAO is an investigative arm of Congress that

"exists to support the Congress in meeting its Constitutional responsibilities and to help improve the performance and accountability of the federal government for the benefit of the American people."[3] This organization has completed over forty studies examining varying aspects of our national strategy that deal with combating terrorism and homeland security.

Next, this chapter examines several reports conducted by the RAND Corporation. RAND is a nonprofit institution that "helps improve policy and decision making through research and analysis".[4] RAND has been analyzing and addressing public policy issues for over fifty years. They purport "to conduct multidisciplinary research and analysis that is rigorous and nonpartisan, and that informs and is informed by the policy process."[5] Significant for this study is RAND's involvement in the national security realm. It operates three federally funded research and development centers: the oldest, Project Air Force, sponsored by the U.S. Department of the Air Force; the National Defense Research Institute sponsored by the Office of the Secretary of Defense, the defense agencies, the Unified Commands, and the Joint Staff; and the Arroyo Center, sponsored by the U.S. Department of the Army.[6]

The final work examined is the Advisory Panel to Assess Domestic Response Capabilities to Terrorism Involving Weapons of Mass Destruction, chaired by Virginia Governor James Gilmore, and commonly referred to as the Gilmore Commission. The Advisory Panel was authorized by the FY 1999 House Appropriations Act, H.R. 3616, Section 1405, and established by the Secretary of Defense in consultation with the Attorney General, the Secretary of Energy, the Secretary of Health and Human Services, and the Director of the Federal Emergency Management Agency. Those agencies entered into a contract with the National Defense Research Institute to assess response capabilities to terrorist incidents in the United States involving WMD. The Advisory Panel's work appears in three separate reports to the President and Congress. The commission's reports "provide an analysis of potential U.S. domestic threats from terrorists…and

contains several conclusions and recommendations for consideration by the President and the Congress."[7]

Ataxia: The Chemical and Biological Terrorism Threat and the US Response

Ataxia is a comprehensive research report that critically examines the many facets of the unconventional terrorism issue. The report first examines the actual threat of terrorism involving chemical and biological weapons and re-examines the 1995 Aum Shinrikyo sarin attack in the Tokyo subway system incorporating the expert opinions of chemical and biological weapons specialists, federal agency experts, and non-governmental experts. Next it inventories the various federal response assets, training and equipment programs including observations and opinions from people working the front lines of public health and safety in the U.S. Finally, the report concludes with an extensive list of observations and recommendations for federal policy makers. The report ultimately attempts to "put the threat into proper perspective and suggest ways the government might use taxpayers dollars more wisely to enhance front-line preparedness."[8]

In her evaluation of the chemical and biological terrorist threat, Smithson asserts that the apprehension in the United States after the 1995 Aum Shinrikyo Japanese subway attack resulted from "saturation coverage" of scary scenarios painted mostly by U.S. leaders, not reality.[9] As an example, former FBI Director John Deutch, stated in 1998 that "[e]xperts in every quadrant of the national security and law enforcement community all consider this catastrophic threat [chemical or biological attack] perfectly plausible today."[10] Smithson documents several pages of statements of frightening predictions by members of Congress and the National Security Council, including the Secretary of Defense, the FBI Director, and Director of the CIA. Stimson contends, however, that "melodrama and speculation" dominate that national debate instead of context and concludes these predictions are not grounded in technical and historical analysis but rather are a "familiar sign that competitions for federal funds are afoot" and that these "[c]hicken little statements are better for scaring up money than forming sound public policy."[11] Stimson makes

her argument by reviewing the history of terrorism and evaluating its trends. Next, she examines the reasons why terrorists would tend to shy away from employing chemical or biological weapons and assesses the technical feasibility of actually acquiring, producing, and disseminating chemical or biological agents. Finally, she surveys some of the databases that track chemical and biological terrorist activities.

Stimson acknowledges that the terrorists of the 1990s were not like the traditional terrorists that were prominent in the 1960s.[12] Past terrorists, like the Red Brigades or the Black Panthers, waged "well planned, complex campaigns of violence, consisting of literally thousands of individual terrorist acts" and using guns, letter bombs, kidnapping, explosives, and airline hijackings to gain publicity furthering their aims, taking care not to "kill in excess."[13] The terrorists of the 1990s, however, were not pursuing political power or championing a political cause, but were instead religious in nature and intent on creating mass casualties. Examples include the bombings of New York's World Trade Center in 1993, the Murrah Federal Building in Oklahoma City in 1995, Khobar Towers in Saudi Arabia in 1996, and the U.S. embassies in Kenya and Tanzania in 1998. Stimson uses statistics from the Department of State (DOS), St. Andrew's University, RAND, and the Central Intelligence Agency, as well as literature from experts like Bruce Hoffman, Brian Jenkins, Walter Lacquer, Jonathon Tucker, and Richard Falkenrath to conclude that terrorist acts in the 1990s were more lethal than those of the previous three decades and the driving force behind the acts was religion. In addition to religious motivations, Stimson cites several other factors contributing to terrorism's increased lethality. These factors include the need to stage more sensational acts because ordinary violence has become commonplace, the state sponsorship of terrorism, terrorists becoming masters of their craft, and the ease of weapons procurement and proliferation of know-how to amateur terrorists.

After examining the history of terrorism and its trends, Stimson concedes that organizations and experts attempting to predict terrorisms' future would understandably conclude

that it is most likely to involve employment of chemical or biological weapons. They can kill tens of thousands of people, spread panic, aid in establishing a position of strength for the terrorist, disrupt or damage a society and economy, and enhance terrorists' ability to attack anonymously.

The Aum Shinrikyo subway attack in 1995 seems to confirm the experts' predictions. However, Stimson examines why the Aum Shinrikyo attack has not since been duplicated despite the fact that terrorist groups and individuals usually imitate successful tactics.

Stimson argues there are several reasons why terrorists have and will continue to refrain from using chemical or biological agents. Some terrorists may have moral objections to the enormous casualties and gruesome effects chemical or biological weapons can cause. Working with these agents may risk the terrorists' own health and safety. Because the effects of biological attacks may be delayed by weeks, terrorists might find it difficult to claim responsibility. Using chemicals or biological agents may alienate the group's own members and erode potential supporters. Terrorists may not want to risk a furious government reaction. Finally, and the reason Stimson exhaustively examines, terrorists will find it difficult to acquire, produce, and disseminate chemical and biological weapons effectively.

Stimson acknowledges that expert opinions on most technical aspects of chemical and biological weapons vary widely, however, she states there is consensus that biological weapons are more deadly than chemical weapons. Regarding the chemical threat, she concludes that the stereotypical chemical "bathtub manufacturing scenario…is incongruous with the quantities of chemical agent needed to cause mass casualties" but acknowledges that the technical challenges in manufacturing chemical warfare agents are noteworthy but not insurmountable [14] Many of the chemicals and equipment used by the chemical industry are dual-purpose and can be employed to produce chemical weapons and the precursors for chemical agents are found in many commercial products.[15] Equipment is readily available, including reactors, agitators, storage tanks, containers,

heat exchangers, and distillation columns. To overcome the large price tag of producing a chemical weapon, a terrorist can forgo safety precautions or reduce the scale of the attack bringing the cost of an attack as low as tens of thousands of dollars as compared to the estimate of $20 million needed for a full-up plant to produce sarin, soman, or tabun.[16] Not only is production material and equipment readily available, but so is the technical knowledge.

Information on chemical warfare and agent production is readily available in books and on the internet. The expertise required, which Smithson concludes is a graduate level chemistry degree or equivalent experience, is abundant. Smithson concludes the difficulty in executing a chemical attack lies in the dissemination of the agent.

None of the three possible methods the report identifies can effectively target a group of people larger than a few hundred with any high degree of probability. Delivery through explosive munitions is difficult as the exploding charge may be too small for correct dissemination or too large, causing destruction of the agent. Aerial dispersal by crop dusters or sprayers mounted on trucks or boats is difficult because weather conditions prevent achieving sufficient concentration and maintaining it long enough for inhalation. Finally, employing a chemical agent in food or water supplies is difficult because of the large amounts needed, especially in the common scenario of a terrorist poisoning community water supplies. Smithson's analysis appears to concur with the quote included in the report that it would be "doubtful that an adversary could under any conditions, with a high probability [*sic*] effectively target a group of people larger than a few hundred with any kind of chemical attack."[17]

Regarding a biological attack, Smithson concludes "the obstacles to the successful dissemination of biological agents are such that governments have found it necessary to employ hundreds, even thousands of top-flight scientists, to obtain a mass casualty biological weapons capability."[18] Her report asserts that terrorists will encounter several barriers to constructing a biological weapon, including obtaining a lethal strain or culture of an agent, establishing a stable

manufacturing process, purifying the agent and keeping it alive, dissemination, and safety for the terrorist. Obtaining the most infectious and virulent culture will be the greatest barrier.

The report acknowledges four possible methods to obtain seed cultures: (1) natural resources, (2) culture collections, (3) research laboratories or public health facilities, and (4) state sponsors. Each has its advantages and drawbacks. Smithson concludes obtaining growth and production equipment--fermenters, centrifuges, driers, milling equipment, and safety products--for a biological weapon is the least difficult barrier for a terrorist to overcome because of their wide availability. As with chemical programs, technological know-how is readily available as microbiologists, biologists, and medical professionals have the necessary skill sets for production. Additionally, national scientific meetings and courses, and the tens of thousands of people receiving post secondary school and industrial training in biology related disciplines, provide an additional pool of technological know how. Unlike with a chemical agent, the study does not discount delivery as impossible but rather highlights the difficulties terrorists must overcome.

Dissemination can occur through several methods: explosive bombs, contamination, aerosol sprayers, and through delivery agents such as insects. Dissemination through a sprayer or even a crop duster is inexpensive and unsophisticated but presents several difficulties. These hurdles include calculating the concentration of the agent in the sprayer, determining the degradation effect the sprayer has on the agent, accounting for weather conditions, and requisite dosage calculations for the desired effect on the target. Unlike a chemical weapon where delivery provides the most difficult barrier to overcome, Stimson asserts acquisition of a biological culture will be the greatest obstacle in constructing biological weapons capable of mass casualties.

Concluding her technical feasibility argument, Smithson claims that the so-called increase in terrorist incidents causing mass casualties, plus the rise in availability of products, equipment, and technology increases the probability terrorist will employ chemical or biological weapons of mass destruction is over-stated. She concedes small scale attacks are possible,

however: "[t]heoretically, a quart of nerve agent contains roughly a million lethal doses, but in practice over a ton of nerve agent would be needed to kill ten thousand people outdoors...[and] it would take a terrorist roughly two years to make enough sarin in a basement-sized operation to kill five hundred and another eighteen years to produce the ton of gas required to kill ten thousand."[19]

Stimson next reviews historical trends of chemical and biological terrorism and concludes if the past is any predictor of the future, terrorist use of chemical or biological weapons will be "small scale and far less harmful than conventional terrorist attacks."[20] Smithson uses for her analysis the cases of political or ideological perpetrators using chemical or biological substances from 1975 to 2000 in a database maintained by the Center for Nonproliferation Studies at the Monterey Institute of International Studies. Smithson's analysis finds that chemical or biological substances were used only 126 times from 1975 to 2000 in order to further a political or ideological cause. Of those cases, 45 percent involve the non-mass casualty agents of tear gas and butyric acid or are attributed to one single organization, Aum Shinrikyo. Additionally, in 96 percent of the cases the attack resulted in 3 or fewer deaths. Stimson concludes that analysis does not lend credence to the forecasts of terrorist use of chemical or biological agents to cause mass casualties.

Smithson concludes that "[t]aken together, the technical realities, actual case histories, and statistical records of terrorist behavior with chemical and biological substance undercut the rhetoric considerably and point not to catastrophic terrorism but to small attacks where a few, not thousands, would be harmed."[21] The report highlights the possibility that terrorists could more easily inflict harm with chemical and biological substances through foul play such as sabotaging a chemical storage facility or a transporter of hazardous materials rather than assembling a weapon from scratch.[22] The mass casualty capability is evident from the Union Carbide accident in December 1984 when a methyl isocyanate leak killed 3,800 people and injured over 11,000.[23]

Smithson concludes that "terrorists intent on causing mass casualties with chemicals would probably engineer the intentional release of industrial chemicals rather than wrestle with more complex warfare agents."[24]

Regarding the impact of the Aum Shinrikyo 1995 subway system attack as a model for future terrorist attacks, Smithson discounts the not if-but when school of thought for several reasons. First, the basic components of a chemical or biological program were known and accessible decades before the attacks. Second, no organization has replicated the cult's attack which is not typical of the imitative nature of terrorists. Third, Smithson believes the Aum Shinrikyo adeptness is embellished. Despite employing highly educated scientists, the cult's program experienced several toxic accidents and their dissemination attempts jeopardized the lives of some of members.[25] Although credited with producing and disseminating anthrax and botulinum toxin, the cult's biological warfare program was not successful despite recruiting scientists. Smithson maintains this case disproves the assertions that "acquiring and spreading these agents is shake-'n-bake easy."[26]

Regarding domestic preparedness and response, Smithson concludes that the "U.S. conventional terrorism preparedness programming could benefit from a major overhaul."[27] Her interviews with local first responders--firemen, policemen, medical specialists--shows they believed that the federal "partners were busy competing with each other for missions and resources than they were coordinating their efforts."[28] The goals, requirements, timelines, and priorities regarding accomplishing response tasks vary among federal departments like DOD, Health and Human Services, and DOJ. Smithson also accuses the federal government of creating new capabilities that simply duplicate existing ones.

Her study points out that the DOD created specialized response teams like the Marine Chemical/Biological Incident Response Force and the National Guard Civil Support Teams (formerly called RAID teams) when assets such as the Army Technical Escort Unit, Army

Reserve and Active Army chemical companies, the Army's 52d Ordnance Disposal unit, and the Air Force BEEF units already existed. She claims that no federal team, unless pre-deployed, will affect the outcome of rescue operations.[29] Another area Stimson identifies needing improvement for chemical, and biological, responses is medical assistance.

Smithson acknowledges there have been improvements to the federal consequence management capability over the last decade such as the National Disaster Medical System and FEMA's Disaster Medical Assistance Teams. However, she concludes these improvements "do not even approach the type of monumental challenge that a full-fledged infectious disease outbreak would present."[30] Smithson believes response improvements need to be made in hospital preparedness activities, disease surveillance, and development of new antibiotics, vaccines, and antidotes.

United States Commission on National Security/21st Century

Commonly referred to as the Hart-Rudman Study, this commission's charter was to redefine "national security in this age and to do so in a more comprehensive fashion than any other similar effort since 1947."[31] The commission concludes that without significant reforms, American power and influence cannot be sustained and that there is a need for a "culture of coordinated strategic planning to permeate all U.S. national security institutions…[that] without creative strategic planning in this new environment, we will default in time of crisis to a reactive posture…[which] is inadequate to the challenges and opportunities before us."[32] The commission made recommendations for organizational changes in five areas: ensuring the security of the American homeland, recapitalizing America's strengths in science and education, redesigning key institutions in the Executive Branch, overhauling the government's military and civilian personnel systems, and reorganizing Congress's role in national security affairs.[33] Important to this study are the recommendations the commission made regarding securing the homeland, institutional redesign, and the role of Congress.

In its Phase III Report, the Hart-Rudman commission concludes that a "direct attack against American citizens *on American soil* [italics in original]" is likely over the next twenty-five years due to a combination of persistent international terrorism and unconventional weapons proliferation. The report makes makes four recommendations regarding homeland security.[34] It recommends the creation of an independent National Homeland Security Agency with responsibility for planning, coordinating, and integrating various U.S. government activities involved in homeland security.[35] President Bush partially implemented this recommendation with the creation of the Office of Homeland Security. The commission's second recommendation called on DOD to create a new office of the Assistant Secretary for Homeland Security to oversee DOD homeland security activities in that area to ensure that necessary resources are made available.[36] The commission recognizes that the "potentially catastrophic nature of homeland attacks" necessitated the nation being prepared to use the extensive resources of the DOD.[37] It also recommended the National Guard assume homeland security as its primary mission, "as the U.S. Constitution itself ordains."[38] Finally, regarding homeland security, the commission recommends Congress reorganize itself to accommodate these new Executive Branch realignments and also form a special select committee for homeland security.[39] The commission also suggested improvements to the national security institutional structure.

The Commission recommended an institutional overhaul to support its finding that the national strategy should drive the design and implementation of national security policies, that the President should guide the "top-down" strategic planning process, and the process should be "linked to the allocation of resources throughout the government."[40] For this study, focus is on recommendations directed at the DOD.

The first is the commission's recommendation to conduct a review of the roles and responsibilities of the staffs at OSD, the Joint Staff, the military services, and the CINCs, followed by the Secretary of Defense reorganizing and reducing those staffs by ten to fifteen

percent.[41] Significant for this study is the fact the commission specifically highlights the Joint Forces Command (JFCOM) because of its important and evolving role in consequence management with its standing JTF-Civil Support. The next recommendation is to introduce a new process that requires the services and defense agencies to compete for the allocation of resources within the overall DOD budget.[42] Imbedded in this recommendation is a proposal to improve the Quadrennial Defense Review process by restructuring it so that it "defines modernization requirements for two distinct planning horizons: near-term (one to three years) and long-term (four to fifteen years)".[43] The CINCs would have the primary influence on readiness in the near-term phase. This proposal was significant because the commission highlighted a suggestion that JFCOM represent the CINCs in the requirements definition process.[44]

The commission makes a series of recommendations to reform some areas, specifically, the process for programming and budgeting, the acquisition process, and the force structure planning process.[45] Significant for this study is not the specific changes recommended, but rather the importance placed on FEMA and OHS understanding the current DOD process highlighted (planning, programming, budgeting, R & D/procurement, and acquisition). This is critical as the OHS will have to understand the DOD strategic planning process in order to avoid a fractured, inefficient, and ineffective resourcing process that does not allow the agency to accomplish its strategic goals.

The commission recommends a shift from the "threat-based, 2 MTW [Major Theater of War] force sizing process" to one that attempts to measure requirements based on recent operational trends, intelligence estimates of potential adversary capabilities, and national security objectives.[46] Essentially, this is a shift from a threat-based force to a capabilities-based force. This is significant because one theme consistent across the debate on homeland security is the need for a threat assessment in order to avoid the flawed strategy of planning against unexamined

scenarios. It would be a mistake for DOD to be a capabilities-based force while the support it lends to other federal agencies (eg., FEMA) is threat-based.

Finally, the commission recommends that the Secretary of Defense revise its categories of Major Force Programs (MFPs) to focus on providing a different mix of capabilities.[47] It suggests updating the existing MFPs and adding new ones corresponding to the military capabilities prescribed by the commission. They include strategic nuclear, homeland security, conventional, expeditionary, and humanitarian relief and constabulary.[48] The commission recommends that the Secretary of Defense assign the reserve component forces this vital role. "They should be trained and equipped to respond as deployable forces to …WMD-triggered disasters."[49] This recommendation is significant because this will require a highly integrated active-reserve effort.

In its fifth area of investigation, and the final one relevant to this study, the commission reviewed the role of Congress in national security affairs. It recommended that both Congressional and Executive Branch leaders build programs encouraging its members to become more knowledgeable and experienced in national security.[50] Programs should include ongoing education, more opportunities for overseas travel, more legislative exchanges with other countries, and greater participation in war games. Regarding the latter program, the commission recommended expanding the war games at the National Defense University so that every member of Congress can participate in one or more per two year cycle.[51] The commission believes that by role modeling key decision-makers, "members of Congress [would] acquire a better understanding of the limits of American power, and…learn about . . . the procedures and systems of Executive Branch decision-making, and about crisis interactions" eventually leading to a more sophisticated Legislative Branch.[52] It also recommended that Congress merge its appropriations committees with their respective authorizations committees.[53] For example, currently, appropriations relating to defense are handled in three subcommittees (defense, military

construction, and energy and water). Under the commission's proposal, all appropriations will be made within the Senate Armed Services Committee. In its final recommended role for Congress in national security, the commission suggests formulating a permanent consultative group.[54] The consulting group coordinate with the Executive branch to achieve mutual trust, respect, partnership and a shared understanding of each branch's role. This will result in each branch able to execute its role in national security affairs more effectively.

United States General Accounting Office (GAO)

The United States General Accounting Office (GAO) has published over forty reports in the last five years on domestic preparedness, homeland security, and combating terrorism on the homeland. There are threads of continuity among all the reports. They include three major recommendations. First, the federal government needs a clearly defined leadership to "develop and implement" a homeland security strategy in coordination with all of the relevant agencies and departments and have the ability to "marshal the necessary resources to get the job done."[55] Second, the homeland security strategy should be based on a comprehensive threat and risk assessment.[56] Third, the large number of organizations involved in homeland security need to have "articulated role, responsibilities, and accountability mechanisms."[57] Significant to this study is the GAO's recognition that a key component to a comprehensive national strategy is effective management of the consequences of an incident.

GAO's recommendation to develop a national strategy has three elements: a risk assessment, vulnerability analysis, and infrastructure criticality analysis.[58] This includes, first, assessing the threats posed by state and non-state actors and eliminating or reducing the threat; second, identifying the weaknesses in the nation's infrastructure, planning, and exercises; and third, assuring our ability to respond and recover.[59] The resulting strategy should "focus" the nation's finite resources since the reality is that all vulnerabilities cannot be eliminated, nor all threats prevented, and the national does not have the ability to respond and recover from all

incidents.[60] Specifically, the GAO finds the FEMA-led Weapons of Mass Destruction Interagency Steering Group efforts to develop federal response team force packages to chemical or biological terrorist incidents lacking because they have been based on worst-case scenarios rather than analysis of credible threats.[61] Without realistic threat scenarios, the GAO believes FEMA is unable to develop appropriate federal consequence management responses.[62]

The new national strategy will require the federal government to assign roles to agencies and departments. In doing so, it will "need to reach consensus with the other levels of government and with the private sector on their roles."[63] The GAO suggests an approach similar to the one taken in response to the potential for computer failures and the beginning of the new century, commonly called Y2K. The Y2K task force used an approach with massive mobilization of federal leadership including forging relationships with private industry and international governments and an effective communication plan to implement corrections.[64] The GAO also found the Attorney General's Five-year Interagency Counterterrorism and Technology Crime Plan serves as a baseline strategy for the coordination of a national strategy and operational capabilities to combat terrorism and represents an interagency effort that identifies which federal agencies will perform specific tasks.[65]

The GAO agrees that the Bush Administration's establishment of the Office of Homeland Security is a positive step toward developing a comprehensive and coordinated homeland security strategy. It identified, however, several key unanswered questions: (1) What will be included in the definition of homeland security and what are its specific goals and objectives? (2) How will programs that are spread across numerous agencies and government levels be identified and prioritized? 3) How will the OHS impact the budget and resource process?[66] Additionally, interagency efforts such as the FEMA-led Weapons of Mass Destruction Interagency Steering Group should continue. This planning effort enables federal agencies to identify the consequence management teams able to respond to specific terrorist scenarios.[67]

As late as September 2001, the GAO review of reports identifies concern about the preparedness of states and local areas to respond to chemical or biological terrorist attacks.[68] Those concerns include insufficient state and local planning for response to terrorist attacks, inadequacies in the public health structure, lack of hospital participation in training on terrorism and emergency response planning, insufficient capacity for treating mass casualties from a terrorist act, and untimely availability of medical teams and resource.

In the area of public health preparedness, the GAO concluded the response remains inadequate citing the 1999 West Nile virus outbreak in New York that resulted in seven dead and sixty two confirmed cases. Despite the fact the West Nile virus was a natural outbreak, analysis of the response is important because the respone is the same whether an intentional disease outbreak or one that is naturally occurring. Also, and that "because a bioterorrist event could look like a natural outbreak," bioterrorism preparedness rests on public health preparedness.[69] The GAO identified necessary public health improvements as a result of the West Nile Virus outbreak that include improving disease surveillance and response, better communication among public health agencies, improved coordination between public and animal health agencies, and broadening laboratory capabilities.[70] For example, although the outbreak was relatively small in terms of the number of human cases and occurred in an area with one of the nation's largest local public health agencies, the virus outbreak taxed federal, state and local laboratory resources.[71] Requests for tests during the outbreak inundated the New York state and Center for Disease Control laboratories with the latter handling the bulk of the testing. Officials indicated the CDC laboratory would have been unable to respond to another outbreak had one occurred at the same time.

RAND

RAND Corporation Studies. This nonprofit institution that aims to help improve policy and decision making through research and analysis has produced over forty studies on domestic

terrorism and preparedness. Recommended solutions included improving the nation's disease surveillance network, increasing laboratory capacity, improving management of medical and pharmaceutical stockpiles, and increasing emergency room capacities.[72] It further recommend that the Center for Disease Control lead the effort to reach consensus among the federal, state, and public health officials on the core capacities needed at each level of government.[73]

The Gilmore Commission

The Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, or the Gilmore Commission, submitted its findings and recommendations in three separate annual reports over a three-year period beginning in 1999. The first report is a comprehensive assessment of the terrorist threat. The second report makes a broad program assessment focusing on both specific programs to combat terrorism and the larger national strategy. Finally, the third report includes the commission's findings in addition to revision and validation of the recommendations in the first two reports as they were submitted prior to the 11 September 2001 terrorist attacks against the United States.

The First Annual Report is an assessment of the terrorist threat facing the nation in the twenty-first century. The commission concludes that chemical and biological (along with radiological and nuclear) terrorism "presents a genuine threat to the Untied States."[74] It believes the changing face of terrorism portends the use of chemical, biological, radiological, or nuclear weapons. The commission concludes that fundamentalist or apocalyptic religious organizations, cults, and extreme single issue groups intend to use chemical or biological devices to inflict mass casualties, instill fear in the public, establish a strategic position of strength, and cause societal or economic impacts. Although some hurdles in acquiring, producing, and delivering these weapons currently exist, the commission asserts the national strategy must be prepared to counter the chemical and biological threat as new discoveries, changing technology, and material factors change. The 1995 Aum Shinrikyo attack demonstrates today's terrorist organizations possess

both the capability and intent to conduct at least small scale attacks. Consequently, the first report contains two conclusions.

The first conclusion is that the U.S. must conduct comprehensive threat, risk, and vulnerability assessments.[75] These threat assessments should pay more attention to high probability/low consequence threats, but not at the expense of low probability/high consequence events. The second conclusion is the Unite States needs a viable national strategy to guide development of clear, comprehensive, and integrated national domestic preparedness programs.[76] The first reports findings establish the foundation for the subsequent reports released in 2000 and 2001.

The Second Annual Report assesses the specific programs to combat terrorism and the larger national strategy. The report's key finding is the President "should develop and present a national strategy for combating terrorism within the first year of assuming office".[77] It finds the current U.S. national strategy for combating terrorism incoherent because it is based on broad policy statements and a loose set of already existing plans and programs that lack synchronization and direction. It recommends the national strategy not only be federal but national in scope; encompass deterrence, prevention, preparedness, and response against domestic and international threats; be built upon current response systems including all key functional areas (intelligence, law enforcement, fire services, emergency medical service, public health, medical care provider, emergency management, and the military); and be fully resourced with measurable performance indicators. The commission found the lack of a national strategy results in a fragmented federal effort to combat terrorism.

This fragmented federal effort led to the recommendation to establish a senior level coordination entity in the Executive Office of the President.[78] The commission suggests this national office have program and budget authority over federal assets to combat terrorism, be authorized to review agency budgets for compliance to priorities and allowed to eliminate

conflicts and unnecessary duplication among agencies. The national office should oversee terrorism-related intelligence activities, coordinate federal response programs, establish performance standards, and provide direction and priorities for terrorism related research, development, testing, and evaluation. Finally, the national office should establish an advisory board that assists in developing and is part of the approval process for domestic strategy, plans and programs and that the board should consist of state governors, mayors, subject matter experts, and representatives from professional organizations. President Bush designated such a national office in EO 13228 establishing the Office of Homeland Security. Key to this study are some of the commission's recommendations on the characteristics of the national office, or the new Office of Homeland Security, not included in EO 13228. They are addressed in chapters 5 and 6. The Gilmore Commission's Second Annual Report recommends not only executive branch action but congressional action as well.

The commission recommends congress consolidate authority over combating terrorism programs into a single committee, either joint or one in both the Senate and the House of Representatives. Currently, the eleven House committees and fourteen Senate committees claiming oversight or responsibility over various combating terrorism programs have contributed to the fragmented, unsynchronized, and uncoordinated federal effort. In addition to executive and congressional roles, the commission recognizes the importance of state and local efforts.

The commission recommends the executive branch establish a mechanism to ensure state and local governments participate in the development and implementation of the national terrorism preparedness strategy.[79] Additionally, the commission makes the recommendation to ensure the domestic portion of the national strategy build upon existing state and local programs, systems, and plans. It bases its recommendations on the fact that local response personnel--policemen, firemen, hazardous material technicians, health and medical officials--will be the first

on the scene of a terrorist incident. Federal resources will not arrive until hours, perhaps days, after the event.

Finally, the commission's second report recommends five functional improvements needed in order to effectively implement a national strategy to combat terrorism. They include enhancing intelligence/threat assessments and information sharing; fostering better planning, coordination, and operations; enhancing training, equipping, and exercising; improving health and medical capabilities; promoting better research and development and developing national standards; enhancing efforts to counter agro-terrorism; and improving cyber security against terrorism.[80] Continuing the second report's emphasis on functional improvements, the commission's last report identifies additional areas needing attention.

The Third Annual Report focuses on five functional areas needing the most attention in order to implement a national strategy to protect the U.S. from terrorism. They include empowering state and local responses, improving health and medical capabilities, strengthening immigration and border control, clarifying roles and missions on the use of the military, and enhancing security against cyber attacks.[81] For the purpose of this study, only the third functional area, clarifying roles and missions on the use of the military, requires treatment.

The commission concludes "controversy, confusion, misunderstanding, and disorganization continue to surround the subject of the role of the U.S. Armed Forces to deter, prevent, or respond to a terrorist threat inside the borders of the United States."[82] The commission observes there are few "comprehensive, carefully coordinated, well understood plans and programs" for how the military will execute its role.[83] Consequently, the panel makes five recommendations in order to clarify the roles and missions of the military in deterring, preventing, or responding to a terrorist threat against the homeland:

1. Establishing a single, unified command and control structure for all functions for providing military support or assistance to civil authorities for disasters, including terrorism

2. Developing detailed plans for the use of the military domestically across the spectrum of potential activities, the institution of specific training in units most likely to be involved in support to civil authorities, and expanding military involvement in exercises with federal, state, and local civilian agencies

3. Directing new specific mission areas for the National Guard when providing support to civil authorities for combating terrorism

4. Publicizing a compendium of the statutory authorities for using the military domestically to combat terrorism, with detailed explanations about the procedures for implementing those authorities

5. Improving the full time liaison elements located in the ten Federal Emergency Management Agency regions[84]

The works of Amy Smithson, the Hart-Rudman Commission, RAND, the Government Accounting Office, and the Gilmore commission provide an overview of the issues and problems surrounding the federal response to a terrorist attack against the homeland. The analyses of Smithson, RAND, and the Gilmore Commission conclude that today's terrorist organizations possess both the intent and the capability to conduct chemical or biological attacks; the technical hurdles to employ a chemical or biological weapon to cause mass casualties (100 or greater) cannot currently be overcome. All of the analyses support the finding that the national strategy to combat terrorism lacks coherency and synchronization. To that point, they provide a basis for understanding both the larger issues such as the failure to establish a national office developing a national strategy to combat terrorism--hopefully fixed with the establishment of the Office of Homeland Security--and the subordinate issues such as the adequacy of the health and medical response to a terrorist release of a biological weapon.

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[1]From the Henry L. Stimson mission statement; available at http://www.stimson.org/stimson/mission.htm; Internet; accessed on 2 December 2001.

[2]Department of Defense, *United Stated Commission on National Security/21st Century. Road Map for National Security: Imperative for Change; Phase I Report of the U.S. Commission on National Security/21st Century*, (Washington, D.C.: GPO, 15 September 1999), preface.

[3]From GAO mission statement; available at http://www.gao.gov/; Internet; accessed on 2 December 2001.

[4]From RAND website; available at http://www.rand.org/about; Internet; accessed on on 2 December 2001.

[5]Ibid.

[6]Ibid.

[7]Gilmore Commission, *First Annual Report to The President and The Congress of the Advisory Panel To Assess Domestic Response Capabilities For Terrorism Involving Weapons Of Mass Destruction, I. Assessing the Threat*, (Washington, D.C.: RAND, 15 September 1999), Appendix G.

[8]Amy E. Smithson and Leslie-Anne Levy, *Ataxia:*The Chemical and Biological Terrorism Threat and the US Response*, (Washington, D.C.: The Henry L. Stimson Center, Chemical and Biological Weapons Nonproliferation Project, October 200), xi.

[9]Ibid., xi.

[10]Ibid., 1

[11]Ibid., 3-4, 12.

[12]Ibid., passim.

[13]Ibid., 13-14.

[14]Ibid., 279.

[15]Ibid., 29-31.

[16]Ibid., 32.

[17]Robert K. Mullen, "Mass Destruction and Terrorism," *Journal of International Affairs* 32, no. 1 (spring-summer 1978): 77, quoted in Smithson; 37.

[18]Ibid., 279.

[19]Ibid., 279.

[20]Ibid., 69.

[21]Ibid., 282.

[22]Ibid., 282-283.

[23]Ashok S. Kalelkar, "Investigation of Large-Magnitude Incidents: Bhopal as a Case Study," presentation to the Institution of Chemical Engineers Conference On Preventing Major Chemical Accidents, London, England, May 1988 noted in Smithson, 284.

[24]Ibid., 285.

[25]Ibid., xii.

[26]Ibid., xiii.

[27]Ibid., 6.

[28]Ibid., xiv.

[29]Ibid., 292.

[30]Ibid., 296.

[31]Department of Defense, *United Stated Commission on National Security/21st Century. Road Map for National Security: Imperative for Change; Phase III Report of the U.S. Commission on National Security/21st Century*, (Washington, D.C.: GPO, 15 February 2001), iv.

[32]Ibid., iv.

[33]Ibid., viii.

[34]Ibid., viii.

[35]Ibid., viii.

[36]Ibid., ix.

[37]Ibid., viii.

[38]Ibid., ix.

[39]Ibid., ix.

[40]Ibid., x.

[41]Ibid., 65.

[42]Ibid., 69.

[43]Ibid., 69.

[44]Ibid., 66.

[45]Ibid., 63.

[46]Ibid., 76

[47]Ibid., 77.

[48]Ibid., 77.

[49]Ibid., 77.

[50]Ibid., 111.

[51]Ibid., 111.

[52]Ibid., 111.

[53]Ibid., 112.

[54]Ibid., 113.

[55]David M. Walker, *Combating Terrorism, FEMA Continues to Make Progress in Coordinating Preparedness and Response*, Statement of David M. Walker, Comptroller General of the United States, (Washington, D.C.: U.S. Government Accounting Office, March 2001), 1, GAO-01-15.

[56]Ibid., 1.

[57]Ibid., 1.

[58]Ibid., 5.

[59]Ibid., 5.

[60]Ibid., 6.

[61]Government Accounting Office, *Combating Terrorism: Federal Response Teams Provide Varied Capabilities; Opportunities Remain to Improve Coordination*, (Washington, D.C.,: U.S. Government Accounting Office, November 2000), 21-22, GAO-01-14.

[62]Ibid., 22.

[63]Walker, *FEMA Continues to Make Progress in Coordinating Preparedness and Response*, 6,.

[64]Ibid., 6.

[65]Government Accounting Office, *Federal Response Teams Provide Varied Capabilities*, 18,.

[66]Government Accounting Office, *Homeland Security: Challenges and Strategies in Addressing Short and Long Term National Needs*, (Washington, D.C.: U.S. Government Accounting Office, 7 November 2001), 6, GAO-02-160T.

[67]Government Accounting Office, *Federal Response Teams Provide Varied Capabilities*, 26.

[68]Government Accounting Office, *Bioterrorism: Federal Research and Activities*, (Washington, D.C.: U.S. Government Accounting Office September 2001), 20, GAO-01-915.

[69]Government Accounting Office, *Challenges and Strategies in Addressing Short and Long Term National Needs*, 9.

[70]Government Accounting Office, *West Nile Virus Outbreak: Lessons for Public Health Preparedness*, (Washington, D.C.: U.S. Government Accounting Office, 11 September 2000), 21, GAO/HEHS-00-180.

[71]Ibid., 18-34.

[72]Ibid., 9.

[73]Ibid., 10

[74]Gilmore Commission, *First Annual Report*, vi.

[75]Ibid., x.

[76]Ibid., ix.

[77]Gilmore Commission, *Second Annual Report to The President and The Congress of the Advisory Panel To Assess Domestic Response Capabilities For Terrorism Involving Weapons Of Mass Destruction, I. Toward a National Strategy for Combating Terrorism*, (Washington, D.C.: RAND, 2000), iii.

[78]Ibid., v.

[79]Ibid., viii.

[80]Ibid., ix through xi.

[81]Gilmore Commission, *Third Annual Report to The President and The Congress of the Advisory Panel To Assess Domestic Response Capabilities For Terrorism Involving Weapons Of Mass Destruction, III. For Ray Downey*, (Washington, D.C.: RAND, 15 December 2001), ad passium.

[82]Gilmore Commission, *Advance Executive Summary: Third Annual Report to The President and The Congress of the Advisory Panel To Assess Domestic Response Capabilities For Terrorism Involving Weapons Of Mass Destruction, III. For Ray Downey*, (Washington, D.C.: RAND, 31 October 2001), 12.

[83]Ibid., 12.

[84]All six recommendations come from the Gilmore Commission, *Advance Executive Summary*, 13-14.

CHAPTER 3

METHODOLOGY

Introduction

This study is a policy evaluation thesis that employs qualitative methods to examine if the prescribed role of the DOD in 1999 version of the *FRP* is adequate to meet the challenges posed by a terrorist attack against the homeland using a chemical or biological WME.[1] The study's basic framework consists of two bodies of knowledge similar to those proposed by military theorist Sun Tsu, know yourself and know the enemy. These two bodies of knowledge produced two important considerations. First, knowing the enemy allows identification of the federal response functions necessitated by a terrorist chemical or biological attack against the U.S. Second, knowing yourself--in this case, DOD--highlights the factors impacting the military role in response and recovery operations--capabilities, national strategy, policy, doctrine, directives, legality, and precedence. These issues guide an analysis of the adequacy of DOD's role prescribed by the *FRP* using four criteria: necessity, feasibility, suitability, and acceptability. In addition to determining the adequacy of the DOD role in the *FRP*, the analysis allows recommendations to improve the *FRP* through revisions of DOD's role. Establishing a method to evaluate the adequacy of the DOD role is fundamental to the study. However, the body of evidence needs to be built first.

Data Collection

Knowing Yourself

This study conducts its analysis using the framework of knowing yourself and knowing the enemy in order to evaluate the adequacy of the DOD role. Knowing yourself is essential in order to evaluate the feasibility, suitability, and acceptability of the existing DOD roles in the *FRP* and recommendations this study makes regarding roles not currently prescribed. This entails

examining not only the DOD's prescribed role in the 1999 version of the *FRP* but also its role outlined in other national strategic documents impacting domestic response and recovery operations. This is critical in order to determine whether any prescribed or recommended roles fall within the assigned duties, responsibilities, missions, or tasks of the DOD. Collection of this data occurs through a review of primary sources (table 1) outlining the strategic context.

Table 1. National Response and Recovery Strategy

FEMA's *Federal Response Plan*
The Stafford Act
Department of Health and Human Services *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism*
Environmental Protection Agency's *National Oil and Hazardous Substances Pollution Contingency Plan*
Federal Bureau of Investigation's *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan*
Presidential Decision Directives 39, 62, and 63
Executive Orders 12656 and 13228
Weapons of Mass Destruction Act of 1996

Knowing yourself also encompasses determining what DOD has written about its own role in response and recovery operations. This is accomplished by reviewing DOD doctrine, directives, and reports as shown in table 2.

Understanding yourself also entails knowing DOD capabilities that are determined through a review of organizational and doctrinal documents. Additionally, it is important to know the legal basis for a DOD role in domestic response and recovery operations found in the Constitution; the Stafford Act; Insurrection Act; Title 10; Title 42; Economy Act; and the

Comprehensive Environmental Response, Compensation, and Liability Act. Finally, knowing yourself includes reviewing the precedence of employing the armed forces domestically, such as during Hurricane Andrew, the Los Angeles riots, and the 1996 Summer Olympics. All of this data allows a clearer understanding of DOD's role regarding responding to and recovering from chemical or biological terrorist attacks against the homeland. After understanding yourself, understanding the enemy is next.

Table 2. DOD Documents Addressing Domestic Reponses and Recovery Operations

DOD Directive 3025.1, *Military Support to Civil Authorities*
DOD Directive 3025.12, *Military Support to Civil Disturbances*
DOD Directive 3025.15, *Military Assistance to Civil Authorities*
DOD Directive 3025.1-M, *Manual for Civil Emergencies*
FM 3-11.21, *Multiservice Tactics, Technique, and Procedures for Nuclear, Biological, and Chemical Consequence Management*
FM 3-0, *U.S. Army Operations*
FM 100-19, *Domestic Support Operations*
2001 Annual Report to Congress

Knowing the Enemy

Knowing the enemy is essential in order to determine the effects of a terrorist attack using a chemical or biological weapon. This knowledge allows identification of federal response roles necessitated by a chemical or biological terrorist attack. This study uses the framework proposed by David Singer almost fifty years ago to identify threats. Singer hypothesizes threat is a combination of both the enemy's estimated capabilities and estimated intent.[2] This study

reviews both intent and capabilities of non-state actors in the current security environment. Additionally, it looks at trends in both traditional, chemical, and biological terrorism. Finally, the study examines four case studies, two actual and two other hypothetical, in order to evaluate the necessary federal functions when responding to and recovering from chemical/biological terrorist attacks. It uses the 1995 Aum Shinrikyo sarin attack in a Japanese subway to demonstrate what a chemical attack will look like and the John Hopkins Center for Civilian Biodefense Studies illustrative planning scenario Dark Winter, the Department of Justice exercise TOPOFF, and the 1999 West Nile virus outbreak in New York to show what a biological attack will look like.

The study reviews primary and secondary historical, analytical, and theoretical sources. Many experts and organizations have made efforts to determine the threat, and in order to cover the broad spectrum of views this study evaluates many federal efforts. Views examined include the DOD, Center for Disease Control, Department of Agriculture, FBI, CIA, Gilmore Commission, Hart-Rudman Commission, Modeling and Simulation Information Analysis Center, Defense Threat Reduction Agency, Office of Technology Assessment, congressional committees, and the GAO. This study also examines non-governmental efforts by RAND, Center for Nonproliferation Studies, St. Andrews University Center for the Study of Terrorism and Political Violence, Center for Strategic International Studies, the Lawrence Livermore National Laboratory, as well as individual efforts by experts, such as Jessica Stern, Joshua Lederberg, Richard Falkenrath, Ron Purver, Bruce Hoffman, and Jonathon Tucker. First, it is essential to define the evaluation criteria of necessity, feasibility, suitability, and acceptability.

Analysis

A role is necessary if it is required when responding to or recovering from a terrorist chemical or biological attack, the first criterion. These are the roles identified during the evaluation of the Aum Shinrikyo attack, the West Nile virus outbreak, and exercises Dark Winter and TOPOFF. The second criterion, the feasibility of a role, requires the determination of

whether the role can be accomplished with available military resources. The role must fall within current DOD capabilities, defined as the mental or physical ability to execute an assigned duty, responsibility, mission, or task. Additionally, DOD must be able to employ those capabilities in sufficient quantity and at the right time. The third evaluation criterion is suitability which ascertains the appropriateness of a role for the military. This entails determining whether a role falls within the assigned missions, objectives, or goals of the military services. The fourth and final criterion is acceptability. The acceptability of a role is a calculation of whether the role is worth the cost in manpower, materiel, and time involved.[3] Considerations include whether the assigned role is consistent with the nation's laws, within the traditional employment of military power, and politically acceptable. For example, it measures intangible costs, such as curtailment of civil liberties to the benefits gained by a military quarantine. With the criteria defined, it is possible to interpret the collected data.

Interpretation

Interpretation of the collected body of evidence regarding knowing yourself and knowing the enemy results in a determination of the adequacy of DOD's role in the *FRP* when responding and recovering from a chemical or biological terrorist attack against the homeland and the selection of considerations to improve the *FRP*. The study accomplishes this with two sequential tests.

The first test evaluates the relationship between the prescribed roles and their necessity (see figure 1). In this instance, necessity becomes a screening criterion. The intersection of the prescribed roles and the necessary roles (Area 3) indicates where a DOD role is not only prescribed in the *FRP* but also vital in response to a chemical or biological attack. Area 1 indicates roles prescribed in the *FRP* but not necessary, potentially a recommendation for removal from the *FRP*. Area 2 is the instance where the role is necessary but not prescribed in the *FRP*. After completing the first test (necessary versus prescribed roles), the existence of Area

2 begs the second test of this analysis--whether there are any necessary roles that are feasible, suitable, and acceptable for DOD.

The final outcome of the second test is the determination whether the *FRP* can be improved by considering roles for DOD that are feasible, suitable, and acceptable. As seen in figure 2, Area 5 indicates the set of roles that were not only necessary and not prescribed in the *FRP* (from the first test) but also determined to be feasible, suitable, and acceptable.

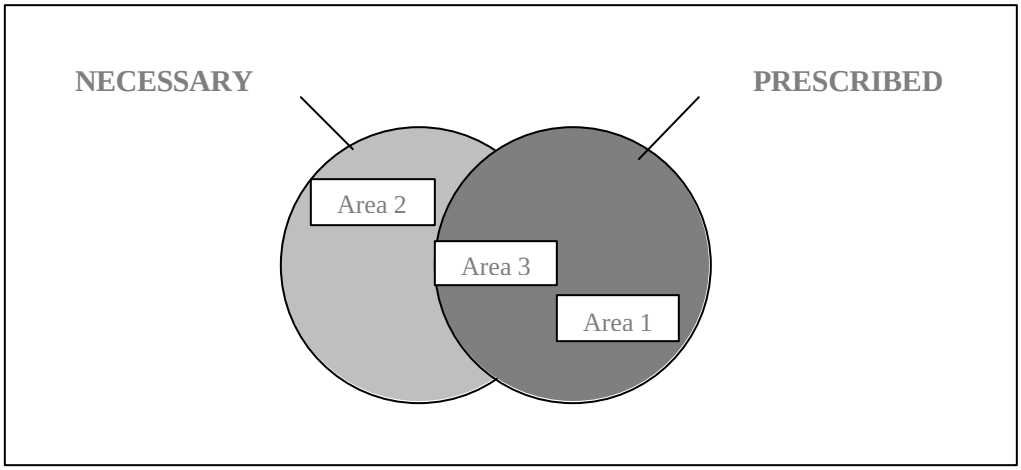


Figure 1. First Test: Necessary Versus Prescribed Roles

The study recommends roles in this area for consideration by FEMA for inclusion in the *FRP*. Additionally, the study recommends roles in Area 6 for research and development consideration as they are both suitable and acceptable but not currently within the capabilities of the DOD.

Knowing yourself and knowing the enemy allows understanding of the roles necessitated by a terrorist chemical or biological attack against the homeland, DOD chemical and biological response capabilities, DOD roles prescribed in the *FRP* and throughout the national strategy, military doctrine and directives addressing domestic support operations, the legal basis for military employment on the homeland, and the precedence for employment. The analysis and

interpretation of the data reveal whether the *FRP* prescribes all of the necessary roles. An inadequate DOD role is the instance where it does not. Consequently, the study evaluates all of the roles that are necessary but not prescribed for their feasibility, suitability, and acceptability. The roles satisfying all three criteria become considerations for FEMA to improve the *FRP* through revision of the DOD role in response to and recovery from a chemical or biological attack against the homeland.

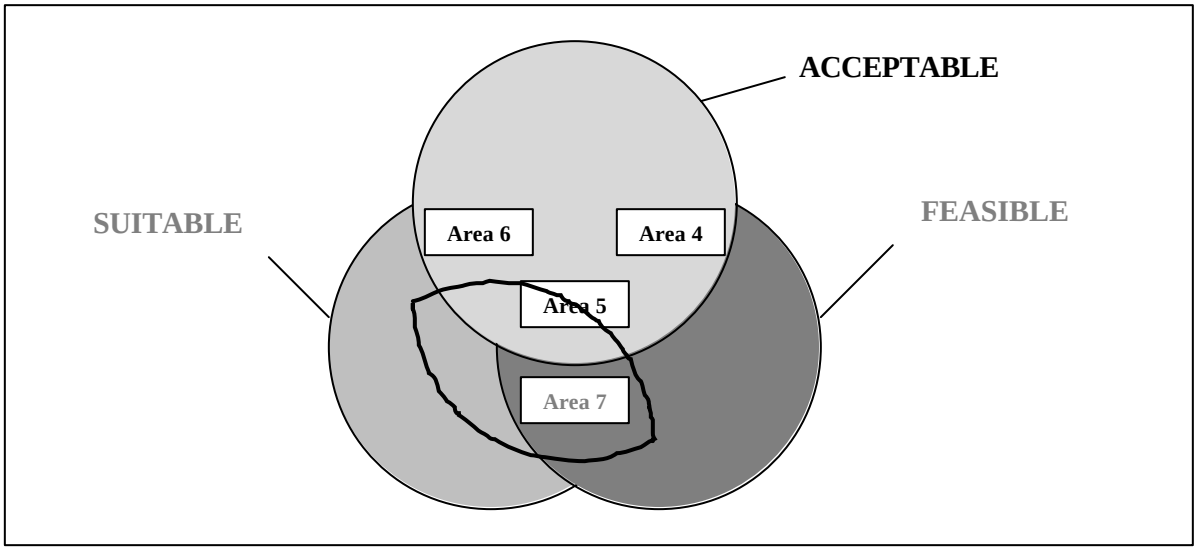


Figure 2. Evaluation Method of Recommended Roles

[1]Michael Quinn Patton, *Qualitative Evaluation and Research Methods* (London: Sage Publications, 1990), 11.

[2]David J. Singer, "Threat Perception and the Armament-Tension Dilemma," *Journal of Conflict Resolution*, (March 1958): 94.

[3]Department of Defense, Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, D.C.: 23 March 1994).

CHAPTER 4

KNOW THE ENEMY

Introduction

In March 1995, the Japanese apocalyptic cult Aum Shinrikyo placed eleven packages of sarin nerve gas on five Tokyo subway lines in the midst of a morning rush hour. The terrorist attack resulted in twelve dead and approximately five thousand injured.[1] Arguably, this was the first terrorist organization to stage a chemical attack resulting in mass casualties. In the years intervening between the Aum Shinrikyo attack and the anthrax attacks following the 11 September 2001 destruction of the World Trade Center towers, terrorist experts remained divided on the likelihood of a future terrorist attack involving chemical or biological weapons.

Experts separated between the alarmist view that future terrorist use was a virtual certainty and the complacent view grounded in assumptions about the lack of terrorist motivation and the technical infeasibility of acquiring and delivering chemical and biological agents.[2] Walter Laquer asserted that some terrorist groups "almost certainly will" use weapons of mass destruction "in spite of all the reasons mitigating against it," while Amy Smithson concluded that the "analysis of terrorist behavior with chemical/biological substances does not provide much backing for the not if, butwhen catastrophic terrorism school of thought."[3]

This chapter first examines the trends in terrorism in order to determine what they suggest about the likelihood of terrorist employing chemical or biological weapons. Next, it explores the motivations and capabilities of terrorist organizations in order to determine what they suggest about future use. Finally, it evaluates two real world incidents (the 1995 Aum Shinrikyo attack and the 1999 West Nile virus outbreak) and two exercises (TOPOFF and Dark Winter) in order to determine the response functions necessitated by employment of an actual chemical or biological agent.

Trends In Terrorism

There are several trends in terrorist activity over the last thirty-three years that point to the potential employment of chemical and biological weapons by terrorists in the future. They include an increase in lethality, an increase in religiously inspired terrorism, evidence of increasingly spectacular events, an increase in blackmail and extortion terrorist threats, the amateurization of terrorists, and the growth of state sponsored terrorism.[4] In the context of terrorist attacks against the homeland, the trends support the likelihood that the U.S. will be a target.

Increasing Lethality

During the 1990s, the number of international terrorist incidents each year decreased, however, the number of people killed per terrorist attack increased. The RAND-St. Andrews University Chronology of International Terrorism for the first half of the decade supports this finding.[5] In 1991, a record 484 international terrorist incidents occurred, followed by 343 in 1992, 360 in 1993, 353 in 1994, and 275 incidents in 1995.[6] This trend continued in 1996, the last published RAND-St. Andrews chronology, with only 250 incidents, the lowest in 23 years.[7] Although 1996 saw the lowest number of terrorist incidents since 1973, it was the fourth most deadly year since the inception of the database in 1968. Despite the decrease in international terrorist incident occurrences, lethality increased.

In 1995 for example, at least one person died in 29 percent of all recorded terrorist incidents, the highest since 1968.[8] This was the trend in the first half of the 1990s, with an increase from 14 percent in 1991 to 17.5 percent in 1992, and from 24 percent in 1993 to 27 percent in 1994.[9] During the 1970s, only 17 percent of international terrorist incidents killed anyone and just 19 percent in the 1980s. Since terrorists now want mass casualties, they will likely employ weapons that cause them, like chemical and biological.

It is important here to note the RAND-St. Andrew database only documents international terrorism, where terrorists go abroad to strike their targets. It excludes violence carried out by terrorists or governments within their own country against their own nationals. Additionally, it only includes direct action attacks: kidnapping, bombing, attacks on installations, hijacking, hostage taking, assassinations and shootings, and conspiracies.

When comparing the statistics over time and including not only international terrorist attacks but also indigenous terrorist incidents (against fellow citizens or against foreigners within the country's borders), the trend toward increased lethality is even more apparent. The Gilmore Commission's first report noted between 1990 and 1996 a total of 50,070 people were killed in terrorist attacks around the world whereas 28,110 lost their lives in the 14 years between 1970 and 1983.[10] The number of fatalities nearly doubled in almost one-half the time. In addition to the increase in lethality, nonfatal injuries over identical time periods also witnessed a sevenfold increase from 1,352 (1970–1983) to 9,976 (1990–1996).[11]

The terrorists' trend toward increased lethality demonstrates their quest for more destructive means making chemical or biological weapons very attractive. Author Richard Falkenrath argues the traditional terrorist use of a conventional bomb can reliably kill at most a few hundred people, but cannot kill a few thousand, much less tens of thousands like chemical and biological weapons.[12]

Increase in Religiously Inspired Terrorism

There are several reasons for terrorism's increased lethality, but according to Bruce Hoffman, none are as significant as the "proliferation of terrorist groups motivated in part or whole by a religious imperative."[13] In 1968, none of the eleven terrorist groups identified to have been active were motivated by religious ends even though several organizations, like the Catholic Provisional Irish Republic Army, their Protestant counterparts the Ulster Freedom Fighters, and

the Muslim Palestine Liberation Organization had a religious component. With these groups, it was the political component, comprised of their nationalist aims, that dominated their agenda.[14] In 1980, the world witnessed the appearance of the "first modern religious terrorist groups" following the 1979 revolutions in Iran and accounted for two of the sixty-four groups active that year.[15] By 1992, the number of religiously motivated terrorist groups had increased by six times (11 out of 48) and accounted for almost 25 percent of the incidents that year. By 1994, the proportion of active terrorist groups characterized as religious in objective increased to 33 percent (16 of 49) and again in 1995 to almost 45 percent (25 of 58).[16]

Two specific statistics from the mid-1990s exemplify the correlation between religious inspired terrorism and increased lethality. First, in 1995, although religious terrorist groups committed only 25 percent (71 of 278) of the incidents that year, they accounted for 58 percent of the fatalities (167 of 287).[17] Second, in 1996, groups predominantly motivated by religious or theological ideals perpetuated ten of the thirteen events that killed eight or more people.[18] Some of the most significant and lethal terrorist incidents in the 1990s had a religious element to them:

1. The 1993 bombing of the World Trade Center by Islamic terrorists

2. The series of thirteen car and truck bombings in Bombay, India, in February 1993 in reprisal for the destruction of an Islamic shrine where 400 died and 1,000 more injured

3. The hijacking of an Air France passenger jet by the Algerian Armed Islamic Group (GIA) whose plot to blow themselves and the plane up over Paris was thwarted when French commandos raided the plane during a refueling stop in Marseilles

4. The Aum Shinrikyo sarin attack against a Japanese subway in March 1995 killing twelve and injuring close to five thousand

5. The bombings in France by the GIA against trains, markets, and cafes, killing 8 and wounding more than 180 from July to October 1995

6. The massacres of an estimated 75,000 persons since 1992 by Islamic extremists in Algeria

7. The killing of fifty-eight tourists and four Egyptians by members of the Gamat al-Islamiya in Luxor, Egypt in November 1997[19]

Falkenrath concludes "non-state violence appears to be becoming more lethal because it is increasingly motivated by extreme and absolutist doctrine."[20] Because violence first and foremost is a sacramental act or divine duty carried out in direct response to some theological demand or imperative, it "assumes a transcendental dimension, and its perpetrators are thereby unconstrained by the political, moral, or practical constraints that seem to affect other terrorists."[21] Where secular terrorists generally consider indiscriminate violence immoral and counterproductive, religious terrorists regard such violence not only as "morally justified, but as a necessary expedient for the attainment of their goals."[22] They view the primary purpose of violent acts not to coerce particular concessions, but to "fulfill a spiritual requirement."[23] This belief is exemplified in the importance religious terrorists put on the clerical sanctioning of attacks, often requiring religious figures to bless an operation before it is executed. In 1993, the first World Trade Center bombers specifically obtained a *fatwa*, or religious edict, from Sheikh Omar Abdel-Rahman, now imprisoned in the U.S., before planning their attack.[24]

The restraints on violence embraced by secular terrorists are not relevant to the religious terrorist. When terrorists worship a god that says "it is permissible to kill indiscriminately, then the constraints of conventional morality fall away."[25] The rhetoric common to the manifestos of religious terrorist groups describe persons outside their religious community using dehumanizing terms, such as infidels, nonbelievers, and children of Satan. Hoffman believes the deliberate use of such adjectives is significant because they further erode the constraints on violence and bloodshed by portraying the terrorists' victims as either "subhuman" or "unworthy" of living.[26] Secular terrorists see violence as a way of "instigating the correction of a flaw in a system that is

basically good or as a means to foment the creation of a new system" where religious terrorists do "not see themselves as components of a system worth preserving," but as "outsiders" enabling contemplation of far more destructive and deadly attacks.[27]

The increasingly religious dimension of terrorism points to the potential use of chemical or biological weapons. The growth in the number of active terrorist groups characterized as religious in nature and the accompanying increase not only in the proportion of terrorist attacks attributed to religious groups but also the lethality of those attacks demonstrate terrorists have crossed the psychological barrier to causing mass casualties. Many experts believe this is a prerequisite before employing chemical or biological agents. Despite those trends and what they may predict, Jeffrey Simon concludes the terrorists' belief that acts of violence are morally justified and theologically mandated provides the most powerful, and possibly sufficient, incentive for any type of attack.[28]

Increase in Spectacular Events

The tendency for a few spectacular incidents to capture world headlines eliciting dramatic government responses is another trend that has implications for the future use of chemical or biological weapons. These spectacular events are those "dramatic, attention-riveting, high lethality acts" that capture the attention of both the media and the public.[29] The 11 September 2001 attacks against the World Trade Center and the subsequent anthrax attacks exemplify this trend. However, it existed even before those horrific attacks.

In 1996, the number of international incidents that killed eight or more people increased from eight in 1995 to thirteen in 1996. The spectacular incident events of that year include the LTTE truck bombing of the Sri Lankian Central Bank in Colombo on 31 January killing 96 people and injuring over 1,400; the Islamic extremist (al-Gama'a al-Islamiya) machine-gun and hand grenade attack on Greek tourists in Cairo, killing eighteen and wounding fifteen; the religious militant truck bomb attack against the U.S. barracks in Daharan, Saudi Arabia killing

nineteen people and wounding another five hundred; and, finally, the seizure of an Ethiopian Airline airplane by two Ethiopian men seeking asylum resulting in a crash at sea killing 127 of the 175 passengers.[30]

The incidents of 1996 are reflective of a trend over the previous fifteen years. Spectacular, high-casualty terrorist incidents during that period include the bombing of Pan Am flight 103 over Lockerbie, Scotland, in December 1988 that killed 259 passengers and 11 people on the ground; the first World Trade Center bombing in February 1993 killing 6 and injuring about 1,000; the bombing of the Alfred E. Murrah Federal Building in Oklahoma City in April 1995 killing 168 and injuring more than 500; the bombings of the U.S. embassies in Kenya and Tanzania in August 1998, killing 224 and injuring 5,400; and the second attack on the World Trade Center and the Pentagon in September 2001.

Joshua Lederberg concludes that: "Terrorists may be perpetrating more sensational and indiscriminate attacks because they perceive that the public has become desensitized and that traditional shootings and hijackings no longer attract sufficient media coverage or political leverage."[31] For example, when convicted Oklahoma City bomber Timothy McVeigh's lawyer asked him whether he could have achieved the same effect of drawing attention to his cause without killing anyone, he was reported to have replied: "That would not have gotten the point across. We needed a body count to make our point."[32] The increase in spectacular events demonstrate the terrorist requirement for public attention and media coverage which a chemical or biological attack is certain to attain. Hoffman surmised that: "This equation of publicity and carnage with attention and success thus has the effect of locking some terrorists into a relenting upward spiral of violence in order to retain the media and public's interest."[33] Simon believes that: "With a multitude of terrorist groups competing for the international spotlight, more dramatic incidents are likely and none would be more dramatic than one involving [chemical or] biological agents."[34]

Increase in Threats, Hoaxes, and Extortions

Threats, hoaxes, and extortion involving claims about the potential use of chemical and biological weapons are common. In order to be effective, the threat to use chemical or biological weapons must be credible. One way credibility can be obtained is through the prior successful use of a chemical or biological weapon. This was seen in the U.S. in 1978 following a series of incidents where seven people died after taking Tylenol capsules laced with cyanide and several people tried to blackmail companies with threats of further product contamination.[35] Therefore, to maintain threats, hoaxes, and extortions as viable tools, terrorists will have to eventually employ a chemical or biological agent to lend believability. Some examples include:

1. A German biologist threatened to contaminate water supplies with anthrax and botulinum unless paid $8.5 million in 1973.[36]

2. The Red Army Faction threatened to spread anthrax via the German mail system in 1980.[37]

3. An unidentified group or individual tried to extort $10 million from two hotels in Lake Tahoe by threatening to poison the water supplies.[38]

4. Four people in 1987 threatened to release an airborne dioxin over Nicosia.[39]

5. German officials thwarted a neo-Nazi group plan to pump hydrogen cyanide into a synagogue in 1992.[40]

Amateurization of Terrorism

Hoffman concludes that the "amateurization of terrorism may contribute to the loosening of constraints previously self-emplaced on attacks and thus affect terrorist tendency toward the use of weapons of mass destruction."[41] The first World Trade Center bombing in February 1993

and the subsequent plot five months later to free the terrorists arrested for the attack provide an example of this trend.

The prototypical terrorist organization has a well-defined command and control system with members specially trained in terrorist paramilitary techniques and engaged in clandestine activities as a full-time avocation.[42] These traditional terrorist groups include the Japanese Red Army, Italy's Red Brigade, Dev Sol, Palestine Liberation Organization, Irish Republican Army, and Bosque ETA. However, now it appears "more and more non-state violence is committed by an ad hoc collection of like-minded individuals" coming together for a specific purpose, sometimes to commit a single act.[43] Experts term this phenomena the rise of amateur terrorism, referring more to the spontaneity of the groups' formation than the skill of its members.

The four main conspirators in the first World Trade Center bombing came to know one another and eventually joined forces through their attendance at a common place of worship in a Jersey City mosque. The investigation into the bombing plot revealed two other worshippers at the same Jersey City mosque had been previously convicted of terrorist acts in the New York metropolitan area.[44] The first person was Egyptian-born Sultan Ibraham El Gawli who was arrested and convicted in December 1985 by the U.S. Customs Service for attempting to export 150 pounds of C-4 explosive, 100 blasting caps, remote detonators, and a silenced 9-millimeter pistol to Palestinian terrorists in Israel. The second person who also worshiped at the Masjid al-Salam Mosque in Jersey City was El Sayyid A. Nosair. He was convicted of assassinating rabbi Meir Kahane, a Jewish extremist and founder of the terrorist group Kach, in November 1990. Friends and a common religious belief brought all of these terrorists together to form an ad hoc group of like-minded individuals for specific operations. One consequence of this phenomena is that these new groups will tend to be only indirectly connected to a central authority or foreign government and will lack the modus operandi of traditionally organized terrorist.[45]

The reduced control of a central authority over an amateur organization may result in fewer constraints on operations, targets, and reduce inhibitions to inflicting casualties. Unlike amateurs, established terrorist groups and state sponsors are fundamentally concerned with their own organizational survival, which contributes to their "basic conservatism in the use of destructive force."[46] In the instance of the 1993 World Trace Center bombings, rather than being deterred by the swiftness in which the FBI solved the case, fifteen persons plotted to free the bombers through even more horrific attacks.[47] They plotted to release the four bombers by destroying two commuter tunnels and a bridge linking New Jersey to Manhattan, blowing up the United Nations building, attacking the FBI's New York field office, and assassinating various public officials.[48] Having amateur groups with no political organization to worry about or formed only to commit a limited number of operations further complicates the terrorism problem.

Amateur terrorists can be very attractive to professional terrorist groups or state sponsors who view them simply as "pawns . . . or expendable minions" that conceal the true identity of the group actually commissioning an attack.[49] This indirect connection may be seen in the case of money transfers that occurred before the 1993 World Trade Center bombing. Federal authorities reportedly traced $100,000 wired from banks in Iran and $8,000 in transfers from Germany to an account held by two of the bombers, and one suspect confessed that some funds had been routed through the militant Egyptian Islamic Group Gamat al-Islamiya, and the radical transnational Muslim Brotherhood organization.[50] One major contributing factor to the ease with which states and terrorists can come together is technology.

Advances in communication and transportation make it easy for individuals and organizations geographically scattered but ideologically similar to make contact. In addition to bringing terrorists and sponsors together, the ability to easily come together has the effect of freeing people at the most violent-prone fringes from some of the constraints they previously faced.[51] Where zealots were once constrained because they could not act alone or were restrained

by group influence, they can now find radicals like themselves and form violent groups.[52] This can result in the formation of amateur groups pursuing a goal they believe is ordained by a god or motivated by political ideology that justifies violence and may not feel constrained enough to rule out the use of chemical or biological weapons.[53]

State Sponsorship of Terrorism

The president of the Chemical and Biological Arms Control Institute testified before Congress, "[T]he events of September 11 and the subsequent anthrax attacks suggest that the state-nonstate actor connection is more important than ever before."[54] Previously, most analysts, experts, and academia tended to evaluate chemical and biological employment possibilities along separate tracks: state and nonstate. Today, there must be an appreciation for a new challenge that may be neither war nor terrorism, but one where the distinction has become blurred. War and terrorism have become linked as demonstrated by the fact that Osama bin Laden has both depended on and provided support to various national governments.[55] Terrorists who have the financial, technical, and logistical support of foreign governments have many advantages over other terrorist groups.[56] State sponsored terrorists contemplating a chemical or biological attack may have access to agents, training on their use, and technical support that it may not otherwise have. The Gilmore Commission concluded terrorists finding it difficult to transform chemical or biological agents into effective weapons may find their problem greatly reduced if they could benefit from state sponsored chemical and biological weapons programs.[57]

In its 2000 report on global terrorism, the U.S. State Department lists seven countries as state sponsors of terrorism: Cuba, Iran, Iraq, Libya, North Korea, Syria, and Sudan.[58] The Monterey Institute for International Studies Center for Nonproliferation Studies identifies five of those seven countries with known chemical programs (see table 3), either through an open declaration or because there is "clear evidence of chemical . . . weapons possession." The

Institute concludes the other two countries, Cuba and Sudan, may possibly have programs. Of the seven countries, only Iran signed and ratified the Chemical Weapons Convention. Regarding biological weapons, the Monterey Institute identifies three countries that could possibly produce biological agents and three countries that probably or likely have research programs (see table 3). Iraq is the most threatening nation that can probably reconstitute its biological program in the absence of United Nations inspections.[59] Only Iran and Cuba have signed and ratified the 1972 Biological and Toxin Weapons Convention.

Table 3. State Sponsors of Terrorism Chemical and Biological Programs

State-Sponsor of Terrorism	**Chemical Program**	**Biological Program**
Cuba	Possible	Probable Research Program
Iran	Known	Likely Maintains a Research Program
Iraq	Known	Probable Reconstitution of Program
Libya	Known	Possible Production of Agents
North Korea	Known	Possible Production of Agents
Syria	Known	Possible Production of Agents
Sudan	Possible	Possible Research Program

Notes:
Known: where states have either declared their programs or there is clear evidence of chemical or biological weapons possession
Probable: where states have been publicly named by government or military officials as probable chemical or biological weapons possessors or as producing chemical or biological weapons
Possible: where states have been widely identified as possibly having chemical or biological weapons or a program by sources other than government officials
Research: possible agents studied; no evidence of weaponization
Weaponized Agents: where agents are produced in quantity, or filled into munitions in a specialized formulation with enhanced shelflife or dissemination properties.

Source: State Department, *Patterns of Global Terrorism: 2000* (Washington, D.C.: U.S. State Department, April 2001); available from http://www.state.gov/s/ct/rls/pgtrpt/2000/2441.htm; Internet; accessed on 10 April 2002; Monterey Institute of International Studies, *Chemical and Biological Weapons: Possession and Programs Past and Present* (Monterey, CA: Center for Nonproliferation Studies, 2002); available from http://cns.miis.edu/research/cbw/possess.htm#1; Internet; accessed on 23 February 2002.

The United States As a Target

When a terrorist attack occurs, regardless if the weapon is a chemical or biological agent, statistics show U.S. citizens and property are twice as likely to be the target over the citizens and property of any other country. The RAND-St. Andrew University 1996 chronology shows the U.S.s' return to the top of the list as the country terrorists targeted the most, a position it retained every year since 1968, except 1995.[60] There were forty-four attacks against U.S. citizens and property in 1996 alone, twice that of the next most targeted countries--Turkey, Great Britain, and France--each targeted twenty-two times.[61] As an example of the magnitude of carnage, terrorist attacks overseas killed 77 Americans and wounded 651 during the period from 1995 to 2000 (see table 4).

Table 4. United States Casualties From International Terrorism
1995-2000

Year	Wounded	Killed
1995	60	10
1996	510	25
1997	21	6
1998	11	12
1999	6	5
2000	43	19

Source: Department of State, *Patterns of Global Terrorism*: 2000 (Washington, D.C: U.S. State Department, April 2001); available from http://www.state.gov/s/ct/rls/pgtrpt/2000/2460.htm; Internet; accessed on 13 February 2002.

In fact, several of the terrorist attacks against the U.S in the 1990s contain a combination of the trends previously mentioned: the increase in lethality, spectacular events, and religious

inspiration. They include the 1993 World Trade Center bombing; the November 1995 bombing of the U.S Security Assistance Office in Riyadh by Sunni Saudi nationals, killing seven and wounding forty; the June 1996 bombing of the Khobar Towers in Dharan by Shi'ite Saudi extremists, killing nineteen and injuring over five hundred; and the August 1998 attacks against U.S. embassies in Tanzania and Kenya by Islamic terrorists, killing 224 and injuring 5,400.[62]

This data and these examples cannot predict the future use of chemical or biological weapons, but rather highlight the potential of an attack, by conventional or unconventional means, against U.S citizens or property.

Trends In Chemical and Biological Terrorism

The Henry L. Stimson Center and the Center for Nonproliferation Studies at the Monterey Institute of International Studies conducted a joint analysis of chemical and biological terrorism from 1975 through 2000.[63] The analysis used cases where the perpetrator was motivated by political or ideological motives and deliberately employed a chemical or biological substance, thus delimiting criminal motivations and incidents involving nuclear or radiological weapons. All of the data used in the analysis was from open sources and revealed several trends.

During the 25 year period, a total of 139 cases occurred in the U.S. and 203 incidents happened internationally (see table 5). Interestingly, domestic biological cases occurred almost twice as often as chemical ones. Conversely, international incidents had chemicals used four times as much as biological agents. The database also revealed certain groups may be more inclined to employ chemical or biological agents.

Table 5. Number of Terrorist Cases Involving Chemical or Biological Substances (1975-2000)

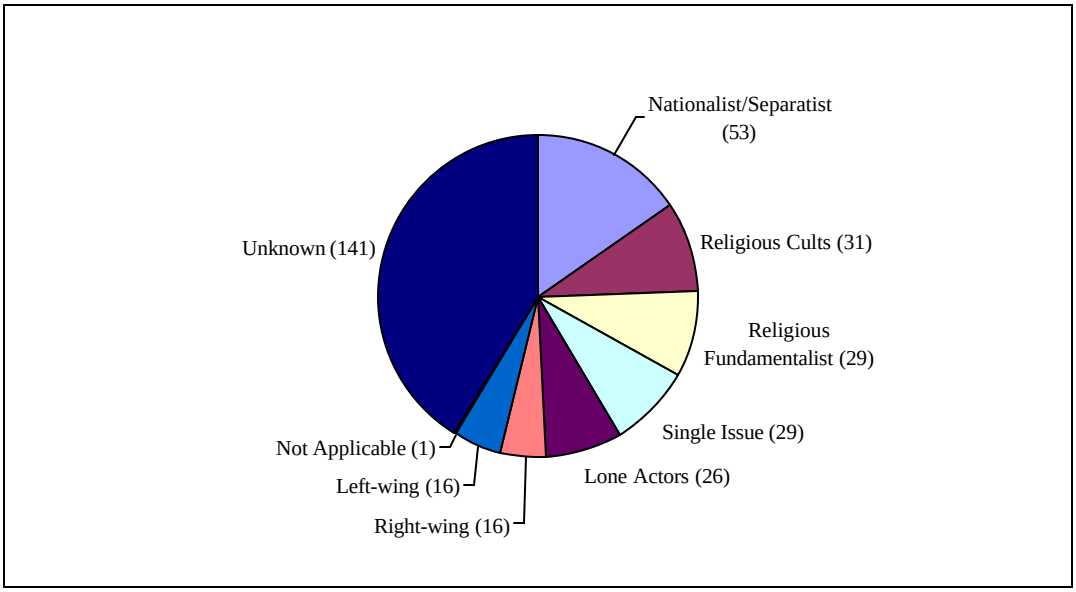
Type of Terrorist Case	**Number of Domestic Cases (Percentage of Worldwide Total)**	**Number of International Cases (Percentage of Worldwide Total)**	**Total Number of Cases Worldwide**

Involving Chemical Substances	46 (22.2%)	161 (77.8%)	207
Involving Biological Substances	93 (68.9%)	42 (31.1%)	135
Total	139 (40.6%)	203 (59.4%)	342

Source: Amy E. Smithson and Leslie-Anne Levy, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response* (Washington, D.C.: The Henry L. Stimson Center, Chemical and Biological Weapons Nonproliferation Project, October 2000), 58.

Among all of the groups employing chemical/biological substances, religious groups committed the most acts. Religious organizations, both cults and fundamentalists, were responsible for 18 percent of the incidents (60 of 342 cases) from 1975 to 2000, with nationalist and separatist organizations comprising 15 percent of the cases (see figure 3). This trend substantiates the earlier assertion that the increasing religious nature of terrorist groups and their desire to inflict mass causalities creates the desire to employ chemical or biological weapons. Of all the incident cases, it is important to differentiate between use and non-use.

Figure 3. Affiliation of Groups with Chemical and Biological Substances. Reprinted with permission from Amy E. Smithson and Leslie-Anne Levy, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response* (Washington, D.C.: The Henry L. Stimson Center, Chemical and Biological Weapons Nonproliferation Project, October 2000), 59.



The Stimson Center study observed that of the 342 worldwide terrorist cases purporting to involve chemical or biological substances only 37 percent (126 cases) involve the actual use of a substance. The remainder of cases were hoaxes, plots, threats, attempted acquisition, possession, or the threat of use after possession (see table 6). In the 126 cases of actual use, the most prevalent substances were chemical: butyric acid (22 cases), cyanide (20 cases), and tear gas (14 cases) with cyanide being the only one lethal; butyric acid only causes nausea, and tear gas is an incapacitating agent. Cyanide was responsible for twelve deaths and sixty-three injuries during the period.[64] These were not the only deaths resulting from employment of chemical or biological substances.

The Monterey database revealed there were 150 fatalities due to chemical terrorism and 2 from biological terrorism during the period from 1975 to 2000. The sole chemical death in the U.S. occurred due to the 1973 Symbionese Liberation Army assassination of an Oakland, California, school superintendent with a cyanide-tipped bullet. Because the Stimson Center analysis only included incidents up to August 2000, the deaths attributed to the U.S. anthrax attacks following the World Trade Center destruction were not included. Regarding the use of

chemical/biological substances causing mass fatalities, the study noted that only five terrorist attacks resulted in ten or more deaths.[65]

Regarding nonfatal attacks, of the 3,244 injuries worldwide (2,492 chemical and 752 biological) roughly three-fourths resulted from 3 incidents: the 1995 Aum Shinrikyo sarin subway attack, the 1984 Rajneeshee salmonella poisoning sickening 751, and the 1983 West Bank gas release on 694 schoolgirls. In 96 percent of the cases, the attacks injured or killed 3 or fewer people.

The trends in chemical/biological terrorism show that there are incidents where mass fatalities and injuries occurred, but they are not the norm. Only five cases resulted in more than ten deaths and less than three people were killed or injured in 96 percent of the cases. Interestingly, almost one-half (45 percent) of the 126 cases where chemical or biological substances were employed either involved non-mass casualty agents (tear gas and butyric acid) or were linked to one organization, Aum Shinrikyo. These observations may appear to diffuse the argument that terrorist desire to employ chemical or biological weapons in order to cause mass casualties. However, it is this study's contention that the desire to employ chemical or biological weapons lay not only in their ability to cause mass casualties, but their ability to act as weapons of mass effects.

Table 6. Terrorist Activities with Chemical and Biological Substances (1975-2000)

Type of Activity	**Number of Domestic Incidents**	**Number of International Incidents**
Hoax/prank/threat	83	37
Plot only	9	19
Attempted acquisition	1	8
Possession	6	42
Threat with possession	4	7

Use of agent	36	90

Source: Amy E. Smithson and Leslie-Anne Levy, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response* (Washington, D.C.: The Henry L. Stimson Center, Chemical and Biological Weapons Nonproliferation Project, October 2000), 61.

Motivation

The reason terrorists desire to employ chemical and biological weapons is because they are weapons of mass effects. Chemical and biological weapons can produce mass casualties, inflict fear and panic, give the terrorist a position of strength, incapacitate instead of kill, provide logistical and psychological advantages, and cause economic damage.

The most compelling reason terrorists might decide to use chemical or biological weapons is the desire to have a single attack produce very high casualties. This is, after all, the reason states developed and used weapons of mass destruction in the first place.[66] Prior to the 2001 attacks against the World Trade Center, conventional attacks rarely killed more than a few hundred people.[67] So if multiple conventional attacks are rejected by the terrorist as too difficult for a small organization or insufficiently dramatic, the "desire to inflict very high casualties could motivate an interest in acquiring and using weapons of mass destruction."[68] As a former FEMA director testified, "[t]o produce about the same number of deaths within a square mile, it would take 32 million grams of fragmentation cluster bomb material; 3,200,000 grams of mustard gas; 800,000 grams of nerve gas; 5,000 grams of material in a crude nuclear fission weapon; 80 grams of botulinal toxin type A; or only 8 grams of anthrax spores."[69] The Aum Shinrikyo 1995 sarin attack and the 1984 Rajneeshee salmonella poisoning are just two examples of mass casualties created by chemical and biological weapons.

A second reason for terrorist groups to seek chemical or biological weapons is to exploit the classic weapon of the terrorist--extreme fear. Terrorism, in essence, is a form of psychological warfare that attempts to create a sense of fear to portray a government as unable to

protect its citizens from attack or losing control.[70] This could lead to a loss of public confidence resulting in a government emplacing repressive measures like declaring a state of emergency or limiting civil rights.[71] For instance, the 1995 Aum sarin attack not only caused mass panic in Tokyo, it also shattered the popular perception among the Japanese people who considered their country to be among the safest in the world.[72] In the U.S., following the fall 2001 anthrax attacks, there were many instances demonstrating fear among people. In Cleveland, officials quarantined an airplane after being notified a white powder was spotted triggering the deployment of hazardous material units to the scene; the Sands Hotel & Casino in Atlantic City, closed for an hour after a prescription bottle containing white powder was found on a restaurant table only to find out it was food seasoning left behind by a diner; and in Monterey, California, firefighters barricaded an area around a pile of white powder in a hospital parking lot which turned out to be baking soda.[73] The very unfamiliarity of weapons of mass destruction and their images--gruesome and abnormal diseases, convulsions and choking on poisonous gas, men in protective suits--further "magnify the psychological impact" of a chemical or biological attack.[74]

A third possible rationale terrorists may use to employ chemical or biological agents is the desire to gain a position of strength to negotiate.[75] A credible threat to use a chemical or biological weapon would have to be answered by a government and could provide terrorists with a tool for political coercion. The terrorist position can also strengthened by weakening the U.S. strategic position. Terrorists can weaken the U.S. strategic position by targeting key institutions (like the Capitol) or key leaders (like the Senate majority leader) both of which occurred following the September 2001 World Trade Center attack. Also, terrorists could hinder the U.S. from deploying military forces overseas by targeting force projection platforms.

A fourth reason terrorists may resort to these weapons is because they can incapacitate rather than kill. Again, the Rajneeshee poisoning is an example when in 1984 the cult contaminated restaurants with Salmonell typhimurium in a plot to sicken residents of The Dalles,

Oregon to influence the outcome of a local election. As a result of the attack, 751 became ill. By employing a biological agent rather than a chemical poison, terrorists may avoid arrest and retribution because the effects of the former would be delayed and more difficult to trace. In the case of the Rajneeshee attack, the real source of the Salmonella outbreak was not identified until a year later.[76] The delayed effect also gives the terrorist the option of claiming responsibility early on or waiting to find if their demands are met.[77] However, this can also be a drawback as delayed effects make it difficult to use biological agents as an instrument of terror or coercion.

A fifth reason, specifically with biological weapons, is the logistical and psychological advantages these weapons give terrorists. A biological attack, unlike a conventional bombing, would not likely attract immediate attention, and could initially go unnoticed because of the lack of a "signature," only manifesting itself days or even weeks after the event thus allowing for the possibility of anonymous attacks.[78] The time-lag between release of the agent and its perceived effects on humans reduces the chance of a perpetrator being apprehended.[79] Compared to conventional arms, chemical and biological weapons are much easier to disguise, transport, and introduce into the target area.[80] As an example, in 1978 a Bulgarian agent assassinated defector Georgi Markov in London using an umbrella to fire microscopic pellets containing the deadly poison ricin into Markov's leg.[81]

A final reason a terrorist may resort to weapons using chemical or biological agents is to cause economic damage. An analysis conducted by the Center for Disease Control and Prevention concluded that the economic impact of a bioterrorist attack could range from $477 million per 100,000 persons exposed (brucellosis scenario) to $26 billion per 100,000 persons exposed (anthrax scenario).[82] Those costs included lost earnings, hospitalization, outpatient care, and intervention (vaccination). There are historical examples of terrorists contaminating agricultural produce or threatening to do so causing economic damage.

In 1978, the Palestinian Liberation Organization injected Israeli Jaffa oranges with mercury injuring twelve people and damaging more than forty percent of the Israeli-European citrus market and hurting Israel's economy.[83] In 1989, a Chilean left-wing group that was part of an anti-Pinochet movement claimed that it had laced grapes bound for U.S. markets with sodium cyanide, causing suspensions of Chilean fruit imports by the U.S., Canada, Denmark, Germany, and Hong Kong seriously damaging the Chilean economy.[84] In the early 1980s, Tamil separatists in Sri Lanka threatened to infect Sri Lankan rubber and tea plantations with non-indigenous diseases as part of a total biological war strategy designed to cripple the Sinhalese-dominated government.[85] Targeting livestock is another way terrorist could damage the U.S. economy.

Many Western countries are particularly susceptible to this form of aggression, given the integrated way farm animals are bred, transported, and sold. As the Gilmore Commission concluded, disrupting this vital and vulnerable industry could not only damage the economy, but also undermine confidence in government's ability to protect society and underscores the terrorists' ability to coerce without crossing the mass casualty threshold avoiding the risk of attracting massive government reprisals.[86]

Capabilities

In May 1996, CIA director John Deutch concluded before the Conference on Nuclear, Biological, Chemical Weapons Proliferation and Terrorism that "the proliferation of nuclear, biological, and chemical weapons and their potential use by states or terrorists is the most urgent challenge facing national security . . . [as the] materials and expertise to build chemical and biological weapons are ever more readily available."[87] Echoing the CIA Director's conclusion a year later, FBI Director Louis Freeh asserted "the acquisition, proliferation, threatened or actual use of weapons of mass destruction by a terrorist group or individual constitutes one of the gravest threats to the United States."

Previously, it was not just a matter of having will and motivation to commit terrorist acts, but having the capability--training, access to weaponry, and operational knowledge. These capabilities were not readily available and were generally acquired through terrorist run training camps or through assistance from state-sponsors.[88] Today, as Hoffman asserts, the "means and methods of modern terrorism--including even WMD--are publicly available to an extent that is unprecedented."[89] The Unabomber is a case in point. Although not a terrorist per se, Thomas Kaczynski constructed simple, yet sophisticated home-made bombs from ordinary materials that were dispatched to his victims via the mail. Despite one of the most massive manhunts staged by the FBI in the U.S., he was able to elude capture and identification for eighteen years while killing three and injuring twenty-three.[90]

The remainder of this subsection examines the basic components necessary to develop chemical or biological weapons. The components of a program include acquisition and production, technical knowledge, and dissemination. Because chemical and biological weapons are distinct from one another, each is evaluated separately.

Biological Capabilities

A biological weapon disperses organisms to produce disease in humans, plants, and animals. There are five basic categories of biological weapons: bacteria, virus, rickettsaie, fungi, and toxins. Bacteria are single-cell organisms causing diseases from the rarely deadly brucellosis to the plague. Viruses, which are tiny parasitic organisms, must be grown in living tissue and can cause smallpox, encephalitis, and hemorrhagic fevers like Ebola. Rickettsiae, require live tissue for cultivation, and start illnesses such as Q fever. Fungi, are parasitic plants that include yeasts, and molds. Finally, toxins are poisons that are produced by plants and animals, but many such as ricin and botulinum toxin can be created chemically. Most of the diseases are not contagious, like

anthrax, but some pose a frightening prospect because they are communicable like smallpox or the plaque. The difficult aspect of detecting a biological attack is that many disease symptoms are similar to common outbreaks like the flu--aches, fever, coughing, and fatigue.

Acquisition and Production

There are several ways a terrorist could acquire a biological agent. They include purchasing it from one of the world's 1,500 germ banks, as did Larry Wayne Harris; stealing it from a research laboratory, hospital, or public health service; culturing the desired agent from natural sources; or obtaining biological agents from a rogue state, disgruntled government scientist, or state sponsor.[91]

A survey conducted by W. Seth Carus reveals interesting aspects of the non-state actors attempting to acquire and use biological agents. Carus surveyed forty-five cases from open source literature in which a non-state actor used, threatened to use, acquired, attempted to acquire, or expressed an interest in biological agent. In his the survey, perpetrators actually acquired biological agents in twenty-four of the forty-five cases reviewed.[92] In one-third of those cases, the biological agent came from legitimate suppliers as when Larry Wayne Harris obtained *Yersinia pestis* from the American Type Culture Collection in 1995.

Larry Wayne Harris had a past of active involvement in a few of the 523 racist and anti-government groups the Southern Poverty Law Center identified as part of the so-called "Patriot" movement which encompassed far-right groups inspired by racism, nativism, Nazi ideology, survivalism, and resentment of government taxation and affirmative action.[93] His involvement included: being a lieutenant in the neo-Nazi organization Aryan Nation from 1990 until 1995; acting on the governing board of the National Alliance which is a neo-Nazi organization ran by William Pierce, the author of the book *The Turner Diaries*, which inspired the Oklahoma City bombing; and an adherent of the Christian Identity Church, which teaches that blacks are subhuman and that Jews are the offspring of Satan.[94] Firm in his belief that Armageddon was

imminent, Harris wanted to acquire some *Yersinia pestis* to carry out defensive research. When his employer, Superior Laboratories, refused to order the bacteria, Harris set up a phony laboratory in order to order the three vials of the *Y. pestis* from the American Type Culture Collection, an organization that supplies microbial cultures to biomedical researchers around the world. No law prohibited Harris or anyone else from acquiring the biological agent, but because he misrepresented himself to purchase the vials he was convicted of mail fraud. Harris' case provides an example of the reality of non-state actors acquiring toxins or agents.

In four of the cases from Carus' study the perpetrators acquired agents by stealing them from research or medical laboratories and in all of those cases the people involved had legitimate access to the facilities.[95] Carus' study demonstrates that it may not be easy to prevent illicit acquisition of biological agents because there are too many 'legitimate' circumstances permitting individuals access to toxins or pathogens.[96] Additionally, because only a small number of agents are subject to strict control and because many agents actually used in criminal or terrorist acts remain uncontrolled or easily stolen from legitimate users, it is "unlikely that any determined perpetrator will be prevented by legal constraints" from acquiring biological pathogens.[97]

Technical Knowledge

In additiona to the cultures and equipment, terrorists need the knowledge to produce the biological agents and expert opinions differ on the required skill sets. In one category are those sharing the opinion of Jeffrey Simon who believes "several biological agents can be produced either at home or in a small laboratory, without sophisticated scientific knowledge."[98] In the other category are those believing the more conservative view expressed by R.W. Mengel that the "type of knowledge needed probably is beyond a biologist, necessitating the employment of both a microbiologist and a pathologist . . . overcoming the problem of the deterioration of the biological agent once it has been released requires extensive skills, even beyond those available

to microbiologists and pathologists."[99] However, most agree with the former conclusion as supported by the U.S. Office of Technology and Assessment finding that "the technical requirements for culturing microorganisms or producing toxins for use in bioweapons are not particularly high. Most estimates are that second-year or third-year medical or microbiology students would have enough laboratory experience to prepare an agent with minimal danger to themselves."[100]

The basic science behind biological weapons is being learned by more people than ever and this increase in potential biological capabilities is primarily a by-product of educational, economic, and technological progress.[101] The number of B.S. degrees awarded in the U.S. in biology increased by 164 percent from 1966 to 1996 and the number of Ph.Ds by 168 percent.[102] Americans earned more than 72,000 advanced degrees in biology by 1996; 3,158 being doctoral degrees (see table 7). Falkenrath contends these statistics suggest the growth of an underlying scientific and technical competence in the U.S. over time and the data on other countries suggests similar trends.[103] Although scientists may seem unlikely candidates for terrorist organizations, Aum Shinrkyo was successful in attracting chemists, physicists, and biologists from some of Japan's leading universities.[104]

Referring back to the survey conducted by Carus, his evidence suggested perpetrators had "no special scientific or medical expertise" in seventeen of the forty-five cases where there was a use, threatened use, or acquisition of a biological agent.[105] In eighteen of the cases, the perpetrators had some expertise that ranged from a laboratory technician to trained microbiologists; eleven cases showed the involvement of a physician or a trained Ph.D-level microbiologist.[106] Carus' evidence underscores the impact educational progress will have on terrorists ability to possess the technical knowledge for a bioweapons program. In addition to educational progress, there has been economic and technological advances as well.

The emergence of the biotechnology industry in the mid-1980s to exploit the commercial potential of advances in biological sciences created increases in the number of personnel with sufficient knowledge to use biological agents and "to make the agents easier to produce and employ as weapons."[107] According to the Biotechnology Industry Organization, there were 1,273 biotechnology firms, of which 300 are public, employing 150,800 persons in 2001 in the U.S. alone, up from zero in 1980. The byproduct of this growth is not only an increase in the number of people with biotechnical training but also an increase in the availability of tools, supplies, and equipment such as fermenters and measuring apparatus.

In 1995, the CIA concluded the requisite laboratory and production equipment to produce bioweapons is "easily attainable and cheap."[108] A biological production facility would include fermenters, milling equipment, centrifuges, and drivers. This is the same equipment needed to produce beer, yogurt, and vaccines.[109] Not only is the equipment readily available, but so is the information.

Table 7. Biological Science Degrees Awarded: 1966-96

Bachelor's				Master's				Doctoral			
Year	Total	Year	Total	Year	Total	Men	Total	Year	Total	Men	Total
1966	23,477	**1982**	42,427	**1966**	4,224	**1982**	5,931	**1966**	2,135	**1982**	2,716
1967	25,476	**1983**	40,883	**1967**	4,988	**1983**	5,741	**1967**	2,360	**1983**	2,752
1968	28,710	**1984**	39,639	**1968**	5,517	**1984**	5,440	**1968**	2,827	**1984**	2,508
1969	32,388	**1985**	39,405	**1969**	5,765	**1985**	5,095	**1969**	3,092	**1985**	2,665
1970	34,303	**1986**	39,509	**1970**	5,835	**1986**	5,048	**1970**	3,361	**1986**	2,555
1971	36,033	**1987**	39,047	**1971**	5,756	**1987**	4,999	**1971**	3,654	**1987**	2,527
1972	37,638	**1988**	37,688	**1972**	6,126	**1988**	4,810	**1972**	3,600	**1988**	2,479
1973	42,672	**1989**	36,949	**1973**	6,294	**1989**	4,953	**1973**	3,648	**1989**	2,606
1974	48,856	**1990**	38,040	**1974**	6,581	**1990**	4,893	**1974**	3,484	**1990**	2,574
1975	52,236	**1991**	40,351	**1975**	6,591	**1991**	4,806	**1975**	3,497	**1991**	2,713
1976	54,913	**1992**	43,892	**1976**	6,621	**1992**	4,848	**1976**	3,573	**1992**	2,877
1977	54,193	**1993**	47,989	**1977**	7,154	**1993**	4,840	**1977**	3,484	**1993**	2,968
1978	52,213	**1994**	52,321	**1978**	6,851	**1994**	5,276	**1978**	3,516	**1994**	3,042
1979	49,576	**1995**	56,890	**1979**	6,879	**1995**	5,495	**1979**	3,646	**1995**	3,095
1980	47,111	**1996**	62,081	**1980**	6,536	**1996**	6,286	**1980**	3,803	**1996**	3,158
1981	44,046			**1981**	6,015			**1981**	3,803		

Source: Natic
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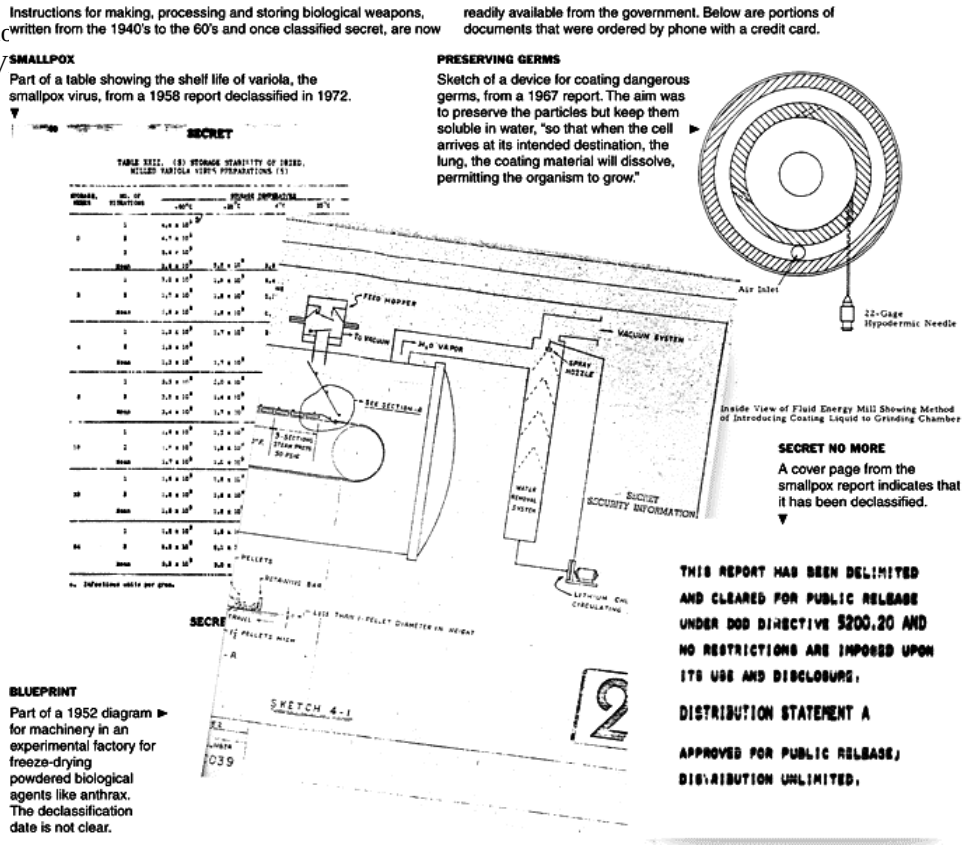

Technology has enabled terrorists to easily obtain information on the production of biological weapons. Information is readily available over the internet, mail order publishers, CD-ROM, and bookstores (see figure 4). Publications that have recipes for biological agents such as botulinum toxin and ricin include *The Poisoner's Handbook*, *Silent Death*, and the *Catalogue of Silent Tools of Justice*.[110]

Figure 4. Example of Open Source Instructions for Biological Weapon; reprinted, with permission from William J. Broad, "U.S. Selling Papers Showing How to Make Germ Weapons," *New York Times* (New York), 13 January 2002; available from http://www.nytimes.com/2002/01/13/national/13GERM.html?ex=1012472926&ei=1&en=566cca7f80d9e198; Internet; accessed on 23 January 2002.

Disperal

Dissemination can occur through several methods: explosive bombs, contamination, aerosol sprayers, and through delivery agents such as insects. Dissemination through a sprayer or even a crop duster is inexpensive and unsophisticated but presents several difficulties. These hurdles include calculating the concentration of the agent in the sprayer, determining the degradation effect the sprayer has on the agent, accounting for weather conditions, and requisite dosage calculations for the desired effect on the target.

Prior to the anthrax attacks following the 11 September 2001 World Trade Center destruction, expert opinions varied on the likelihood of terrorist successfully employing biological weapons against the U.S. homeland. Experts like Jonathon Tucker, the Director of the Chemical and Biological Nonproliferation Program Center for Nonproliferation Studies, admitted in testimony before the U.S. Senate Committee on Governmental Affairs that the history of biological employment shows that only a few terrorists acquired and used unconventional weapons "and nearly all have encountered major technical hurdles in doing so."[111] However, the anthrax mailed to U.S. Senate Majority Leader Tom Daschle's office in the fall of 2001 contained dried spores that had been milled to a fine power and processed with chemical additives so they could become easily airborne and infect people through inhalation. Tucker concluded that the perpetrator had "access to special military technology and know how related to the 'weaponization' of anthrax . . . [and now had] the potential to disseminate large quantities of dried anthrax spores through the air, potentially exposing thousands of people."[112]

Historical Examples of Biological Agent Employment

There are other instances where non-state actors have employed biological agents in the U.S. They include the following:

1. In September 1984, an estimated 751 residents of The Dalles, Oregon became ill when members of cult led by Bhadwan Shree Rajneesh contaminated salad bar restaurants with salmonella bacteria to influence a local election.[113]

2. In August 1994, Douglas Baker and Leroy Wheeler, both associated with the Minnesota Patriots Council (right wing militia group) were arrested for possession of .7 grams of ricin (enough to kill at least 129 persons) along with a home-made delivery system, allegedly part of a plan to murder Internal Revenue Service agents, U.S. Marshals, and local deputy sheriffs.[114]

3. In 1996, twelve Dallas, Texas employees became ill after someone contaminated their cafeteria food with Shigella dysenteraie type 2.[115]

These examples are by no means exhaustive. As discussed earlier in chapter 4, the Stimson Center study identified 93 cases where perpetrators had used biological substances in the U.S.

Chemical Capabilities

Chemical weapons fall into four basic categories: blister, blood, choking, and nerve agents. Blister agents, such as mustard gas or lewsite, destroy exposed skin tissue. Blood agents like hydrogen cyanide or chloride, can block oxygen circulation in the body when inhaled. Choking agents inflame the bronchial tubes and lungs possibly causing asphyxiation and include agents such as phosgene and chlorine. Finally, nerve agents like tabun, sarin, VX, or soman can short circuit the nervous system causing respiratory failure and death within minutes. Chemical agents can be colorless, odorless liquids or pungent, oily fluids. Most chemical agents are non-persistent and dissipate quickly when released. Others, including VX and mustard gas, are much more persistent, posing long-term health and environmental concerns. Of the four categories, the nerve agents are the deadliest, as they are one hundred to one thousand times more lethal than pesticides.[116] Weaponization of these toxic liquid and gaseous substances occurs when able to be dispersed in bombs, rockets, missiles, artillery, mines, grenades, or spray tanks.[117]

Acquisition and Production

Of the two weapon types, "chemical weapons are the easiest to acquire."[118] In addition to manufacturing chemical agents and weapons on their own, there are other ways terrorists can acquire chemical agents and weapons. They include direct use of commercially-available poisons; the theft of chemical munitions held by the military; or the receipt of ready-made chemical weapons from a state sponsor.[119]

Chemical warfare agents are produced by reacting precursors in an appropriate ratio and in a prescribed manner. Many of the chemicals and much of the equipment required for production is available commercially due to their dual-purpose nature. For example, the chemicals used in the production of nerve agents are commodity chemicals used in the commercial industry at a level of millions of tons per year and "impossible to control", and there are over forty manufacturers worldwide that produce one of its key precursors, prosperous trichloride.[120] Table 8 shows the commercial uses for chemical ingredients of the primary warfare agents.

Table 8. Dual Use Chemicals

Dual-use chemical	**Chemical Weapon Agent**	**Commercial product**
Thiodiglycol	Sulfur mustard	Plastics, dyes, inks
Thionyl chloride	Sulfur mustard	Pesticides
Sodium sulfide	Sulfur mustard	Paper
Phosphorus oxychloride	Tabun	Insecticides
Dimethylamine	Tabun	Detergents
Sodium cyanide	Tabun	Dyes, pigments, gold recovery
Dimethyl methylphosphonate	G Agents	Fire retardant
Dimethyl hydrochloride	G Agents	Pharmaceuticals
Potassium bifluoride	G Agents	Ceramics
Diethyl phosphite	G Agents	Paint solvent

Source: Office of Technology Assessment, *Technology Underlying Weapons of Mass Destruction*, (Washington, DC: GPO, December 1993), 29.

A wide variety of chemicals are used in both research and industry and "can be ordered in small quantities for domestic delivery without arousing undue suspicion."[121] However, there are several controls in place to regulate the export of chemical precursors such as the efforts put forward by the Chemical Weapons Convention and the Australia Group. The Chemical Weapons Convention requires reporting by certain production facilities, such as those that use more than 30 metric tons of dual-use chemicals, and of certain amounts and types of agents, such as when reaching the threshold of 100g for military chemical warfare agents that have no commercial use.[122] The Australia Group is an entity of thirty nations that attempts to enforce export controls on chemical precursors and production equipment to thwart proliferation; it currently has fifty chemicals under export control.[123] However, the Australia Group controls cannot prevent non-member countries from selling precursor chemicals nor prevent terrorists from circumventing export controls. For example, they can purchase relatively small amounts of precursors from multiple sources or manufacture precursor chemicals from compounds whose export are not controlled or come from domestic sources.[124]

Technological Knowledge

Unlike with biological weapons, there appears to be widespread consensus among the experts on the skill level necessary for the production of a chemical agent; a graduate student in chemistry.[125] As with education in biology, the number of advanced degrees in chemistry are increasing as well. As table 9 depicts, the number of masters degrees in chemistry earned annually in the U.S. has increased by 123 percent from 1966 to 1996, and doctoral degrees by 134 percent during the same period.[126] Universities awarded a total of 15,134 chemistry degrees in 1996 alone. The Office of Technology Assessment remarked that the "substantial pool of Western or Western trained scientists, engineers and technicians has successfully been tapped for

years by Third World states eager to acquire their expertise for . . . chemical and other weapon projects."[127] The expertise is not only available but so is the information.

The literature on chemical warfare and chemical agents has evolved very little over the last fifty years and there is a wealth of open source literature. The Office of Technology Assessment noted the "[c]urrent-generation mustard and nerve agents are based on scientific discoveries made during and between the two World Wars, and there have been few major innovations since then in either basic chemicals or manufacturing methods."[128] The formulas for manufacturing nerve agents and mustard gas are readily available in various scientific texts and come from good sources as in the case of the formula for VX which the U.S. Defense Department declassified in 1971.[129]

Table 9. U.S. Chemical Science Degrees Award, 1966-1996

Bachelor's				Master's				Doctoral			
Year	Total	Year	Total	Year	Total	Men	Total	Year	Total	Men	Total
1966	9,735	**1982**	11,316	**1966**	1,839	**1982**	1,758	**1966**	1,594	**1982**	1,680
1967	9,872	**1983**	11,039	**1967**	1,831	**1983**	1,632	**1967**	1,773	**1983**	1,758
1968	10,847	**1984**	10,912	**1968**	2,014	**1984**	1,677	**1968**	1,803	**1984**	1,765
1969	11,807	**1985**	10,701	**1969**	2,070	**1985**	1,734	**1969**	1,967	**1985**	1,836
1970	11,617	**1986**	10,317	**1970**	2,146	**1986**	1,764	**1970**	2,238	**1986**	1,903
1971	11,183	**1987**	9,830	**1971**	2,284	**1987**	1,750	**1971**	2,211	**1987**	1,975
1972	10,721	**1988**	9,158	**1972**	2,259	**1988**	1,702	**1972**	2,019	**1988**	2,015
1973	10,226	**1989**	8,822	**1973**	2,230	**1989**	1,800	**1973**	1,855	**1989**	1,970
1974	10,525	**1990**	8,289	**1974**	2,138	**1990**	1,711	**1974**	1,797	**1990**	2,100
1975	10,649	**1991**	8,461	**1975**	2,006	**1991**	1,676	**1975**	1,776	**1991**	2,194
1976	11,107	**1992**	8,829	**1976**	1,796	**1992**	1,791	**1976**	1,624	**1992**	2,214
1977	11,322	**1993**	9,109	**1977**	1,775	**1993**	1,853	**1977**	1,571	**1993**	2,137
1978	11,474	**1994**	9,641	**1978**	1,892	**1994**	2,010	**1978**	1,544	**1994**	2,257
1979	11,643	**1995**	10,016	**1979**	1,765	**1995**	2,105	**1979**	1,566	**1995**	2,162
1980	11,446	**1996**	10,713	**1980**	1,733	**1996**	2,273	**1980**	1,538	**1996**	2,148
1981	11,540			**1981**	1,667			**1981**	1,612		

Source: National Science Foundation, *Science and Engineering Degrees: 1966-1996*, NSF 99-332, (Arlington, VA: NSF. 1999), Table 37

Dispersal

Chemical agents can be disseminated through aerosol sprays or explosive munitions, however it is also possible through contamination of food or water as well. Most experts discount the latter method of contamination because of the large dose necessary for effective use. As an example, if each member of a community of 20,000 were to drink 16 ounces of water from a four billion gallon reservoir, it would require in excess of 14 billion lethal doses to deliver one dose per person and if the best suited chemical agent were used, it would require 600 metric tons.[130]

Today, chemical additives can be added to chemical warfare agents in order to overcome some of the hurdles to effective employment. They include stabilizers, freezing point depressants, and thickeners.[131] Additionally, many of the design specifications for munitions and aerosol sprayers can be found in open literature.[132] However, as Smithson noted, delivery through explosive munitions is difficult without any engineering skills as the exploding charge will usually be too slight for correct dissemination or too much causing destruction of the agent. Aerial dispersal by crop dusters or sprayers mounted on trucks or boats is difficult because weather conditions such as temperature, wind speed, and inversion conditions prevent achieving the right concentration and being able to maintain it long enough for inhalation.

A U.S. Defense Department model shows that releasing ten kilograms (22 pounds) of sarin into the open air under favorable weather conditions covers about one-hundredth of a square kilometer with lethal effects.[133] Since population densities in U.S. urban areas are typically around 5,000 people per square kilometer, that type of attack would kill about 50 people. Releasing 100 kilograms (220 pounds) of sarin into the open air affects about ten times as much area and therefore would kill approximately 500 people. Releasing 1,000 kilograms (2,200

pounds) into the open air would cover several square kilometers, killing about 10,000 people. Therefore, it would take an open-air attack using amounts close to 1,000 kilograms of sarin to produce destructive effects greater than attainable by such traditional terrorist means as conventional explosives. One way for terrorists to overcome these problems would be to carry out an attack in an enclosed space, such as a domed stadium, office building, or subway system.

It is also possible that terrorists may employ chemical agents through binary munitions where two separate canisters filled with nontoxic precursor chemicals are mixed either manually or automatically at the last minute to produce a lethal agent.[134] Aum Shinrikyo attempted to use a binary device to produce cyanide gas in an attack previous to the one on 20 March 1995, but the device was discovered before it could produce a lethal concentration.[135] In the final analysis, developing a means to disseminate chemical agents effectively and cause mass casualties is likely to prove a far greater challenge to terrorists than is producing the agent itself.[136]

Historical Employment of Chemical Agents

Despite the technical hurdles to employing chemical weapons, non-state actors have done it. In the debate surrounding chemical terrorism, experts get fixated on the mass casualty aspect. Consequently, some experts argue that the 1995 Aum Shinryko sarin attack was the first terrorist attack using chemical weapons and achieving mass casualties. This solely depends on how mass casualties are defined; some experts argue it is a hundred, others a thousand. This study continues its assertion that it is a chemical weapon's ability to be employed as a weapon of mass effects that make it desirable to terrorists. Examples include the following:

1. In April 1946, a small team of Jewish holocaust survivors, members of the group DIN, in a plan to track down and kill World War II Nazis, successfully infiltrate a U.S. prisoner of war camp at Stalag 13 outside Nuremberg and spread an arsenic-based poison on loaves of bread. Hundreds were reportedly killed and 2,283 injured with 207 hospitalized.[137]

2. In November 1978, 900 members of the People's Temple, followers of cult leader Jim Jones, committ mass suicide by drinking cyanide laced kool-aid.

3. On New Year's Eve 1994, nine Russian soldiers and six civilians in Tajikistan reportedly died after drinking cyanide-laced champagne and fifty-three others were hospitalized.[138]

4. In May 1994, Judge Kevin Duffy asserts that the perpetrators of the 1993 World Trade Center bombing incorporated sodium cyanide into the bomb with the intent to generate deadly hydrogen cyanide to kill everyone in the towers.[139]

Final Thoughts on the Nature of the Threat

Prior to the anthrax attacks following the 11 September 2001 World Trade Center destruction, expert opinions varied on the likelihood of terrorist employment of chemical or biological weapons against the U.S. homeland. However, most conceded that the true measure of likelihood lay not so much in the motivations but in the capabilities to launch such an attack. Experts like Jonathon Tucker, the Director of the Chemical and Biological Nonproliferation Program Center for Nonproliferation Studies, admitted in testimony before the U.S. Senate Committee on Governmental Affairs that the history of chemical and biological employment shows that only a few terrorists acquired and used unconventional weapons "and nearly all have encountered major technical hurdles in doing so."[140] However, the anthrax mailed to U.S. Senate Majority Leader Tom Daschle's office in the fall of 2001 contained dried spores that had been milled to a fine powder and processed with chemical additives so they could become easily airborne and infect people through inhalation. Tucker concluded that the perpetrator had "access to special military technology and know how related to the 'weaponization' of anthrax . . . [and had] the potential to disseminate large quantities of dried anthrax spores through the air, potentially exposing thousands of people."[141]

Experts would not argue with the fact terrorists in the past have been capable of employing chemical and biological weapons as demonstrated throughout this chapter. However, they would assert terrorists lack the capability to employ them as weapons of mass destruction causing tens and hundreds of thousands of casualties. In fact, as previously mentioned in chapter 2, both the Gilmore commission and Smithson conclude the most likely scenario is a small scale attack using a chemical agent, although biological is more deadly, in an enclosed area such as a building or arena, causing deaths on a magnitude of a few hundred, not thousands. Smithson finds that "[t]aken together, the technical realities, actual case histories, and statistical record of terrorist behavior with chemical and biological substances undercut the rhetoric considerably and point not to catastrophic terrorism but to small attacks where a few, not thousands, would be harmed."[142] This study argues that it is not the ability to kill a few hundred or even a few thousand people that make chemical or biological weapons desirable to terrorists. It is their ability to be used as weapons of mass effects that make the not if, but when school of thought the realist view rather than the alarmist view. As shown throughout this chapter, chemical and biological agents are not only capable of causing death and injuries, but can also cause panic, contamination of working and living areas, damage to society's psychology and economy, create a loss of U.S. strategic position, and perhaps undesirable political change as the government responds to protect its citizens.

There may remain those insistent on believing terrorists cannot overcome the scientific, technical, or financial hurdles and who refuse to accept the likelihood of a small scale chemical or biological attack. For those, this study suggests there is still the reality of terrorists interested in harming large numbers of persons by engineering a chemical disaster using conventional means, such as a bomb, to attack an industrial plant or storage facility. Common industrial and agricultural chemicals can be as highly toxic as conventional chemical weapons and the 1984 Bhopal, India catastrophe demonstrated their effectiveness when unleashed on a nearby populace.

In that incident, a disgruntled employee at a pesticide plant precipitated an explosion in one of the storage tanks by simply adding water to it causing a massive release of *methyl isocyanate* that affected thousands of people. Four months later, some 1,430 persons were reported to have died as a direct result of the leak--a figure that increased to 3,800 as reported by Indian officials seven years later.[143] The government also listed a total of 11,000 persons as having been disabled or harmed from exposure to the gas.[144]

Necessary Functions As a Result of a Terrorist Chemical or Biological Attack

The nature of a terrorist chemical or biological attack necessitates the execution of specific functions by local, state, and federal agencies for successful response and recovery from the incident. In order to determine those necessary functions, this analysis evaluates two real world events--the 1995 Aum Shinrikyo sarin attack and the 1999 West Nile virus outbreak in New York--and two simulated attacks--exercises Dark Winter and TOPOFF. For this study, a function is an assigned duty, task, responsibility, or mission in a general sense.[145] For example, directing DOD to provide a helicopter for medical evacuation is an assigned task. The corresponding function would be patient evacuation.

This analysis is not an assessment of either the real world events or the simulated exercises, but rather a review of lessons learned coming from participants, exercise officials, and experts. This step is critical in order to conduct the study's first test that compares the roles prescribed to DOD against the roles necessary as a result of a chemical or biological terrorist attack against the homeland.

This study examines two training exercises and two real world event to reveal the necessary functions as a result of a chemical and biological terrorist attack: exercises TOPOFF and Dark Winter, the 1999 West Nile virus outbreak in New York, and the 1995 Aum Shinrikyo sarin attack.

Exercise TOPOFF was a no-notice exercise conducted by the Department of Justice to test the readiness of top government officials to respond to terrorist attacks directed at multiple geographic locations.[146] The exercise occurred in May 2000 in three cities simulating a chemical event in Portsmouth, New Hampshire, a radiological event in the Washington, D.C. area, and a biological event in Denver, Colorado. The focus of this analysis is on the biological event that consisted of a terrorist aerosol release of *Yersinia pestis*, a bacteria that causes plaque. Exercise participants included local, state, and federal officials and agencies including state and local health departments, the Center for Disease Control, hospitals, FEMA, government officials, and public health services. Upon termination of the exercise after 4 days, reports show the occurrence of 3,700 cases claiming 950 lives.

Exercise Dark Winter intended to simulate the U.S. reaction to the deliberate, covert introduction of smallpox in three states in order to examine the national security, intergovernmental, and information challenges of a biological attack against the homeland.[147] Sponsored by four organizations--Center for Strategic and International Studies, the Johns Hopkins Center for Civilian Biodefense Studies, the ANSER Institute for Homeland Security, and the Oklahoma City National Memorial Institute for the Prevention of Terrorism--the exercise spanned fourteen days that began with the confirmation of three reported cases of smallpox in Oklahoma, Georgia, and Pennsylvania. At the conclusion of the exercise, the disease spread to 25 states and 15 countries with 16,000 reported cases.[148]

The New York West Nile virus outbreak began in June 1999 as two separate investigations: one of sick people, the other of dying birds. Investigation started quickly after a physician at a local hospital reported the first case. The ongoing investigation involved the efforts of local, state, and federal public health agencies and research laboratories. After several weeks, the separate bird and human investigations converged and after exhaustive laboratory research the virus was correctly identified. In the end, there were seven dead and sixty-two

confirmed cases.[149] Although a relatively small outbreak in terms of human cases, it taxed the federal, state and local laboratory resources to the point that officials indicated the Center for Disease Control would have been unable to respond to another outbreak had one occurred at the same time.

On 20 March 1995, the Japanese cult Aum Shinkrikyo launched a sarin attack in a Japanese subway that ultimately killed twelve people and injured many others leading many experts and analysts to conclude terrorism had entered a new era with the first non-actor employment of a chemical weapon as a weapon of mass destruction.[150] Around eight o'clock in the morning, five Aum members, using their umbrella tips, punctured eleven small plastic bags containing a grand total of 159 ounces of sarin on five separate subways that would all converge on the station at Kasumigaseki. Acting on an insider tip, the cult picked this station and time in order to thwart a raid by Japan's National Police Agency and Self Defense Forces on its compound in Kamikuishiki planned for 22 March 1995. Within minutes, the first passengers exited the cars convulsing, coughing, vomiting. The purpose of this subsection is not to review in great detail the anatomy of the 20 March 1995 cult attack, nor discern what lessons learned in the Tokyo response may or may not be applicable for a U.S. response to a similar attack. Rather the purpose is to review the lessons learned in order to highlight the functions required to respond and recover from a terrorist chemical attack.

The response functions necessitated by the attacks that occurred during exercises Dark Winter and TOPOFF, the 1999 West Nile virus outbreak, and the Aum Shinrikyo attack are below.

Chemical and Biological Decontamination. No decontamination occurred at the incident site of the Aum attack. Consequently, reports showed that of the 1,364 emergency medical technicians working at the incident site, 10 percent developed symptoms and had to receive treatment at the hospital themselves.[151] In a questionnaire given to the 1,063 St. Luke's Hospital

staff, 23 percent revealed at least mild sarin symptoms.[152] After the incident, Tokyo government officials moved quickly to restore public confidence by deploying the Self Defense Force to decontaminate the affected subway trains and stations.[153] By late in the evening on 20 March, the subway system was back to normal service.

Communication. The ability to rapidly and reliably communicate among health departments, and agencies at the local, state, and federal level is imperative for effective decision making and coordination.[154] During the West Nile virus outbreak, officials indicated that the lack of sufficient and secure channels for communication among the large number of agencies involved prevented them from sharing information efficiently. New York City's local health departments could not share laboratory results with the Center for Disease Control nor use its disease database because it lacked secure electronic communication.[155] Exercise TOPOFF demonstrated the need for hospitals to be able to efficiently communicate with and receive support from other hospitals; emergency management and public safety agencies; and local, state, and federal officials.[156]

The Aum case bears out similar communication problems found during the TOPOFF and Dark Winter exercises. Regular communications channels were clogged, consequently, rescue vehicles could not get through to the ambulance dispatch center in order to determine what hospitals could receive patients.[157] Inside the hospitals, communications were also hampered. At St. Luke's hospital, calls between departments were impossible and response personnel resorted to yelling down hallways or physically finding the person in order to talk.[158]

Coordination. During the Aum attack, emergency response personnel were unfamiliar with the assistance that arrived from the Self Defense Forces creating command and control confusion and lead to a less coordinated response.[159]

Epidemiological Investigation. This function includes making assessments of vector-borne diseases, conducting field investigations to include the collection and laboratory analysis of

relevant samples, and studying health/disease patterns and the factors influencing those patterns.[160] Both exercises and the West Nile virus outbreak identified the requirement to determine the nature of the outbreak quickly in order to recommend actions such as protection and containment strategies. Exercise TOPOFF suggests a biological terrorist attack needs more than the normal epidemiological investigation because there is not adequate time for research when thousands are waiting for prophylaxis.[161] During Dark Winter, officials concluded that contact tracing was effectively impossible as a ratio of 100 contacts to every confirmed case resulted in 1.6 million contacts after 11 days into the smallpox epidemic.[162] The GAO found the epidemiological investigation during the 1999 West Nile virus outbreak in New York taxed the resources of one of the nation's largest health departments despite the fact the outbreak was relatively small and that the Institute of Medicine found this would happen across the U.S.[163] Additionally, although the reporting of two cases of encephalitis to the New York Health Department led to containment of the West Nile epidemic, later investigation found that when those two cases became apparent there were already twenty other patients hospitalized with encephaliti--a recognizable and legally reportable disease.[164]

Health Worker Safety. This function includes monitoring the health and well-being of emergency workers, performing field investigations and studies addressing worker health and safety issues, and providing technical assistance and consultation on worker health and safety measures and precautions.[165] Doctors, nurses, and health officials become exhausted during a medical crisis such as a biological attack.[166] Not only is their health important for quality care, but also their safety. During both TOPOFF and Dark Winter, hospital staff were afraid to come to work because of contamination, further worsening staff shortages.[167] Exercise Dark Winter identified the need to protect healthcare workers through a combination of several methods: minimizing exposure, vaccinations, respiratory precautions, isolation rooms, and appropriate handling of infectious materials.[168]

Health and Medical Equipment/Supplies. This function entails providing health and medical equipment and supplies, including pharmaceuticals, biologic products, and blood products in support of health service operations and for restocking health and medical care facilities in an area affected by a major disaster or emergency.[169] This function is critical because hospitals have lost their surge capability and lack inventory because they and the pharmaceutical companies focus on just-in-time production and delivery creating shortages of medical supplies during crises.[170] During both exercises, hospitals reported gross inadequacy of supplies. During TOPOFF, local antibiotic supplies depleted early in the crisis creating the need for the Surgeon General and CDC to approve the release of antidotes from the National Pharmaceutical Supply.[171] Additionally, a critical medical device--ventilators--ran out requiring 1,300 to be flown to the incident site on just the second day of the exercise.[172] During Dark Winter, the depletion of smallpox vaccinations after only eleven days of the epidemic led to deadly violence as people tried to protect themselves from contamination by forcing their way into treatment facilities.[173] During the Aum attack, once the police identified the substance as sarin, St. Luke's Hospital only had enough 2-PAM and atropine sulfate on hand to treat the most serious cases.[174]

Mass Logistics. This function includes the acquisition, storage, movement, and distribution of supplies. During exercises TOPOFF and Dark Winter, transportation slow downs and the reluctance of drivers to deliver to contaminated areas resulted in shortages of milk, bread, and staples. Officials exacerbated the shortages by advising people to stay in their homes in order to contain the epidemic, thus, creating a need for the distribution of food and medicine to peoples' homes.[175] When the Emergency Epidemic Response Committee ordered the Colorado state border closed during the TOPOFF exercise, officials recognized they had no plan to feed four million people.[176] Failure to deliver such goods created civil unrest as people looted stores for food and supplies.

Civil Disturbance Support. Civil disturbances are riots, acts of violence, insurrections, unlawful obstructions or assemblages, or other disorders prejudicial to public law and order.[177] A biological attack requires authorities to manage civil unrest as panicked citizens seek medical treatment. During TOPOFF, several critical locations experienced the build-up of massive crowds to include hospitals, medical treatment facilities, antibiotic distribution points, and food stores.[178] Security at these locations became a major concern. During Dark Winter, riots occurred at a vaccination site in Philadelphia resulting in two dead with another site overwhelmed by angry citizens.[179]

Medical Care Personnel. This function involves assistance in providing triage, medical or surgical stabilization, and continued monitoring and care of patients until evacuation.[180] The health care systems lacks a surge capacity also create staffing shortages during a crisis, as it did during TOPOFF.[181] Additionally, both exercises found that some medical staff will not report to work if they are at risk of getting the lethal disease and bringing it home to their families.[182] During TOPOFF, lack of manpower to unbundle the supplies from the National Pharmaceutical Supply and repackage them for distribution created large delays.[183] There were also difficulties in effectively manning antibiotic distribution points. After the Aum attack, Japanese officials saw that chemical medical training was essential to effectively triage patients.[184] A former employee of the U.S. Army Medical Research Institute for Chemical Defense questions any local capability to triage more than 5,000 chemical casualties.[185]

Hospital Care. This function is the provision of definitive medical care to seriously injured or ill victims as a result of a chemical or biological attack and the National Disaster Medical System exists to support this need with a nationwide network of acute care hospitals.[186] During TOPOFF and Dark Winter, ill and anxious persons quickly overwhelmed hospitals and medical facilities, exacerbated by public announcements for people to seek treatment at a medical facility if they were feeling ill.[187] After three days of the TOPOFF exercise, one hospital treated

3,878 persons, of which 3,200 were just worried and did not actually have the plague.[188] Patient visits to one hospital emergency department quickly increased to ten times the usual caseload and all local hospitals "were beyond capacity in less than 24 hours of the epidemic."[189] One hospital actually dropped out of the exercise because it had so many actual patients that needed real treatment it could not spare personnel to participate in the exercise. During Dark Winter, 138 hospitals experienced unprecedented numbers of patients and 20 closed citing dangers to staff and patients.[190] In addition to lacking surge capacity, Dark Winter demonstrated that hospitals have few isolation rooms for highly contagious patients.[191] As an example, the Baltimore-Washington area has just one hundred beds for highly contagious patients.[192]

Within ninety minutes of the Aum attack, one of Tokyo's closest and largest hospitals, St. Luke's International Hospital, received five hundred patients and placed itself on emergency footing canceling routine care.[193] Medical personnel treated patients in every conceivable part of the hospital--hallways, wards, even the chapel. In all, 278 Tokyo hospitals saw 5,510 patients. However, of the 5,510 patients, approximately 85 percent were psychogenic patients, or "worried well," who had no real chemical injuries but demanded medical attention.[194] Consequently, the often quoted casualty figure of 5,500 is not representative of actual casualties. Not only is the quantity of hospital care important, but also its quality. Facilities with proper ventilation are critically important as seen in the fact that over half of the medical personnel working in the St. Luke's Hospital chapel reported agent exposure symptoms as opposed to sixteen percent of the staff working in the better ventilated emergency department.[195]

Mortuary Affairs. This function involves providing equipment and personnel for temporary morgue facilities; victim identification; and processing, preparation, and disposition of remains.[196] During TOPOFF, hospitals were unable to dispose of contaminated or infected corpses accumulating in emergency departments and wards.[197]

Disease Containment. A biological attack requires preventing the spread of the disease. The issue provoking the greatest concern during TOPOFF was the measures taken to control the spread of the epidemic.[198] Measures included antibiotic prophylaxis, isolation of individual patients in hospitals, travel advisories, and warnings to stay at home. Finally, a quarantine ordered the closure of state borders and airports, but officials could not develop a plan to enforce it.[199] Other options considered included restricting patients to dedicated facilities, assembling contacts of patients in designated sites, and providing "holding tanks" to contain healthy persons until the incubation period was over.[200] Officials considered similar options during Dark Winter but also struggled whether to make any containment measure voluntary or mandatory.[201] Containment takes on heightened importance given that vaccination inventories are insufficient. In 1972, after four decades of its disappearance, a smallpox case emerged in Yugoslavia. Josip Tito ordered the immunization of the entire country and instituted a nation-wide quarantine--the only effective ways to control a smallpox epidemic.

Disease Surveillance. This function includes actions to monitor the general population and special high-risk population segments; carry out field studies and investigations; monitor injury and disease patterns and potential disease outbreaks; and provide technical assistance and consultations on disease and injury prevention.[202] The medical and health response during the West Nile virus outbreak demonstrated the necessity for disease surveillance capabilities. The Queens physician encountering the first case reported an unusual cluster of illnesses to the New York City Health Department who followed up by interviewing patients and family members, canvassing all New York City hospitals for potential cases, and performing autopsies on the victims.[203] During TOPOFF, public officials acknowledged the importance of tracing disease contacts in order to define the scope of the outbreak and design a containment strategy.[204]

Laboratory Support. A critical support system for both epidemiological investigation and disease surveillance is the support from local, state, and federal laboratories. The West Nile virus

outbreak taxed the federal, state and local laboratory resources. Both the New York state and CDC laboratories were quickly inundated with requests for tests during the outbreak, and because of the limited capacity at the New York labs, the CDC handled the bulk of the testing. Officials indicated that the CDC laboratory would have been unable to respond to another outbreak had one occurred at the same time.[205] Despite the success in quickly identifying the West Nile virus in New York, officials pointed out the need for more laboratory capacity to identify and handle infectious agents of high concern to human health, particularly emerging or exotic ones.[206] For example, at the time of the outbreak, only two laboratories in the country had the reagents necessary to identify the West Nile virus. Additionally, the Institute of Medicine concluded that a surge capacity was needed, and that the unique and complimentary roles of public and private laboratories needed definition.[207]

The CDC found most states lacked the public health laboratory capacity to handle many of the viruses classified as dangerous and identified as high priority because of risk to national security and public health.[208] In 1999, the GAO determined the number of Biosafety Level 3 laboratories were unknown and there were only three federal Biosafety Level 4 laboratories.[209] Biosafety level 3 labs are capable of handling serious or lethal pathogens with the potential for aerosol transmission and biosafety Level 4 labs deal with pathogens that are dangerous, posing high risk of life-threatening disease and have no vaccines or drugs available for treatment.

Chemical and Biological Protection. This function provides the capability to sustain life and continue operational capability in a chemically or biologically contaminated environment.[210] In additional to medical protection, there are two types of non-medical protection: individual and collective. Individual protection consists of clothing and masks while collective protection consists of filters and air movement devices, transportable shelter systems, medical facilities, and rest and relief shelters.[211] Dark Winter showed the importance of protecting health care workers through vaccination, respiratory precautions, isolation facilities, and special equipment like

masks, gloves, and gowns.[212] Dark Winter officials also concluded transporting contagious victims around the country should be avoided.[213] Consequently, there is a requirement for transportable protection facilities, both medical and non-medical. During the Aum response, emergency medical technicians, police, and fire personnel lacked any special respirators or gas masks and wore regular work clothing.[214]

Coordination. Dark Winter demonstrated that coordination becomes more difficult as local and state bureaucracies interact with federal agencies. During Dark Winter, coordination between levels was fragmented and ineffective such as the time when authorities decided to invoke a travel restriction to assist in containing the smallpox epidemic. The required close work between local, state, and federal officials to close airports, restrict public transportation, and seal off borders between states was inadequate.[215]

Assessment. This function also includes assessing the health system and facility infrastructure, and entails deploying personnel to the incident area to determine specific health and medical needs and their priorities.[216]

Patient Evacuation. This function involves the movement of seriously ill or injured patients from the incident area to a location where definitive care is available such as a hospital or medical treatment facility. Although Dark Winter officials discouraged moving contagious patients around the nation, evacuation is a critical component of the National Disaster Medical System as patients are moved to available facilities with bed space for treatment. During the Aum attack, although area hospitals offered their assistance to St. Luke's Hospital, there was no plan or means to transport the patients between hospitals as all of the local ambulances were unavailable.[217]

Food, Drug, Medical Device Safety. This function involves actions to ensure foods, drugs, biologic products, and medical devices following a chemical or biological attack are safey. This can include seizing, removing, and/or destroying contaminated or unsafe products.[218]

Veterinary Services. This function involves providing assistance in delivering health care to injured or abandoned animals and performing veterinary preventive medicine activities following a chemical or biological attack.[219] Of over 1,700 known pathogens affecting humans, 49 percent are zoonotic, that is, capable of infecting both people and animals.[220] The response to the West Nile virus outbreak demonstrated the importance of involving the animal health community, especially in the conduct of epidemiological investigation and disease surveillance. New York City public health laboratories lacked the reagents to test birds that became ill and the U.S. Department of Agriculture labs lacked the virus reagents to test the birds specifically for the West Nile virus strand.[221] An Institute of Medicine workshop concluded that the veterinary community should not be overlooked in disease surveillance because they are familiar with biological pathogens.[222]

Potable Water/Wastewater and Solid Waste Disposal. This function involves assessing potable water and wastewater/solid waste disposal issues; conducting field investigations to include collection and laboratory analysis of relevant samples; providing water purification and wastewater/solid waste disposal equipment and supplies; and providing technical assistance and consultation on potable water and wastewater/solid waste disposal issues.[223]

Public Affairs. This function involves providing public health, disease, and injury prevention information to the general public who are located in or near the incident areas.[224] In both exercises, the media played a key role in disseminating information to the public. During TOPOFF, the media broadcast information about symptoms people should look for, treatment facility locations, and actions to take regarding containment of the disease.[225] Political figures such as local mayors and state governors appeared on broadcasts to encourage citizens to heed public health advisories and attempt to restore public confidence in government.[226] In the aftermath of the Aum attack, Japanese government officials continually used the media to assure citizens that public services, such as the subway system, were safe for use.[227] Although not the

preferred method, the media also transmitted critical information to health and medical personnel because communication channels were so jammed.[228]

Mental Health Services. This function includes making assessments and providing mental health care to victims and response personnel. Biological attacks are accompanied by fears of illness and death, as well as worries about possible genetic or congenital birth defects in offspring in the long term.[229] In the immediate aftermath of a terrorist attack, acute autonomic arousal and panic can result in both victims and first responders (firemen, policemen, medical, and hazardous material personnel) that can incapacitate the response infrastructure. Victims of the Aum attack continued to show post-incident symptoms indicative of Post Traumatic Stress Disorders. Health officials distributed questionnaires to 610 patients treated at St. Luke's International Hospital, of which 60 percent indicated signs of PTSD up to 6 months after the incident.[230] Symptoms included fear (32%), insomnia (29 percent), flashbacks (16 percent), depression (16 percent), irritation (16 percent), and nightmares (10 percent).

A 1996 University of Oklahoma study found that twenty percent of the rescue personnel at the 1995 Oklahoma City bombing required mental health treatment immediately following the incident.[231] The long term affects of a terrorist attack are also a concern. A 1992 study concluded that 30.7 percent of those severely injured in a terrorist attack, and 10.5 percent of the uninjured victims, suffered from Post Traumatic Stress Disorder (PTSD).[232]

Identified Necessary Functions

The functions necessary to respond to a chemical or biological terrorist attack (see Table 2) identified by this study are not an exhaustive listing. The evaluation of the Aum Shinrikyo sarin attack, the West Nile virus outbreak, and the TOPOFF and Dark Winter exercises occurred through a review of literature covering the lessons learned. This body of literature tends to not focus on what worked well. However, the lesson learned literature is appropriate, as this study's

focus is not only on those functions necessary when responding to a chemical or biological terrorist attack but also the adequacy of the response.

Table 10. Necessary Response Functions to a Chemical or Biological Terrorist Attack

Assessment
Chemical/Biological Contamination Avoidance
Chemical/Biological Decontamination
Chemical/Biological Protection
Civil Disturbance Support
Communication
Coordination
Disease Containment
Disease Surveillance
Dismantle, dispose, and transfer of contaminated property
Epidemiological Investigation
Food/drug/medical device safety
Health and Medical Equipment/Supplies
Hospital Care
Laboratory Support

Table 10-*continued*

Mass Logistics
Medical Care Personnel
Mental Health Services
Mortuary Affairs
Patient Evacuation
Potable Water/Wastewater and Solid Waste Disposal

Public Affairs
Technical Advice
Transportation
Veterinary Services

[1]Of the 5,510 patients seen by Tokyo's 278 hospitals, only 15 percent were real casualties; figures included in Amy E. Smithson and Leslie-Anne Levy, *Ataxia:*The Chemical and Biological Terrorism Threat and the US Response,* (Washington, D.C.: The Henry L. Stimson Center, Chemical and Biological Weapons Nonproliferation Project, October 200): 95.

[2]Richard A. Falkenrath, Robert D. Newman, and Bradley A. Thayer , *America's Achilles' Heel: Nuclear, Biological, and Chemical Terrorism and Covert Attack*, (Cambridge, MA: MIT Press, 1998), 27.

[3]Walter Laqueur, "Postmodern Terrorism," *Foreign Affairs* 75, no. 5 (September/October 1996): 34; Smithson, 68.

[4]Jeffrey D. Simon, *Terrorists and the Potential Use of Biological Weapons*, (Santa Monica, CA: RAND, December 1989), 5, R-3771-AFMIC.

[5]The RAND-St. Andrews University Chronology of International Terrorist Incidents is a computerized database of international terrorist incidents occurring worldwide from 1968 to the present. It has continuously been maintained since 1972, first by RAND, and since 1994 by the Centre for the Study of Terrorism and Political Violence at St. Andrews University in Scotland. The incidents recorded are only international terrorism, therefore, attacks such as the Basque separatist group E.T.A against Spanish targets in Spain are not recorded. All research into each incident comes from open source materials including newspapers, government reports, news transcripts, and journals.

[6]Bruce Hoffman, "Viewpoint: Terrorism and WMD: Some Preliminary Hypotheses," *The Nonproliferation Review*, volume 4, no. 3 (spring-summer 1997): 47.

[7]Bruce Hoffman and David Claridge, "The RAND-St Andrews Chronology of International Terrorist Incidents, 1996," *Terrorism and Political Violence 10*, no. 2 (summer 1998): 135.

[8]Bruce Hoffman and Donna Kim Hoffman, "The RAND-St Andrews Chronology of International Terrorist Incidents, 1995," Terrorism and Political Violence 8, no. 3 (autumn 1996): 88.

[9]Hoffman and Claridge, "RAND-St. Andrews Chronology, 1996," 136.

[10]The Gilmore Commission, *First Annual Report to The President and The Congress of the Advisory Panel To Assess Domestic Response Capabilities For Terrorism Involving Weapons Of Mass Destruction, I. Assessing the Threat* (Washington, D.C.: RAND, 15 December 1999), 8.

[11]Ibid., 8.

[12]Falkenrath, 206.

[13]Hoffman, "Viewpoint: Preliminary Hypothesis,"48.

[14]Hoffman, *Terrorism and Weapons of Mass Destruction: An Analysis of Trends and Motivations* (Santa Monica, CA: RAND, 1999), 31.

[15]Ibid., 48.

[16]Ibid.

[17]Ibid.

[18]Hoffman and Claridge, "RAND-St. Andrews Chronology, 1996, 135.

[19]All of these examples come from Hoffman, "Terrorism and Weapons of Mass Destruction: An Analysis of Trends and Motivations," 25-26.

[20]Falkenrath, 182.

[21]Hoffman, "Viewpoint: Terrorism and WMD: Some Preliminary Hypotheses," 48.

[22]Ibid., 48.

[23]Falkenrath, 184.

[24]Hoffman, "Viewpoint: Terrorism and WMD: Some Preliminary Hypotheses," 48.

[25]Brian M. Jenkins, "Understanding the Link Between Motives and Methods," *Terrorism with Chemical and Biological Weapons: Calibrating Risks and Responses*, ed. Brad Roberts (Arlington, Va.: The Chemical and Biological Arms Control Institute, 1997), 45; quoted in Smithson, 18.

[26]Hoffman, "Viewpoint: Terrorism and WMD: Some Preliminary Hypotheses, 49.

[27]Ibid., 49.

[28]Simon, 7.

[29]Hoffman and Claridge, "RAND-St. Andrews Chronology, 1996," 135.

[30]Ibid., 138.

[31]Joshua Lederberg, *Biological Weapons: Limiting the Threat* (Cambridge, MA: MIT Press, 1999), 290.

[32]Hoffman, *Trends and Motivations*," 21.

[33]Hoffman, *Terrorism and Weapons of Mass Destruction: An Analysis of Trends and Motivations* (Santa Monica, CA: RAND, 1999), 22.

[34]Simon, 12.

[35]Simon, 9.

[36]Falkenrath, 43.

[37]Ibid., 43.

[38]Simon, 6.

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[42]Ibid., 199.

[43]Ibid.

[44]Ibid., 37.

[45]Ibid.

[46]Falkenrath, 200.

[47]Hoffman, *Trends and Motivations*, 39.

[48]Ibid., 36.

[49]Ibid., 38.

[50]Ibid.

[51]Ibid., passim.

[52]Falkenrath, 200.

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[54]Michael Moodie, testimony before the Subcommittee on International Security, Proliferation and Federal Service Committee on Governmental Affairs, Washington, D.C, 7 November 2001; available from; http://www.senate.gov/~gov_affairs/110701moodie.htm; Internet; accessed on 10 November 2001.

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[63]Smithson, 57-69.

[64]Ibid., 62.

[65]Ibid., 64.

[66]Falkenrath, 205.

[67]Ibid., 45.

[68]Ibid., 205.

[69]Gilmore Commission, *First Annual Report,* 10.

[70]Simon, 8.

[71]Falkenrath, 7.

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[157]Smithson, 92, 109.

[158]Smithson, 96.

[159]Smithson, 109.

[160]FEMA, *Federal Response Plan (1999),* ESF #8-10; Government Accounting Office, "West Nile Virus Outbreak: Lessons for Public Health Preparedness," GAO/HEHS-00-180. (Washington, D.C. 11 September 2000), passim.

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[162]John Hopkins Center, *Final Script--Dark Winter*, 43.

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[164]Donald A. Henderson, "Hearing on the Threat of Bioterrorism and the Spread of Infectious Diseases," testimony before the U.S. Senate Foreign Relations Committee, Washington, D.C., 5 September 2001; available from http://www.hopkins-biodense.org/pages/library/spread.html; Internet; accessed on 29 November 2001.

[165]FEMA, *Federal Response Plan (1999)*, ESF #8-10.

[166]John Hopkins Center, *Final Script—Dark Winter*, 24.

[167]John Hopkins Center, *Final Script—Dark Winter*, 24; Inglesby, "Observations from TOPOFF," 438.

[168]John Hopkins Center, *Final Script—Dark Winter*, 15.

[169]FEMA, *Federal Response Plan (1999)*, ESF #8-9.

[170]Henderson, Testimony.

[171]Inglesby, "Observations from TOPOFF," 440.

[172]Inglesby, "Observations from TOPOFF," 438.

[173]John Hopkins Center, *Final Script—Dark Winter*, 39.

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[181]John Hopkins Center, *Final Script—Dark Winter*, 11.

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[187]Inglesby, "Observations from TOPOFF," 438; John Hopkins Center, *Final Script—Dark Winter*, 24.

[188]Inglesby, "Observations from TOPOFF," 441.

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[191]John Hopkins, Final Script— John Hopkins Center, *Final Script—Dark Winter*, 10.

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[195]Ibid., 99.

[196]FEMA, *Federal Response Plan (1999)*, ESF #8-10.

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[211]Ibid., 41-42.

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[213]John Hopkins Center, *Final Script—Dark Winter*, 34.

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[219]Ibid., ESF #8-10.

[220]Government Accounting Office, *West Nile Virus Outbreak*, 23.

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[224]Ibid., ESF #8-9.

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CHAPTER 5

KNOW YOURSELF

Introduction

After a chemical or biological terrorist attack against the homeland, FEMA is responsible for managing the consequences of the attack by coordinating support to protect public health and safety, restore essential government services, and provide emergency relief to affected governments, businesses, and individuals. When state and local capabilities are overwhelmed, support comes from federal departments and agencies. FEMA coordinates that federal response through the *Federal Response Plan* (*FRP*) that outlines the responsibilities for all supporting federal agencies, including DOD.

There other federal response plans that may be activated in lieu of, prior to, or in conjunction with the *FRP* during a chemical or biological terrorist attack against the homeland. They include the EPA's *National Oil and Hazardous Substances Pollution Contingency Plan*, the DHHS *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorist*, and the FBI's *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan*. Additionally, there are national strategic documents impacting the federal response including the Defense Against Weapons of Mass Destruction Act of 1996, Presidential Decision Directives (PDD-39, PDD-62, and PDD-63) and Executive Orders (EO 12656 and EO 13228). This subsection outlines DOD's prescribed role by examining the tasks specified in the *FRP*, the supporting federal agency response plans, and the other documents comprising the national emergency and disaster strategy regarding terrorism.

Prescribed Roles

Federal Response Plan

The April 1999 *FRP* establishes the "process and structure for the systematic, coordinated, and effective delivery of [f]ederal assistance to address the consequences of any

major disaster or emergency" declared under the 1988 Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act).[1] The *FRP* enumerates the fundamental policies, planning assumptions, concept of operations, response (saving lives, protecting property, and meeting basic human needs) and recovery (restoring the disaster-affected area) actions, and responsibilities for twenty-seven federal departments and agencies, including the DOD. It describes the array of federal assets available to augment state and local efforts to "save lives; protect public health, safety, and property; and aid affected individuals and communities in rebuilding after a disaster."[2]

The Stafford Act and Executive Orders 12148 (Federal Emergency Management) and 12656 (Assignment of Emergency Preparedness Responsibilities) establish the FEMA primarily responsible for "coordinating [f]ederal emergency preparedness, planning, management, and disaster assistance functions."[3] In response to that role, FEMA first developed the *FRP* in April 1992 and designed it to address a generic disaster or emergency where federal assistance augments state and local efforts. The plan's purpose was to "facilitate the delivery of all types of [f]ederal response assistance to states to help them deal with the consequences of significant disasters."[4]

Within the plan, the federal agency roles are found in the *FRP*'s Emergency Support Function (ESF) Annexes and its Incident Annexes. The ESFs describe the mission, policies, concept of operations, and responsibilities of the primary and support agencies involved in the implementation of key response functions that supplement state and local activities. The twelve ESFs are: Transportation (#1), Communications (#2), Public Works and Engineering (#3), Firefighting (#4), Information and Planning (#5), Mass Care (#6), Resource Support (#7), Health and Medical Services (#8), Urban Search and Rescue (#9), Hazardous Materials (#10), Food (#11), and Energy (#12). The Incident Annexes describe the mission, policies, concept of operations, and responsibilities in specific events that require a unified response under the *FRP*

and when one or more other federal plan that implement authorities and functions outside the scope of the Stafford Act can be invoked. The Terrorism Incident Annex is the first in a series of anticipated incident annexes. Because FEMA specifically wrote the Terrorist Incident Annex to address the federal response to terrorist acts, to include those involving chemical and biological weapons, it is the start point for this study.

Terrorist Incident Annex

FEMA developed the Terrorist Incident Annex in 1997 in response to President Clinton's Presidential Decision Directive-39 (PDD-39); establishing the U.S. policy on counterterrorism. PDD-39 announces the U.S. will "deter, defeat, and respond vigorously to all terrorist attacks on our territory and against our citizens, or facilities, whether they occur domestically . . . or on foreign territory."[5] Specifically, it charges FEMA to "ensure that the Federal Response Plan is adequate to respond to the consequences of terrorism directed against large populations in the United States, including terrorism involving weapons of mass destruction."[6] PDD-39 also states that FEMA shall ensure that the *FRP* is adequate to respond to the consequences of terrorism, referred to as consequence management.

The federal response to a terrorist incident has two components, crisis management and consequence management. Crisis management is predominantly a law enforcement agency response with the Department of Justice as the lead federal agency and includes "measures to identify, acquire, and plan the use of resources needed to anticipate, prevent, and/or resolve a threat or act of terrorism."[7] Consequence management is the measures taken "to protect public health and safety, restore essential government services, and provide emergency relief to governments, businesses and individuals affected by the consequences of terrorism.[8] The *FRP* recognizes that crisis and consequence management operations may occur concurrently in response to a terrorist incident (see figure 5).[9] Because PDD-39 establishes FEMA as the Lead

Federal Agency (LFA) for consequence management, the agency eventually included the Terrorist Incident Annex in the 1999 version of the *FRP*.

One scenario outlined in the Terrorist Incident Annex includes terrorist employment of weapons of mass destruction, defined as any explosive, poison gas, weapon involving a disease organism, or any weapon designed to release radiation or radioactivity at a level dangerous to human life.[10] Consequently, the Terrorist Incident Annex outlines the roles and responsibilities for the primary federal agency, FEMA, and supporting agencies--DOD, Environmental Protection Agency (EPA), Department of Health and Human Resources (DHHS), and Department of Energy (DOE)--responding to a terrorist incident involving a chemical or biological weapon. The *FRP* Terrorist Incident Annex specifies the following two roles for DOD:

1. Activating technical operations capabilities to support the federal response to threats or acts of weapon of mass destruction terrorism (note: technical operations include actions to "identify, assess, dismantle, transfer, dispose of, or decontaminate personnel and property exposed to explosive ordnance or weapons of mass destruction."[11])

2. Coordinating military operations within the U.S. with the appropriate civilian lead agency(ies) for technical operations[12]

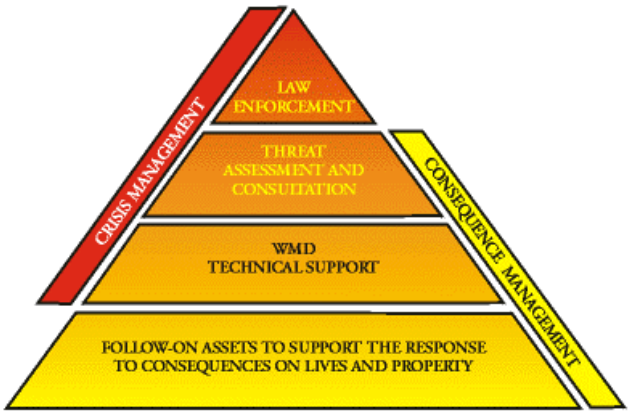

Figure 5. Crisis and Consequence Management Relationship. Reprinted from Federal Emergency Management Agency, *Federal Response Plan* (Washington, D.C.: April 1999), TI-2

Not only does the *FRP* Terrorist Incident Annex include roles for DOD, but also for the EPA, DHHS, and DOE. Since the DOE role is in response to nuclear or radiological attacks, they are not relevant to this study. However, because the EPA and the DHHS have significant responsibilities in response to a terrorist attack using a chemical or biological weapon that impact DOD, their roles require further investigation.

The EPA and DHHS are both lead agencies for ESFs specifically mentioned in the *FRP* Terrorist Incident Annex and they are both responsible for federal response plans that may be executed concurrently with the *FRP*. The two ESFs and agency response plans have roles for the DOD. The EPA is the lead agency for both ESF #10, Hazardous Materials Annex, and its own response plan, the *National Oil and Hazardous Substance Pollution Contingency Plan* (*National Contingency Plan*). The DHHS is the lead agency for both ESF #8, Health and Medical Services Annex, and its response plan, the *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism* (referred to as the *Health and Medical Services Support Plan* throughout the remainder of the study).

Consequently, this study also focuses on the DOD roles specified in the two *FRP* ESFs specifically mentioned in the Terrorist Incident Annex--the Hazardous Materials Annex and Health and Medical Services Annex. Additionally, it examines the specified DOD role in responding to a chemical or biological terrorist attack in the two other federal response plans specifically mentioned in the *FRP* Terrorist Incident Annex--the *National Contingency Plan* and the *Health and Medical Services Support Plan*. The study also examines the DOD role in another federal response plan that may also operate concurrently with the *FRP* as part of the National Disaster Response Framework--the FBI's *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan*.[13]

Emergency Support Function #10: Hazardous Materials Annex

Activation of the Terrorist Incident Annex may require ESF #10 assistance during both crisis management and consequence management.[14] The *FRP*'s Hazardous Materials Annex (ESF #10) provides for a coordinated response to actual or potential discharges and/or releases of hazardous materials and includes the "appropriate response actions to prevent, minimize, or mitigate a threat to public health, welfare, or the environment caused by actual or potential hazardous materials incidents."[15] The 1999 version of the *FRP* expanded its definition of hazardous materials to include "certain chemical, biological, and other weapons of mass destruction."[16] Planned responses under ESF #10 can include, but are not limited to, household hazardous waste collection, debris disposal, water quality monitoring and protection, air quality sampling and monitoring, and protection of natural resources. There are two DOD roles directed in ESF #10:

1. Direct response actions for releases of hazardous substances from DOD vessels, facilities, and vehicles

2. Provide personnel and equipment to other federal organizations and state and local governments (such as SUPSALV [Navy Supervisor of Salvage]), as requested, if consistent with DOD operational requirements[17]

Incredibly, the DOD role in ESF #10 did not change from the 1992 version of the *FRP* when updated in 1999, despite the inclusion of chemical and biological weapons of mass destruction in its definition of hazardous materials. This point may demonstrate the lack of agency effort in developing a coordinated and thoughtful response to a chemical or biological terrorist attack. Further evidence includes the fact that the two tasks contained in ESF #10 do not differ much from those specified in the EPA's *National Contingency Plan*.

Emergency Support Function #8: Health and Medical Services Annex

As with ESF #10, activation of the Terrorist Incident Annex may require Health and Medical Services Annex (ESF #8) assistance during consequence management. The Health and Medical Services Annes provides coordinated federal assistance to supplement state and local resources when a major disaster or emergency require a response to public health and medical care needs.[18] As the primary agency for ESF #8, DHHS coordinates and provides the overall public health response; triage, treatment, and transportation of victims of the disaster; and evacuation of patients out of the disaster area, as needed, into a network of hospitals operated by the military services, Veterans Affairs, and non-federal organizations.[19] The federal response is categorized into fifteen functional areas: assessment of health, medical needs; health surveillance; medical care personnel; health, medical equipment and supplies; patient evacuation; in-hospital care; food, drug, medical device safety; health worker safety; radiological, chemical, biological hazards consultation; mental health care; public health information; vector control; potable water, wastewater and solid waste disposal; victim identification, mortuary services; and veterinary services.[20] The DOD has responsibilities under ESF #8 as both a support agency and a partner in the National Disaster Medical System (NDMS). The ESF #8 specifies the following fourteen responsibilities for DOD:

1. Alert the Global Patient Movement Requirements Center (GPMRC) to provide DOD National Disaster Medical System (NDSM) Federal Coordinating Centers (Army, Air Force, and Navy) and Veteran's Affairs NDMS FCCs [Federal Coordinating Centers] reporting/regulating instruction to support disaster relief efforts

2. Alert DOD NDMS FCCs to activate NDMS area operations/patient reception plans; initiate bed reporting based on GPMRC [Global Patient Movement Requirements Center] instructions

3. In coordination with NDMSOSC [National Disaster Medical System On-Scene Coordinator], evacuate and manage patients as required from the disaster area to NDMS patient reception areas

4. In coordination with Department of Transportation and other transportation support agencies, transport medical personnel, equipment, and supplies into the disaster area

5. Provide logistical support to health/medical response operations

6. Provide Active Duty medical units for casualty clearing/staging and other missions as needed, including aeromedical evacuation; mobilize and deploy Reserve and National Guard medical units, when authorized and necessary to provide support

7. Coordinate patient reception and management in NDMS areas where military treatment facilities serve as local NDMS FCCs

8. Provide military medical personnel to assist Department of Health and Human Services in activities for the protection of public health (such as food, water, wastewater, solid waste disposal, vectors, hygiene, and other environmental conditions)

9. Provide available DOD medical supplies for distribution to mass care centers and medical care locations being operated for disaster victims

10. Provide available emergency medical support to assist State and local governments within the disaster area. Such services may include triage, medical treatment, and the utilization of surviving DOD medical facilities within the disaster area

11. Provide assistance in managing human remains, including victim identification and disposition

12. Provide technical assistance, equipment, and supplies through the U.S. Army Corps of Engineers, as required, in support of HHS to accomplish temporary restoration of damaged public utilities affecting public health

13. Immediately notify the Surgeons General of the Army, Air Force, and Navy if there is a likelihood that their support may be required

14. Provide technical facility and clerical expertise to assess the physical condition of the medical treatment facilities[21]

Environmental Protection Agency: National Oil and Hazardous Substance Pollution Contingency Plan

The EPA's purpose is to protect human health and to safeguard the natural environment.[22] Its planned response to discharges and releases of hazardous substances is contained in its *National Oil and Hazardous Substances Pollution Contingency Plan*, or *National Contingency Plan.* The purpose of the *National Contingency Plan* is to provide the "organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants."[23] It lists general responsibilities for federal agencies regarding such incidents and describes the specific responsibilities of the National Response Team, Regional Response teams, the National Response Center, and the U.S. Coast Guard's National Strike Force. The DOD is one of sixteen federal agencies comprising the National Response Team.[24]

The *National Contingency Plan* is applicable and in effect whenever FEMA activates the *FRP* or any of its ESFs. As a result, federal agencies, including DOD, may conduct consequent management activities under the *National Contingency Plan.* It lists the following two specified tasks for DOD:

1. Take all action necessary with respect to a release where either the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of DOD

2. Provide assistance to other federal agencies on request.[25]

The NCP highlights the capabilities of two specific DOD organizations, the Army Corps of Engineers and the Navy Supervisor of Salvage (SUPSALV). The plan details the fact the

Corps of Engineers is capable of providing specialized equipment and personnel for maintaining navigation channels, removing navigation obstructions, repairing structures, and maintaining hydroelectric power generating equipment. It also describes the Navy Supervisor of Salvage capability to provide specialized containment, collection, and removal equipment designed for salvage-related and open sea pollution incidents.

Regarding the EPA's role in the *FRP*'s Terrorist Incident Annex, they are to activate technical operations capabilities to support the federal response to acts of chemical or biological terrorism. In executing its responsibilities, the agency is permitted to "coordinate with individual agencies identified in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) to use the structure, relationships, and capabilities of the National Response System as described in the NCP to support response operations."[26]

Department of Health and Human Services: Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism

The DHHS has federal responsibility for meeting the health and medical needs of the nation in emergencies and is the primary agency for coordinating health, medical and health-related social services in ESF #8 (Health and Medical Services).[27] Regarding DHHS's role in the Terrorist Incident Annex, they are to "activate technical operations capabilities to support the [f]ederal response" to acts of chemical or biological terrorism.[28] The annex also permits DHHS to coordinate with individual agencies in its own response plan, the *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism*.[29]

The purpose of the June 1996 DHHS *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological terrorism* (*Health and Medical Services Support Plan*) is to "provide a coordinated [f]ederal response for urgent public health and medical care needs resulting from chemical or biological terrorist threats or acts in the U.S."[30] The plan recognizes that the local government "bears the responsibility for support of its citizens" through

the first-responder system, and as required, patient evacuation into a network of non-federal and federal National Disaster Medical System hospitals.[31] However, the plan also recognizes that a single incident could cause conditions requiring support overwhelming state or local medical systems, "necessitating urgent, time critical assistance from the federal government."[32] State and local resources may be insufficient to adequately minimize loss of life, clear casualties from the scene, or treat them in hospitals. Federal capabilities can assistant in treatment, triage, and transport.

The DHHS *Health and Medical Services Support Plan* is the "primary source of public health and medical response information for all" federal officials and agencies involved in response and recovery from a chemical or biological terrorist attack.[33] The primary agencies providing health and medical services operational support are DOD, EPA, and Veteran's Affairs. The *Health and Medical Services Support Plan* specifies the following six responsibilities to DOD:

1. Provide military personnel, equipment, transportation, and supplies to assist HHS in providing health and medical services support and technical assistance. DOD participation on the CBRDT is provided by USAMRIID [U.S. Army Medical Research Institute of Infectious Diseases], NMRI [Naval Medical Research Institute], USAMRICD [U.S. Army Medical Research Institute of Chemical Defense], TEU [Technical Escort Unit], and ERDEC [Edgewood Research, Development, and Engineering Center]

2. Provide logistical support to health/medical response operations

3. Provide available emergency medical support to assist in the support of state and local governments within the chemical or biological terrorist incident area

4. Coordinate air evacuation patient regulation

5. Coordinate patient reception and management in areas where DOD medical centers serve as NDMS FCCs

6. Provide support in accordance with its responsibilities as a partner in the NDMS and a supporting agency of ESF #8.[34]

Public Law 104-201, Title XIV (Defense Against Weapons of Mass Destruction Act of 1996)

Included in Public Law 104-201 (National Defense Authorization Act for Fiscal Year 1997), is Title XIV, also known as the Defense Against Weapons of Mass Destruction Act of 1996. The act outlines immediate actions to "enhance the capability of the [f]ederal [g]overnment to prevent and respond to terrorist incidents involving weapons of mass destruction . . . [and] improve the capabilities of state and local emergency response agencies to prevent and respond to such incidents at both the national and the local level."[35] The tasks directed to DOD by the act include:

1. Establishing an emergency assistance program

2. Establishing an executive agency to coordinate the DOD chemical and biological emergency response

3. Establishing a chemical and biological response team

4. Testing the preparedness of federal, state, and local agencies for chemical or biological emergencies

5. Assist in establishing metropolitan emergency response teams

6. Providing military assistance for civil law enforcement in chemical or biological emergencies[36]

The emergency assistance program entails DOD providing training and expert advice to civilian personnel in federal, state, and local agencies on emergency responses to chemical or biological attacks.[37] The training can include how to use, operate, and maintain equipment for detecting a chemical or biological agent, monitoring the presence of agents, protecting emergency personnel and the public, and decontamination. The program also includes establishing a hotline in order for state or local officials to receive expert advice and relevant data on issues such as the

use of loaned equipment or employing the National Guard or Reserves when responding to chemical or biological emergencies.[38]

The act not only directs DOD to develop and maintain at least one domestic terrorism rapid response team composed of members of the armed forces and DOD employees capable of aiding federal, state, and local officials in the detection, neutralization, containment, dismantlement, and disposal of chemical and biological weapons of mass destruction, but also coordinating all of the DOD assistance.[39] Additionally, the program assigns DOD responsibility for developing and carrying out a program for testing and improving the federal, state, and local responses to emergencies involving chemical or biological weapons.[40] The DOD is to assist DHHS in establishing metropolitan medical emergency response teams to provide medical services in the event of a terrorist chemical or biological attack. Finally, the act amends Chapter 18 (Military Support for Civilian Law Agencies) of Title 10 (Armed Forces) by authorizing the Secretary of Defense to provide assistance in support of Department of Justice activities relating to the enforcement of section 831 of Title 18 (Crimes and Criminal Procedure) during an emergency situation involving a biological or chemical weapon of mass destruction.[41]

Presidential Decision Directive 39: U.S. Policy on Counterterrorism

In June 1995, President Clinton signed Presidential Decision Directive-39 (PDD-39), the U.S. policy on counterterrorism. The policy asserts the U.S. will "deter, defeat, and respond vigorously to all terrorist attacks on our territory and against our citizens, or facilities, whether they occur domestically …or on foreign territory."[42] It charges FEMA to "ensure that the Federal Response Plan is adequate to respond to the consequences of terrorism directed against large populations in the United States, including terrorism involving weapons of mass destruction."[43] PDD-39 designates FEMA as the LFA for consequence management and is supported by twenty-seven *Federal Response Plan* signatories which include the DOD. There are three specified

DOD roles in PDD-39. They include:

1. Reducing vulnerabilities affecting security of all U.S military personnel and facilities
2. Managing, funding, and exercising its counterterrorism program
3. Providing timely transportation for the Emergency Support Teams.[44]

Only the latter role is relevant for this study.

Presidential Decision Directive 62: Protection Against Unconventional Threats to the Homeland and Americans Oversees

This May 1998 classified directive reaffirms PDD-39 and attempts to create a new and more systematic approach in the federal government's fight against terrorism.[45] It clarifies the roles and activities of U.S. agencies in a wide range of programs including apprehension and prosecution, transportation security, response capabilities, and protection of computer based systems. It reaffirms the FBI's role as the LFA for crisis management and FEMA as the LFA for consequence management. The directive also establishes the Office of the National Coordinator for Security, Infrastructure Protection and Counterterrorism.

Because this directive is classified, it is not possible to determine whether it specifically prescribes a role for DOD. However, a Department of Justice unclassified summary states the directive reaffirms DOD's role in training state and local first responders and maintaining trained military units to assist them, such as the National Guard Civil Support Teams.[46]

Presidential Decision Directive 63: Critical Infrastructure Protection

This May 1998 directive is in response to the findings and recommendations of the President's Commission on Critical Infrastructure Protection.[47] It acknowledges the importance of assuring continuity and viability of critical infrastructures including telecommunications, energy, banking and finance, transportation, water systems, and emergency services. The directive tasks federal agencies to take all measures to eliminate vulnerability to both physical and cyber attacks on critical infrastructures and directs creation of individual federal department and agency protection plans and a National Infrastructure Assurance Plan. Because these are

specified tasks for all federal agencies and departments, not just DOD, they will not be evaluated any further by this study.

Executive Order 12656: Assignment of Emergency Preparedness Responsibilities

The November 1988 Executive Order 12656 (EO 12656) assigns "national security emergency preparedness responsibilities to federal departments and agencies" and bases the responsibilities on extensions of their regular missions.[48] It lists fifteen lead and eight support responsibilities for DOD. The fifteen lead responsibilities in EO 12656 include:

1. Ensure military preparedness and readiness to respond to national security emergencies

2. In coordination with the Secretary of Commerce, develop, with industry, government, and the private sector, reliable capabilities for the rapid increase of defense production to include industrial resources required for that production

3. Develop and maintain, in cooperation with the heads of other departments and agencies, national security emergency plans, programs, and mechanisms to ensure effective mutual support between and among the military, civil government, and the private sector

4. Develop and maintain damage assessment capabilities and assist the Director of the Federal Emergency Management Agency and the heads of other departments and agencies in developing and maintaining capabilities to assess attack damage and to estimate the effects of potential attack on the Nation

5. Arrange, through agreements with the heads of other Federal departments and agencies, for the transfer of certain Federal resources to the jurisdiction and/or operational control of the Department of Defense in national security emergencies

6. Acting through the Secretary of the Army, develop, with the concurrence of the heads of all affected departments and agencies, overall plans for the management, control, and allocation of all usable waters from all sources within the jurisdiction of the U.S.. This includes:

a. Coordination of national security emergency water resource planning at the national, regional, State, and local levels

b. Development of plans to assure emergency provision of water from public works projects under the jurisdiction of the Secretary of the Army to public water supply utilities and critical defense production facilities during national security emergencies

c. Development of plans to assure emergency operation of waterways and harbors; and

d. Development of plans to assure the provision of potable water

7. In consultation with the Secretaries of State and Energy, the Director of the Federal Emergency Management Agency, and others, as required, develop plans and capabilities for identifying, analyzing, mitigating, and responding to hazards related to nuclear weapons, materials, and devices; and maintain liaison, as appropriate, with the Secretary of Energy and the Members of the Nuclear Regulatory Commission to ensure the continuity of nuclear weapons production and the appropriate allocation of scarce resources, including the recapture of special nuclear materials from Nuclear Regulatory Commission licenses when appropriate

8. Coordination with the Administrator of the National Aeronautics and Space Administration and the Secretary of Energy, as appropriate, to prepare for the use, maintainence, and development of technologically advanced aerospace and aeronautical-related systems, equipment, and methodologies applicable to national security emergencies

9. Develop, in coordination with the Secretary of Labor, the Directors of the Selective Service System, the Office of Personnel Management, and the Federal Emergency Management Agency, plans and systems to ensure that the Nation's human resources are available to meet essential military and civilian needs in national security emergencies

10. Develop national security emergency operational procedures, and coordinate with the Secretary of Housing and Urban Development with respect to residential property, for the control,

acquisition, leasing, assignment and priority of occupancy of real property within the jurisdiction of the Department of Defense

11. Review the priorities and allocations systems developed by other departments and agencies to ensure that they meet Department of Defense needs in a national security emergency; and develop and maintain the Department of Defense programs necessary for effective utilization of all priorities and allocations systems

12. Develop, in coordination with the Attorney General of the U.S., specific procedures by which military assistance to civilian law enforcement authorities may be requested, considered, and provided

13. In cooperation with the Secretary of Commerce and other departments and agencies, identify those industrial products and facilities that are essential to mobilization readiness, national defense, or post-attack survival and recovery

14. In cooperation with the Secretary of Commerce and other Federal departments and agencies, analyze potential effects of national security emergencies on actual production capability, taking into account the entire production complex, including shortages of resources, and develop preparedness measures to strengthen capabilities for production increases in national security emergencies;

15. With the assistance of the heads of other Federal departments and agencies, provide management direction for the stockpiling of strategic and critical materials, conduct storage, maintenance, and quality assurance operations for the stockpile of strategic and critical materials, and formulate plans, programs, and reports relating to the stockpiling of strategic and critical materials.[49]

The eight support responsibilities included in EO 12656 are:

1. Advise and assist the heads of other Federal departments and agencies in the development of plans and programs to support national mobilization. This includes providing, as appropriate:

a. Military requirements, prioritized and time-phased to the extent possible, for selected end-items and supporting services, materials, and components

b. Recommendation for use of financial incentives and other methods to improve defense production as provided by law; and

c. Recommendation for export and import policies

2. Advise and assist the Secretary of State and the heads of other Federal departments and agencies, as appropriate, in planning for the protection, evacuation, and repatriation of U.S. citizens in threatened areas overseas

3. Support the Secretary of Housing and Urban Development and the heads of other agencies, as appropriate, in the development of plans to restore community facilities

4. Support the Secretary of Energy in international liaison activities pertaining to nuclear materials facilities

5. In consultation with the Secretaries of State and Commerce, assist the Secretary of the Treasury in the formulation and execution of economic measures that affect other nations

6. Support the Secretary of State and the heads of other Federal departments and agencies as appropriate in the formulation and implementation of foreign policy, and the negotiation of contingency and post-emergency plans, intergovernmental agreements, and arrangements with allies and friendly nations, which affect national security

7. Coordination with the Director of the Federal Emergency Management Agency the development of plans for mutual civil-military support during national security emergencies

8. Develop plans to support the Secretary of Labor in providing education and training to overcome shortages of critical skills[50]

EO 12656 also designates the National Security Council as the principal forum for national security emergency preparedness policy and directs the FEMA Director to advise the National Security Council on such policy.[51] It further directs the FEMA director to assist in the implementation of emergency preparedness policy by coordinating with the relevant federal departments and agencies and state and local governments. Executive Order 13228 (EO 13228) later amends or replaces these sections of EO 12656.

Executive Order 13228: Establishing the Office of Homeland Security and Homeland Security Council

On 8 October 2001, President Bush issued Executive Order 13228 (EO 13228) establishing the Office of Homeland Security (OHS) and the Homeland Security Council. The order assigns responsibility to the OHS for coordinating federal efforts to "detect, prepare for, prevent, protect against, respond to, and recover from terrorist attacks within the United States."[52] Significant for this study are the OHS responsibilities regarding response and recovery. Specifically, it is to coordinate efforts to ensure rapid restoration of critical infrastructure; coordinate efforts to ensure rapid restoration of public and private critical information systems; coordinate containment and removal of biological, chemical, radiological, explosive, or other hazardous materials; provide medical, financial, and other assistance to victims; and coordinate efforts to stabilize financial markets.[53]

EO 13228 does not list specific tasks for the DOD. However, it is important to recognize that the framework established for the federal effort includes five specified areas: detection, preparation, prevention, protection, and response and recovery. The general tasks specified for response and recovery in EO 13228 are different from those spelled out in the *FRP*. Where as FEMA defines response as "saving lives, protecting property, and meeting basic human needs" and recovery as "restoring the disaster-affected area", EO 13228 defines it as rapid restoration of critical infrastructure, restoration of public and private critical information systems, stabilization of financial markets, containment and removal of biological, chemical, radiological, explosive, or

other hazardous, and providing assistance to victims.[54] This study recommends FEMA establish a strategy along the five specified areas in EO 13228 in order to maintain a consistent strategic framework.

This Executive Order amends EO 12656 and designates the Homeland Security Council as the principal forum for consideration of policy relating to terrorist threats and attacks within the U.S. and responsible for administering such policy.[55]

United States Government Interagency Domestic Terrorism Concept of Operations Plan

The *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan* (*CONPLAN*) is "[d]esigned to provide overall guidance to federal, state, and local agencies concerning how the federal government [will] respond to a potential or actual terrorist threat or incident that occurs in the U.S., particularly one involving Weapons of Mass Destruction."[56] The FBI developed the *CONPLAN* through the efforts of the six federal signatories--DOD, Department of Energy, DHHS, EPA, FEMA, and Department of Justice. Addressing the response to a chemical or biological attack, it establishes conceptual guidance for deploying advisory and technical resources to assist the LFA in "facilitating interdepartmental coordination of crisis and consequence management activities."[57]

The sole DOD responsibility in the CONPLAN is to serve as a "support agency to the FBI for crisis management . . . and FEMA for consequence management . . . in accordance with DODD 3025.1 and 2000.12, and CJCS CONPLAN 0300-97 and upon approval of SECDEF."[58] It also specifies that DOD provide assistance to the LFA and the plan's primary agencies during all aspects of a terrorist incident, including*:

1. Threat Assessment
2. Technical Advice
3. Operational Support
4. Tactical Support

5. Support for Civil Disturbances

6. Custody, transportation, and disposal of a WMD device

7. Other capabilities including mitigation of the consequences of a release.[59]

(* The plan does not further define the assistance roles)

Summary of DOD Prescribed Roles

The specified DOD roles in the federal response to and recovery from a chemical or biological terrorist attack against the homeland come not only from the FEMA's *Federal Response Plan*, but also other federal agency response plans and documents comprising the national emergency management and counterterrorism strategy. DOD has roles in the *FRP* annex outlining the federal response to a terrorist chemical or biological attack, the Terrorist Incident Annex, as well as the two Emergency Support Functions it invokes, ESF #10 (Hazardous Material Annex) and ESF #8 (Health and Medical Services Annex). Additionally, the Terrorist Incident Annex's two other supporting federal agencies--EPA and DHHS--specify roles for DOD in their own response plans, the *National Oil and Hazardous Substance Pollution Contingency Plan* and the *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism*, respectively. Finally, there are four other national policy documents relevant to a terrorist chemical or biological attack that contain roles for DOD including PDD-39, Executive Order 12656 (Assignment of Emergency Management Responsibilities), Title XIV (Defense Against Weapons of Mass Destruction Act of 1996), and the *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan.* With DOD prescribed roles identified, it is possible to conduct the study's first test; comparison of necessary and prescribed roles.

Before conducting the first test on the data, manipulation of the DOD prescribed roles is required. Because many of the prescribed DOD roles are written as specific tasks, direct comparison with the necessary functions identified in chapter 4 is impossible. In order to conduct

a comparison, the identified roles or specific tasks, must be correlated to an equivalent functional area. This study subjectively transformed the specified role or task into a corresponding functional area and the results are in table 11. It is important here to discuss the function categories used by this study.

The functional areas coincide not only with those used in chapter 4, but are also functional areas addressed in and common to national policy sources. The group of health and medical services functions--assessment, disease surveillance, epidemiological investigation, health and medical equipment/supplies, hospital care, laboratory support, medical care personnel, mortuary affairs, patient evacuation, transportation, veterinary services, mental health services, food/drug/medical device safety, and potable water/wastewater and solid waste disposal--come directly from ESF #8 and the DHHS *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism.*

The group of hazardous materials functions--contamination avoidance; decontamination; protection; dismantle, disposal, and transfer of contaminated property--is outlined by the *DOD Chemical/Biological Annual Defense Report* and DOD chemical and biological defense doctrine. The remaining functions come from either the *FRP* Annexes (communication, mass logistics, public affairs) or from concepts familiar throughout DOD and federal agencies such as coordination, civil disturbance support, and technical advice. One required function, disease containment, remains unaddressed by any of the national policy documents outlining the nation's emergency preparedness or counterterrorism strategy.

Table 11. Crosswalk of DOD Specified Tasks to Corresponding Functional Areas

DOD Specified Tasks	Source	Corresponding Necessary Function
Activate technical operations	*FRP* Terrorist Incident Annex	• Contamination Avoidance • Assessment • Decontamination • Dismantle, dispose, and transfer contaminated property
Direct response actions for releases of hazardous substances from its vessels, facilities, and vehicles	*FRP* ESF #10	Requires Additional Specificity
Provide personnel and equipment to other Federal organizations and State and local governments (such as SUPSALV), as requested, if consistent with DOD operational requirements	*FRP* ESF #10	Requires Additional Specificity
Alert the Global Patient Movement Requirements Center (GPMRC) to provide DOD National Disaster Medical System (NDSM) Federal Coordinating Centers (Army, Air Force, and Navy) and Veteran's Affairs NDMS FCCs reporting/regulating instruction to support disaster relief efforts	*FRP* ESF #8	Hospital Care
Alert DOD NDMS FCCs to activate NDMS area operations/patient reception plans; initiate bed reporting based on GPMRC instructions	*FRP* ESF #8	Hospital Care
In coordination with NDMSOSC, evacuate and manage patients as required from the disaster area to NDMS patient reception areas	*FRP* ESF #8	• Medical Care Personnel • Patient Evacuation
In coordination with Department of Transportation and other transportation support agencies, transport medical personnel, equipment, and supplies into the disaster area	*FRP* ESF #8	Transportation
Provide logistical support to health/medical response operations	*FRP* ESF #8	Health/Medical Equipment and Supplies
Coordinate patient reception and management in NDMS areas where military treatment facilities serve as local NDMS FCCs	*FRP* ESF #8	Medical Care Personnel
Provide Active Duty medical units for casualty clearing/staging and other missions as needed, including aeromedical evacuation; mobilize and deploy Reserve and National Guard medical units, when authorized and necessary to provide support	*FRP* ESF #8	Medical Care Personnel
Provide military medical personnel to assist Department of Health and Human Services in activities for the protection of public health (such as food, water, wastewater, solid waste disposal, vectors, hygiene, and other environmental conditions	*FRP* ESF #8	• Potable water/Wastewater and Solid Waste Disposal • Technical Advice • Food/Drug/Medical Device Safety
Provide available DOD medical supplies for distribution to mass care centers and medical care locations being operated for disaster victims	*FRP* ESF #8	Health/Medical Equipment and Supplies
Provide available emergency medical support to assist State and local governments within the disaster area. Such services may include triage, medical treatment, and the utilization of surviving DOD medical facilities	*FRP* ESF #8	• Hospital Care • Medical Care Personnel

Table 11 *continued*

Provide assistance in managing human remains, including victim identification and disposition	*FRP* ESF #8	Mortuary Affairs
Provide technical assistance, equipment, and supplies through the U.S. Army Corps of Engineers, as required, in support of HHS to accomplish temporary restoration of damaged public utilities affecting public health	*FRP* ESF #8	• Technical Advice • Hospital Care
Provide technical facility and clerical expertise to assess the physical condition of the medical treatment facilities.	*FRP* ESF #8	Assessment
Provide assistance to other federal agencies	*National Contingency Plan*	Requires Additional Specificity
Take all action necessary with respect to release where either the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of DOD	*National Contingency Plan*	Requires Additional Specificity
Provide available emergency medical support to assist in the support of State/local governments within the C/B terrorist incident area	DHHS Health and Medical Service Support Plan	Requires Additional Specificity
Provide logistical support to health/medical response operations	DHHS Health and Medical Service Support Plan	Health and Medical Supplies
Provide military personnel, equipment, transportation, and supplies to assist HHS in providing health and medical services support and technical assistance	DHHS Health and Medical Service Support Plan	• Medical Care Personnel • Transportation • Health/Medical Equipment and Supplies • Technical Advice
Coordinate patient reception and management in areas where DOD medical centers serve as NDMS FCCs	DHHS Health and Medical Service Support Plan	Patient Evacuation
Establishing an executive agency to coordinate the DOD chemical and biological emergency response	Defense Against Weapons of Mass Destruction Act of 1996	Coordination
Establishing an emergency assistance program	Defense Against Weapons of Mass Destruction Act	Technical Advice
Establishing a chemical and biological response team	Defense Against Weapons of Mass Destruction Act of 1996	• Assessment • Containment • Contamination Avoidance • Decontamination • Dismantle, Disposal, and Transfer of Property • Medical Care Personnel

Table 11 *continued*

Testing the preparedness of federal, state, and local agencies for chemical or biological	Defense Against Weapons of Mass Destruction Act of 1996	Beyond the scope of this study
Assist in establishing metropolitan emergency medical response teams	Defense Against Weapons of Mass Destruction Act of 1996	Medical Care
Providing military assistance for civil law enforcement in chemical or biological emergencies	Defense Against Weapons of Mass Destruction Act of 1996	Beyond the scope of this study
Provide timely transportation for the Emergency Support Teams	PDD-39	Transportation
Custody, transportation, and disposal of a WMD device	FBI *CONPLAN*	Dismantle, dispose, and transfer of contaminated property
Mitigation of the consequences of a release	FBI *CONPLAN*	Requires Additional Specificity
Operational Support	FBI *CONPLAN*	Requires Additional Specificity
Support for Civil Disturbances	FBI *CONPLAN*	Civil Disturbance Support
Tactical Support	FBI *CONPLAN*	Requires further explanation
Technical Advice	FBI *CONPLAN*	Technical Advice
Threat Assessment	FBI *CONPLAN*	Assessment

Note: The tasks and functions above the double line are those this study considers prescribed by the *Federal Response Plan*, either directly or through another federal agency response plan specifically referenced in the *FRP*. They include the EPA's *National Contingency Plan* and the DHHS's *Health and Medical Services Support Plan*.

Source: Federal Emergency Management Agency, *Federal Response Plan*, (Washington, D.C.: April 1999), TI-11, ESF #10-15, ESF # 8-10; Environmental Protection Agency, *National Oil and Hazardous Substances Pollution Contingency Plan*, 40 CFR citation: 300920 OMB control No.: 2050-0141, Section 300.175; Department of Health and Human Services, *Health and Medical Support Plan for the Federal Response to Acts of Chemical/Biological (C/B) Terrorism*, 23; President, Decision Directive 39, "U.S. Policy on Counterterrorism," June 21, 1995; available from http://www.fas.org; Internet; accessed on 1 September 2001; President, Executive Order, "Assignment of Emergency Preparedness Responsibilities, Executive Order 12656," *Federal Register* Vol. 53, No. 228 (23 November 1988): 47491, section 501; Federal Bureau of Investigation, *United States Government Interagency Domestic Terrorism Concept of Operations Plan*, January 2001; available from http://www.fema.gov/r-n-r/conplan/cplncvr.pdf; Internet; accessed on 21 November 2001.

First Test: Necessary and Prescribed Roles

With data collected on the roles necessitated by a chemical or biological terrorist attack from chapter 4: Know the Enemy, and the prescribed DOD roles identified in this chapter: Know

Yourself, it is possible to complete the first test. Evaluation of the 1995 Aum Shinrikyo sarin attack, the 1999 West Nile Virus outbreak, and exercises TOPOFF and Dark Winter reveal twenty-five roles necessitated by a chemical and biological attack (see table 10). For this first test, those necessary roles are evaluated against the DOD roles directly from the *FRP* (Terrorist Incident Annex, ESF #10, and ESF #8) and the supporting federal agency response plans (EPA's *National Contingency Plan* and DHHS' *Health and Medical Services Support Plan*) (above the double line in table 11). This first test has three outcomes. The first outcome is a role that is prescribed but not necessary (Area 1 of figure 1); this study recommends prescribed but not necessary roles be removed from the *FRP*. The second outcome is a role that is necessary and prescribed (Area 3 of figure 1); this study finds no adjustment to the *FRP* is required. The final outcome is the case where the role is necessary but not prescribed to DOD (Area 2 of figure 1), these roles are further analyzed below for their feasibility, suitability, and acceptability for DOD and potential consideration for inclusion in the *FRP*.

Table 12 displays in tabular form the intersection or non-intersection of necessary and prescribed roles. For the first test, this study only evaluates the intersections left of the double line in table 12, where the roles are prescribed directly in the *FRP* or in a supporting federal agency response plan. Regarding the first outcome, this study found the set of prescribed but not necessary roles to be null. However, there are five tasks assigned to DOD that are too vague, lacking detail and specificity, to allow meaningful contingency planning by DOD. This study recommends FEMA, EPA, and DHHS further clarify the following tasks, and DOD planners initiate requests for information to gain adequate specificity:

1. Direct response actions for releases of hazardous substances from its vessels, facilities, and vehicles (FEMA, *FRP* ESF #10)

2. Provide personnel and equipment to other federal organizations and state and local governments (such as SUPSALV), as requested, if consistent with DOD operational requirements (FEMA, *FRP* ESF #10)

3. Provide assistance to other federal agencies (EPA, *National Contingency Plan*)

4. Take all action necessary with respect to release where either the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of DOD (EPA, *National Contingency Plan*)

5. Provide available emergency medical support to assist in the support of state/local governments within the chemical/biological terrorist incident area (DHHS, *Health and Medical Services Support Plan*)

The second outcome shows thirteen roles that are both necessary and prescribed to DOD (see table 13). This is the case where the role is necessary and either FEMA assigned it to DOD in the *FRP*, or the EPA and DHHS assigned it in their agency response plan. However, as seen in exercises TOPOFF and Dark Winter, the DOD response in some of these functions is still inadequate. For example, during exercise Dark Winter, DOD lacked the resources to augment the civilian health care system with personnel or equipment citing readiness requirements as the potential for conflict in the Middle East grew.[60] Based on these exercises, table 13 highlights nine necessary and prescribed roles where the DOD response remains inadequate (indicated with an asterisks).

Table 12. Intersection of Necessary Functions and Prescribed Roles

Necessary Functions	*FRP* Terrorist Incident Annex	*FRP* ESF #10	*FRP* ESF #8	DHHS *Health and Medical Support Plan*	EPA *National Contingency Plan*	PDD-39	1996 Defense Against WMD Act	EO 12656	FBI CONPLAN
Assessment	X						X		X
Chemical/Biological Contamination Avoidance	X						X		
Chemical/Biological Decontamination	X						X		
Chemical/Biological Protection							X		
Civil Disturbance Support									X
Communication									
Coordination							X		
Disease Containment							X		
Disease Surveillance									
Dismantle, dispose, and transfer of contaminated property	X		X				X		X
Epidemiological Investigation									
Food/drug/medical device safety									
Health and Medical Equipment/Supplies			X	X					
Hospital Care			X						
Laboratory Support									
Mass Logistics				X					
Medical Care Personnel			X	X					
Mental Health Services									
Mortuary Affairs			X						
Patient Evacuation			X						
Potable Water/Wastewater and Solid Waste Disposal			X					X	
Public Affairs									
Technical Advice			X	X			X		X
Transportation			X	X		X			
Veterinary Services									

Finally, there are thirteen roles that are necessary to respond to and recovery from a terrorist chemical or biological attack, but not prescribed to DOD in the either the *FRP*'s Terrorist Incident Annex, ESF #8, or ESF #10 (table 14). Additionally, neither EPA nor DHHS assigns these tasks in their agency response plan. Although it is possible FEMA may prescribe the function elsewhere in the *FRP*, this study considers it inadequate if not included in the Terrorist Incident Annex, ESF #10, ESF #8, or an agency response plan cited in either of those three annexes.

Table 13. Necessary and Prescribed Roles

Assessment
Chemical/Biological Contamination Avoidance*
Chemical/Biological Decontamination*
Dismantle, dispose, and transfer contaminated
Health and Medical Equipment/Supplies*
Hospital Care*
Mass Logistics*
Medical Care Personnel*
Mortuary Affairs*
Patient Evacuation*
Potable water/Wastewater and Solid Disposal
Technical Advice*
Transportation

Note: Roles where DOD response remains inadequate are indicated with an *

Table 14. Necessary Roles/Not Prescribed

Chemical/Biological Protection
Civil Disturbance Support
Communication
Containment
Coordination
Disease Containment
Disease Surveillance
Epidemiological Investigation
Food/drug/medical device safety
Laboratory Support
Mental Health Services
Public Affairs
Veterinary Services

The first step toward determining whether the DOD role prescribed in the *FRP* is adequate when responding to a chemical or biological terrorist attack is complete with the first test. The next step entails determining whether the thirteen roles identified as necessary but not prescribed (table 14) are feasible, suitable, and acceptable for DOD. Additionally, this study will also evaluate the nine roles that are necessary and prescribed, but where the DOD response remains inadequate (table 13) for their feasibility, suitability, and acceptability as well.

Second Test: Feasibility, Suitability, and Acceptability

Before making a final assessment on the adequacy of DOD's role in the *FRP*, a second test is necessary. It is imperative to evaluate the feasibility, suitability, and acceptability of the roles before making a recommendation to prescribed them to DOD. This study focused on the roles from tables 13 and 14 categorized as health and medical services and hazardous materials, for two reasons. First, FEMA specifically references those two functional categories in the *FRP*'s Terrorist Incident Annex when outlining federal agency responsibilities. Second, those functional categories are the responsibility of two of the four supporting federal agencies (DHHS and EPA) mentioned in the Terrorist Incident Annex (the other two are DOE, which is responsible for radiological incidents and not the focus of this study, and DOD). This includes all the functions from table 13 (highlighted with an asterisks) and table 14, except communications, mass logistics, and public affairs. These three functions are addressed in separate annexes in the *FRP* and not the focus of this study. The stand alone functions of coordination, civil disturbance, disease containment, and technical advice are also evaluated for feasibility, suitability, and acceptability. They are necessary for response and recovery, but not included in the Terrorist Incident Annex, ESF #8, or ESF #10.

Feasibility

The test for feasibility is twofold. First is the evaluation of whether DOD currently possesses the assets capable of carrying out the identified function. Second is the determination

whether DOD can deliver the assets in the quantity and time required for successful response and recovery. Currently, it is not possible to determine whether DOD can deliver the necessary assets in the right amount and the right time to successfully respond to and recover from a particular terrorist chemical or biological attack. Consequently, this study only completes the first subtest and a function passes for feasibility if DOD possesses the organizations or equipment to accomplish the necessary function.

Capabilities

Chemical and Biological Contamination Avoidance. DOD possesses material and organizational contamination avoidance capabilities. The operational concept of contamination avoidance includes reconnaissance, detection, identification, warning and reporting of chemical or biological agents.[61] Early warning is key in order to avoid contamination, or where avoidance is not possible, detection, identification, and warning to allow responders to assume the appropriate protective posture and begin decontamination of the affected area and people. Examination of the DOD chemical and biological defense program reveals the major material solutions for detection, identification, and early warning of a chemical or biological presence.

There are currently eleven joint contamination avoidance programs that are part of the Joint Chemical and Biological Defense program. The programs include the Automatic Chemical Agent Detection Alarm, Joint Chemical Agent Detector, Joint Service Lightweight Standoff Chemical Agent Detector, Joint Service Warning and Identification LIDAR Detector, Joint Biological Point Detection System, Joint Biological Remote Early Warning System, Joint Service Light NBC Reconnaissance System, Joint Warning and Reporting Network, Joint Chemical Biological Agent Water Monitor, Joint Portal Shield network sensor system, Critical Reagents Program.[62] Systems like the Joint Chemical Biological Agent Water Monitor can detect the presence of contaminants in potable water. In addition to possessing contamination avoidance equipment that can be part of the federal response, the DOD maintains units capable of

performing the function. The DOD organizations capable of reconnaissance, detection, identification, and warning are the Technical Escort Unit, the Marine Corps Chemical Biological Incident Response Force, and the Army's chemical companies.

The Army's Technical Escort Unit (TEU) provides chemical and biological assistance not only in the functional area of contamination avoidance (verification, sampling, and detection), but also in dismantling, disposing, and transferring of contaminated property; decontamination; and technical advice.[63] This 193 person unit, organized into 7 companies, is capable of immediate worldwide response and deploying within 4 hours from any of its four locations that include Aberdeen Proving Ground, Maryland; Fort Belvoir, Virginia; Pine Bluff, Arkansas; or Dugway Proving Ground, Utah.[64]

The Marine Corps Chemical Biological Incident Response Force (CBIRF) is an operational force capable of responding to weapons of mass destruction incidents and conducting consequence management operations with other emergency response agencies.[65] This unit is able to deploy an initial team within six hours and the remainder of the unit in twenty-four hours from its home base at Indian Head Naval Warfare Center, Maryland.[66] The 360 person unit possesses expertise not only in contamination avoidance (reconnaissance, detection, and identification) but also in the functions of decontamination, medical care personnel, and technical advice.[67]

Finally, in addition to the TEU and CBIRF, DOD has contamination avoidance capabilities in its Active Duty chemical units that number close to 100, as well as in the National Guard and Reserve Component. In his 1997 Tiger Team report, the Secretary of Defense stated that each of the National Guard and Reserve chemical companies will have one platoon trained in contamination avoidance operations.[68]

Chemical/Biological Decontamination. The DOD possesses organizations and equipment capable of conducting decontamination operations. The goal of decontamination is to rapidly and effectively render contamination harmless or remove it to allow the sustainment of

operations in a contaminated environment. When contamination cannot be avoided, personnel and equipment must be decontaminated to reduce or eliminate hazards after chemical or biological weapons employment. DOD possesses the equipment to allow decontamination of medical and non-medical personnel, individual equipment, vehicles, aircraft, facilities, and fixed sites (see table 15).[69]

Table 15. DOD Decontamination Programs

Category	Nomenclature
Personnel	✓ M295 Individual Equipment Decontaminating Kit ✓ M291 Skin Decontaminating Kit
Equipment Vehicles and Aircraft	✓ M17A2/A3 Lightweight Decontamination ✓ System ✓ M21/M22 Modular Decontamination ✓ System (MDS) ✓ M17 Diesel Lightweight Decontamination ✓ System ✓ Joint Service Sensitive Equipment Decon ✓ Joint Service Fixed Site Decon
Decontamination Solutions and Coatings	✓ Decontamination System and Solution Decontaminants

Source: *Department of Defense, Department of Defense Chemical and Biological Defense Program Annual Report to Congress and Performance Plan* (Washington, D.C., July 2001), C-1.

Organizationally, DOD maintains both Active Duty and Reserve Component chemical companies with decontamination capability.[70] At the end of the year 2000, there were 170 Nuclear, Biological, and Chemical platoons and companies in the National Guard and Reserve alone.[71] Additionally, there are special response teams like the Air Force's Wartime Patient Decontamination Team that can construct and operate decontamination sites and facilities in the vicinity of a supported medical treatment facility (there are 33 complete teams consisting of 2 personnel packages and 1 equipment package each in the Air Force inventory).[72] As previously

discussed, the Army's TEU and the Marine Corps CBIRF also possess a decontamination capability.

Chemical and Biological Protection. When contamination cannot be avoided, DOD can provide material solutions to protect life sustainment and continue operations in a chemically or biologically contaminated environment. DOD can provide both individual protection by way of masks, clothing, medical prophylaxis, pretreatment, and antidotes, and collective protection in the form of transportable shelters, overpressure systems to apply to fixed structures, and lightweight shelters (see table 16).[73]

Some of the DOD collective protection equipment includes the Chemically Protected Deployment Medical System--Chemically/Biologically Hardened Air Transportable that can sustain medical operations in a chemical or biological contaminated environment for 72 hours.[74]

Table 16. DOD Collective Protection Programs

Category	Nomenclature
Tentage and Shelter Systems	✓ M20A1/M28 Simplified Chemical Protection Equipment ✓ Chemical/Biological Protective Shelter (Medical) ✓ Portable Collective Protection System ✓ Chemically Protected Deployable Medical System–Chemically/ Biologically Hardened Air Transportable Hospital ✓ Joint Transportable Collective Protection System
Collective Protection Systems	✓ Shipboard Collective Protection System ✓ Shipboard Collective Protection Equipment ✓ Advanced Integrated Collective Protection System for Vehicle, Vans, and Shelters ✓ Selected Area Collective Protection System ✓ M8A3 ✓ M13A1 ✓ Joint Collective Protection Equipment
Filters	✓ M56 ✓ Fixed Installation Filters

Source: *Department of Defense, Department of Defense Chemical and Biological Defense Program Annual Report to Congress and Performance Plan* (Washington, D.C., July 2001), B-1.

Civil Disturbance Support. DOD possesses Active Duty, National Guard, and Reserve Component units able to conduct civil disturbance operations.

Coordination. Coordinating functions include the ability to coordinate the response and recovery activities within DOD. On October 1, 1999, the U.S. Joint Forces Command established a standing Joint Task Force-Civil Support (JTF-CS) to command and control DOD forces in support of a LFA managing consequences of weapons of mass destruction in the U.S.[75] As previously mentioned, the CB-RRT coordinates many of the DOD response agencies as well. Additionally, the U.S. Army First and Fifth Headquarters can establish a fully functional command post (designated Response Task Force East and West, respectively) within twenty-four hours and assume operational control of DOD forces providing support to civil authorities as well as send liaisons to supported civil agencies.[76]

Disease Containment. Similar to the capabilities able to provide civil disturbance support, DOD possesses Active Duty, National Guard, and Reserve Component units able to enforce containment measures imposed by federal, state, or local governments. Infantry and military police units within the armed forces can assist the efforts to enforce a containment strategy whether it is isolation of contaminated individuals, house arrest, travel restrictions, border closings, or quarantine.

Disease Surveillance, Epidemiological Investigation, and Laboratory Support. DOD possesses both the organization and equipment necessary to collect samples and conduct laboratory evaluation and investigation. The USAMRIID has laboratory facilities that can be employed for assessing and evaluating a biological terrorist incident. It also deploys experts along with the USAMRICD personnel with the CB-RRT that are capable of supervising epidemiological investigation.[77] As previously mentioned, the MEDCOM SMART-Preventive Maintenance Team can provide expert consultation in the areas of epidemiology and disease surveillance, medical entomology, environmental health science, toxicology, industrial hygiene,

environmental sampling and analysis, health risk assessment, sanitation and hygiene, solid and hazardous waste management, and health risk communication.

The Air Force, Navy, and Marine Corps possess disease surveillance, epidemiological investigation, and laboratory support as well. The Air Force maintains specialty teams capable disease surveillance and epidemiological investigation.[78] Its Theater Epidemiology Team can conduct medical and environmental threat assessments, disease surveillance, disease outbreak investigation, and environmental monitoring. Its Bioenvironmental Engineering Team can provide agent surveillance, detection, and reconnaissance. The Infectious Diseases Team can augment the capability to identify, control, report, and provide treatment for infectious diseases and biological warfare agents. The Air Force Biological Augmentation Team (currently eight available) is a three to two person team of medical laboratory personnel that provides rapid pathogen identification. The U.S Navy Medical Research Center's Biodefense Research Program can provide biological detection support and deploy a transportable biological field laboratory. The Marine Corps CBIRF can also provide a mobile laboratory.[79]

Dismantle, disposal, and transfer contaminate property. In addition to the TEU, the U.S. Army's 52d Explosive Ordnance Disposal (EOD) Group has four subordinate EOD battalions capable of working with explosive chemical or biological weapons and four Special Improved Explosive Device companies that can provide bomb squads capable of identifying, rendering safe, and disposing of chemical munitions and explosive devices.[80] Additionally, each service has EOD units that can provide support following an incident.[81]

Hospital Care. DOD can provide hospital care as a participant along with the Veterans Affairs in the National Disaster Medical System. It operates over 120 hospitals and medical treatment facilities across the U.S. (see figure 6) in addition to the mobile field hospitals and corps support hospitals DOD can deploy. MEDCOM provides standardized decontamination equipment at all of its fixed medical treatment facilities.[82] The USAMRIID can provide even

more specialized patient care at its wards capable of isolating sixteen biosafety level 3, and four biosafety level 4 patients.[83]

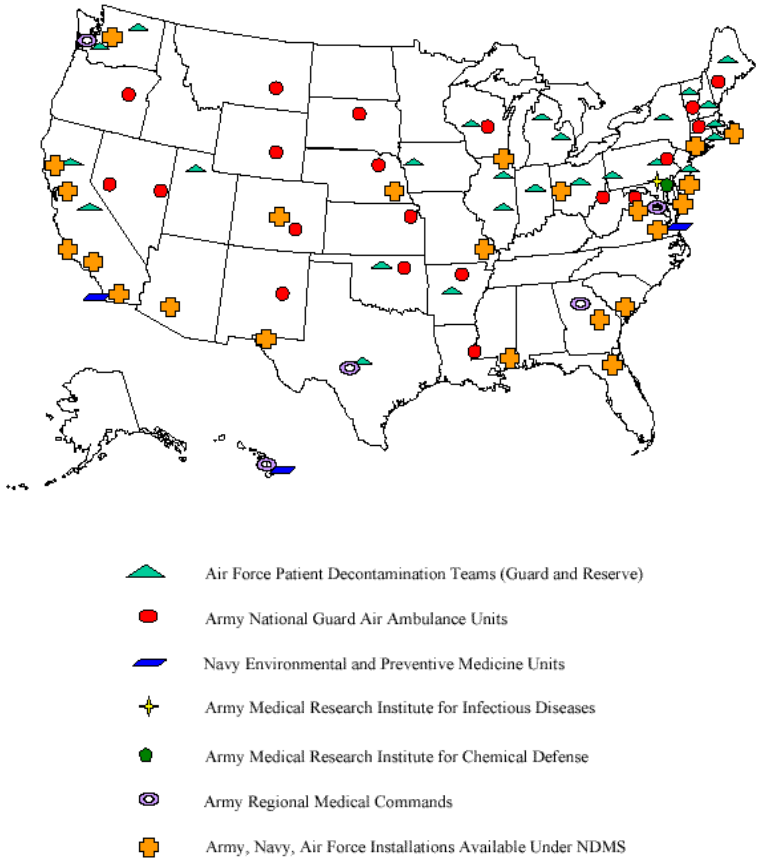

Figure 6. DOD Medical Assets Capable of Responding to a Terrorist Attack. Reprinted with permission from Amy E. Smithson and Leslie-Anne Levy, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response* (Washington, D.C.: The Henry L. Stimson Center, Chemical and Biological Weapons Nonproliferation Project, October 2000), 143

Medical Care Personnel. DOD possesses the personnel and organization to augment state and local public health and medical services personnel. The medical service capabilities in DOD include clinical support (triage and treatment), transportation (patient evacuation), epidemiological investigation, disease surveillance, pharmaceutical support, mortuary assistance, mental health, mass casualty care, veterinary care, and supplies and equipment.

DOD medical care personnel receive training in the clinical support areas of patient care, managing casualties, and health protection in a chemical and biological environment.[84] Army Medical Department (AMEDD) officers receive chemical and biological training in patient care, leader development, and force protection in their basic and advance schools and in courses run by other DOD agencies (see table 17).

Table 17. Summary of Army Medical NBC Training (FY 2000)

Training Command	**Type of Training**	**Training Method**	**Number of Students**
AMEDDC&S	Leader Development	In-House	2953
	Leader Development	Distance Learning	460
	Force Health Protection	In-House	71
USAMRICD	Patient Care	In-House	420
	Patient Care	Distance Learning	5301
	Patient Care	On-Site	1104
	Leader Development	On-Site	108
	Leader Development	In-House	323
USAMRIID	Patient Care	In-House	420
	Patient Care	Distance Learning	9335
	Patient Care	On-Site	1104
	Leader Development	In-House	323
	Leader Development	On-Site	108
	Leader Development	Distance Learning	41

Source: Department of Defense, Department of Defense Chemical and Biological Defense Program Annual Report to Congress and Performance Plan (Washington, D.C., July 2001), 97.

DOD personnel receive training from the U.S. Army Medical Research Institute of Infectious Disease's (USAMRIID) Field Management of Chemical and Biological Casualties Course (FCBC) (see table 18). This five day in-house course at the Aberdeen Proving Ground, or three day on site course, provides detailed training in the first echelon management of chemical and biological agent casualties that includes: the current global threat of chemical and biological agent use, the characteristics and effects of threat agents, recognition and emergency treatment of agent and exposure, and the principles of triage and decontamination of chemical and biological agent casualties.[85]

Table 18. Officers and Enlisted Personnel Trained in FCBC since FY99

Course	Days in Course	Army	Navy	Air Force	All Services
In-House	5	724	71	13	808
Off-site	3	668	1	17	686
Total		1,392	72	30	1,494

Source: Government Accounting Office, *Combating Terrorism: Federal Response Teams Provide Varied Capabilities; Opportunities Remain to Improve Coordination* (Washington, D.C. November 2000), 44, GAO-01-14.

Additionally, the USAMRIID and U.S. Army Medical Research Institute for Chemical Defense (USAMRICD) jointly run the Medical Management of Chemical and Biological Casualties Course (see table 19) for DOD personnel. This course provides instruction to physicians, physician assistants, and nurses on the use of specialized equipment and teaches skills required for safe, long distance evacuation while stressing first-hand experience in triage, decontamination, and medical operations.[86]

Table 19. Officers and Enlisted Personnel Trained in MCBC since FY99

Course	Days in Course	Army	Navy	Air Force	All Services
Total In-House	7	929	330	116	1,375
Medical Corps Officers; physicians; PAs; nurses		872	290	96	1,258
Enlisted Medics; corpsmen		57	40	20	117
Total Off-site	3	4,201	394	1,288	5,8983
Medical Corps Officers; physicians; PAs; nurses		3,108	1 73	947	4,228
Enlisted Medics; corpsmen		1,093	221	341	1,655
Total Trained		5,130	724	1,404	1,655
Annual Average		1,283	181	1,404	1,815

Source: Government Accounting Office, Combating Terrorism: Federal Response Teams Provide Varied Capabilities; Opportunities Remain to Improve Coordination, (Washington, D.C. November 2000), 44, GAO-01-14

In addition to the two courses previously mentioned, the USAMRIID also conducts satellite broadcasts throughout each year not only to medical professionals within DOD (see table 20), but also civilian health providers and first responders. As an example, its satellite broadcast of the course "Biological Warfare Terrorism: Medical Issues and Response" reached 9,935 people at 500 sites across the U.S. in the year 2000.[87]

Table 20. USMARIID Biological Warfare Satellite Broadcasts, 1997-2000

Year	**Army**	**Navy and Marines**	**Air Force**	**All Services**
1997	942	856	1,558	3,356
1998	2,442	992	7978	11392
1999	1,869	939	2,431	5,239
2000	1,630	390	650	2,670
Total	6,863	3,177	12,617	22,657

Source: Government Accounting Office, *"Chemical and Biological Defense, DOD Needs to Clarify Expectations for Medical Readiness."* GAO-02-38. Report to the Chairman, Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform, House of Representatives, (Washington, D.C. October 2001), 44

In addition to personnel trained in chemical and biological medical services, the DOD also possesses response teams with medical service capabilities in the U.S. Army Medical Command's Special Medical Augmentation Response Teams (SMART). These teams are capable of providing short duration medical augmentation to local, state, and federal agencies nationwide within twelve hours of notification.[88] There are a total of 287 personnel that can be designated to participate on one of the 43 SMARTs capable of providing response in 10 medical functional areas: Trauma/Critical Care (SMART-TCC), Nuclear/Biological/Chemical (SMART-NBC), Stress Management (SMART-SM), Medical Command, Control, Communications, Tele-medicine (SMART-MC3T), Pastoral Care (clinical) (SMART-PC), Preventive Medicine (SMART-PM), Burn (SMART-B), Veterinary (SMART-V), Health Systems Assessment and Assistance (SMART-HS), and Aeromedical Isolation (SMART-AIT).[89] Although, any or all

SMART can deploy to an incident site, the three most likely to respond to a terrorist chemical or biological attack are the Nuclear/Biological/Chemical, Preventive Medicine, and Aeromedical Isolation.

In addition to the SMART, DOD deploys medical capabilities with two other response teams, the Marine Corps CBIRF and the Chemical Biological Rapid Response Team (CB-RRT). The Marine Corps Chemical-Biological Incident Response Force can perform triage and emergency medical treatment in a contaminated area.[90] Their trauma unit can stabilize patients for up to seventy-two hours and the unit's medical officers and corpsmen have the ability to broadcast images via a satellite link using a lightweight video camera to experts outside the incident site.[91] The National Medical Chemical and Biological Advisory Team deploys with the CB-RRT (their capabilities are discussed in the next section), within four hours and can provide medical advice to local officials on protection of first responders and other health care personnel, casualty decontamination procedures, first aid (for non-medical personnel) and initial medical treatment, and casualty handling.[92] Finally, in addition to the CB-RRT and Marine Corps CBIRF, the Reserve and National Guard are prepared to deploy trauma and triage response elements that can deploy to an incident cite within seventy-two hours.[93]

Mental Health Services. In addition to the Stress Management SMART (SMART-SM), the National Guard and Reserves maintain stress management elements capable of providing support for military and civilian first responders and incident survivors.[94] This capability can be augmented by the psychiatrists and psychologists as well as mental health and occupational therapy personnel serving on active duty.

Mortuary Affairs. In addition to the DOD mortuary affairs units, the Mortuary Affairs Center at Fort Lee Virginia provides expert advice and assistance, in conjunction with the medical and medical examiners' offices, on managing, treating, and handling contaminated casualties.[95]

Patient Evacuation. The DOD has the capability to provide medical evacuation as well. In addition to MEDCOM's Aeromedical Isolation team, the USAMRIID also maintains an Aerodemical Isolation team to provide a rapid response evacuation capability anywhere in the world using Air Force assets to transport personnel exposed to contagious or highly dangerous diseases.[96] The team can also provide consultation on the appropriate management of exposed personnel in a mass casualty situation.

Technical Advice. Technical advice functions include offering expert advice, providing assistance in organizing equipment, and assisting to implement plans. The CB-RRT provides a technical support package specifically tailored for response requirements and is composed of a variety of existing DOD elements. This fourteen person team located at Aberdeen, Maryland can deploy an initial team within four hours and the remainder in less than twelve hours.[97] The CB-RRT can coordinate with the LFA, plan medical and non-medical assistance to local authorities and first responders, deploy an advisory team to the federal, state, and local command and control organizations, and provide technical expertise necessary to assist in mitigating a chemical or biological incident.[98] The CB-RRT deploys with two primary communications systems--the Deployable Communications System and the Deployable Response and Graphics Operations Network--that possess wireless and satellite communications, secret internet service, digital and cellular telephone service, and a suite of computers operating on a local and wide area network.[99] As previously mentioned, the National Medical Chemical and Biological Advisory Team deploys with the CB-RRT to provide medical advice.

Additional technical elements managed and coordinated by the CB-RRT include, but are not limited to, the TEU, U.S. Army Edgewood Chemical and Biological Center, U.S. Army ECBC Forensic Analytical Center, MEDCOM SMARTs and regional medical commands, USAMRICD, USAMRIID, U.S. Army Center for Health Promotion and Preventative Medicine, U.S. Navy Medical Research Center, U.S. Navy Environmental Health Center, U.S. Navy

Environmental and Preventive Medicine Units, and the U.S. Naval Research Laboratory (see figure 7).[100] In addition to the CB-RRT and the previously mentioned CBIRF and TEU, two other organizations within DOD can provide technical advice: the Defense Threat Reduction Agency and the USAMRICD.

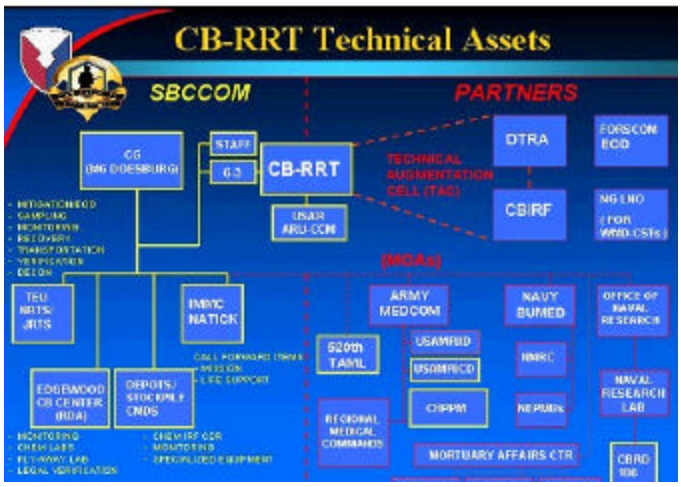

Figure 7. Chemical/Biological-Rapid Response Team Capabilities. Reprinted from Department of Defense, FM 3-11.21, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Aspects of Consequence Management* (Washington, D.C.: December 2001), D-5.

The Defense Threat and Reduction Agency provides two organizations able to provide expertise during a chemical or biological attack. Its Operations Center provides online assistance and wide band infrastructure support to first responders and warfighters. The Consequence Advisory Team provides expertise in determining chemical and biological requirements, resourceing, command and control, public affairs, and legal aspects.[101] The U.S. Army Soldier Biological Command Edgewood Chemical Biological Center provides soil, water, and air chemical surety remediation and restoration analysis.[102]

USAMRICD can deploy a Chemical Casualty Site Team (CSST) consisting of physicians, a nurse, toxicologists, veterinarians, and laboratory specialists. These specialists can provide support in understanding the medical effects of specific chemical warfare agents,

identifying chemical agents, determining a protection plan for personnel responding to chemical incidents, and guiding the decontamination of personnel and causalities.[103]

Finally, National Guard and Reserve Component units have trained preventive medicine teams that can provide health threat assessments, disease sampling, and preventive medicine estimates.[104]

Veterinary Services. DOD possesses veterinarians throughout the medical community. Regarding response teams, the MEDCOM SMART-Veterinary can assess risk and recommend actions relative to animal health and food safety. It can provide technical advice on preventive medicine issues, triage and treat injured animals, assess food contamination and the potential for food-borne illness outbreaks, determine zoonotic disease threats, and coordinate with animal medicine/food safety agencies and organizations at the incident site. A veterinarian also deploys with the USAMRICD CSST.

Quantity of DOD Response

It is not currently possible to determine whether DOD can provide the necessary quantity of assets to respond and recover from a terrorist chemical or biological attack, the second subtest for feasibility. Noted chemical and biological terrorism expert Jonathon Tucker asserts that: "[F]ederal response teams would…be too limited in size and capabilities to treat thousands of prompt casualties from a major chemical attack or to handle multiple, simultaneous terrorist events. For these reasons, primary responsibility for emergency health and medical services lies inevitably with local first-responders, including police, firefighters, paramedics, and hospital emergency department physicians."[105] Tucker's assertion errs in the fact there are DOD capabilities other than the elite response teams like the TEU, CBIRF, SMART, and CB-RRT. However, there is still a need to determine whether those assets, along with other federal agencies

augmenting state and local efforts, are still enough. In order to accomplish this, there must be better threat assessments completed.

Current threat assessments have been overly simplistic by only focusing on a single factor such as the agent that may be used or the motivations of the non-state actor that may use them.[106] The assessments done to date tend to concentrate on vulnerabilities, rather than risk which is the combination of vulnerabilities and risk. According to Moodie, the results are assessments that tend to "portray dangers that are virtually infinite."[107] Three results arise from these type of assessments. The first is policy paralysis in the face of an overwhelming challenge or pressure to commit enormous funds that will never be enough. The second is the fostering of worst case thinking that places resources to high consequence, low probability scenarios. The last result is the transformation of "what ifs" into contingencies that provide no sense of whether what is theoretically possible matches the reality of what is likely to happen.[108] Consequently, exercises such as TOPOFF and Dark Winter are conducted in a manner where the effects of the attack are not contained making it impossible to determine the adequate quantity, mix, and timing of response and recovery efforts. Improving threat assessments is a first step toward making this possible.

A better threat assessment potentially does several things for the federal, state, and local authorities. It can describe a "threat envelope" that would identify the most plausible scenarios and also provide a means to identify contingencies that due to the severity of their consequences require some preparation, even if they are relatively unlikely.[109] Additionally, better threat assessments will highlight that the threat is not just one factor, but rather multi-dimensional consisting of who (the actor and its motivations, intentions, and capabilities), what (the agent), where (the target), and how (mode of attack, dissemination mechanics, and other operational considerations).[110] Effective action depends on the "existence of a strategy that--for both military and domestic defense dimension--defines the contribution of each individual tool of policy,

relates them to one another, and integrates them in a such a way that they all work together toward the achievement of define goals and objective."[111] As a result, improved threat assessments is a first step toward improving FEMA's Regional Response Plans.

Timeliness of DOD Response

Experts acknowledge that any response, especially during a chemical attack, must occur within minutes and hours, not days, to save lives. Again, Tucker concludes: "[T]he only way a federal response team could get to the scene of a terrorist attack in a timely manner would be if the perpetrators provided advance warning or if reliable intelligence of an impending attack were available, but it would be imprudent to count on either of these assumptions."[112] Despite this, there is precedence in DOD policy to provide military support to a chemical or biological incident in a more timely manner.

The Immediate Response Authority found in DOD Directive 3125.1, *Military Support to Civil Authorities (MSCA)*, gives local military commanders and officials authority to take action necessary to "save lives, prevent human suffering, or mitigate great property damage" when time and conditions do not permit prior approval from higher headquarters.[113] By emphasizing the spirit of this authority, DOD can reduce its reliance on centrally controlled response assets by decentralizing the planning and execution of military support to civil authorities during a chemical or biological terrorist attack. Most local commanders have organic transportation assets (trucks and busses) to move people and equipment not already part of a response team to an incident cite. The dispersion of military organizations across the nation makes it feasible that local commanders can move military assets to a large number of incident sites, not necessarily as first responders, but to enhance response and recovery operations (see figure 6 and 8). Certainly, it would be impractical to have transportation assets on-call for an immediate response, say within hours. However, that impracticability can be mitigated with improved risk assessments allowing a commander to determine an appropriate readiness posture.

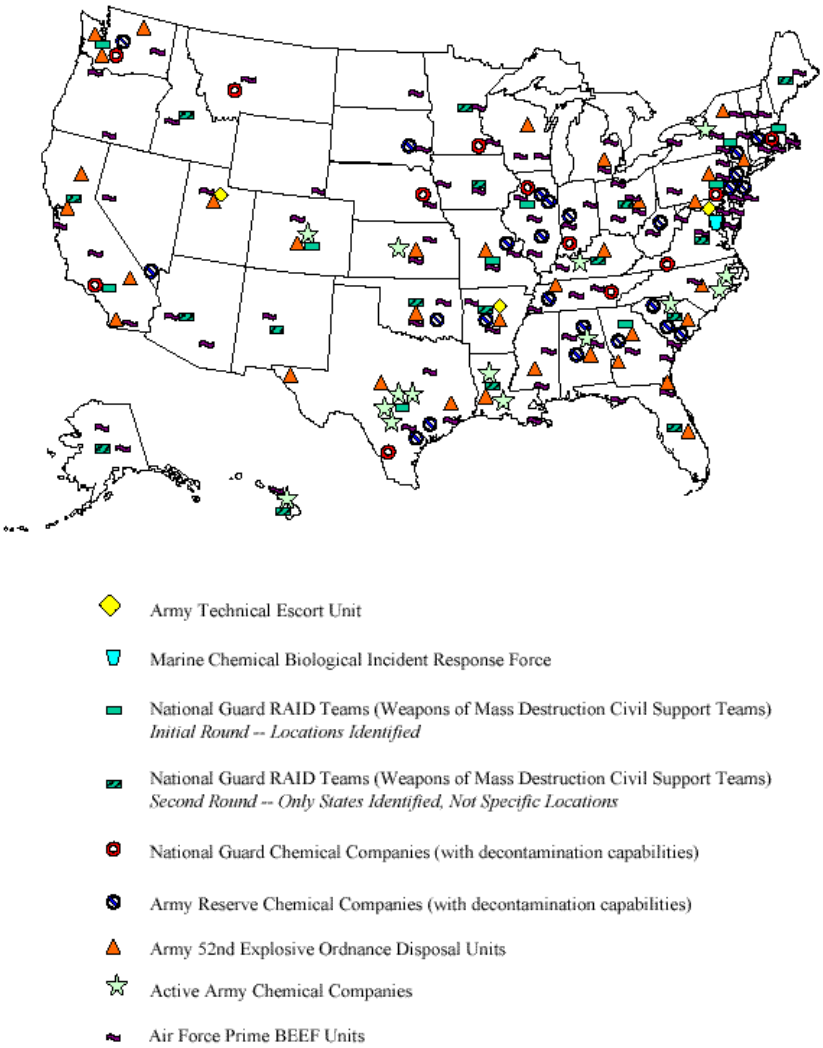

Figure 8. Military Chemical/Biological Assets. Reprinted with permission from Amy E. Smithson, and Leslie-Anne Levy, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response* (Washington, D.C.: The Henry L. Stimson Center, Chemical and Biological Weapons Nonproliferation Project, October 2000), 138.

The recently developed Homeland Security Advisory System is just one mechanism FEMA officials can use to communicate a risk assessment not only to military commanders, but all federal agencies providing response assistance. The system provides warnings in the form of a set of graduated threat conditions that increases as the risk of the threat increases and at each threat condition. The Office of Homeland Security has directed federal departments and agencies

to implement a corresponding set of protective measures not only to reduce vulnerabilities but also increase response capabilities during a period of heightened alert.[114] This gives department secretaries and agency directors flexibility in providing assistance. For example, instead of having many units and organizations on four hour alert, the Homeland Security Advisory System would allow military commanders to place more or less units on shorter or longer response times in accordance with the risk assessment provided by the Office of Homeland Security.

As a result, the new Homeland Security Advisory System will allow FEMA, and consequently DOD, to better plan the timeliness of the response and recovery assets. Adding improved threat assessments to the planning process will allow FEMA, and therefore DOD, to determine the quantity of DOD assistance necessary to respond and recover from a chemical or biological terrorist attack. In the end, improved threat assessments and the new Advisory System will allow FEMA to better save lives, protect property, meet basic human needs, and restore the disaster-affected area.

Result of the Feasibility Test

The DOD possesses capabilities in each of the functions evaluated in the second test. It can provide material and organizational solutions for those functions that are necessary but not prescribed in the *FRP* (see table 14) or the two supporting federal agency response plans (*National Contingency Plan* and *Health and Medical Services Support Plan*). It also possesses assets in roles already prescribed to DOD but where its response remains inadequate as witnessed during exercises like Dark Winter when federal officials withheld military assets because of operational readiness equipment (see table 13).

Again, DOD capabilities in communications, mass logistics, and public affairs were not evaluated because those functions are addressed in annexes other than ESF #8, #10, or the Terrorist Incident Annex. They are within the *FRP*'s ESF #2 (Communication), ESF #11 (Food), and the Public Affairs Annex.

Table 21. Summary of DOD Functional Capabilities

Function	DOD Capability
Chemical and Biological Protection	✓ CBIRF ✓ Joint Services Protection Program
Civil Disturbance Support	✓ Active Duty units ✓ National Guard
Communication	✓ *NOT EVALUATED*
Coordination	✓ JTF-Civil Support ✓ Response Task Force East/West ✓ CB-RRT
Disease Containment	✓ Active Duty units ✓ National Guard
Disease Surveillance Epidemiological Investigation Laboratory Support	✓ USAMRIID ✓ USN Medical Research Center ✓ CB-RRT ✓ Air Force Teams ✓ CBIRF
Food/drug/medical device safety	✓ MEDCOM SMART
Mass Logistics	✓ *NOT EVALUATED*
Mental Health Services	✓ MEDCOM SMART ✓ DOD Medical Personnel
Public Affairs	✓ *NOT EVALUATED*
Veterinary Services	✓ MEDCOM SMART ✓ USAMRICD ✓ DOD Veterinarians
Chemical and Biological Contamination Avoidance	✓ Technical Escort Unit ✓ Marine Corps Chemical-Biological Incident Response Force ✓ Chemical Companies ✓ Joint Chemical and Biological Defense Program
Chemical and Biological Decontamination	✓ TEU ✓ CBIRF ✓ Chemical Companies ✓ Joint Services Decontamination Program
Dismantle, transfer, and dispose of contaminated property	✓ TEU ✓ 52d Ordnance Group
Health and Medical Equipment Supplies	✓ MEDCOM
Hospital Care	✓ NDMS ✓ USAMRIID ✓ Mobile field hospitals ✓ Corps Support Hospitals

Table 21-*continued*

Medical Care Personnel	✓ CBIRF ✓ MEDCOM SMART ✓ CB-RRT ✓ DOD Medical Units/personnel
Mortuary Affairs	✓ DOD Mortuary Affairs Units
Patient Evacuation	✓ MEDCOM SMART ✓ Air Force Transportation ✓ USMRIID
Technical Advice	✓ TEU ✓ CBIRF ✓ Defense Threat Reduction Agency ✓ USAMRIID ✓ USAMRICD

Note: Roles necessary but not prescribed are above the double line; necessary and prescribed roles where the DOD response remains inadequate are below

As previously mentioned, when evaluating whether it is feasible DOD can perform a role in an identified function, it is important to determine whether the asset can arrive in the right quantity and at the right time.

Experts doubt the military can provide the right amount in a timely manner to save lives, protect property, and mitigate the circumstances of a terrorist chemical or biological attack. As a result, there are two considerations to improve the timing and quantity issues. First, there should be a national effort to complete better threat assessments. FEMA, and the FEMA led Weapons of Mass Destruction Interagency Steering Committee, can use those threat assessments to tailor response force packages and update Regional Response Plans. Second, timeliness can be improved by incorporating the Office of Homeland Security's new Homeland Security Advisory System and synchronizing it with a tiered DOD response, similar to the three-tiered approach outlined by the Secretary of Defense in his *1997 Domestic Preparedness Program Report to Congress*.[115]

Therefore, based solely on the criterion of possessing the capability and not whether the quantity or timeliness of the response is adequate, it is feasible for DOD to have a role in the

necessary functions not already tasked in the *FRP* (see tables 14). Additionally, it is feasible DOD can provide assets in those function prescribed already but where its response remains inadequate (table 13).

Suitability

The evaluation of a role's suitability comes by ascertaining its appropriateness for the military. This entails determining whether the role falls within the assigned missions, objectives, or goals of the military services and involves two approaches. The first, an external approach, examines the specified tasks national policy assigns DOD in response and recovery from a chemical or biological terrorist attack. The second, an internal approach, reviews what DOD itself has thought about response and recovery. Previously, this study reviewed the documents comprising both the combating terrorism and emergency preparedness national policy to determine DOD's prescribed role in response and recovery. Consequently, the external approach is already complete and table 12 outlines those functions where national policy prescribes a role to DOD. The second approach is explored next by reviewing defense doctrine, reports, and directives to discern what DOD has said about its own role in response and recovery operations.

One indicator of how much thought DOD has given to its response and recovery role is the availability of doctrine.[116] Written specifically for the military response to and recovery from a chemical or biological terrorist attack is Joint Service manual FM 3-11.21, *Multiservice Tactics, Technique, and Procedures for Nuclear, Biological, and Chemical Consequence Management.* It acknowledges that the DOD response to a chemical or biological terrorist attack against the homeland may involve personnel or equipment to execute the hazardous material critical tasks of contamination avoidance, protection, and decontamination.[117] Additionally, the manual acknowledges that successful response and recovery may require employment of DOD capabilities in the functional areas of communication, public affairs, health and medical work safety, medical care personnel, patient evacuation, mass logistics, health and medical supplies,

transportation, technical advice, coordination, public works, disease surveillance, and assessment.[118] The manual further states the recovery from a chemical or biological attack begins when the immediate hazards are contained or controlled to the point that military assets are replaced or are no longer needed. However, during the recovery phase, DOD response assets may still be required to take action to restore conditions at the incident site to include decontamination, medical services, and mass logistics.[119] Additional joint doctrine acknowledging a DOD role in response and recovery operations include Joint Publication 3-07.2, *Joint Tactics, Techniques, and Procedures for Antiterrorism* and Joint Publication 3-11, *Joint Doctrine for Nuclear, Biological, and Chemical Operations*. In addition to joint doctrine, there is service doctrine articulating the means and methods of employing their unique capabilities.

The Army's capstone doctrine manual FM 3-0, *Operations*, asserts that the Army "possesses capabilities suited to respond to [chemical and biological] incidents."[120] It acknowledges that the resources required to deal with chemical or biological incidents differ from those needed during conventional disasters and will include mass casualties that may require decontamination and a surge of medical resources, to include antidotes, vaccines, and antibiotics.[121] It further describes the public health threats related to food, vectors, water, waste, and mental health created by the resulting large number of casualties and toxic environmental hazards, as well as the necessity for mass evacuation. As the DOD Executive Agent for support and assistance to civil authorities, the Army doctrine manual is important in understanding what the armed forces say about its own role in response and recovery.

FM 3-0 also outlines the organizations and equipment able to respond to and recover from a chemical or biological terrorist attack. They include chemical units that can detect chemical and biological agents and decontaminate equipment and property. It also includes the U.S. Army Medical Command (MEDCOM) that can provide large-scale medical care through its experienced clinicians, planners, and support staffs by furnishing assessment, triage, treatment,

trauma care, hospitalization, and follow-up care for chemical and biological casualties. MEDCOM can also deploy field hospitals or evacuate victims to fixed facilities. The manual elaborates on the previously mentioned SMARTs that rapidly deploy to assist in medical treatment and response and how they focus on chemical and biological casualties, trauma and critical care, stress management, burns, and preventive medical threat assessment."[122] Finally, the Army's *Operations* manual lists additional support that may include bomb dogs, casualty and medical assistance, electrical and structural engineering, imagery, explosive ordinance disposal, linguist support, mortuary affairs, ground transportation, helicopter support, and public affairs.[123] In addition to its capstone manual on doctrine, the Army's FM 100-19, *Domestic Support Operations*, details support and assistance to civil authorities.

The manual outlines the way the Army plans to support civil authorities. It asserts that because disasters usually occur without warning, they create confusion and a shortage of health care personnel. One result is lack of workers to care for the dead and the manual outlines how Army mortuary affairs units can provide search, recovery, evacuation, and identification services.[124] It further describes how Army aviation can provide support to domestic operations to include air movement support of logistics and transportation operations; command and control support to federal, state, and local authorities; aeromedical evacuation; and reconnaissance and surveillance support. The manual outlines how military police are capable of providing search, rescue, and evacuation support; physical and area security; traffic circulation control; and have special expertise in civil disturbance operations.

The field manual also acknowledges that local civilian hospitals and resources may become saturated requiring activation of the NDMS and an Army response including deployment of hospital resources such as a combat support hospital or a mobile army surgical hospital. Additionally, military personnel can coordinate the evacuation of patients to Army Medical Department Activities community hospitals or medical centers throughout the U.S. Additional

medical support can include immunizations, chemical prophylaxis, pest management, nutritional programs, and epidemiological surveys. The doctrine also acknowledges the potential for Army public affairs and communications capabilities to support operations.

Other service doctrine addressing the requirement for domestic support to response and recovery operations include Army and Air Force nuclear, biological, and chemical doctrine (the FM 3-series and MCWP 3-37 series) and Air Force doctrine on military operations other than war (AFDD 2-3), air mobility (AFDD 2-6 series), and health services (AFDD 2-4.2).[125] In addition to both joint and service doctrine, there are DOD directives that provide guidelines, limitations, and constraints on military support and assistance to civil authorities during disasters and emergencies.

The DOD *Manual for Civil Emergencies* (DOD 3025.1-M) provides guidance for the planning, coordination, and execution of military support to civilian authorities during civil emergencies involving all hazards.[126] The manual asserts that local commanders may use their Immediate Response Authority, which is any form of immediate action taken by a DOD component or military commander to save lives, prevent human suffering, or mitigate great property damage under imminently serious conditions. The response can include action to "assist in the rescue, evacuation, and emergency medical treatment of casualties, the maintenance or restoration of emergency medical capabilities, and the safeguarding of public health."[127] Specifically regarding health and medical services, the manuals states that the services must plan and program medical support to the *FRP* following a catastrophic event, coordinate with the Director of Military Support to identify medical units and personnel trained to provide medical support to the *FRP*, and provide medical augmentation as during activation of the *FRP*.[128] The manual further acknowledges that support may also include communications, transportation, power, and fuel. It also addresses the potential for response to a civil disturbance which is governed by a separate DOD Directive.

The DOD Directive 3025.12, *Military Assistance for Civil Disturbances (MACDIS)* acknowledges that under Executive Order 12656 (Assignment of Emergency Preparedness Responsibilities), federal agencies and departments are to identify facilities and resources, government and private, essential to national defense and welfare and to provide for the security of those facilities and resources and avoid or minimize disruptions during any national security emergency.[129] It also stipulates military forces may be used in emergency circumstances such as when necessary to prevent loss of life and to restore a functioning government and public order.[130] The directive states Army and Air National Guard forces have the primary responsible for providing military assistance to state and local government in civil disturbances serving under command of the state's governor and further stipulates during a terrorist incident on the homeland, DOD will only commit federal forces after mutual agreement with the FBI.[131] DOD also addresses military support in DODD 3025.1, *Military Support to Civil Authorities*.

The directive states that "[s]ubject to priorities, established by the President of SECDEF, all DOD resources are potentially available for MSCA."[132] It reiterates the Immediate Response Authority which allows military commanders, officials, or DOD agencies to take action to save lives, prevent human suffering, or mitigate great property damage resulting from any civil emergency or attack creating imminently serious conditions. The directive acknowledges DOD assistance to civil agencies may include the following:

1. Rescue, evacuation, and emergency medical treatment of casualties; maintenance or restoration of emergency medical capabilities

2. Safeguarding the public health

3. Emergency restoration of essential public services (including fire fighting, water, communications, transportation, power, and fuel)

4. Emergency clearance of debris, rubble, and explosive ordnance from public facilities and other areas to permit rescue or movement of people and restoration of essential services

5. Recovery, identification, registration, and disposal of the dead; monitoring and decontaminating radiological, chemical, and biological effects

6. Controlling contaminated areas; and reporting through national warning and hazard control systems

7. Roadway movement control and planning; safeguarding, collecting, and distributing food, essential supplies, and materiel on the basis of critical priorities

8. Damage assessment; interim emergency communications

9. Facilitating the reestablishment of civil government functions[133]

The DOD response capabilities are also acknowledged in the Secretary of Defense's *Annual Report to Congress*.

In his *2001 Annual Report to Congress*, the Secretary of Defense outlines the DOD capabilities to support consequence management operations in Chapter 7 (Managing the Consequences of Domestic Weapons of mass Destruction Incidents). He reports the establishment of the Joint Task Force-Civil Support to "plan for and integrate DOD's support to the LFA for domestic consequence management."[134] The 2001 annual report, as well as the previously mentioned FM 3-11.21, lists the assets DOD maintains for domestic consequence management including the Marine Corps CBIRF, the Army TEU, the Army SMARTs, the CB-RRT, the USAMRIID, the Navy Medical Research Center, the USAMRICD, and the Defense Threat Reduction Agency, mobile field hospitals, logistics, communications, mortuary affairs, military police, search and rescue teams, and chaplains.[135] The annual report also references assets capable of decontamination, medical support, logistics, transportation, and communication functions.[136] In outlining the DOD principles for consequence management, the annual report highlights the fact many assets are dual use and reside in the armed forces' warfighting capabilities, an important point discussed later in this chapter.

Results of the Suitability Test

The external national strategic documents and DOD internal sources provide sufficient evidence of the suitability of all the functions considered during the second test. The appropriateness of these roles exists because of their assignment by six external documents—*Federal Response Plan*, *National Contingency Plan*, *Health and Medical Services Support Plan*, *CONPLAN*, Weapons of Mass Destruction Act of 1996, and EO 12656 (see table 12). Additionally, evidence that DOD has put thought into its own role when the federal government responds to a chemical or biological terrorist attack against the homeland is included in doctrine (FM 3-11.21, FM 3-0, and FM 100-19), directives (DODDs 3025.12, 3025.1, 3025.15, and 3025.1-M), and reports like the *2001 Annual Report to Congress*. Table 22 summarizes the internal documents addressing the necessary functions that are not prescribed to DOD (from table 14) or prescribed but where the DOD response remains inadequate (from table 13).

Table 22. Suitability of Necessary Functions

	FM 3-11.21	FM 3-0 *Army Operations*	FM 100-19 *Domestic Support Operations*	DODD 3025.12	DOD 3025.1-M *Manual for Civil Emergencies*	DODD 3025.1 *MSCA*	*2001 Annual Report to Congress*
Chemical/Biological Protection	**X**						
Civil Disturbance Support			**X**	**X**	**X**		
Communication	**X**		**X**		**X**	**X**	**X**
Coordination	**X**						**X**

Disease Containment							
Disease Surveillance	X						X
Epidemiological Investigation	X		X				X
Food/drug/medical device safety		X					
Laboratory Support							X
Mass Logistics	X	X	X		X	X	X
Mental Health Services		X			X		X
Public Affairs	X	X	X				
Veterinary Services		X			X		
Chemical/Biological Contamination Avoidance	X	X					X
Chemical/Biological Decontamination	X	X					X
Dismantle, dispose, and transfer of contaminated property		X					X
Health Medical/Equipment and Supplies	X	X	X		X		X
Hospital Care	X	X	X		X		X
Medical Care Personnel	X	X			X	X	X
Mortuary Affairs		X	X			X	X
Patient Evacuation	X	X	X		X	X	X
Technical Advice	X	X					X

Note: Roles necessary but not prescribed are above the double line; necessary and prescribed roles where the DOD response remains inadequate are below

Acceptability

The acceptability of a function is a calculation of whether the benefit is worth the cost in manpower, materiel, and time involved, with consideration given to whether the assigned role is consistent with the nation's laws, within the traditional employment of military power and whether precedence exists.[137] This study subjective examines the benefits of avoiding the mass effects of chemical and biological weapons and the costs that come with committing our military to a domestic support mission. The legality of the function is discernable after examination of U.S. Code and Public Law. Finally, the determination whether there is precedent is possible by examining three military domestic support operations: Hurricane Andrew , Los Angeles riots, and the 1996 Summer Olympics.

Benefits

The benefits of revising the DOD role in the *FRP* regarding response to and recovery from chemical or biological terrorist attacks are understood best by examining what it prevents,

rather than what it provides. Revising DOD's role in the *FRP* improves the federal government's ability to assist states in saving lives, protecting property, and mitigating the circumstances of an incident. Specifically, it prevents costs associated with employment of chemical or biological weapons of mass effects.

Potentially large number of casualties and injuries can occur as seen in the Aum Shinrikyo attack where 12 died and at least 825 suffered chemical injuries, or in the exercise Dark Winter where 10,000 deaths occurred during the first two weeks of a smallpox epidemic. Panic can set in as it did after the Aum attack where 60 percent of the injured patients suffered post traumatic stress syndrome 6 months following the attack. There was evidence of panic in the U.S. following the anthrax scare such as when officials quarantined a plane in Cleveland, Ohio, after spotting a white powder. Also, the entire Sands Casino Hotel in Atlantic City, New Jersey shuts down when a patron finds medicine bottle with a white substance in it. The economic costs are devastating as well. The Center for Disease Control estimates the lowest cost will be $477 million per 100,000 people exposed to a biological agent. The Los Angeles riots cost the city $717 million. Certainly everyone in the U.S. has suffered some setback to their personal freedom whether from removing their shoes prior to boarding a plane or having their purse searched before entering a basketball stadium.

There are other benefits that come with a revised DOD role. By the very nature of the fact DOD is a large department, developing and training defense capabilities normally create economies of scale. In this case, it is less costly in the aggregate to fund capabilities in a federal department that can deploy to an incident scene than to fund the same capabilities in each state or in the each of the 120 cities participating in the Domestic Preparedness Program. Of course, gains in economies of scale realized by revising DOD's role comes at the expense of not having that same capability at the local or state level. Because military assets are located throughout the country (see figures 6 and 8), they essentially provide a pre-staged national response capability.

Additionally, the location of those military assets tend to remain fixed as do the capabilities at each site. Although, changes occur as they did during the Base Realignment and Closure activities during the 1990s when installations closed and military units deactivated.

Costs

In his 2001 Annual Report to Congress, the Secretary of Defense highlights the costs associated with committing DOD capabilities to support state and local agencies in responding and recovering from a chemical or biological attack. Since most of the DOD organizations and equipment that respond to a terrorist employment of a chemical or biological weapon of mass effects are largely resident in the armed forces warfighting capabilities, they are commonly referred to as dual use.[138] Consequently, DOD assets committed to respond and recover from a terrorist chemical or biological attack against the homeland are assets that cannot be committed to a major theater of war or small scale contingency around the world, and vice versa. As a result, after an incident occurs, DOD will have to balance LFA requests for support against any ongoing warfighting requirements. During exercise Dark Winter, DOD withheld committing assets because of tensions occurring in the Middle East during the notional smallpox epidemic.

Expert predictions worsen the situation as they see the use of chemical or biological agents by future opponents as a means to counter U.S. military strength. The Army's Training and Doctrine Command views a world that by 2015 will have an operational environment characterized by opponents employing "weapons of mass effects" in an attempt to deny force projection operations.[139] RAND predicts that by 2025 adversaries will be capable of launching limited chemical and biological attacks at military targets to disrupt U.S. power projection operations and against civilian targets to "deter U.S. involvement or raise the costs of intervention."[140] The increase in state sponsorship of terrorism further increases this likelihood. Consequently, the homeland may be most vulnerable to terrorist attack while many of the DOD response and recovery assets are deployed and unable to respond domestically. This dilemma

further highlights the assertion that better threat assessments are needed. With complete assessments, FEMA and DOD can improve contingency planning to reduce vulnerability and capability gaps.

One way in which federal and state governments can reduce the vulnerability resulting from the dual use dilemma is to increase resident capabilities in the National Guard or Reserve Component. The Hart-Rudman Commission recommends the National Guard assume homeland security as its primary mission.[141] Analysts from the Strategic Assessment Center conclude the National Guard is well suited for the homeland security mission due to its pre-existing state disaster response mission where it works closely with public safety and medical agencies, its close ties with the local communities, and its members who work in the civilian economy.[142] During Dark Winter, exercise officials cited the services of the National Guard as "invaluable" in all the affected states, performing services like establishing communication links between hospitals and public health agencies, delivering vaccines, and performing civil disturbance control at emergency rooms.[143] The Army Reserve has 63 percent of the U.S. Army's chemical units stationed across the nation able to perform contamination avoidance, decontamination, and protection functions.[144] Additionally, 70 percent of DOD's medical forces reside in the National Guard and Reserve Component.[145] This may be the most cost effective approach to improving homeland security while not diminishing the nation's warfighting capabilities. Security policy makers are faced with the complex possibility of simultaneously meeting the nation's threats both internationally and domestically.

Legality

The legality of employing the armed forces to conduct domestic operations in support of civil authorities lies in constitutional and statutory authority. There are several constitutional bases for the use of the military domestically to support and assist civil authorities. Article One of the U.S. Constitution gives Congress the power to "provide for calling forth the [m]ilitia to

execute the laws of the Union, suppress insurrections, and repel invasions."[146] The Second Article gives the President the power to employ the National Guard when they are called into service, or federalized.[147] Finally Article Four charges the federal government to protect each of the states against "domestic violence."[148]

The Supreme Court recognizes that it is not possible to define all of the circumstances "arising in time of war or of immediate and impending public danger" necessitating military employment.[149] President and later Chief Justice William Taft believed the commander-in-chief can employ the army and navy anywhere he wants as long as resources were appropriated.[150] The constitutionality of the President to use Active Duty troops and federalized National Guard units has been upeld in cases *Laird v Tatum* following the civil disturbances after Reverend Martin Luther Kink Jr.'s assassination and in *Cooper v Aaron* over the school desegregation order in Little Rock, Arkansas. There are specific statutes that authorize the President to use the armed forces in the event of a domestic emergency to help restore public order, save lives, and protect public health and safety.[151]

Regarding hazardous material operations, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authorizes the President take any response measures "necessary to protect public health or welfare or the environment" from the release of hazardous substances, pollutants, or contaminants that "present an imminent or substantial danger."[152] Although CERCLA does not specifically address intentional uses of chemical or biological agents, organizations like the Center for Strategic and International Studies consider the statue broad enough to cover terrorist incidents as they pose an imminent and substantial danger to public health.[153] CERCLA does not limit the president's options in employing federal departments and agencies, including DOD.[154]

Regarding health and medical services, Title 42 directs the Secretary of Health and Human Services to "assist [s]tates . . . in the prevention and suppression of communicable

disease" and cooperate with and aid "state and local authorities in the enforcement of their quarantine and other health regulations."[155] Additionally, the Surgeon General is authorized to establish quarantines to "prevent the introduction, transmission, or spread of communicable disease" from state to state.[156] Title 42 also permits detention of individuals "found to be affected."[157] The U.S. Supreme Court has upheld the quarantine authority, to include state quarantine legislation, in *Zemel v Rusk*. It noted the constitutional freedom to travel within the U.S is protected however, it does not mean areas cannot be quarantined when "unlimited travel to the area would directly…interfere with the safety and welfare of the area of the [n]ation as a whole."[158]

In June 1878, Congress passed Title 18, Section 1385, or the Posse Comitatus Act, governing the use of the Army and Air Force as a posse comitatus. It states "[whoever, except in cases and under circumstances expressly authorized by the Constitution or Act of Congress, willfully uses any part of the Army or the Air Force as a posse comitatus or otherwise to execute the laws shall be fined under this title or imprisoned not more than two years, or both."[159] In the years following passage of the Act, Congress created a number of statutory exceptions falling into four major categories: insurrections/civil disturbances, counterdrug operations, disaster relief, and counterterrorism/weapons of mass destruction. All but the counterdrug exception is relevant to this study.

The first exception is included in the Insurrection Act, which empowers the president to use the military to respond to civil disturbances.[160] It states "[t]he President, by using the militia or the armed forces, or both, or by any other means, shall take such measures as he considers necessary to suppress, in a [s]tate, any insurrection, domestic violence, unlawful combination, or conspiracy."[161] This was the authority used to deploy forces to the 1992 Los Angeles riots.

The Stafford Act provides the second exception to the Posse Comitatus. It authorizes the President to assign roles to DOD essential to preserving public health and safety subsequent to a

major disaster or emergency. A terrorist attack using a chemical or biological weapon would be a disaster declared under the Stafford Act as done by the president during two recent terrorist incidents: the 1995 Alfred E. Murrah Building bombing in Oklahoma City and the September 2001 attacks on the World Trace Center and Pentagon. [162]

The U.S. Code 42 (The Public Health and Welfare), Chapter 68 (Disaster Relief), or the Stafford Act, authorizes the president to direct any federal agency, including DOD to use its authorities and resources--personnel, equipment, supplies, facilities, and advisory services--in support of state and local emergency assistance efforts to "save lives, protect property and public health and safety, and lessen or avert the threat of a catastrophe."[163] The Stafford Act gives the president the same authority in meeting the immediate threats to life and property resulting from a major disaster. Federal assistance may include work and services to save lives and protect property including debris removal; search and rescue; emergency medical care; emergency mass care; emergency shelter; provision of food, water, medicine, and other essential needs; movement of supplies or persons; clearance of roads and construction of temporary bridges; warnings of further risks and hazards; dissemination of public information and assistance regarding health and safety measures; and the reduction of immediate threats to life, property, and public health and safety.[164] Funding for support comes from Title 31 covering money and finance. The Economy Act provides the legal authority for DOD to provide goods and services to other agencies when it is in the best interest of the nation.[165] The Public Health and Welfare code also specifically addresses the use of armed forces.

Title 10, Chapter 18 also amends Posse Comitatus. It permits the use of the military in emergency situations involving chemical or biological weapons of mass destruction. Additionally, it allows the Secretary of Defense to provide equipment and supplies to emergency response agencies "prepare for or respond to an emergency involving chemical or biological agents," to include sensors, training facilities, protective clothing, and antidotes.[166]

Although officials have interpreted the Posse Comitatus Act in a manner where military power is subordinate to civil law enforcement, it has never been thought to apply to the wider range of military domestic support operations.[167] Federal courts have upheld the navy's provision of ships, supplies, communication equipment, and aerial reconnaissance assets in the apprehension of drug trackers (*US v Kahn*) and terrorists (*US v Yunis*).[168] Public Law 106-65 permits the Secretary of Defense to "provide assistance to [c]ivil [a]uthorities in responding to an act of terrorism or threat of an act of terrorism."[169] The Center of Strategic and International Studies concludes the Posse Commitatus Act preserves a broad field of "lawful activities" to the military and it is not surprising no one "appears to have been convicted of a violation " of the Act since its enactment 123 years ago.[170]

The Defense Against Weapons of Mass Destruction Act tasks the Secretary of Defense to "develop and maintain at least one domestic terrorism rapid response team . . . capable of aiding federal, state, and local officials in the detection, neutralization, containment, dismantlement, and disposal of weapons of mass destruction containing chemical, biological, or related materials."[171] The Act also holds the Secretary of Defense responsible for the coordination of Department of Defense assistance to federal, state, and local officials in responding to threats involving biological or chemical weapons.[172] Part of the Act directs Domestic Preparedness Program.

Under the Domestic Preparedness Program, DOD is to provide civilians of federal, state, and local agencies with training and expert advice regarding emergency response to chemical or biological attacks and technical advice during a response.[173] It can include advice in areas such as detecting a chemical or biological agent, monitoring the presence of such an agent, protecting emergency personnel and the public; and decontamination.

Within Title 50, Congress also holds DOD responsible for the hazardous material functions of contamination avoidance, protection, decontamination, and dismantling, disposing, and transferring contamination property. Chapter 32 (Chemical and Biological Defense

Capabilities) of Title 50 charges the Secretary of Defense to carry out the nation's chemical and biological defense program.[174] Regarding health and medical services, Chapter 40 (Defense Against Weapons of Mass Destruction), tasks DOD is to assist the Secretary of Health and Human Services and provide "medical services that are necessary or potentially necessary by reason of a use or threatened use of a weapon of mass destruction."[175]

Precedence of Military Support to Domestic Civil Authorities

The 1990s provide three examples of military assets responding to disaster and emergencies: the aftermath of Hurricane Andrew, the Los Angeles Riots, and the 1996 Atlanta Summer Olympics. These three military deployments are demonstrative of a domestic disaster, emergency, and special activity that necessitated DOD participation to actually or potentially save lives, protect property, and reduce suffering.

On 24 August 1992, Hurricane Andrew hit the southern Florida coast with 160 miles per hour winds and its 35 miles path of destruction demolished 65,000 homes leaving survivors without water, electricity, or telephone service and creating heavy debris that blocked roads making ambulance, fire, and food deliver services difficult and slow. By order of the president, DOD formed and deployed Joint Task Force Andrew (JTF Andrew) including forces from the 82d Airborne Division and 10th Mountain Division; ultimately growing to 9,500 soldiers, 3,400 sailors, 800 Marines, and 1,000 airmen from the active and reserve components.[176] During the course of the operation, JTF Andrew operated 24 support sites that produced 35,000 meals per day and established four life support centers that provided tents, medical care, potable drinking water, showers, housing repair materials, and donated items. The Army's Material Command distributed clothes, diapers, bottled water, and food and MEDCOM provided combat stress, preventive medicine, veterinary, and health facilities planning augmentation to the medical elements organic to the two divisions. The Army's Transportation Center deployed a Joint Movement Center to Florida and successfully provided a combination of air, land, and sea

transportation to DOD forces, disaster victims, and relief workers.[177] DOD forces significantly contributed to the unified action that relieved human suffering and aided victims in rebuilding their communities. Four months earlier, the armed forces found itself deployed on a different domestic support operation, the Los Angeles riots.

Initially sparked by the state court acquittal of four police officers in the Rodney King case, the April 1992 riots in Los Angeles spread widely across many parts of the city and DOD found itself deployed to conduct civil disturbance operations.[178] The Army National Guard's 40th Infantry Division deployed 10,465 troops that were subsumed by Joint Task Force-Los Angeles Headquarters. Although the operations highlighted problems with equipment inadequacies, interagency coordination problems, and civil disturbance readiness, the riots subsided.[179] Six days after beginning, the riots ended with 54 persons killed, 2,383 injured (221 critically), 13,212 people arrested, close to 11,113 fires, and final damage estimated at $717 million for Los Angeles County. Another domestic support operations DOD participated in during the 1990s were the 1996 Summer Olympics.

During the 1996 Summer Olympic games in Atlanta, DOD provided response and recovery capabilities in the event of a chemical or biological terrorist attack. The Marine Corps CBIRF established itself in a winery in downtown Atlanta prepared to conduct contamination avoidance, decontamination, medical care, and security operations.[180] Additionally, the Naval Medical Research Institute provided epidemiological investigation and laboratory support to the CBIRF in a reach back capacity. In addition to the 120 CBIRF personnel and the Naval Medical Research Institute, officials established a Chemical/Biological Response Team (before the CB-RRT existed) at Dobbins Air Force Base outside of Atlanta. Included on the five person team was a Navy doctor to provide medical services and two people from the Army's TEU to conduct contamination avoidance, decontamination, and dismantling, disposing, and transferring of contaminated property functions.[181]

Summary of Acceptability

The functions previously determined necessary but not prescribed to DOD (table 14) or prescribed where the DOD response remains inadequate (table 13) are all acceptable to consider for a revised DOD role (see table 23). Certainly government leaders will want to do anything to avoid the effects of a terrorist chemical or biological attack. The outcomes can be devastating. The benefits of an effective federal response is the avoidance of thousands injured and killed, psychological damage, people living in fear, loss of the U.S. strategic position, economic damage, and political turmoil as the government attempts to take action to gain the confidence of its citizens which may result in civil rights infringements. This study did not intent to conduct a quantitative cost-benefit analysis, but rather a subjective review of each. However, one issue that arise is the dual use dilemma, where DOD assets able to respond to an incident reside in its war-fighting capabilities. Articles of the Constitution as well as Title's 10, 42, and 50 provide the legal basis for military employment. The Defense Against Weapons of Mass Destruction Act of 1996 provides further justification for the use of armed forces when responding to and recovering from chemical and biological terrorist attacks against the homeland. Finally, precedence for DOD employment during disasters and emergencies is evident in operations like the support provided during the aftermath of Hurrican Andrew, the 1992 Los Angeles riots, and the 1996 Summer Olympics in Atlanta, GA.

Table 23. Acceptability of Functions

Necessary Functions	**Legality**	✓ **Traditional Employment**
Chemical/Biological Protection	✓ CERCLA ✓ Title 50 ✓ Stafford Act	✓ 1996 Summer Olympics
Civil Disturbance Support	✓ CERCLA ✓ Title 50 ✓ Stafford Act	✓ LA Riots

Communication	NOT EVALUATED	
Coordination	✓ Title 50 ✓ Stafford Act	✓ Hurricane Andrew ✓ 1996 Summer Olympics
Disease Containment	✓ 10 USC ✓ Stafford Act	✓
Disease Surveillance	✓ 10 USC ✓ Stafford Act	✓ West Nile Virus Outbreak
Epidemiological Investigation	✓ 42 USC (Stafford Act)	✓ West Nile Virus Outbreak
Food/drug/medical device safety	✓ 42 USC	✓ Hurricane Andrew
Laboratory Support	✓ 42 USC	✓ West Nile Virus Outbreak
Mass Logistics	*NOT EVALUATED*	
Mental Health Services	✓ 42 USC	✓ Hurricane Andrew
Public Affairs	*NOT EVALUATED*	
Veterinary Services	✓ 42 USC	✓ Hurricane Andrew
Chemical/Biological Contamination Avoidance	✓ CERCLA ✓ Title 50 ✓ Stafford Act	✓ 1996 Summer Olympics
Chemical/ Biological Decontamination	✓ CERCLA ✓ Title 50 ✓ Stafford Act	✓ 1996 Summer Olympics
Dismantle, dispose, and transfer of contaminated property	✓ CERCLA ✓ Title 50 ✓ Stafford Act	✓ 1996 Summer Olympics
Health Medical/Equipment and Supplies	✓ 42 USC	✓ Hurricane Andrew
Hospital Care	✓ 42 USC	✓ Hurricane Andrew
Medical Care Personnel	✓ 42 USC	✓ Hurricane Andrew
Mortuary Affairs	✓ 42 USC	✓
Potable Water/Wastewater and Solid Waste Disposal	✓ 42 USC	✓ Hurricane Andrew
Patient Evacuation	✓ 42 USC	✓ Hurricane Andrew
Technical Advice	✓ 42 USC	✓ 1996 Summer Olympics

Note: Roles necessary but not prescribed are above the double line; necessary and prescribed roles where the DOD response remains inadequate are below

[1]Federal Emergency Management Agency, *Federal Response Plan* (Washington, D.C., April 1999), 1.

[2]Ibid., 1.

[3]Federal Emergency Management Agency, *Federal Response Plan*, 3.

[4]Ibid.

[5]President, Decision Directive 39, "U.S. Policy on Counterterrorism," June 21, 1995, available from http://www.fas.org on 1 September 2001.

[6]Ibid.

[7]FEMA, *Federal Response Plan (1999)*, TI-1.

[8]Ibid., TI-1.

[9]Ibid., TI-2.

[10]Ibid., TI-16.

[11]Ibid., TI-16.

[12]Ibid., TI-11.

[13]Ibid., 6.

[14]Ibid., ESF #10-5.

[15]Ibid., ESF #10-1 through ESF #10-2.

[16]FEMA, *Federal Response Plan (1999),*ESF #10-1 – ESF #10-2.

[17]Both tasks come directly from FEMA, *Federal Response Plan (1999)*, ESF #10-15.

[18]FEMA, *Federal Response Plan (1999)*, ESF #8-1.

[19]Ibid., ESF #8-2.

[20]Ibid., ESF #8-2.

[21]All 14 tasks come from FEMA, *Federal Response Plan (1999)*, ESF #8-17 through ESF #8-18.

[22]Environmental Protection Agency website at http://www.epa.gov, obtained on 13 December 2001.

[23]Environmental Protection Agency, *National Oil and Hazardous Substances Pollution Contingency Plan,* 40 CFR citation: 300920 OMB control No.: 2050-0141, 47417.

[24]Available from http://www.epa.gov/oerrpage/superfund/programs/er/nrs/nrsnrt.htm; accessed on 25 March 2002.

[25]Both tasks come from Environmental Protection Agency, *National Oil and Hazardous Substances Pollution Contingency Plan,* Section 300.175.

[26]FEMA, *Federal Response Plan (1999)*, TI–13.

[27]Department of Health and Human Services, "Medical Response in Emergencies: HHS Role," *HHS Fact Sheet*, 25 January 2001, obtained from http://www.hhs.gov/news/press/2001pres/01fsemergencyresponse.html on 7 December 2001.

[28]FEMA, *Federal Response Plan (1999)*, TI–12.

[29]FEMA, *Federal Response Plan (1999)*, TI–12.

[30]Department of Health and Human Services, *Medical Support Plan for the Federal Response to Acts of Chemical/Biological (C/B) Terrorism*, 4.

[31]Ibid., 5.

[32]Ibid., 23.

[33]Ibid., 6.

[34]All 6 tasks come from Department of Health and Human Services, *Medical Support Plan for the Federal Response to Acts of Chemical/Biological (C/B) Terrorism*, 23.

[35]Public Law 104-201, Title XIV. US Congress, Senate Committee on Governmental Affairs, Permanent Subcommittee on Investigations, *Global Proliferation of Weapons of Mass Destruction*, 104th Cong., 1st sess., 31 October and 1 November 1995 (Washington, DC: US Government Printing Office, 1996), section 1411.

[36]All of these tasks come from Congress, Senate, *National Defense Authorization Act for Fiscal year 1997*, 104th Cong., 1st sess., H.R. 3230, (23 September 1996), secs. 1411-1417; available from http://thomas.loc.gov/cgi-bin/query/D?c104:1:./temp/~c104tKAbnY:e966570; Internet; accessed on 15 January 2002

[37]Ibid., Section 1411.

[38]Ibid., Section 1412.

[39]Ibid., Section 1413 and 1414.

[40]Ibid., Section 1415.

[41]Ibid., Section 1416.

[42]President, Decision Directive 39, "U.S. Policy on Counterterrorism," June 21, 1995, obtained from http://www.fas.org on 1 September 2001.

[43]Ibid.

[44]All three specified tasks come from Presidential Decision Directive 39; Ibid.

[45]Department of Justice, "Presidential Decision Directive 62," Department of Justice website; available from http://www.blackstone.ojp.usdoj.gov/osldps/lib_pdd62.html; Internet; accessed on 9 April 2001.

[46]Ibid.

[47]Department of Defense. *Critical Infrastructure Protection Plan.* Washington, D.C., 18November 1998. Obtained from http://www.fas.org/irp/offdocs/pdd/DOD-CIP-Plan.htm on 8 December 2001.

[48]U.S. President, Executive Order, "Assignment of Emergency Preparedness Responsibilities, Executive Order 12656," *Federal Register* Vol. 53, No. 228 (23 November 1988): 47491, section 102 (a).

[49]All 15 tasks come from Section 501.

[50]All 8 tasks come from Section 502.

[51]Ibid., Section 104.

[52]President, Executive Order, "Establishing the Office of Homeland Security and the Home-land Security Council, Executive Order 13228," *Federal Register* Vol. 66, No. 196 (10 October 2001): 51812

[53]Ibid., 51814.

[54]FEMA, *Federal Response Plan (1999),* 2; President, Executive Order, "Establishing the Office of Homeland Security and the Home-land Security Council, Executive Order 13228," 51814.

[55]Ibid., 51816.

[56]Federal Bureau of Investigation, *United States Government Interagency Domestic Terrorism Concept of Operations Plan,* January 2001; available from http://www.fema.gov/r-n-r/conplan/cplncvr.pdf; Internet; accessed on 21 November 2000, iii.

[57]Ibid., iii.

[58]Ibid., 4.

[59]All tasks come from Federal Bureau of Investigation, *United States Government Interagency Domestic Terrorism Concept of Operations Plan,* 4.

[60] John Hopkins Center, *Final Script—Dark* Winter, 25.

[61]Department of Defense, *Department of Defense Chemical and Biological Defense Program Annual Report to Congress and Performance Plan* (Washington, D.C., July 2001), 26.

[62]Ibid., 30.

[63]Department of Defense, FM 3-11.21, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Aspects of Consequence Management,* (Washington, D.C.: December 2001), D-5; Technical Escort Unit website at http://teu.sbccom.army.mil/index.htm. Accessed on 6 December 2001.

[64]Government Accounting Office, *Combating Terrorism: Federal Response Teams Provide Varied Capabilities; Opportunities Remain to Improve Coordination*, (Washington,

D.C.: U.S. Government Accounting Office, November 2000), 37, GAO-01-14 and from Technical Escort Unit website; available from http://teu.sbccom.army.mil/index.htm; Internet; accessed on 6 December 2001

[65]Department of Defense, *Department of Defense Chemical and Biological Defense Program Annual Report to Congress and Performance Plan*, 124-125.

[66]Government Accounting Office, *Combating Terrorism: Federal Response Teams Provide Varied Capabilities; Opportunities Remain to Improve Coordination*, 37, GAO-01-14.

[67]Department of Defense, *Department of Defense Chemical and Biological Defense Program Annual Report to Congress and Performance Plan*, 125.

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CHAPTER 6

RECOMMENDATIONS

Introduction

There are several roles the Federal Emergency Management Agency (FEMA) should consider prescribing to the Department of Defense (DOD) in the *Federal Response Plan* (*FRP*) regarding the response to a chemical or biological terrorist attack against the homeland. There are roles regarding hazardous material functions, health and medical services functions, coordination, disease containment operations, civil disturbance support, and technical advice that are feasible, suitable, and acceptable for DOD. It is beyond the scope of this study to develop weighted decision criteria that would be necessary in order to make a strong recommendation for a new or revised DOD role in response and recovery operations. However, this study does provide the basis for further evaluation by FEMA, DOD, and the Department of Health and Human Services (DHHS) as to whether the homeland security strategy prescribes a sufficient response and recovery role for the armed forces.

Conclusion

This study finds twenty-five functions that are necessitated by a terrorist attack against the homeland involving a chemical or biological weapon of mass effects (see table 10). The evaluation of the 1999 West Nile virus outbreak, the 1995 Aum Shinrikyo sarin attack, and the U.S. exercises TOPOFF and Dark Winter, revealed a federal response requires at least these functions. This study reached three conclusions regarding the role of DOD prescribed in the *FRP* regarding the twenty-five necessary functions.

The first conclusion is there are thirteen necessary functions not prescribed to DOD in either the *FRP*'s Terrorist Incident Annex, ESF #8, ESF #10, or any supporting agency response plan--the EPA's *National Oil and Hazardous Substances Pollution Contingency Plan*, the

DHHS's *Health and Medical Service Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism*, or the FBI's *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan* (see table 14). Ten of those roles are feasible, suitable, and acceptable for DOD (see table 24). This study did not evaluate three of the roles--communications, mass logistics, and public affairs--because they are covered in annexes within the FRP outside the scope of this study--ESF #2, ESF #11, and the Public Affairs Annex, respectively.

The second conclusion is there are twelve necessary functions where FEMA has prescribed are role to DOD in the *FRP* (see table 13 and 24). In nine of those twelve prescribed roles, the DOD response remains inadequate, as evident during exercises TOPOFF and Dark Winter.

The third conclusion is that there are five specified tasks in federal agency response plans, regarding chemical and biological terrorist attacks, that require further clarification for DOD.

Finally, this study makes fifteen recommendations regarding the DOD role during a response to and recovery from a chemical or biological terrorist attack against the homeland. There are eleven recommendations for FEMA, one for the Office of Homeland Security, and three for DOD.

Table 24. Summary of Test One and Two on Necessary Functions

Function	Feasibility	Suitability	Acceptability	
			Precedence	Legality
Chemical and Biological Protection	• CBIRF • Joint Services Protection Program	• *FRP, 1996 Defense Against WMD Act* • FM 3-11.21	• 1996 Summer Olympics	• CERCLA • 50 USC • Stafford Act
Civil Disturbance Support	• Active Duty units • National Guard	• FBI *CONPLAN* • FM 100-19, DODD 3125.12, DOD 3025.1-M	• LA Riots	• CERCLA • Title 50 • Stafford Act
Communication	NOT EVALUATED			
Coordination	• JTF-Civil Support • Response Task Force East/West • CB-RRT	• *1996 Defense Against WMD Act* • FM 3-11.21, FM100-19, DOD 3025.1-M, DODD 3025.1, *2001 Annual Report to Congress*	• Hurricane Andrew • 1996 Summer Olympics	• 50 USC • Stafford Act
Disease Containment	• Active Duty units • National Guard	• *1996 Defense Against WMD Act*		• 10 USC • Stafford Act
Disease Surveillance/ Epidemiological Investigation/ Laboratory Support	• USAMRIID • USN Medical Research Center • CB-RRT • Air Force Teams • CBIRF	• FM 3-11.21, FM 100-19, *2001 Annual Report to Congress*	• West Nile Virus Outbreak	• 10 USC • Stafford Act
Food/drug/medical device safety	• MEDCOM SMART	• FM 3-0	• Hurricane Andrew	• 42 USC
Mass Logistics	NOT EVALUATED			
Mental Health Services	• MEDCOM SMART • DOD Medical Personnel	• FM 3-0, DOD 3025.1-M	• Hurricane Andrew	• 42 USC
Public Affairs	NOT EVALUATED			
Veterinary Services	• MEDCOM SMART • DOD Veterinarians • USAMRICD CSST	• FM 100-19, DOD 3025.1-M	• Hurricane Andrew	• 42 USC

Chemical and Biological Contamination Avoidance	• Technical Escort Unit • Marine Corps Chemical-Biological Incident Response Force • Chemical Companies • Joint Chemical and Biological Defense Program	• *FRP, 1996 Defense Against WMD Act* • FM 3-11.21, FM 3-0, *2001 Annual Report to Congress*	• 1996 Summer Olympics	• CERCLA • 50 USC • Stafford Act

Table 24-*continued*

Chemical and Biological Decontamination	• TEU • CBIRF • Chemical Companies • Joint Services Decontamination Program	• *FRP, 1996 Defense Against WMD Act* • FM 3-11.21, FM -0, *2001 Annual Report to Congress*	• 1996 Summer Olympics	• CERCLA • 50 USC • Stafford Act
Dismantle, transfer, and dispose of contaminated property	• TEU • 52d Ordnance Group	• *FRP, 1996 Defense Against WMD Act, CONPLAN* • FM 3-0, *2001 Annual Report to Congress*	• 1996 Summer Olympics	• CERCLA • 50 USC • Stafford Act
Health and Medical Equipment Supplies	• MEDCOM	• *FRP, Health and Medical Services Support Plan* • FM 3-11.21, FM 3-0, FM 100-19, DOD 3025.1-M, *2001 Annual Report to Congress*	• Hurricane Andrew	• 42 USC
Hospital Care	• NDMS • USAMRIID • Mobile field hospitals • Corps Support Hospitals	• *FRP* • FM 3-11.21, FM 3-0, FM 100-19, DOD 3025.1-M, *2001 Annual Report to Congress*	• Hurricane Andrew	• 42 USC
Medical Care Personnel	• CBIRF • MEDCOM SMART • CB-RRT • DOD Medical Units/personnel	• *FRP, Health and Medical Services Support Plan* • FM 3-11.21, FM 3-0, FM 100-19, DOD 3025.1-M, *2001 Annual Report to Congress*	• Hurricane Andrew	• 42 USC

Mortuary Affairs	• DOD Mortuary Affairs Units	• *FRP* • FM 3-0, FM 100-19, DODD 3025.1, *2001 Annual Report to Congress*	• Hurricane Andrew	• 42 USC

Table 24-continued

Patient Evacuation	• MEDCOM SMART • Air Force Transportation • USMRIID	• *FRP* • FM 3-11.21, FM 3-0, FM 100-19, DOD 3025.1-M, DODD 3025.1, *2001 Annual Report to Congress*	• Hurricane Andrew	• 42 USC
Technical Advice	• TEU • CBIRF • CB-RRT • USAMRICD • USAMRIID • Defense Threat Reduction Agency	• *FRP, 1996 Defense Against WMD Act, Health and Medical Services Support Plan* • FM 3-11.21, FM 3-0, *2001 Annual Report to Congress*	• 1996 Summer Olympics	• 42 USC

Recommendations For FEMA

Recommendation 1. Regarding hazardous materials functions, FEMA should incorporate a chemical and biological protection role for DOD into its *FRP*.

The ability to protect life sustainment capabilities and continue operations in a contaminated environment is a role not only necessitated by a chemical or biological terrorist attack against the homeland, but also feasible, suitable, and acceptable for DOD. The only hazardous material roles prescribed to DOD in the *FRP* (outlined in the Terrrorist Incident Annex and Emergency Support Function #10) or the Environmental Protection Agency's (EPA) *National Oil and Hazardous Substance Pollution Contingency Plan* are contamination avoidance, decontamination, and action to dismantle, dispose, and transfer of contaminated equipment. The 1995 Aum Shinrikyo Japanese subway sarin attack and the U.S. exercise Dark Winter identified the necessity of a chemical and biological protection role.

During Dark Winter, the June 2001 exercise simulating a smallpox epidemic, officials identified the need to protect health care workers and first responders.[1] Individual protection

Note: Roles necessary but not prescribed are above the double line; necessary and prescribed roles where the DOD response remains inadequate are below

including masks, gloves, and protective gowns were in short supply. Additionally, collective protection such as isolation rooms or well-ventilated work areas was insufficient to prevent the airborne spread of disease. The impact of insufficient chemical and biological protection was evident during the Aum Shinrikyo attack, when one-half of the medical personnel treating patients in Tokyo's St. Luke's Hospital chapel--a room lacking proper ventilation to treat patients--reported sarin exposure symptoms as opposed to sixteen percent of the staff working in the better ventilated emergency department.[2] Evident it is a necessary role, DOD can provide protection capabilities, has been prescribed a protection role in the national strategy, has planned for it in doctrine and directives, and has the legal basis to fulfill the role domestically.

DOD can provide both individual and collective protection for medical and non-medical purposes. The Joint Services Protection Program consists of individual protection such as masks, clothing, medical prophylaxis, pretreatment, and antidotes. It also consists of collective protection such as transportable shelters, overpressure systems to apply to fixed structures, medical facilities, and lightweight rest and relief shelters.[3] Some examples of the collective protection equipment in the Joint Services Protection Program include the Chemically Protected Deployment Medical System--Chemically Hardened Air Transportable that can sustain medical operations in a chemical or biological contaminated environment for seventy-two hours (see table 16 for other programs).[4] DOD is not only capable of a protection role, but has been prescribed it externally and planned for it internally as well.

DOD plans for a protection role in its own doctrine, the joint service manual FM 3-11.21, *Multiservice Tactics, Technique, and Procedures for Nuclear, Biological, and Chemical Consequence Management.* It acknowledges that the DOD response to a chemical or biological terrorist attack against the homeland may involve personnel or equipment to execute the hazardous material critical tasks of contamination avoidance, protection, and decontamination.[5] Externally, the Defense Against Weapons of Mass Destruction Act of 1996 directs DOD to

provide technical advice to federal, state, and local agencies regarding the protection of emergency personnel.[6] A protection role is not only suitable for DOD, but legally supported also.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authorizes the president to take any response measures "necessary to protect public health or welfare or the environment" from the release of hazardous substances, pollutants, or contaminants that "present an imminent or substantial danger."[7] Chapter 32 (Chemical and Biological Warfare Program) of Title 50 assigns the Secretary of Defense responsible for carrying out the nation's chemical and biological defense program.[8] Part of that program is providing material solutions to sustain life and continue operational capabilities in a chemically or biologically contaminated environment.

Recommendation 2. Regarding health and medical services functions, FEMA should incorporate roles for DOD in disease surveillance, epidemiological investigation, laboratory support, mental health services, and veterinary services into the *FRP*. As the lead agency for Health and Medical Services in the *FRP*, the Department of Health and Human Services (DHHS) should also consider prescribing these roles for DOD in its *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism.*

The functions of disease surveillance, epidemiological investigation, laboratory support, mental health services, and veterinary services are necessitated by a terrorist chemical or biological attack and feasible, suitable, and acceptable for the armed forces. The DOD does not have responsibility for any of these functions in the *FRP* or in the DHHS's supporting response plan, the *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism* (*Health and Medical Services Support Plan*). However, both the TOPOFF and Dark Winter exercises and the 1999 West Nile virus outbreak in New York prove the necessity for these functions.

The ability to make assessments of vector-borne diseases, conduct field investigations, perform collection, conduct laboratory analysis, and study health and disease patterns are critically important during a biological attack.[9] Exercise TOPOFF proved a biological terrorist attack needs more than the normal disease surveillance and epidemiological investigation because there is not the luxury of additional time for research, especially while thousands are standing outside hospitals waiting for prophylaxis.[10] During Dark Winter, officials concluded that contact tracing was effectively impossible as a ratio of 100 contacts to every confirmed case resulted in 1.6 million contacts just 11 days into the simulated smallpox epidemic.[11] The Government Accounting Office (GAO) found the epidemiological investigation during the 1999 West Nile outbreak in New York taxed the resources of one of the nation's largest health departments despite the fact the outbreak was relatively small and the Institute of Medicine confirmed this would be the general occurrence across the U.S.[12] Both the New York state and Center for Disease Control (CDC) laboratories were quickly inundated with requests for tests during the outbreak and because of the limited capacity at the New York labs, the CDC handled the bulk of the testing. Officials indicated that the CDC laboratory would have been unable to respond to another outbreak had one occurred at the same time.[13] Although the reporting of two cases of encephalitis to the New York Health Department led to the identification of the West Nile virus, later investigation found that when those two cases became apparent, there were already twenty other patients hospitalized with symptomatic encephalitis--a recognizable and legally reportable disease.[14] Also important to disease surveillance and epidemiological investigation is veterinary services.

Of over 1,700 known pathogens affecting humans, 49 percent are zoonotic--capable of infecting both people and animals. The response to the West Nile virus outbreak demonstrated the importance of involving the animal health community, especially in the conduct of epidemiological investigation and disease surveillance. New York City public health laboratories

lacked the reagents to test birds that became ill, and conversely the U.S. Department of Agriculture laboratories lacked the virus reagents to test the birds specifically for the West Nile strand.[15] The Institute of Medicine concluded that the veterinary community should not be overlooked in disease surveillance because of their familiarity with biological pathogens.[16] In addition to veterinary services, chemical and biological attacks require mental services as well.

Chemical and biological disasters occur with little or no warning and are accompanied by fears of ongoing illness and premature death, as well as worries about possible genetic or congenital birth defects in offspring.[17] Both types of attacks produce psychiatric problems and survivors and first responders undergo extreme psychological trauma.[18] In the immediate aftermath of a terrorist attack, acute autonomic arousal and panic can result in both victims and first responders (firemen, policemen, medical and hazardous material personnel) that can incapacitate the response infrastructure. A 1996 University of Oklahoma study found that twenty percent of the rescue personnel at the 1995 Oklahoma City bombing site required mental health treatment immediately following the incident.[19] The long term affects of a terrorist attack are also a concern. A 1992 study concluded that 30.7 percent of those severely injured in a terrorist attack, and 10.5 percent of the uninjured victims, suffered from Post Traumatic Stress Disorder.[20] Following the Aum Shinrikyo attack, 60 percent of the 610 patients treated at St. Luke's Hospital indicated signs of Post Traumatic Stress Disorder up to 6 months after the incident that included symptoms like fear (32 percent), insomnia (29 percent), flashbacks (16 percent), depression (16 percent), irritation (16 percent), and nightmares (10 percent).[21] Because of their necessity, these health and medical functions require a DOD role in the *FRP* and the DHHS' agency response plan.

DOD has the capabilities to perform a role in disease surveillance and epidemiological investigation. The U.S. Army Medical Command's Special Medical Augmentation Response Teams (SMART) are capable of providing short duration medical augmentation in ten different

medical function areas to local, state, and federal agencies nationwide within twelve hours of notification.[22] One of the ten, a Preventive Maintenance Team (SMART-PM) can provide expert consultation in the areas of epidemiology and disease surveillance, medical entomology, environmental health science, toxicology, industrial hygiene, environmental sampling and analysis, health risk assessment, sanitation and hygiene, solid and hazardous waste management, and health risk communication.[23] The Air Force possesses three teams capable of performing disease surveillance or epidemiological investigation. The Theater Epidemiology Team can conduct medical and environmental threat assessments, disease surveillance, disease outbreak investigation, and environmental monitoring. Its Bioenvironmental Engineering Team can provide agent surveillance, detection, and reconnaissance. Its Infectious Diseases Team can augment efforts to identify, control, report, and provide treatment for infectious diseases and biological warfare agents.[24] DOD also possesses laboratory support to assist during a chemical or biological terrorist attack.

The U.S. Army Medical Research Institute of Infectious Disease (USAMRIID) has laboratory facilities to employ for assessing and evaluating a biological terrorist incident. It has a Biosafety Level 4 laboratory to use for dangerous, exotic agents posing high risk of life threatening disease that have no vaccines or drug treatments. The GAO concluded the USAMRIID "provides professional expertise on issues related to technologies, therapeutics, prophylactics, and education that could be used to support" a bioterrorist incident.[25] The USAMRIID already works with the CDC as a part of the Laboratory Response Network as a confirmatory diagnostic lab and subject matter expert.[26] Another GAO report found DOD laboratories such as those at USAMRIID can augment federal response teams by performing functions that enable response teams like the DHHS's Disaster Medical Assistance Teams to perform their role more efficiently.[27] Their labs can rapidly analyze and test samples of chemical and biological agents and serve as a reference center for identification of biological agents.

Additionally, experts from the USAMRIID and the U.S. Army Medical Research Institute for Chemical Defense (USAMRICD) that deploy with the Chemical/Biological-Rapid Response Team (CB-RRT) are capable of supervising epidemiological investigation.[28]

The Air Force's Biological Augmentation Team (currently eight available) is a two to three person team of medical laboratory personnel that can provide rapid pathogen identification.[29] The U.S Navy Medical Research Center's Biodefense Research Program can provide biological detection support and deploy a transportable biological field laboratory, and the Marine Corps Chemical/Biological Incident Response Force (CBIRF) can provide a mobile laboratory.[30] In addition to laboratory support, DOD can also provide mental health and veterinary services personnel.

The MEDCOM's SMART maintain both stress management teams (SMART-SM) and veterinary teams (SMART-V). These personnel are in addition to mental health specialists and veterinarians across the nation at DOD hospitals and medical treatment facilities. With these capabilities, DOD has written how to employ these health and medical assets in its own doctrine and provided guidance on their use in its directives.

Both the Secretary of Defense' 2001 Annual Report to Congress and FM 3-11.21, lists the Marine Corps CBIRF, the MEDCOM's SMARTs, the Chemical-Biological Rapid Response Team, the USAMRIID, the Navy Medical Research Center, the U.S. Army Medical Research Institute for Chemical Defense (USAMRICD), and the Defense Threat Reduction Agency as DOD assets available to provide health and medical service support to consequence management operations.[31] As the DOD Executive Agent for support and assistance to civil authorities, the Army discusses the employment of these health and medical assets during a military response to a chemical or biological attack into its capstone doctrine manual, FM 3-0 *Operations*.[32] It plans for the deployment of SMARTs to assist in critical care, stress management, and preventive medicine threat assessment.[33] The DOD *Manual for Civil Emergencies*, DOD 3025.1-M, asserts that

military assets may be used to "assist in the rescue, evacuation, and emergency medical treatment of casualties, the maintenance or restoration of emergency medical capabilities, and the safeguarding of public health."[34] Specifically regarding health and medical services, the manual states that the services must plan and program medical support to the *FRP* following a catastrophic event, coordinate with the Director of Military Support to identify medical units and personnel trained to provide medical support to the *FRP*, and provide medical augmentation as needed during activation of the *FRP*.[35] Not only does DOD address the employment of its health and medical service assets in its doctrine and directives, but the support for domestic operations is also with precedence and a legal basis as well.

In 1992, health and medical assets deployed with Joint Task Force-Andrew in support of operations subsequent to the devastation left behind after Hurricane Andrew hit the southern coast of Florida. Stress management, veterinarian, and preventive medicine personnel from both the Army's MEDCOM and the two organic divisions comprising the Joint Task Force (10th Mountain Division and 82nd Airborne Division) provided support throughout the operation.[36] During the 1999 West Nile virus outbreak, USMARIID laboratories and personnel supported the epidemiological investigation headed by the Center for Disease Control.[37] The Naval Medical Research Institute and the Marine Corps CBIRF deployed in support of the 1996 Summer Olympics in Atlanta in order to provide epidemiological investigation and laboratory support. The Stafford Act provides the president authority to assign DOD roles essential to preserving public health and safety subsequent to a major disaster or emergency. A terrorist attack, especially one involving chemical or biological weapons, would be a disaster declared under the Stafford Act as done by the president during two recent terrorist incidents: the 1995 Alfred E. Murrah Building bombing in Oklahoma City and the September 2001 attacks on the World Trade Center and Pentagon.[38]

Recommendation 3. FEMA, EPA, and DHHS should consider further clarifying some of the tasks for DOD in their agency response plans.

Overall, this study reveals five tasks specified in federal agency response plans that will be envoked during a chemical or biological terrorist attack that require further specificity. There are two tasks in FEMA's *FRP*, two tasks in the EPA's *National Contingency Plan*, and one task in the DHHS *Health and Medical Services Support Plan* that were too general or vague, therefore not allowing determination of a corresponding necessary function for additional evaluation by this study. As a result, this study recommends FEMA, EPA, and DHHS clarify the following tasks:

1. Direct response actions for releases of hazardous substances from its vessels, facilities, and vehicles (from *FRP* ESF #10)[39]

2. Provide personnel and equipment to other Federal organizations and State and local governments (such as the Navy Supervisor of Salvage), as requested, if consistent with DOD operational requirements (from *FRP* ESF #10)[40]

3. Provide assistance to other federal agencies (from the *National Contingency Plan*)[41]

4. Take all action necessary with respect to release where either the release is on, or the sole source of the release is from, any facility or vessel under the jurisdiction, custody, or control of DOD (from the *National Contingency Plan*)[42]

5. Provide available emergency medical support to assist in the support of state and local governments within the chemical or biological terrorist incident area (from the *Health and Medical Services Support Plan*)[43]

Recommendation 4. FEMA should consider incorporating a civil disturbance role for DOD in to the Terrorist Incident Annex and begin a federal review of containment operations and consider a role for armed forces.

Support to civil disturbances and containment operations are both necessitated by a terrorist attack against the homeland using chemical or biological weapons. During TOPOFF, several critical locations quickly saw the build up of massive crowds to include hospitals, medical treatment facilities, antibiotic distribution points, and food stores, and the security at these locations became a major concern.[44] One official participating in the exercise doubted her hospitals' ability to control the massive crowds or enforce an order forbidding contagious patients to leave.[45] During Dark Winter, riots occurred at a vaccination site in Philadelphia resulting in two dead, and angry citizens overwhelmed another site.[46] During both exercises, transportation slow downs, and the reluctance of drivers to deliver to contaminated areas, resulted in shortages of milk, bread, and staples.[47] Officials exacerbated the shortages by advising people to stay in their homes for seventy-two hours in order to contain the epidemic.[48] Failure to deliver such goods resulted in civil unrest as people looted stores for food and supplies. Analysts at the John Hopkins' Center for Civilian Biodefense Studies summed it up this way:

> Some time into the exercise, (notional) civil unrest broke out. People had not been allowed to shop. Stores were closed. Food supplies ran out. . . . Rioting began to occur. Gridlock occurred around the city, including health care facilities. . . . [M]ost observers and participants agreed that serious civil disruption would be a genuine risk.[49]

The issue provoking the greatest concern during TOPOFF was the measures taken to contain the spread of the epidemic.[50] Measures early on included antibiotic prophylaxis and isolation of individual patients in hospitals, which escalated into travel advisories and warnings to stay at home. The police participating in the exercise admitted to the Emergency Epidemic Response Committee that they would be "unable to keep people at home."[51] Finally, a quarantine ordered the closure of state borders and airports, but officials did not have a plan to enforce it.[52] Other options considered were restricting patients to dedicated facilities, segregating patients in designated sites, and providing "holding tanks" to contain healthy persons until the incubation period was over.[53] Officials considered similar options during Dark Winter but also struggled whether to make any containment measures voluntary or mandatory.[54]

The Dark Winter exercise saw tensions rapidly develop between state and federal authorities over the issue of disease containment measures. Federal officials believed the issues were best decided at the national level to give the president "maximum control of the military and public safety assets."[55] State leaders were opposed to federalizing the National Guard, as governors relied on them for their state mission--meeting logistical and public supply needs. Colorado Governor Frank Keating argued: "My fellow governors are not going to permit you [federal officials] to make our states leper colonies We'll determine the nature and extent of the isolation of our citizens."[56] This led Senator Sam Nunn to conclude: "We are going to have absolute chaos if we start having war between federal government and state government."[57] Finally, having insufficient vaccinations available may force government officials to implement containment measures. In 1972, after four decades of its disappearance, a smallpox case emerged in Yugoslavia. Josip Tito ordered the immunization of the entire country and instituted a nation-wide quarantine--the only effective ways to control a smallpox epidemic.

A DOD role in civil disturbance operations is feasible, suitable, and acceptable. It possesses the capabilities to support operations with Active Duty and National Guard units. During exercise Dark Winter, officials lauded the effective use of National Guard forces in securing key locations such as emergency rooms and vaccination distribution sites.[58] The suitability of a civil disturbance role is seen through its assignment in the FBI's *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan (CONPLAN).*[59] Additionally, a civil disturbance role is addressed internally at DOD in its defense directives (DODD 3025.12 and DODD 3025.1-M) and doctrine (FM 3-11.21, FM 3-0, and FM 100-19). Finally, the acceptability of a civil disturbance role is found both in its legality as outlined in the Insurrection Act and its precedence as seen with the military deployment of the National Guard's 40th Infantry Division during the 1992 Los Angeles riots. The Insurrection Act states "[t]he President, by using the militia or the armed forces, or both, or by any other means, shall take such measures

as he considers necessary to suppress, in a [s]tate, any insurrection, domestic violence, unlawful combination, or conspiracy."[60] This was the authority used to deploy forces to the 1992 Los Angeles riots.

DOD support to disease containment operations can include the same forces used during civil disturbances making it a feasible role. The suitability of an armed forces role in disease containment is seen in the Defense Against Weapons of Mass Destruction Act of 1996 that directs the Secretary of Defense to maintain the capability to contain the effects of chemical and biological weapons of mass destruction.[61] However, this study is unable to discover evidence of a containment role prescribed in any other national policy documents or in any defense directives, doctrine, or reports. The legality of a containment role is found in Title 42 which upholds the authorization of the federal government to contain the spread of infectious disease. It directs the Secretary of Health and Human Services to "assist [s]tates . . . in the prevention and suppression of communicable disease" and to cooperate with and aid "state and local authorities in the enforcement of their quarantine and other health regulations."[62] The Supreme Court has upheld the constitutionality of quarantines in *Zemel v Rusk* and *Jacobson v Massachusetts.* This study could not find evidence of the traditional employment of the armed forces in support of containment operations. Because this study could not discover precedence of federal forces enforcing containment measures nor find such a role in doctrine or directives, it does not recommend immediately prescribing this role to DOD in the *FRP*. Rather, FEMA or OHS should consider leading a national discussion concerning containment operations and the potential of a role for DOD.

<u>Recommendation 5</u>. Because of the time sensitivity of the federal response to a chemical or biological terrorist attack, FEMA should consider including mass logistics, public affairs, and communication roles into the *FRP*'s Terrorist Incident Annex.

The purpose of the *FRP*'s Incident Annexes (currently there is only one) is to describe the mission, policies, concept of operations, and responsibilities for specific events that require a unified response under the *FRP*, when one or more other federal plans that implement authorities and functions outside the scope of the Stafford Act is invoked.[63] For a chemical or biological terrorist incident, FEMA anticipates those other federal plans will include the EPA's *National Contingency Plan*, the DHHS' *Health and Medical Services Support Plan*, and the FBI's *U.S. Interagency Domestic Terrorism Concept of Operations Plan*. As a result, the Terrorist Incident Annex attempts to coordinate the efforts of the FBI, DOD, EPA, and DHHS. However, the annex must do more than this. The *FRP* recognizes terrorist events require an "ability to respond rapidly and decisively to terrorism directed against Americans wherever it occurs" and the DHHS reaffirms the time sensitivity of a federal response.[64] As a result the purpose of the Terrorist Incident Annex should expand and address coordination of those tasks requiring a rapid and timely response. Although the functions of communication, mass logistics, and public affairs are addressed elsewhere in the *FRP*, ESF #2, ESF #11, and the Public Affairs Support Annex respectively, they should also be addressed in the Terrorist Incident Annex because a chemical or biological terrorist attack necessitates these functions.

The necessity of a mass logistics function was evident during exercises TOPOFF and Dark Winter when transportation slow downs and the reluctance of drivers to deliver to contaminated areas resulted in shortages of milk, bread, and staples creating a need for the distribution of food and medicine to peoples' homes.[65] When the Emergency Epidemic Response Committee ordered the Colorado state border closed, officials recognized they had no plan to feed four million people.[66] Regarding public affairs, TOPOFF validated its importance during an emergency as the media broadcast information about symptoms people should look for, treatment facility locations, and actions to take regarding containment of the disease.[67] Japanese government officials continually used the media in the aftermath of the Aum Shinrikyo attack to

assure citizens that public services, such as the subway system, were safe for use.[68] Regarding communication, during the West Nile outbreak, officials indicated that the lack of sufficient and secure channels for communication among the large number of agencies prevented them from sharing information efficiently. New York City's local health departments could not share laboratory results with the Center for Disease Control nor use its disease database because it lacked secure electronic communication.[69]

This study did not evaluate the DOD capabilities in the functions of communications, mass logistics, and public affairs because these functional areas were addressed outside the Terrorist Incident Annex, ESF #10, or ESF #8. Regardless, FEMA should consider prescribing a DOD role in the Terrorist Incident Annex for these functions because they are feasible, suitable, and acceptable for the military. The armed forces have employed forces with these capabilities during domestic support operations such as Hurricane Andrew. Additionally, DOD addresses these capabilities regarding a response to a chemical or biological terrorist attack in FM 3-11.21, FM 3-0, the Secretary of Defense's 2001 Annual Report to Congress, and the Director of Military Support's Manual for Civil Emergencies. Finally, the Stafford Act provides the legal basis for these military assets to support domestic civil authorities.

Recommendation 6. FEMA should incorporate the roles of DOD response teams into the *FRP*.

DOD has capabilities in over thirteen teams specifically designed to respond to a chemical or biological terrorist attack against the homeland. These response teams include the Chemical Biological Rapid Response Team, the Marine Corps CBIRF, the Army's Technical Escort Unit (TEU), and the ten functional SMARTs. Additionally, command and control, augmentation, and support can come from the Joint Task Force-Civil Support, the USAMRIID, the Navy Medical Research Center, the USAMRICD, and the Defense Threat Reduction Agency. A GAO study found that "DOD, compared to the other federal agencies, has the greatest breadth

and depth of capabilities in its collective response teams" with capabilities "relevant to all [twelve] of the ESF[s] in the *FRP*."[70]

Incorporation of the DOD response teams roles into the *FRP* is not only a GAO recommendation, but also directed by the Defense Against Weapons of Mass Destruction Act of 1996. It directs the director of FEMA to "develop and incorporate into existing federal emergency response plans and programs prepared under section 611(b) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 USC 5196(b)) guidance on the use and deployment of the rapid response teams established under this section to respond to emergencies involving weapons of mass destruction."[71] The FEMA Director was to carry out this directive in consultation with the Secretary of Defense no later 31 December 1997.[72] The DOD response teams are not addressed in the *FRP*, the *National Contingency Plan*, the *Health and Medical Services Support Plan*, or the *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan*.

Recommendation 7. For any new or expanded role prescribed to DOD in the *FRP*, include the accompanying DOD organizations and equipment into the master inventory of equipment and assets available to aid state and local officials.

The Defense Against Weapons of Mass Destruction Act of 1996 directs the head of each federal agency supporting a federal response plan to "develop and maintain an inventory of physical equipment and assets under the jurisdiction of that agency that could be made available to aid [s]tate and local officials in search and rescue and other disaster management and mitigation efforts associated with an emergency involving weapons of mass destruction."[73] Additionally, FEMA is to "compile and maintain" a master inventory listing of all supporting agency's assets and equipment and incorporate guidance on accessing and using those assets to "respond to emergencies involving weapons of mass destruction" into the existing *Federal Response Plan*.[74] FEMA should incorporate the DOD equipment and assets able to respond to a

chemical and biological terrorist attack against the homeland into the *FRP* and its Terrorist incident Planning Guidelines found in the *Guide to All-Hazards Emergency Operations Planning*.[75]

Recommendation 8. FEMA should consider including a compendium of planning guidelines for state and local authorities in either the *FRP* or its Terrorist Incident Planning Guidelines.

The Gilmore Commission recommended that "the Secretary of Defense publish a compendium, in layman's terms, of the statutory authorities for using the military domestically to combat terrorism, with the detailed explanations about the procedures for implementing those authorities."[76] One example of this need occurred during exercises Dark Winter and TOPOFF. In both instances, government officials were uncertain on the statutory authorities to invoke containment measures--travel advisories, closing state borders, patient isolation, or quarantine.[77] FEMA should consider including this compendium into either the *FRP* or the Terrorist Incident Planning Guidelines.

Recommendation 9. FEMA should update its Regional Response Plans using better threat assessments from the scientific and intelligence community to assist the Weapons of Mass Destruction Interagency Steering Group in refining threat scenarios and developing appropriate response force packages.

When providing support to a terrorist chemical or biological attack response, federal agencies must be able to determine the quantity of assets needed and the latest time of arrival for those assets to the incident cite. The GAO recommends FEMA develop response contingency plans based upon realistic threat scenarios developed in conjunction with experts in the scientific and intelligence communities.[78] The Gilmore Commission also recommends the U.S. conduct comprehensive threat, risk, and vulnerability assessments.[79] Consequently, the first step toward updating FEMA's Regional Response Plans is better threat assessments.

Better threat assessments potentially do several things for the federal, state, and local authorities. The president of Chemical and Biological Arms Control Institute Michael Moodie asserted, they can describe a "threat envelope" that would identify the most plausible scenarios and provide a means to identify contingencies, that due to the severity of their consequences require some preparation, even if relatively unlikely.[80] Better threat assessments would highlight that the threat is not just one factor, but rather multi-dimensional consisting of who (the actor and its motivations, intentions, and capabilities), what (the agent), where (the target), and how (mode of attack, dissemination mechanics, and other operational considerations).[81] Moodie concludes effective action depends on the "existence of a strategy that--for both military and domestic defense dimensions--defines the contribution of each individual tool of policy, relates them to one another, and integrates them in a such a way that they all work together toward the achievement of defined goals and objective."[82] With better threat assessments, FEMA can also develop appropriate response force packages.

In developing appropriate response force packages, GAO finds the FEMA led Weapons of Mass Destruction Interagency Steering Group an effective tool.[83] With better threat assessments, the steering group can improve response team databases that include functions, size, composition, equipment, and transportation needs. In addition to continuing the use of steering committe, FEMA should continue its efforts in working with the Joint Task Force-Civil Support, or the new U.S. Northern Command, in developing force packages.[84] Implementing the Gilmore Commission recommendation that the Secretary of Defense improve the full time liaison elements located in the ten FEMA regions could assist this planning effort.[85] In doing so, FEMA should work with DOD to improve those liaisons by developing qualifications for the personnel assigned to include the quantity and type of military grades needed, assignment considerations, rating schemes, and previous training and experience required for duty.

Recommendation 10. FEMA should sponsor more no-notice interagency exercises that include response and recovery operations.

The GAO also recommends conducting national level response exercises. It identified that TOPOFF 2000 was the first no-notice exercise that included consequence management activities with the participation of many key agencies. This DOJ and FEMA sponsored exercise occurred in May 2000 and included concurrent responses to a radiological incident in Washington, D.C. area; a biological terrorist incident in Denver, CO; and a chemical terrorist incident in Portsmouth, New Hampshire. Eighteen federal agencies, including DOD, participated. The exercise was a no-notice, field exercise that included scenarios where crisis and consequent management activities occurred simultaneously. This enabled federal teams to exercise their activities together and add a degree of realism as federal response teams actually deployed to the incident. The GAO found these national-level exercises allowed federal agencies to maintain proficiency when key personnel changed.[86] Stimson Center analyst Amy Smithson recommends future exercises include large-scale medical mobilization exercises.[87] Smithson highlights that DOD and DHHS officials were skeptical of their combined ability to have met the medical aid requests from Colorado after simulating the release of plaque during the TOPOFF exercise because federal assets were pre-picked and pre-staged.

Recommendation 11. FEMA should consider structuring the *Federal Response Plan* using the framework outline by the President in Executive Order 13228.

The October 2001 Executive Order establishing the Office of Homeland Security specifically outlines the key tasks regarding the response and recovery function. Specifically, Executive Order 13228 directs the Office of Homeland Security to coordinate efforts to ensure rapid restoration of critical infrastructure, restoration of public and private critical information systems, stabilization of financial markets, containment and removal of biological, chemical, radiological, explosive, or other hazards, providing assistance to victims, and coordinating efforts

to mitigate the effects of such an attack.[88] FEMA defines response as saving lives, protecting property, and meeting basic human needs, and recovery as restoring the disaster-affected area.[89] Consequently, FEMA should use the strategic framework outlined by the President for the Office of Homeland Security.

Recommendation for the Office of Homeland Security

Recommendation 12. The Office of Homeland Security should develop one federal response plan for consequence management (or response and recovery) along the lines of the Attorney General's Five Year Plan Counterterrorism and Technology Crime Plan.

Currently, DOD is responsible for tasks in four separate response plans that may be activated during a chemical or biological terrorist attack against the homeland: FEMA's *FRP*, the EPA's National Oil and Hazardous Substances Pollution Contingency Plan, the DHHS's *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological Terrorism*, and the FBI's *U.S. Government Interagency Domestic Terrorism Concept of Operations Plan*. This number of plans makes it difficult to have a coordinated homeland security strategy for chemical or biological response and recovery.

A November 2000 GAO report concluded that having more than one document articulating a national strategy obscures the direction and priorities of federal programs.[90] It also found the Attorney General's Five Year Plan was a good baseline national strategy, developed through an interagency process listing specific counterterrorism tasks for federal agencies and departments. Having a single response plan may assist FEMA in accomplishing its role of defining priorities, tracking and reviewing statutes, resolving conflicts, auditing and reimbursing taskings to federal agencies, identifying issues requiring decisions from higher authorities, and evaluating the need for additional resources.[91]

FEMA should consider including portions of other individual federal agency response plans into the *FRP*. There may have to be a compromise between making the *FRP* the single,

ultimate source for the federal response and making it so voluminous and complicated that it is impossible to understand and implement. However, it may be far easier for supporting agencies to coordinate and prioritize its responsibilities if from one source, rather than multiple response plans written by other supporting agencies, in this case the EPA, DHHS, and FBI. If it remains important for each agency to develop, maintain, and revise its own response plan, than there must be a single lead agency that approves and prioritizes all response and recovery responsibilities. Under the *FRP*, that lead federal agency is FEMA, however, activation of the *National Contingency Plan*, the Health and Medical Service Support Plan, or the *U.S. Interagency Domestic Terrorism Concept of Operations Plan* creates a fractured, ad-hoc response.

Recommendations for the Department of Defense

Recommendation 13. DOD must resolve the dual use dilemma in order to accomplish its prescribed role in the *FRP* regarding the functions of contamination avoidance, decontamination, health and medical equipment/supplies, hospital care, medical care personnel, patient evacuation, and technical advice. It should consider assigning response and recovery operations as one of the primary missions of the National Guard.

The dilemma surrounding DOD's role in response and recovery operations lies in the fact that military assets are dual use as highlighted by the Secretary of Defense in his 2001 Annual Report to Congress. Since most of the DOD organizations and equipment that would respond to a terrorist employment of a chemical or biological weapon of mass effects are largely resident in the armed forces' war fighting capabilities, they are commonly referred to as dual use.[92] Consequently, DOD assets responding to and recovering from a terrorist chemical or biological attack against the homeland are assets that cannot be committed to a major theater of war or small scale contingency around the world, and vice versa. As a result, after an incident occurs, DOD will have to balance Lead Federal Agency requests for support against any ongoing, or potential, war fighting requirements. During the June 2001 exercise Dark Winter, DOD did not commit

supplies and personnel to augment the civilian health care system, citing readiness requirements because of growing potential for a Middle East conflict.[93] Exercise officials did not positively conclude the lack of military support contributed to the insufficient federal response in any of the functional areas. Regardless, the fact remains that the areas where there was an insufficient federal response are the same ones where DOD could not accomplish its prescribed roles from the *FRP*. Several of those roles involved health and medical functions.

The primary cause of inadequate health and medical service functions in the U.S. is, according to the John Hopkins Center for Civilian Biodefense Studies concludes, because the public health industry has lost it surge capacity. Hospitals have lost their surge capacity in their quest to eliminate inefficiencies as 30 percent of the 5,000 hospitals today are losing money; 1,000 went bankrupt and closed in the last decade.[94] Now, hospitals and pharmaceutical companies focus on just-in-time production and delivery which creates shortages of medical supplies, drugs, and staffing during crises.[95] This impact was demonstrated during exercises Dark Winter and TOPOFF.

During TOPOFF, local antibiotic supplies depleted early in the crisis creating the need for the Surgeon General and CDC to approve the release of supplies from the National Pharmaceutical Supply.[96] Additionally, a critical medical supply--ventilators--ran out, requiring 1,300 to be flown to the incident cite on just the second day of the exercise.[97] During Dark Winter, the depletion of smallpox vaccinations after just eleven days of the epidemic led to deadly violence as people tried to protect themselves from contamination by forcing their way into treatment facilities.[98] During both TOPOFF and Dark Winter, the lack of a surge capacity created staff shortages, exacerbated by medical staff that refused to work because they felt at risk of getting a lethal disease and bringing it home to their families.[99] Hospitals were overwhelmed also. After three days of the TOPOFF exercise, one hospital saw 3,878 persons, of which 3,200 were just worried and did not actually have the plaque.[100] Patient visits to one hospital

emergency department quickly escalated to ten times the usual caseload and all local hospitals "were beyond capacity in less than 24 hours of the epidemic."[101] One hospital actually dropped out of the exercise because it had so many actual patients that needed real treatment it could not spare personnel to participate in the exercise. During Dark Winter, 138 hospitals experienced numbers never seen before and 20 closed their doors citing dangers to staff and patients.[102] Although they were not identified as problem areas during Dark Winter and TOPOFF, the hazardous materials functions of contamination avoidance and decontamination could become problems as they did during the Aum Shinrikyo 1995 sarin attack.

No decontamination occurred at the Tokyo subway after the cult's sarin attack. Consequently, reports showed that of the 1,364 emergency medical technicians working at the incident site, 10 percent developed agent exposure symptoms and had to receive treatment at the hospital themselves.[103] In a questionnaire given to the 1,063 St. Luke's Hospital staff--the Tokyo hospital treating most of the patients--23 percent revealed at least a mild symptoms.[104] After the incident, Tokyo government officials deployed the Self Defense Force to decontaminate the affected subway trains and stations in order to restore public confidence quickly.[105] By late in the evening on 20 March, the subway system was back to normal service. The lessons from the Aum Shinrikyo attack and exercises TOPOFF and Dark Winter demonstrate the impact of the public health system losing its surge capacity and the importance of DOD resolving its dual use dilemma in order to commit the necessary military assets to domestic emergencies.

Expert predictions worsen the situation as they point to the use of chemical or biological agents by future opponents as a means to counter U.S. military strength. The Army's Training and Doctrine Command views a world that by 2015 will have an operational environment characterized by opponents employing "weapons of mass effects" in an attempt to deny force projection operations.[106] RAND predicts that by 2025, adversaries will be capable of launching limited chemical and biological attacks at military targets to disrupt U.S. power projection

operations and also against civilian targets to "deter U.S. involvement or raise the costs of intervention."[107] The increase in state sponsorship of terrorism further increases this likelihood. Consequently, the homeland may be most vulnerable to terrorist attacks while most DOD response and recovery assets are deployed, or preparing to deploy, and unable to respond domestically. This dilemma further highlights the importance of completing better threat assessments. One option to lessen the impact of the dual use dilemma is assigning homeland security, including response and recover operations, as the primary mission for the National Guard.

The Hart-Rudman Commission also recommends the National Guard assume homeland security as its primary mission.[108] Analysts from the Strategic Assessment Center also conclude the National Guard is well suited for the homeland security mission due to its pre-existing state disaster response mission working closely with public safety and medical agencies, its close ties with the local communities, and its members who work in the civilian economy.[109] During Dark Winter, exercise officials cited the services of the National Guard as "invaluable" in all the affected states, performing services such as establishing communication links between hospitals and public health agencies, delivering vaccines, and performing civil disturbance control at emergency rooms.[110]

This summary does not review the feasibility, acceptability, and suitability analysis of the DOD role regarding contamination avoidance, decontamination, health and medical equipment/supplies, hospital care, medical care personnel, patient evacuation, and technical advice. Than analysis can be reviewed in chapter 5. This study concludes a DOD role in each of those functions is not only necessitated by a chemical or biological terrorist attack but also feasible, suitable, and acceptable for the armed services. Regardless of the mix of response and recovery assets DOD chooses (Active, National Guard, and Reserve), it must cautiously weigh the impact training for response and recovery operations will have on its warfighting skills. As

authors Chris Seiple and Aaron Weiss both noted, the armed forces must remain responsible for ensuring troops are prepared for the contaminated battlefield and warn that reliance on the active duty force may have the effect of degrading it warfighting proficiency.[111]

Recommendation 14. DOD should encourage the decentralized planning and execution of response and recovery efforts between military commanders and the surrounding local and state governments.

The Immediate Response Authority found in DOD Directive 3125.1, Military Support to Civil Authorities (MSCA), gives local military commanders and officials authority to take action necessary to "save lives, prevent human suffering, or mitigate great property damage" when time and conditions do not permit prior approval from higher headquarters.[112] A terrorist chemical or biological attack will cause large number of casualties, suffering, and property damage and the nature of that attack will necessitate a timely response. The armed forces should consider capitalizing on its vast resources already dispersed across the nation in order to improve the timeliness of the federal response. As expert Jonathon Tucker concluded: "[T]he only way a federal response team could get to the scene of a terrorist attack in a timely manner would be if the perpetrators provided advance warning or if reliable intelligence of an impending attack were available, but it would be imprudent to count on either of these assumptions."[113]

The armed forces should not just rely on their centrally organized and executed response teams such as the CBIRF, CB-RRT, SMARTs, or TEU. Local commanders have assets capable of performing roles in the functions necessitated by a chemical or biological terrorist attack where DOD has a role (table 13). Most local commanders have organic transportation assets, trucks and busses, that can move people and equipment from their installation to an incident cite. The dispersion of military organizations across the nation makes it feasible that local commanders can move military assets to an incident site, not necessarily as first responders, but to enhance response and recovery operations (see figures 6 and 8 from chapter 5). Certainly, it would be

impractical to have transportation assets on-call for an immediate response, say within hours. However, that impracticality can be mitigated with improved risk assessments allowing a commander to determine an appropriate readiness posture.

The recently developed Homeland Security Advisory System is just one mechanism military commanders can use to develop an appropriate readiness posture for response and recovery assets on their installations. The system provides warnings in the form of a set of graduated threat conditions that increases as the risk of the threat increases. The Office of Homeland Security has already directed each federal department and agency to implement a corresponding set of protective measures to not only reduce vulnerabilities but also increase response capabilities during a period of heightened alert.[114] This gives department secretaries, agency directors, and commanders flexibility in providing assistance. Instead of having many units and organizations on a four hour alert, for example, the Homeland Security Advisory System allows officials to place more or less units on shorter or longer response times in accordance with the risk assessment provided by the Office of Homeland Security

Recommendation 15. DOD must ensure DOD doctrine and directives are consistent regarding domestic support to chemical and biological terrorist attacks against the homeland.

Regarding immediate response, DOD, Joint Staff, and service components must ensure doctrine is consistent regarding response and recover operations. For example, FM 3-11.21, *Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Consequence Management*, states that although DOD policy "allows for great flexibility, commanders must ensure that immediate-response deployment authority is used as a last resort. The SECDEF's approval is required for DOD forces to respond to terrorist or WMD events."[115] That statement implies that Secretary of Defense approval is needed before employing DOD resources under the Immediate Response Authority and should be the last course of action a local commander considers. On the contrary, the DOD directive on Military Assistance to Civil

Authorities (DODD 3023.15) states that "[n]othing in this [d]irective prevents a commander from exercising his or her immediate emergency response authority as outlined in DOD Directive 3025.1"[116] Additionally, an effective response is needed within minutes and hours, not days and weeks. Promoting a mindset among commanders that employing DOD assets under the Immediate Response Authority only as a *last resort* to save lives, protect property, and mitigate the circumstances of an attack, is not, this study contends, acceptable guidance.

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[1]John Hopkins Center for Civilian Biodefense, *Final Script –Dark Winter Exercise: Dark Winter-Bioterrorism Exercise, Andrews Air Force Base, June 22-23, 2001*), 15.

[2]Amy E. Smithson and Leslie-Anne Levy, *Ataxia: The Chemical and Biological Terrorism Threat and the US Respons*, (Washington, D.C.: The Henry L. Stimson Center, Chemical and Biological Weapons Nonproliferation Project, October 2000),[99.]

[3]Department of Defense, Department of Defense Chemical and Biological Defense Program Annual Report to Congress and Performance Plan (Washington, D.C., July 2001), 41-42.

[4]Ibid., 47.

[5]Department of Defense, FM 3-11.21, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Aspects of Consequence Management (Washington, D.C.: December 2001), IV-4 through IV-5.

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