

NATIONAL GUARD WEAPONS OF MASS DESTRUCTION CIVIL SUPPORT
TEAMS: HOW PRACTICAL IS COST SAVING REDUCTION?

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE
Homeland Security Studies

by

SPENCER W. GILES, MAJ, U.S. ARMY NATIONAL GUARD
B.S., Chadron State College, Nebraska, 1998
B.S., University of Nebraska Medical Center, Nebraska, 1999

Fort Leavenworth, Kansas
2013-01

Approved for public release; distribution is unlimited.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 14-06-2013		2. REPORT TYPE Master's Thesis		3. DATES COVERED (From - To) AUG 2012 – JUNE 2013	
4. TITLE AND SUBTITLE National Guard Weapons of Mass Destruction Civil Support Teams: How Practical is Cost Saving Reduction?				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Giles, Spencer W., Major				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Fort Leavenworth, KS 66027-2301				8. PERFORMING ORG REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT The Department of Defense created ten National Guard Weapons of Mass Destruction-Civil Support Teams in 1998 to provide rapid support to local and state emergency responders during a domestic chemical, biological, radiological, or nuclear attack. Teams were assigned in ten Federal Emergency Management Agency regions to provide national coverage. Following the 11 September 2011 attacks, the program expanded to add teams in every state and territory with 57 teams currently established. Increasing threat to national security and resultant defense budget cuts demand efficient use of available government resources precipitated this research. The purpose of this study is to determine if the National Guard Weapons of Mass Destruction-Civil Support Team can be reduced to provide cost saving benefits without compromising program capability to support local and national response within current CBRNE threat environment and the mandate of applicable national level security strategies. Research evaluates the current WMD-CST program and a regional ten team configuration against national response doctrine. Model results in five criteria are compared to determine the effect on national response. This study concludes program reduction by 47 teams to a regional organization is not an acceptable risk for the current threat and does not support national response doctrine. .					
15. SUBJECT TERMS WMD-CST, CBRN, Homeland Security, Defense Support to Civil Authorities, Army National Guard, Force Reduction, Consequence Management, State Emergency Response, CBRN Response Enterprise					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT (U)	18. NUMBER OF PAGES 114	19a. NAME OF RESPONSIBLE PERSON
a. REPORT (U)	b. ABSTRACT (U)	c. THIS PAGE (U)			19b. PHONE NUMBER (include area code)

MASTER OF MILITARY ART AND SCIENCE
THESIS APPROVAL PAGE

Name of Candidate: MAJ Spencer W. Giles

Thesis Title: National Guard Weapons of Mass Destruction Civil Support Teams: How
Practical is Cost Saving Reduction?

Approved by:

_____, Thesis Committee Chair
Douglas G. Stephensen, M.P.A., M.S.

_____, Member
O. Shawn Cupp, Ph.D.

_____, Member
Britt W. Estes, M.S.

Accepted this 14th day of June 2013 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

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

NATIONAL GUARD WEAPONS OF MASS DESTRUCTION CIVIL SUPPORT TEAMS: HOW PRACTICAL IS COST SAVING REDUCTION? by Major Spencer W. Giles, 114 pages.

The Department of Defense created ten National Guard Weapons of Mass Destruction-Civil Support Teams in 1998 to provide rapid support to local and state emergency responders during a domestic chemical, biological, radiological, or nuclear attack. Teams were assigned in ten Federal Emergency Management Agency regions to provide national coverage. Following the 11 September 2001 attacks, the program expanded to add teams in every state and territory with 57 teams currently established. Increasing threat to national security and resultant defense budget cuts demand efficient use of available government resources precipitated this research.

The purpose of this study is to determine if the National Guard Weapons of Mass Destruction-Civil Support Team can be reduced to provide cost saving benefits without compromising program capability to support local and national response within current CBRNE threat environment and the mandate of applicable national level security strategies. Research evaluates the current WMD-CST program and a regional ten team configuration against national response doctrine. Model results in five criteria are compared to determine the effect on national response. This study concludes program reduction by 47 teams to a regional organization is not an acceptable risk for the current threat and does not support national response doctrine.

ACKNOWLEDGMENTS

This research project has been a labor intensive and stressful, yet ultimately rewarding endeavor. It would not have been possible without the assistance of many individuals. I would like to thank my committee Mr. Douglass Stephensen, Dr. O. Shawn Cupp, and Mr. Britt Estes for the direction you provided, patience, and confidence in my work. A special recognition goes to my thesis chair and leadership instructor as a dedicated professional, exemplary role model and for providing the honest advice that gave both perspective and urgency to throughout this undertaking. I would like to thank the instructors and fellow students of SG19C who provided motivation and encouragement. Throughout this course you continued to challenge and inform my thinking. I extend my appreciation to fellow students and researchers Robert Mendez, Michael Flynn, and Darin Ream who served as guideposts in my progress and often provided me with alternative perspectives.

Most of all, I owe my continuing gratitude to my family for their unwavering support. I am indebted to my amazing wife Janna for listening to study details she did not care to hear and her continued encouragement. I am grateful to my wonderful children for understanding my frequent and long absences away from home. Their excitement and love makes everything both possible and worthwhile.

TABLE OF CONTENTS

	Page
MASTER OF MILITARY ART AND SCIENCE THESIS APPROVAL PAGE	iii
ABSTRACT.....	iv
ACKNOWLEDGMENTS	v
TABLE OF CONTENTS.....	vi
ACRONYMS	ix
ILLUSTRATIONS	xii
TABLES	xiii
CHAPTER 1 INTRODUCTION	1
Research Purpose	2
Problem Statement.....	3
Primary Research Question	6
Secondary Research Questions	6
Assumptions.....	6
Definitions	7
Limitations	8
Scope and Delimitations	8
Significance	10
Summary and Conclusions	11
CHAPTER 2 LITERATURE REVIEW	12
CBRNE Threat.....	12
Strategic Documents	16
National Security Strategy	17
National Defense Strategy	19
National Military Strategy	21
Army Posture	23
National Guard Posture	24
Response Framework.....	26
CBRNE Response Enterprise	28
CBRNE Enhanced Response Force Package.....	30
Homeland Response Force	30

Defense CBRNE Response Force and Command and Control CBRNE Response Element	32
Weapons of Mass Destruction-Civil Support Team	33
Summary and Conclusions	36
CHAPTER 3 METHODOLOGY	37
Research Design	37
Contextual Background	40
Comparative Models	41
Analytical Structure	41
Engaged Partnership	42
Tiered Response	43
Scalable, Flexible, and Adaptable Operational Capabilities	44
Unity of Effort Through Unified Command	45
Readiness to Act	46
Evaluation Scale	47
Summary and Conclusions	48
CHAPTER 4 ANALYSIS	49
CBRNE Threat	49
Chemical	51
Biological	52
Nuclear	53
Radiological	54
National Strategy	55
CBRNE Response Enterprise	57
WMD-CST Operations	61
WMD-CST Model 1 (Current)	64
Engaged Partnerships	65
Tiered Response	67
Scalable, Flexible, and Adaptable	68
Unity of Effort Through Unity of Command	69
Readiness to Act	70
WMD-CST Model 2 (Reduced)	71
Engaged Partnerships	73
Tiered Response	75
Scalable, Flexible, and Adaptable	76
Unity of Effort Through Unified Command	77
Readiness to Act	77
Model Comparison	78
Summary	79

CHAPTER 5 SUMMARY & CONCLUSIONS.....	81
Purpose of Research.....	81
Conclusions.....	83
Recommended Action.....	88
Further Study	89
Summary	90
GLOSSARY	92
REFERENCE LIST	96

ACRONYMS

AAR	After Action Review
AD	Active Duty
ARNG	Army National Guard
BAH	Basic Allowance for Housing
BAS	Basic Allowance for Subsistence
C2CRE	Command and Control CBRNE Response Element
CBRN	Chemical, Biological, Radiological, and Nuclear
CBRNE	Chemical, Biological, Radiological, Nuclear, and High Explosive
CCMRF	CBRNE Consequence Management Response Force
CERFP	CBRNE Emergency Response Force
CIA	Central Intelligence Agency
CNGB	Chief, National Guard Bureau
CRE	CBRNE Response Enterprise
CST	Civil Support Team
DA	Department of the Army
DCRF	Defense CBRNE Response Force
DHS	Department of Homeland Security
DoD	Department of Defense
DOTMLPF	Doctrine, Organization, Training, Material, Leadership and Education, Personnel, and Facilities
DSCA	Defense Support to Civilian Authorities
EMAC	Emergency Mutual Aid Compact
EOC	Emergency Operations Center

EXEVAL	External Evaluation
FEMA	Federal Emergency Management Agency
HAZMAT	Hazardous Material
HRF	Homeland Response Force
ICS	Incident Command System
JFHQ	Joint Force Headquarters
JFO	Joint Field Office
JOC	Joint Operations Center
NCO	Non-Commissioned Officer
NDAA	National Defense Authorization Act
NDS	National Defense Strategy
NG	National Guard
NGR	National Guard Regulation
NIMS	National Incident Management System
NRCC	National Response Coordination Center
NRF	National Response Framework
NSS	National Security Strategy
OIP	Organizational Inspection Program
OSHA	Occupational Safety and Health Administration
PDD	Presidential Decision Directive
POTUS	President of the United States of America
QDR	Quadrennial Defense Review
RC	Reserve Component
RDD	Radiological Dispersal Device
RED	Radiation Emmission Device

RID	Radiation Explosive Device
RMP	Response Management Plan
RRCC	Regional Response Coordination Cell
SAD	State Active Duty
SEAT	Standards, Evaluation, and Assistance Team
SECDEF	Secretary of Defense
SEMA	State Emergency Management Agency
SITREP	Situation Report
T10	U.S. Code, Title 10
T32	U.S. Code, Title 32
TAG	The Adjutant General
TIC	Toxic Industrial Compound
TIM	Toxic Industrial Material
U.S.	United States
WMD	Weapon of Mass Destruction

ILLUSTRATIONS

	Page
Figure 1. Key Sets of National Planning Scenarios	57
Figure 2. CBRNE Response Enterprise Overview.....	59
Figure 3. National Guard CRE Assignment.....	60
Figure 4. FEMA Regions	72

TABLES

	Page
Table 1. Evaluation Matrix	47
Table 2. Team Annual Pay and Allowance.....	73
Table 3. Evaluation Matrix	79

CHAPTER 1

INTRODUCTION

As we look to the future, the uncertainty and complexity of the global security environment demands vigilance. In these challenging economic times, America's Army will join Department of Defense efforts to maximize efficiency by identifying and eliminating redundant, obsolete or unnecessary programs, responsibly reducing end-strength and by evolving our global posture to meet future security challenges.

— John M. McHugh and GEN Raymond T. Odierno
Army Posture Statement 2012

Following events during the early 1990s of attacks or planned attacks, United States (U.S.) leaders recognized a gap in national capabilities. The gap was a significant absence of capabilities to identify and respond to a Chemical, Biological, Radiological, Nuclear, or high Explosive (CBRNE) incident. In response to this shortfall the Nunn-Lugar-Domenici Act of 1996 directed development of U.S. CBRNE response capabilities. As the lead agency, the Department of Defense (DoD) formed an expert group identified as the Tiger Team to develop a CBRNE response plan incorporating Reserve Component (RC) capabilities. The DoD Tiger Team Report, published January 1998, outlined the specific capability shortfalls and provided a force structure proposal within the National Guard needed for effective CBRNE response, the Rapid Assessment and Identification Detachment (RAID). The Secretary of Defense approved the Tiger Team findings and the National Defense Authorization Act of 1999 authorized formation of ten RAID teams, subsequently re-designated as Weapons of Mass Destruction Civil Support Team (WMD-CST) (DoD Tiger Team 1998).

Initial CST team development provided regional response capability with geographic locations across the U.S. based upon national population distribution. Team

stationing was based upon the ten Federal Emergency Management Regions and established a team in California, Colorado, Georgia, Illinois, Missouri, Massachusetts, New York, Pennsylvania, and Washington, Texas (Government Accountability Office 2009, 4). This capacity expanded from 1999-2005 to provide authorization of teams in each state. The current WMD-CST force structure is 57 teams with one in each state, the territories of Guam, Puerto Rico, U.S. Virgin Islands, the District of Columbia, and a second in each California, New York, and Florida (NGB 2012).

WMD-CSTs are composed of twenty two full time national guardsmen in Active Guard and Reserve (AGR) status under authority of U.S. Code Title 32. Team manning includes a flexible mix of four Air National Guard and eighteen Army National Guard personnel organized into six sections. The WMD-CSTs specialize by functional areas within the team for Command, Operations, Logistics and Personnel, Communications, Survey, and Medical section. The WMD-CST mission is to support civil authorities during a domestic CBRNE incident by identifying suspected chemical or biological agents, assessing incident consequences, advising civil authorities on response measures, and facilitating additional state or military support (Department of the Army 2012). This mission includes consequence management during disasters involving potentially catastrophic loss not related to hostile actions (Department of the Army 2007, 1-3).

Research Purpose

The purpose of the study is to identify if the WMD-CST program is an appropriate candidate for force reduction. To make this determination an understanding of the WMD-CST program and the capability it provides during the consequence management phase of natural or man-made incidents is necessary. The existence of

CBRNE threat as well as the reality of large scale natural disasters have direct bearing on the relevancy of WMD-CST and are fundamental to this research. As force structure decisions are intrinsically a conservation of national economic resources, the value of the WMD-CST influences this determination.

Problem Statement

Since its inception in 1999, the WMD-CST program has dramatically expanded from 10 initial teams to the current 57 teams. This expansion occurred during and following the most devastating attack on a civilian population in the U.S. and wars in both Iraq and Afghanistan. In reaction to U.S. security threats defense budgets witnessed significant growth providing for increased capacity to deter and combat existing threats. Presumably the WMD-CST expansion was based upon potential threat to the homeland at the time of the program growth, but undoubtedly much of the justification also came from past studies such as the DoD Tiger Team Report and the very real 9/11 attacks. Viewing program expansion of 10 teams regionally based to at least one dedicated team in each state and territory it is also questionable if the program growth was caused more from political motivation of the states than actual threat based necessity. This perspective brings into question whether the current manning of WMD-CST or the number of existing teams is truly required. The problem is identifying if comparable protection is possible with a reduction in the size or number of WMD-CSTs as a long term cost saving measure in light of hard fiscal decision required by years of a growing national deficit.

The Cold War arms race produced increasingly lethal stockpiles of nuclear, chemical, and biological weapons under the control of the U.S. and the Soviet Union. Following the collapse of the Soviet Union, the security and control of these weapons

became a global concern requiring international action. Today, numerous national, international, and non-governmental organizations work to stem CBRNE proliferation. Counter proliferation efforts include reduction of existing WMD programs, preventing development of new programs, and deterring weapon use. These counter proliferation efforts continue to improve international security by eliminating WMD weapons stockpiles and galvanizing international opinion as a deterrent against development and use. Understandably, the focus of counter proliferation efforts has greater effect against national programs rather than elusive non-state actors.

In discussion of the advancement of national security priorities the 2010 National Security Strategy states there is no greater threat to the American people than weapons of mass destruction (White House 2010, 4). Chemical, Biological, Radiological, Nuclear, and high Explosive (CBRNE) remain a potential option for adversaries of the U.S in the current operating environment. CBRNE weapons offer attackers an asymmetrical advantage in terms of both the psychological effect and potential magnitude of results when employed against the resources of the U.S. government.

The mechanism of many CBRNE agents provides additional dissemination beyond the requirements of initial weapon deployment. In addition to and compounding possible expansion of weapons effects over a greater area, CBRNE are most frequently identified as symptoms in their casualties instead of through direct detection. Direct detection is often difficult requiring specialized detection equipment and trained personnel not widely available. Compared to more conventional means with similar destructive effects, CBRNE are smaller in size facilitating ease of transportation, storage,

and employment. These characteristics make makes it easier to avoid direct confrontation or detection by military and law enforcement organizations.

The results from CBRNE weapons provide additional benefits that recommend them for terrorist attacks. The essential objective of terrorist attacks is to create fear and the widespread panic that can accompany that fear. Compared to more traditional means of attack, deliberate CBRNE incidents are somewhat uncommon. This uniqueness inspires increased media coverage subsequent to CBRNE events. The high casualty rates possible with a CBRNE attack achieve a direct damaging effect while simultaneously drawing greater media coverage. These combined effects particularly establish CBRNE weapons as a potentially attractive method for terrorists to employ against unprepared civilian populations to achieve their objectives.

Threats to national security cover all areas of national power. Often overall national emphasis attention focuses on the DoD and their primary domain of military power. Within this domain an attack on the U.S. or its interests continues to remain a very real security concern. However, current U.S. emphasis is shifting toward economic concerns. Significant public and political focus is currently on the growing national debt as a threat to national security. With the progressive redeployment of U.S. forces conducting operations in Iraq and Afghanistan, the DoD is a likely candidate for significant budget reductions. Expected budget reductions have generated plans for declining DoD force structure and manning along with greater scrutiny of existing and proposed future programs. Justification of relevancy is required to validate return on value for the investment of national treasure within the context of the current Operating Environment.

Primary Research Question

How practical is cost saving reduction of the WMD-CST program?

Secondary Research Questions

What is the current threat of CBRNE use within the U.S.? How does the current national security strategy address CBRNE threat? What role does the WMD-CST program meet in the national strategy for CBRNE response?

Assumptions

Authorizations and requirements established in WMD-CST Table of Distribution and Allowances (TDA) is the same for all WMD CST during a fiscal year. TDA are the state authorizing document for personnel fill and equipment procurement. These deliberately specified authorizations provide for the base capabilities of the WMD-CST without additional supplementation. Facilities utilized by WMD-CST when not supporting response requirements has negligible effect on unit capabilities or performance. Requirements for personnel administrative use, property storage, and equipment maintenance are assumed adequate for team garrison purposes.

The basic assumption underlying the existence of WMD-CSTs is threat of use within the U.S. Threat assessment in this research study uses only unclassified material available through open source to the general public. This assumes the type and prevalence of CBRNE threat is established by similar events from past attacks or attempted attacks. Use of restricted information available to WMD-CST program managers results in equipment modifications, organizations changes, and operational tasking but does not affect this study.

Definitions

CBRNE: Chemical, Biological, Radiological, Nuclear, and High Explosive.

Threat or incident of chemical components, biological agents, nuclear or radiological material, and/or high explosives.

FEMA: Federal Emergency Management Agency. Federal agency responsible for U.S. domestic support to the population and emergency responders in all hazards emergency preparedness, mitigation, and response.

HAZMAT: Hazardous Material. Any substance posing risk to health, life, safety, property, or the environment when present in specific quantities and forms.

NRF: National Response Framework. U.S. Government plan published by Department of Homeland Security for all-hazard response to domestic emergency.

OE: Operating environment. The sum of political, military, economic, social, infrastructure, informational, physical, and time variables that establish the context of actions. Applicable to multiple levels (International, national, state, or local) as required to determine influences on actions and the potential consequences as a result of those actions.

State: State as used in this study indicates the 50 states of the U.S. the District of Columbia and the territories of Guam, Puerto Rico, and the U.S. Virgin Islands.

Terrorist: Individual or group opposed to the U.S. government or population whose methods include any means available to disrupt, damage, or destroy elements of U.S. society by causing widespread fear. This includes domestic and foreign individuals or groups.

TIC: Toxic Industrial Chemical. Chemical compounds used or produced in industrial processes that are chemical or physical hazard to humans animals, or plants.

TIM: Toxic Industrial Material. Any noxious industrial substance manufactured, stored, transported, or used in industrial or commercial purposes including hazardous described as toxic industrial chemical, toxic industrial biological, or toxic industrial radiological.

WMD-CST: Weapons of Mass Destruction Civil Support Team. U.S. National Guard military force under control of the governor organized, equipped, and trained for domestic employment in support of civil authorities during a disaster response.

Limitations

Several limitations apply to this study. The primary limitation was time and resources available to conduct research. Additionally, this project is an individual academic endeavor and appropriated or granted funds were not utilized. The research conducted was primarily through electron document searches. This research basis unintentionally omits relevant sources not available through electron means. Past assignment within military units of the DoD CBRNE enterprise may introduce investigator bias during either research or analysis.

Scope and Delimitations

This examines the capability of National Guard WMD CSTs to improve preparedness for and response to a CBRNE incident. Funding costs establish an understanding of the WMD-CST program scale comparable to similar civil and military organizations currently existing not as an analytic determinant. Where comparative costs

are used, long term costs associated with human resources (disability, retirement, etc.) is beyond the scope of this research.

One of the primary responsibilities of government is the protection of its people. Because of this inherently governmental aspect of emergency response discussion or comparison of a commercial entity to perform this role is not addressed. Commercial enterprises in CBRNE are more aptly suited to training, preparation, or consequence management following lifesaving actions where appropriate. Commercial enterprises will be addressed in their performance of specific defined roles related to CBRNE response and not considered as a model for comparison.

The full capabilities of WMD-CSTs do not identically exist in the civilian sector or elsewhere in DoD. This fact was the cause for initial inquiry into U.S. CBRNE response shortfall. Where necessary a best match of the existing response element possessing the closest capability to that of the CST is used to provide for comparative understanding. While CSTs are primarily organized for homeland defense under the National Guard, WMD-CSTs are found elsewhere within DoD. The 771st and 773rd CSTs operate under the 7th Civil Support Command of the U.S. Army Reserve in Germany. These units are similarly tasked and funded but are not included in this study focusing on National Guard CSTs.

The existing 57 National Guard WMD-CSTs are fully federally funded, certified, and included in national response cycles. Additional units bearing the same or similar unit identification have been established within the authority of states separate from the National Guard WMD-CST program. Any supplemental units not federally funded, certified, and included in the national response cycle are excluded from this study.

The National Guard has the ability to manage personnel to meet mission and readiness requires within regulatory authorities. This ability may be exercised to supplement WMD-CST with additional personnel and equipment. Personnel augmentation may include establishing additional qualified personnel from the AGR or traditional reservist pools. Equipment augmentation is possible through lateral transfer or procurement with annually provided funds. Augmentation of personnel or equipment is not reflected on the approved WMD-CST Table of Distribution and Allowances. These modifications may be advisable under the specific conditions of an event or as a proposed change to future force structure, but are not viewed as a component of the WMD-CST for the purposes of this research.

Facilities utilized by CSTs are as varied as the states to which they are assigned. CSTs have inherent requirements for facility space to support operations including climate controlled vehicle storage, parking areas, personnel offices, and equipment storage. Due to the relatively small size of WMD-CST in both personnel and equipment existing structures available in their respective state Facility costs omitted as existing structures are generally available for use if not optimal for unit stationing. Likewise facility maintenance is not discussed.

Significance

It should be the goal of every citizen and especially those in government service to be conscientious stewards of national resources. This applies not only within programs for best use of material and personnel, but of existing programs themselves. While the conditions at one point in time may drive a requirement, they may not remain as those conditions change and organizations change or grow over time.

The WMD-CST Program underwent large scale rapid expansion from 2000-2005 that witnessed attacks of September 11, 2001 attacks on the World Trade Center, and wars in both Iraq and Afghanistan. The possibility exists that the rapid growth of the WMD-CST program was an over-reaction to a devastating event. Prudence dictates examination of the decision made following the most devastating attack on U.S. civilian population removed in time from the emotional events. For this reason it is responsible to consider whether this program meets its designated purpose within DoD for the cost provided by the nation. Determining the answer to this question may form the basis for organizational change through program growth, reduction, reorganization, or divestment into civilian programs.

Summary and Conclusions

This chapter introduced the WMD-CST, its basic composition and mission as the DoD resource to support civilian CBRNE disaster response. The primary research question is specified along with the secondary research questions required to complete this study. As a complex topic, many delimitations are established to refine the scope of this paper and provide the reader with a clear understanding of WMD-CST related issues that are covered.

In the next chapter, the documents pertaining to WMD-CST formation and operations are reviewed. Guiding documents begin with past and current national perspectives then progress into the regional, state, and local level. While the fundamental topic remains the WMD-CST, its operation as a DoD element within the confines of the civilian response process is the primary theme.

CHAPTER 2

LITERATURE REVIEW

Be prepared . . . the meaning of the motto is that a scout must prepare himself by previous thinking out and practicing how to act on any accident or emergency so that he is never taken by surprise.

— Baron Robert Baden-Powell

Chapter 1 introduced the WMD-CST as a DoD response element as an asset available at the state level and provided some general background on CBRNE threat to the U.S. It established the direction of this study with definition of the primary and secondary research questions as well as scoping factors to make the research possible. The purpose of this chapter is to identify current and literature affecting existence of the WMD-CST program. Following is a summary of key points and commentary on literature covering CBRNE threat, strategic documents, response framework, CBRNE response enterprise, and finally the WMD-CST. This chapter provides information necessary to understand homeland response following a CBRNE event and a general comprehension of the considerations involved.

CBRNE Threat

The review of sources identifying CBRNE threat to the U.S. available in the unclassified public domain is inherently incomplete. While limitation to unclassified sources of potential CBRNE threat does not provide either the detail or currency of information a classified review is capable of, it has a unique advantage. Restriction to review of open source information identifies the sources of information available to the general population that plays a role in shaping current opinion. Much of the open source

CBRNE threat information originates from the 1999-2004 time period. Publications during this period retain relevancy in the areas of potential threat agents, delivery means, and future threat plans when considered within the context of more recent threat predictions.

The most current report on security threat to the U.S. is the *Statement for the Record on the Worldwide Threat Assessment of the U.S. Intelligence Community for the House Permanent Select Committee on Intelligence provided by the Director of National Intelligence* James Clapper in 2011. This intelligence statement is an overview of U.S. security concerns including CBRN. The threat facing the U.S. is explained:

Rather, it is the multiplicity and interconnectedness of potential threat—and the actors behind them—that constitute our biggest challenge and that they reflect a quickly-changing international environment of rising new powers, rapid diffusion of non-state actors and ever greater access by individuals and small groups to lethal technologies. (Clapper 2011, 2)

The report maintains that nuclear proliferation, in conjunction with the spread of materials and technologies in chemical or biological weapons programs is a prime concern. North Korea's nuclear weapons program is a potential threat under a narrow set of conditions. International actions limit CBRN use by most nations, but are not effective against terrorist organizations. Clapper identifies that no information exists linking deliberate support for CBRNE weapons between nations and terrorist groups, but pursuit of CBRNE programs is expected (Clapper 2011, 4-5).

Identification of CBRNE by type begins with the May 2003 report by the Central Intelligence Agency "Terrorist CBRN: Materials and Effects." It identifies al-Qaeda and other extremist terrorist organization stated desire and attempts to use a CBRNE weapon to for a mass casualty producing attack or to achieve disruption. Cyanides, blister, and

nerve agents are identified as potential weapons as well as toxic industrial chemicals (TIC) with lower toxicity but greater availability. Biological agents include anthrax, ricin, and botulinum toxin with instruction on preparation of the latter found in terrorist training manuals. Radiological threats are identified as any means of causing injury, destruction, or contamination from a radiological source. Several isotopes are listed as commonly available sources for inclusion in a radiological weapon. Nuclear terrorist threat is expressed as an improvised nuclear device constructed from diverted nuclear weapon components, a modified nuclear weapon, or an indigenous device. The nuclear threat is caveated by the limitation imposed of highly enriched uranium or plutonium as a fissile material (Central Intelligence Agency 2003).

The basis for the U.S. approach to combat CBRN terrorism is criticized in “Homeland Insecurity: Thinking About CBRN Terrorism” by Albert J. Mauroni on a number of points including his discussion on potential terrorist use of varied CBRN weapons. The basis of his criticism is primarily with existence of CBRN terrorist risk, upon which he comments:

The basic approach used by terrorist and insurgents is to seek out and use low-risk, easily acquired weapon systems. Any weapon that can be improvised using available and accessible materials is good: any weapon that can be bought on the open market and easily used is good. CBRN materials don’t fit that niche. The reason why terrorist are interested in CBRN hazards is because so many senior leaders keep vocalizing how afraid they are of this particular threat. (Mauroni 2009, 7-8)

He continues to explain the difficulty of terrorist use exists in procuring precursor materials and a training deficiency for handling and delivery. These shortfalls are somewhat controlled by the reality that overcoming these difficulties tend to increase visibility of terrorist motives to the intelligence community making them susceptible to

interdiction. Maurconi continues with a discussion of each CBRN type concluding by stating the most significant hazard is a chemical agent from an industrial source and the least probable is a nuclear device.

Many of the perspectives held by Maurconi are echoed in James Robertson's article "How Appealing are CBRN weapons to Terrorist Groups?" He expresses that the appeal may have declined over recent years. Robertson acknowledges steps taken by terrorist groups, including Al Qaeda, to utilize CBRN effects while examining causes of potential disinterest in CBRN as an attack method. Differentiation of organizational goals and resources between prominent and less well established terrorist organizations is linked to probability and effectiveness of use (Robertson 2011, 3).

Organizational characteristics often affiliated with terrorist networks are reported in "Connections Can Be Toxic: Terrorist Organizational Factors and the Pursuit of CBRN Terrorism." This study attempts to use historical information to group terrorist organizations with characteristics most frequently associated with attempts to procure CBRN weapons. The study concluded that organizations most likely to seek CBRN weapons are embedded in authoritarian countries and closely tied to global networks. No significant relation was identified between religious ideology and CBRN weapons pursuit (Ackerman, Asal, and Rethemeyer 2008, 2).

Increased frequency of CBRNE attacks are positively correlated with democracy, strong rule of law, and honesty by Kate Ivanova and Todd Sandler in "CBRNE Incidents: Political Regimes, Perpetrators, and Targets." They theorize a positive connection between targeting democracies and the susceptibility of government legitimacy in its ability to provide for public safety. The legitimacy is undermined by the combined

physical and psychological effects of CBRNE employment (Ivanova and Sandler 2006, 445).

The varied methods of delivery are addressed along with the CBRNE types in much of the included literature. However, delivery specifically through suicide bombing is generally omitted. This potential delivery means is investigated by Adam Dolink in “Die and Let Die: Exploring Links between Suicide Terrorism and Terrorist Use of Chemical, Biological, Radiological, and Nuclear Weapons.” Dolink recognizes the utility achieved through suicide delivery but identifies two primary factors that reduce the likelihood of its occurrence. First is the motivational and technical obstacles faced by terrorist organizations apparently willing to employ a CBRNE. Second is the interest in self-preservation of terrorist organizations that are capable of overcoming these obstacles. In this case the restraint is from fear of the expected military reprisals the organization would face. Dolink identifies the greatest risk as apocalyptic religious cults with characterized by violence and suicidal tendencies such as Aum Shinrikyo (Dolnik 2003).

Strategic Documents

Individual WMD-CSTs operate at the state level receiving operational guidance through the authority of their respective governors. In this capacity they are a state controlled resource for local support funded by the federal government for homeland defense. As a National Guard resource WMD-CST may be federalized to perform directly for the U.S. Army. The WMD-CST under either of these conditions ultimately takes its strategic direction from national level guiding documents. The guidance contained within various national strategy documents establishes national priorities and the resources expected to accompany them. These strategic documents include the

National Security Strategy, National Defense Strategy, Quadrennial Defense Review, National Military Strategy, National Strategy to Combat Weapons of Mass Destruction, Army Posture Statement, and the National Guard Posture Statement.

National Security Strategy

The foundation of the current U.S. security strategy identifies that U.S. global influence begins by addressing difficulties within the U.S., specifically economic growth and debt reduction. President Barack Obama further states the cornerstone of U.S. security remains the Armed Forces. Building at home includes deficit reduction requiring difficult decisions. Integration of homeland security with national security is critical and can only be achieved through habitual close coordination of federal, state, and local government. This coordination is required to protect, deter, and respond to both threats and natural disasters (White House 2010, 2).

Advancing the top national security priorities requires immediate action. Foremost of these priorities is the threat to the American population of WMDs. Expressly identified within the CBRNE arena are threats from nuclear and biological weapons. The primary requirements to combat the nuclear threat is stopping the spread of nuclear weapons and restricting access to nuclear materials (White House 2010, 4). Methods to address WMD threat cover strengthening of non-proliferation treaties, securing vulnerable nuclear material, and pursuing new ways to protect against biological attacks. American enduring interests are identified as (1) the security of the U.S., allies, and partners, (2) growing U.S. economy, (3) universal values at home and abroad, (4) an international order promoting peace and security. National interests are defined within the current transition from Iraq, and Afghanistan and under recovery from an economic recession.

The U.S. position as the sole global superpower is recognized and coupled to the animosity of violent extremists as demonstrated by the attacks of September 11, 2001 (White House 2010, 7-8).

Homeland security is defined as a component of a whole of government approach. Reorganization of civil defense, emergency response, and other functions under the Department of Homeland Security is recognized with new emphasis to confront emerging hazards. The whole of government approach requires increased national resilience through deterrence and response (White House 2010, 15). Part of this security enhancement includes protection of critical national infrastructure and key resources (White House 2010, 18).

Biological weapon employment has the potential for significant health risk, but also catastrophic consequences on the social, economic, and political landscape. First responders and local health officials are the first line in monitoring and identifying outbreaks and reducing the risk from the source. Reducing risk from biological weapons requires reporting of emerging risks, preventing exploitation, improving prevention of disease agents, and enhancing our capability to interdict, capture, and prosecute offenders using them (White House 2010, 24).

Underpinning national security is the government's ability to finance it. The administration's commitment to the safety of the American people operates within the confines of fiscal constraints. Ultimately, long-term security goals demand responsible fiscal decisions for the government to operate within its budget and hold departments accountable for their allotted budgetary execution and performance. The DoD which was responsible for over 20 percent of all federal outlays in 2010, requires cost-effective and

efficient processes (Office of Management and Budget 2012). Review of existing programs will be conducted to identify wasteful programs for elimination or restructure (White House 2010, 34-35).

National Defense Strategy

The DoD translates national strategy and priorities into department specific guidance every four years in the Quadrenial Defense Review (QDR). To supplement the 2010 QDR, 2012 witnessed the publication of a interim document conveying the National Defense Strategy (NDS) in *Sustaining U.S. Global Leadership: Priorities for the 21st Century Defense*. Together these documents provide a forecast of the expected security environment as well as identifying the key military missions for which DoD will prepare. The fiscal imperative recurrent in the national security strategy is appropriated reflected and integrated by DoD throughout both documents. In addition to other guiding priorities, the Budget Control Act of 2011 reduces overall federal spending, including that of DoD, as a requirement of national security. Reinforcing reduction in cost expenditure, the Secretary of Defense envisions a smaller force with greater flexibility to combat WMD and protect the homeland (SECDEF 2012).

The current and future environment is described by both the QDR and NDS as threatened by nations possessing WMD. Globalization has increased access to information and technologies required develop WMDs. Instability or collapse of a nation having pursued a WMD program is of primary concern. Should this occur, the U.S. is directly threatened by the subsequent spread of WMDs, associated material, and technology enabling opposition elements greater opportunity to challenge national interests (Department of Defense 2010, 7).

Focus within the DoD is provided by specifying ten primary missions for the U.S. Armed Forces. These priorities are provided independent of resourcing determinations between either the key missions or other defense programs. Primary affecting the WMD-CST program are (1) counter weapons of mass destruction, and (2) defend the homeland and provide support to civil authorities. While the specific resourcing are not included for these missions, general considerations are provided. Emergent among these is the recognition that DoD must reduce its cost but cautions that complete divestment of capabilities is undesirable as the future demands on the U.S. Armed Forces can never be fully known (SECDEF 2012, 3-6).

Preceding the 2012 NDS by two years, the current QDR provides a similar but differing view. The 2010 QDR analysis made recommendations to revise programs in support of support six key mission areas. Two of the mission areas pertain directly to CBRNE response organizations, defend the United States and support civil authorities at home and prevent proliferation and counter weapons of mass destruction (Department of Defense 2010, 17). Like the NDS, the QDR places prevention of WMDs as a top national priority with responsibility incumbent upon numerous federal agencies. Due to the scope and difficulty of countering potential WMD threats, DoD requires additional capability. The majority of directed growth to combat WMD proliferation is an active rather than reactive approach focusing on intelligence, interdiction, international partnered threat reduction, and material surety programs (Department of Defense 2010, 34-35). The SECDEF directs six specific counter WMD actions with plans to deny threat elements the benefits of using WMDs against the U.S. and its partners. The combined effects of these

actions operating in concert are meant to both increase the cost and risk of pursuing WMD attacks.

The QDR makes little mention on any specific initiatives or programs dealing with homeland defense against CBRNE weapons. DoD generically states countermeasure, defenses, and mitigation strategies enhancement efforts will be made. Primary discussion of response is limited to the United States will maintain the defense posture required for mission assurance, consequence management, support for civil authorities, strategic dispersal, and homeland defense (Department of Defense 2010, 68). Defense against WMD is generally elaborated on as requiring multiple levels in close coordination with geographic dispersion to include within the U.S (Department of Defense 2010, 35). The NDS reiterates and expands on QDR mention of homeland defense actions within three of the U.S. Armed forces priority mission areas. As a subset of the counter WMD mission, DoD will partner with other US Government elements to detect, protect, and respond to WMDs. However, this mission subset is qualified, by stating it is required only following failure of preventative measures. DoD missions to defend U.S. territory and provide assistance to domestic civil authorities during attack or following natural disasters is listed as a primary mission. Finally, DoD supplementation to lead relief agencies in the conduct of humanitarian, disaster relief, and other operations encompasses those occurring in the U.S.

National Military Strategy

The Joint Chiefs of Staff provides additional details for the U.S. Armed Forces with the publication of *The National Military Strategy*. Admiral M. G. Mullen emphasises the military's approach to complex security challenges is as important as the

capabilities it provides. He advocates preparation of a broad spectrum of military capability for an increasingly uncertain future. WMD proliferation and nuclear terrorism are identified as critical aspects of the strategic environment that U.S. forces must be capable of deterring and defeating in pursuit of the national military objectives. Those objectives as shaped by the NSS and QDR entail (1) counter violent extremism, (2) deter and defeat aggression, (3) strengthen international and regional security, and (4) shape the future force (Chairman, Joint Chiefs of Staff 2006, 4-7). In response to an attack or natural disaster the military focus is planning, control, consequence management, and logistic support to the Department of Homeland Security. One method of strengthening security addresses continued dedication, funding, and training to a portion of the National Guard specifically for homeland defense and DSCA (Chairman, Joint Chiefs of Staff 2006, 10-11).

Under the umbrella of national military strategy the Joint Chiefs of Staff have twice published a separate strategy directed against CBRNE threat, initially in 2002 and most recently in 2006. The 2002 publication immediately followed the *National Strategy to Combat Weapons of Mass Destruction*. This document provides an ends, ways, means framework for planning, conducting, and resourcing missions to combat WMD. This framework is founded upon three strategic pillars including (1) nonproliferation, (2) counterproliferation, and (3) consequence management (Joint Chiefs of Staff 2006, 4-5). Nine specific endstates establish the standards to measure success. Of these, assisting U.S. civil authorities minimize effects, attribute the source of an attack, and ensuring U.S. civilian agencies are capable partners in combating WMDs apply to this research study. Military strategic objectives establish the ways through which the

endstates are achieved including eight mission areas. Mission areas applicable to the WMD-CST program include passive defense and consequence management. Passive defense entails reducing vulnerability and minimizing effects of WMD used against U.S. military interests and critical infrastructure. Consequence management is defined as restoring essential services following a WMD event in the homeland (Chairman, Joint Chiefs of Staff 2006, 7-8).

Army Posture

At the Department of Army (DA) level the Secretary of the Army and the Army Chief of Staff provide service specific guidance through the *Army Posture Statement 2012*. Army senior leadership provide this annual report to Congress to communicate the strategic direction of the Army. As in previous national documents, the *Army Posture Statement 2012* recognizes the constraint of reduced funding, but uniquely acknowledges reductions do not eliminate the Army's responsibility to provide sufficient response capability and force readiness to the nation.

Army force change within budgetary realities places emphasis on maintaining its current capabilities with increased flexibility and retain the ability to expand the force when necessary. Army end-strength from 2012 to 2017 is projected to decrease in the Active Army from around 570,000 to 490,000 and the Army National Guard from 358,000 to 353,500. To achieve this growth capability the Army must reduce endstrength but avoid hollowing the force that retains force structure absent readiness or true capability. Facing the difficult choices in reduction the Army identifies its top three priorities in order of precedence. The first and second priorities are supporting operations in Afghanistan and serving as the best stewards of national resources,

respectively. The final Army priority is preserving both capability and readiness during force reduction. Specifically to meet this objective the Army must adjust force size to the right number of units with the right capability (McHugh and Odierno 2012, 17).

Defense support to civil authorities (DSCA) provided by the Army is predominately attributed to its reserve component forces. In this capacity the Army Reserve Component is commended not only for performance of the missions assigned, but also for the flexibility and depth their coverage provided for the Active Army. DSCA mission responses listed were a combination of wildfires, floods, tornadoes, and Hurricane Irene. The 2011 specified composite response included almost 11,000 National Guardsmen across 13 states to provide critical services and addressed civilian needs throughout these events (McHugh and Odierno 2012, 4).

National Guard Posture

In contrast to the *Army Posture Statement* the 2013 *National Guard Posture Statement* focuses not on strategy or mission priorities but rather recounts highlights of the past year by National Guard forces by service, missions, and programs. National Guard Bureau's (NGB) status as joint bureau between the Department of the Army and Department of the Air Force (DAF) for communication between these departments and the separate states and territories of the U.S. necessitate this different approach (DA, DAF 2001, 1). A diminishing defense budget remains the common thread throughout this work but the overall message is the cost efficiency reportedly achieved with the National Guard force (National Guard Bureau 2013).

Chief of the National Guard Bureau (CNGB) General Craig McKinley expands on two points identified in the *Army Posture Statement 2012*. First, McKinley remarks

that across the board spending cuts are not productive and contribute to a hollow force previously identified as something to avoid during reduction. Next he asserts the National Guard is both an affordable method to ensure reversability of force reduction against an unknow future and the choice force for homeland emergencies. The National Guard composed of 85 percent part-time servicemembers incur one third of the cost of their AC counterparts. Additionally the ARNG provides 40 percent of its operating force at a cost of only 11 percent of the Army budget (National Guard Bureau 2013, 4-5).

The National Guard provides 32 percent of total Army personnel with a mix of civilian and military experience and education. The combination of these sometimes divergent but frequently reinforcing skills is highlighted by Director of the Army National Guard Lieutenant General William Ingram, Jr. Frequent occupations for National Guard Soldiers include emergency first responders, pilots, educators, and medical professionals. Leveraging these skill combinations is an opportunity unique to reserve component forces (National Guard Bureau 2013, 6-7).

Domestic mission support provided by the National Guard incudes several typical areas. Data from the previous year is discussed as number of Soldiers and Airmen performing duty and duty days conducted in various mission categories. Missions in 2011 covered the spectrum from rapid response to natural disasters, border security, counter drug, critical infrastructure protection assessments, and interoperable communication provider. All of these operations are performed in close coordination with local emergency responders. Additionally CBRNE response forces of 10 Homeland Response Forces (HRF), 17 CBRNE Enhanced Response Force Packages (CERFP), and 57 WMD-CSTs are discussed briefly.

Response Framework

The fundamental responsibility of government is to protect the people that form the nation. This requirement implies many duties on government including the ability to respond to a emergencies. The U.S. domestic response to incident emergencies is governed by the *National Response Framework* (NRF) and the *National Incident Management System* (NIMS) provided by the Department of Homeland Security (DHS) in 2008. An update to the NRF exists in draft form as of May 2012 but is omitted from discussion as it has not been officially adopted at the time of this writing. The 2012 revision reduces the 2008 edition by reducing a number of redundancies between its companion NIMS to provide improved clarity in the scope of each document. The NRF establishes the stucture for national level policy and operations while NIMS defines the template by which incidents are managed (Department of Homeland Security 2008b, 1).

Events covered under the NRF run the gamut from small scale local accidents to national attack or disaster and applies to all levels of government. The NRF is organized into five sections each separately delinieating specific characteristics at the local, state, and federal level. Roles and responsiblities are discussed, followed by response actions, and response organizations. The final two chapters highlight the importance of planning for an effective response and identify additional resources applicable to incident preparation, planning, response, and recovery.

The response framework establishes national doctrine based upon key principles of (1) engaged partnership, (2) tiered response, (3) scalable, flexible, and adaptable operational capabilities, (4) unity of effort through unified command, and (5) readiness to act (Department of Homeland Security 2008b, 9).

States are identified as the primary source of assistance to communities. This is through a combination of organic resources, mutual assistance from additional states, and as a point of throughput for federal resources. The National Guard under title 32 is singled out as a key resource available to the governor. Title 32 is the duty status under the United States Code (U.S.C.) that applies to National Guard Troops when not performing federal training or duty under direct authority of DoD (Department of Homeland Security 2008b, 38-39). When the capability resident in the state is exceeded, states request external assistance. State assistance from other states is accomplished through mutual aid and assistance agreements prepared in advance. The most common instrument providing interstate assistance is the Emergency Management Assistance Compact (EMAC). Federal assistance under provisions of the *Robert T. Stafford Disaster Relief and Emergency Act* is facilitated by regional Federal Emergency Management Agency (FEMA) offices in anticipation of a catastrophic event, following an approved request by the governor, or upon the direction of the President (Department of Homeland Security 2008b, 40-41).

FEMA responsibilities encompass all U.S. matters dealing with emergency management. It provides the regional structure that serves as a conduit for communication, integration, and support between the state and federal structure. The various state emergency management agencies work through one of the ten established FEMA offices as determined by region. Regional offices continually operate a Regional Response Coordination Cell (RRCC) capable of expansion to cope with regional events as required. These RRCCs transition to become the Joint Field Office (JFO) orchestrating the integration of response resources (Department of Homeland Security 2008b, 61-62).

In 2003, HSPD-5 directed development of the *National Incident Management System* to establish a standardized template for emergency response between varied response elements from multiple jurisdictions and levels of government. Foundational to NIMS is the fact that incidents typically begin and end locally and are managed on a daily basis at the lowest possible geographical, organization, and jurisdictional level (Department of Homeland Security 2008a, 5). Recognizing that emergency incidents are inherently chaotic, NIMS provides responders with a structure flexible enough to fit any situation while providing standardization to improve interoperability.

As is appropriate in handling emergency events, NIMS does not begin with the onset of an event. Preparedness is the first component of NIMS followed by communications and information, resource, command, and ongoing management. NIMS describes several principles and concepts within each of the component areas, but is principally concerned with command and management. The Incident Command System (ICS) organizational structure is described in detail. Conditions creating significant difficulties to the ICS are identified as CBRN and events that are either not specific to a site or distributed over a large geographic area (Department of Homeland Security 2008a, 7-8, 46).

CBRNE Response Enterprise

The paramount work pertaining to the CBRNE Response Element (CRE) is *Before Disaster Strikes, Imperatives for Enhancing Defense Support to Civil Authorities*. The Advisory Panel on Department of Defense Capabilities for Support to Civilian Authorities After Certain Incidents (hereafter referred to as Advisory Panel) developed this report for the SECDEF and Congress as a requirement of the National Defense

Authorization Act of 2010. The Advisory Panel was composed of senior civilian and government experts with experience in varied CBRNE response functions. Their purpose was to investigate, report findings, and make recommendations for improving DSCA following a CBRNE event (Abbot et al. 2010, 1-3).

The *Before Disaster Strikes* outlines developments in DSCA as well as the operational structures involved. The CRE is composed of special purpose forces under both federal and state control. Colonel Heinrich Reyes reinforces mission details, force structure, and relationships between CRE forces in the NGB presentation “CBRNE Response Enterprise.” Federal forces under U.S. Northern Command (NORTHCOM) include the Defense CBRNE Response Force (DCRF) and Command and Control CBRNE Response Element (C2CRE). CRE organizations in the National Guard include the Homeland Response Force (HRF), CBRNE Response Force Package, and WMD-CSTs (Reyes 2012, 12). Each organization is equipped, manned, and trained to assist first responders at varied time intervals or during CBRNE incidents of increasingly larger magnitude.

Specialized units capable of providing DSCA included in the CRE originated with formation of the WMD-CST program. Since this early inception it has continuously undergone significant growth and modification to become a multi-echelon program involving all four U.S. Armed Forces in both the active and reserve component (Lairsey 2012, 1-2). The WMD-CST constitutes the initial response force under the CRE and as discussed in detail in chapter 4. The remainder of this section outlines the remaining CRE elements of the CBRNE Enhanced Response Force Package, Homeland Response Force,

Defense CBRNE Response Force, and the Command and Control CBRNE Response Element to provide a clear understanding of the scope of the WMD-CST role.

CBRNE Enhanced Response Force Package

The CERFP is the second echelon CBRNE response element subsequent to the WMD-CST. It is a dual mission organization composed of 186 predominantly traditional National Guard Soldiers and Airmen capable of responding to an incident site in 6-12 hours. The CERFP is task organized for CBRNE response into four functional capabilities of command and control, search and extraction, mass decontamination, and mass medical triage with training validation every 24-36 months. Force providers for CERFP organization generally involve an Army battalion headquarters, engineer company, chemical decontamination company, and an Air National Guard Medical Group (Dall 2011, 16-17). The 17 designated CERFPs are state contained formations available to other states through pre-established EMACs (Dall 2011, 13).

Homeland Response Force

The HRF is the most recent addition to the CRE directed by the National Defense Authorization Act of 2010. Discussion of the HRF is provided by Lieutenant Colonel Paul Gault in his Army War College research paper “Enhancing Domestic Response: The Implementation of the Homeland Response Force.” Gault’s paper relates the capabilities of the various element of the CRE with specific attention to the newly envisioned HRF. Pre-saging his discussion, Gault summarizes the origin and development of CBRNE threat.

The HRF encompasses the capabilities and mission set of CERFP with additional regional responsibility. Similar to the CERFP, HRFs are not dedicated units. They are dual missioned with assigned warfighting missions as well as the directed homeland response mission. The difficulties of dual mission organization is further compounded in two HRFs assigned as multi-state entities. The donor units for both of these two organizations are provided by more than one state increasing the challenge of training and response coordination (Gault 2011, 11-12).

HRF composition is an expansion of that forming the CERFP. The overall structure is 566 Soldiers and Airmen assigned within six functional sections. The expansion is limited to supplementation by a 200 soldier security element and a 180 soldier brigade headquarters to provide command and control. The remainder of the force in terms of strength and organization is a duplicate of the CERFP (Reyes 2012, 8).

The dual mission nature of both the CERFP and HRF introduce a number of challenges in manning, training, and equipping. Because each of these forces are comprised of available units, donor structure between states varies accordingly. Meeting prescribed training standards is correspondingly impacted within the relatively limited available reserve component training periods. The dual mission assignment requires prioritization for training both at individual and unit levels that inevitably degrades the readiness of one mission or the other. This factor has played a greater role in the recent years of high overseas deployment cycles (Gault 2011, 19).

Defense CBRNE Response Force and Command and Control CBRNE Response Element

The federal component of the CRE is composed of two tiers. The highest tier is the DCRF formed from the expanded and re-designated CBRNE Consequence Management Response Forces (CCMRF) -1. The DCRF consists of approximately 5,200 personnel from a combination of active and federalized reserve component forces. Its mission is to reinforce state and regional within 24 to 48 hours as they become overwhelmed. The structure of the DCRF varies depending upon the capabilities required, but generally involves an operations, medical, and aviation task force (Dall 2011). Capabilities of the DCRF vary with structure and can include command and control, CBRNE Assessment, decontamination, medical treatment, search and rescue, security, logistic support (Reyes 2012, 12). The second federal tier is the C2CRE A and B which replace CCMRF-2 and CCMRF-3. The C2CRE are 1,500 personnel augmentation forces for the DCRF responding within 96 hours to provide a command and control capability over augmentation forces, smaller in scale, but very similar to DCRF (Van Camp 2012, 15).

Modification of CRE structure improves its overall effectiveness in supporting civil authorities. Replacement of two CCMRF with the expandable capability of the C2CRE in the federal force provided for establishment of HRFs within each FEMA region. HRFs provide increased responsiveness and command and control capability at the state and regional level. The overall balance after recent transition places approximately half of the CRE capability at each the federal and state levels (Reyes 2012, 12).

Weapons of Mass Destruction-Civil Support Team

The roots of the WMD-CST program stem from Presidential Security Directive 39 in 1995 directing actions to reduce threats to U.S. interests from terrorist attack including Nuclear, Chemical, and Biological weapons. Legislation followed with the *Defense Against Weapons of Mass Destruction Act of 1996*, also known as the Nunn-Lugar-Domenici act, mandating and funding enhancement of domestic CBRNE preparedness and response capability. The 1998 *Department of Defense Plan for Integrating National Guard and Reserve Component Support for Response to Attacks Using Weapons of Mass Destruction*, hereafter referred to as the DoD Tiger Team Report, created the WMD-CST program with capability in every state and territory. The plan:

Identifies the nature of the problems we face as a nation in responding to WMD attacks, and assesses current capabilities to respond. It sets the conceptual foundation of the response process and highlights the need to enhance currently limited response capabilities. The second part identifies the tasks for improving military response capabilities, describes the required response elements, and outlines the training requirements necessary to establish and sustain the essential skill levels. (DoD Tiger Team 1998)

The unit conceived as the Rapid Assessment and Initial Detection (RAID) team underwent minor organizational change prior to implementation and replaced the name in January 2000. The WMD-CST program experienced rapid growth of 45 teams through 2007, a growth accompanied by the formulation of governing publications.

The primary source for information about WMD-CST is the U.S. Army Field Manual *Weapons of Mass Destruction-Civil Support Operations* published in December 2007. This manual is structured around the mission to support the incident commander by identifying hazard substances, assessing consequences, advising on response measures

and assisting with requests for additional support. It covers nine distinct topics areas of WMD-CST operations including (1) fundamentals, (2) command and control, (3) threat, (4) mission, capabilities, operational phases, (5) interoperability, (6) assessment, (7) liaison, (8) alert management, (9) training management (Department of the Army 2007). The manual is comprehensive in detailing WMD-CST operations and incorporates supporting information in numerous areas such as program history, affiliated government documents, and past CBRN events to clearly illustrate material provide.

The primary companion document governing WMD-CST is National Guard Regulation 500-3/Air National Guard Instruction 10-2503 *Weapons of Mass Destruction-Civil Support Team Management*. This regulation establishes the regulatory policies, processes, and standards for WMD-CST employment within the provision of the NRF. Of particular importance, it establishes the response sectors and status for coherent national level management. Alert and deployment requirements including timelines for discreet events are specified as well as periods of required DoD certification.

DoD inspector general (IG) reports from January 2001 and 2012 provide a decade separation in assessments. Timing of these reports is fortunate with the initial performed shortly after formation of the program and the most recent within a year of this study. The 2001 report focusing on program management identified numerous major deficiencies across virtually every area of the program. Major Miguel Besosa revisits and analysis the faults highlighted in the 2001 DoD IG audit by grouping them into pre-attack, attack management, and post-attack phases. Additionally, his 2001 research discusses U.S. security strategy relative to WMD-CST capabilities in “The Role of the National Guard in Responding to Weapons of Mass Destruction (WMD) Attacks in the

U.S.: Where Do We Stand” (Besosa 2001). The recent 2012 report evaluated planning and reporting specific to a CBRN incident or disaster. Due to the purpose of the report, the 2012 DoD IG report provides a thorough compilation of the number and types of missions performed within the evaluation period.

Scant individual research is available specifically addressing WMD-CSTs. A total of five research projects on this topic have been located for inclusion in this literature review. These WMD-CST related papers date from the early years of the program in 2000 through 2004. Despite this fact they remain relevant to this study in on the basis of providing perspective on WMD-CST organization.

Lieutenant Colonel Robert Brown questions WMD-CST in “National Guard Weapons of Mass Destruction Civil Support Teams—Are They Ready and Capable to Support the Global War on Terrorism.” His Doctrine, Organization, Training, Material, Leadership and Education, Personnel, and Facilities (DOTMLPF) review, which occurred during peak team fielding, recognizes team design and accelerated press of teams into service. Points addressed include response time over coverage area, debated addition of another survey team, extensive technical training required, and personnel management issues (Brown 2004). Brown’s discussion of coverage area is similarly addressed as an issue in William Coffin’s proposal for an alternate national response structure in “The Operational Framework for Homeland Security: A Primary Mission for the National Guard.”

The monograph “The National Guard Weapons of Mass Destruction Civil Support Team-Structured for Success or Failure” written by James Taylor scrutinizes WMD-CST capability to perform its three of its fundamental mission sets of assess,

advise, and facilitate. He examines additional areas of team effectiveness that include serving as a knowledge base and training resource, conduct of public affairs, and provision of communication and operational support. From this work, the commentary on fundamental missions remains useful to current studies, but much of the work demonstrates a general absence of understanding of WMD-CST operations. This is understandable due to the early publication during the first two years of the program.

Sven Erichsen followed Taylor's approach to examine WMD-CSTs with his monograph "National Guard Weapons of Mass Destruction Civil Support Teams: Performing as Required?" He attempted to establish the effectiveness of the program before expansion in the interest of Army cost savings. The methodology compared team performance to capability requirements in Presidential Decision Directives (PDD), legislation, and the forerunner of the NRF. Erichsen concludes the WMD-CST will never be able to perform as required due to latency arrival time at the incident site. Based upon his conclusion he recommends alternate mission assignment (Erichsen 2002).

Summary and Conclusions

This chapter provided review of the current literature that pertains to the WMD-CST program categorized into the five key areas of CBRNE threat, national strategy, response framework, CBRNE response force structure, and the WMD-CST. The body of work covered establishes the source for analysis to resolve the research question. Chapter 3 describes the method of research and the framework for analysis.

CHAPTER 3

METHODOLOGY

I believe the proliferation of weapons of mass destruction presents the greatest threat that the world has ever known. We are finding more and more countries who are acquiring technology – not only missile technology – and are developing chemical weapons and biological weapons capabilities to be used in theater and also on a long range basis. So I think that is perhaps the greatest threat that any of us will face in the coming years.

— Secretary of Defense William Cohen, January 1997

The previous chapter identified some of the primary contributions within current literature affecting U.S. CBRNE threat and the government security strategies formulated to combat them. It also provided the core of sources governing CBRNE response forces and research focused on response force structure, specifically the WMD-CST. The purpose of this chapter is to identify the methodology utilized in planning, preparing, and conducting this research study. It includes the research method, framework for analysis, and the sources that resulted with the selected means.

Research Design

Inspiration for this study design is founded in the U.S. Army problem solving methodology and the means of communicating potential problem solutions set fourth in the U.S. Army decision brief format. The combination of these tools is the standard means used daily by Army leaders. Problem solving is a seven step process that covers (1) identify the problem, (2) gather information, (3) develop criteria, (4) generate possible solutions, (5) analyze possible solutions, (6) compare possible solutions, and (7) make and implement the decision (Department of the Army 2011, 11-1). The U.S. Army decision brief format uses information from each of the seven steps to communicate the

information to a specified audience to gain concurrence or a decision on the recommendations made.

This research on the WMD-CST program progressed along similar lines and used the seven step problem solving method as a guide for study design. Data collection in this research is based on document review. This research is designed as a qualitative comparative study used for applied research in professional organizations and industry. Comparative study is the examination of two or more conditions or events where the researcher selects the characteristics of interest for analysis, as discussed by research methods instructor Pentti Routio: The design of comparative research is simple. Your objects are specimens or cases which are similar in some respects (otherwise, it would not be meaningful to compare them) but they differ in some respects. These differences become the focus of examination (Routio 2007). The models in this study are composed of the same unit level structure and capability. The respect in which they differ is national level organization and resultant number of available teams. This study compares two models of organization for the WMD-CST program. The aspects are not compared directly, but in terms of their effects on principles of the national response doctrine. Use of comparative study is helpful if your question demands that you determine what is special about a group or identify particular conditions or circumstances (Richards 2006, 90) as desired for this research. This approach directly addresses the primary purpose of this research.

Comparative study method includes several strengths and weaknesses. A predominant strength is the contrast easily observed when current conditions are compared to an alternate possibility. This is similar to course of action comparison in the U.S.

Army seven step problem solving method. Contrast from comparison establishes an understanding of the benefits and shortfalls in each model. An additional strength is the efficiency provided. Comparison study identifies similarities, but detailed investigation is limited by focusing on differences within relevant areas.

Research design includes two primary disadvantages. The first is researcher bias for or against one of the comparative models. This disadvantage stems from the subjective researcher judgement in assessing differences between under comparison. Specifically in the design of this study, qualitatively assessing the level of doctrinal compliance for each criteria relies upon interpretation. The selection of document review source material and the perspective from which it is viewed affects model doctrinal criteria assessment. The second disadvantage of this design is systematic bias potential in selecting the structure of comparison. Systematic bias occurs when the framework for evaluating differences is chosen that naturally favors one model over another. Another avenue of introducing systematic bias is injudicious weighting of criteria.

While these forms of researcher bias are not unique to this design, three specific measures are used to reduce their occurrence. First the widest scope possible for document review is used to ensure assessments are not unduly affected by a single source. The second two measures are intended to reduce systematic bias. This is attempted by selecting evaluation broad based evaluation criteria applicable to multiple organization and variable echelons. This reduces prejudice for or against organizational models based upon size or organizational echelon. The third measure also endeavors to avoid systematic bias by viewing each evaluation criteria equally. Each evaluation criteria is

viewed as of equal value as all other evaluation criteria; criteria weights are not used. The inherently subjective nature of assessing models is unavoidable. The researcher attempts to maintain an objective and impartial perspective supported by source documents for each criteria assessment.

Contextual Background

The occurrence of several international attacks utilizing both conventional and CBRNE weapons during the 1990s caused the U.S. government to evaluate existing capabilities to deter, prevent, respond, and recover from a WMD attack. The evaluation concluded the U.S. lacked the ability to support initial local and state emergency responders cope with the consequences of a WMD event. The remedy for this capability gap was creation of the WMD-CST program specializing in CBRNE response. Occurrence of subsequent attacks and intelligence analysis continued to shape U.S. national security strategy as effected through legislation. The combination of intelligence analysis and security strategy, in relation to CBRNE threat, presumably precipitated formation of additional WMD-CST from 2000 through 2010.

Force structure decisions concerning WMD-CST is innately tied to changes in national CBRNE threat assessment and shifts of U.S. security strategies. Because of this relationship, any potential change in the organizational structure of the WMD-CST program, in terms of locations or number of teams, must include a discussion of the current threat and strategy. This context is provided through a document review of available threat assessment literature available in unclassified sources. The context is further defined by U.S. strategic document review regarding CBRNE including national, defense, and army strategic direction.

Comparative Models

The WMD-CST was established in 1999 as one measure to enhance the nation's response to terrorist attack within the U.S. Initial program stationing included one National Guard WMD-CST in each of the ten FEMA Regions operating under state authority. Teams would remain under the authority of their respective Adjutant Generals unless federallized for national duty or operating under the provision of an interstate agreement between other states within the region. The program rapidly expanded beginning in 2000 until reaching the current WMD-CST configuration of 57 teams (Abbot et al. 2010, 15).

Two organizational structures constitute the models for comparison in this study. The first model is organization of the WMD-CST as it currently exists under geographic and jurisdictional assignment. The second model is regression of the WMD-CST program to original configuration of ten teams with one assigned to each of the FEMA response regions under jurisdictional control of the owning state to which it is geographically located. The location of team assignment and accompanying jurisdictional boundaries are the primary area of focus. The reduction of personnel in the later model provides the potential cost savings achieved. The cost savings of this model are considered in the overall comparison but not as a specific point of comparison. Changes in capabilities available or other characteristics applicable to effective response are the basis of expected variation.

Analytical Structure

The National Response Framework establishes the guidelines of emergency response within the U.S. at all levels of government. Its purpose is the systematic

improvement of national readiness to plan, protect, mitigate, respond, and recover to the prevailing threats to U.S. security (Department of Homeland Security 2012, 1).

The NRF as a whole constitutes the national response doctrine. Centered on saving lives and protecting both property and the environment, response doctrine defines the roles, responsibilities and concepts for all domestic response. Response doctrine is composed of the five key principles (1) engaged partnership, (2) tiered response, (3) scalable, flexible, and adaptable operational capabilities, (4) unity of effort through unified command, and (5) readiness to act (Department of Homeland Security 2008b, 8). As the overarching framework for establishing synchronized response efforts at all organizational levels, it naturally follows that it should also serve as the gauge by which response forces are measured. It is with this perspective that the five principles of U.S. response doctrine are selected to form the evaluation criteria for this study.

Although the principles expound separate imperatives for response, they are not completely discrete topics that can be isolated from one another. The NRF does not afford any one principle a greater value than any of the others. Their usefulness is intended from their resulted synergistic effect. With this understanding, they are further discussed as described within the NRF and as applied to evaluation criteria. Where aspects of varied principles cross-over, the evaluation is limited to the effects on the principle under discussion.

Engaged Partnership

Preparedness activities are the primary domain of the principle of engaged partnership. This includes numerous actions across jurisdictional levels that is incumbent upon strong communication, effective plans, and close coordination by all agencies

involved. These actions occur within separate jurisdictions, across jurisdictional boundaries, as well as up and down hierarchal jurisdictional lines. The critical aspect of engaged partnerships is pre-event activities for enhanced response (Department of Homeland Security 2008b, 8-9).

Evidence of engaged partnership is best observed in plans, protocols, and training events in advance of an incident. The coordination and communication required to for all three is a benefit in its own right, however is difficult to evaluate. The result on the other hand are clearly observable through documentation. Plans, protocols, and build upon one another to improve the overall response as well as that of each participating entity. For evaluation purposes plans, protocols, and training are points of evaluation.

Tiered Response

Most incidents begin, are managed, and end locally. At the local level, there may be any number of participating entities from government to the private sector. Events of larger scope or complexity may necessitate assistance from additional jurisdictions or state involvement. In the realm of emergency response, few incidents require federal support or management. This frequency establishes the foundational NRF principle that incidents must be managed at the lowest jurisdictional level possible (Department of Homeland Security 2008, 10). The national response establishes tiered levels of reinforcing support. It is not necessary for subordinate levels to become overwhelmed before they request or are provided additional support, however legal and or fiscal protocols may be applicable to do so. The construct of this principle requires all levels to anticipate and prepare for potential support needs.

Tiered response evaluates access to response capability by leaders at the appropriate jurisdictional level based upon the principal to manage an incident at the lowest level possible consistent with demand for the capability. The local tier of response is not directly discussed in the evaluation as models analysed are state and regional level. Assessment focuses on the level of demand for specialized support under the framework. Cases requiring cross jurisdictional or state support as opposed to those requiring federal action. The guiding premise focuses on resolution of incidents at the lowest jurisdictional level possible to meet the frequency of resource demand.

Scalable, Flexible, and Adaptable Operational Capabilities

Incidents requiring emergency action are progressive. Incident events can change in magnitude, nature, or complexity as an intrinsic component of the incident or as a consequence of response action. Because of this fact, emergency response resources must be able to expand in terms of number, type, and source as commensurate with the demands of the event. Effective response necessitates a two way capability to rapidly surge and appropriately reduce to efficiently match resources with requirements. Adaptability of resources to match incident conditions applies to response processes as well as the resources used (Department of Homeland Security 2012, 5).

Although this principle of the national response doctrine focuses on expansion and reduction of both resources and processes, evaluation is primarily concerned with the expansion aspect. This is not intended to undermine the importance of reduction of the response effort or transition to recovery phase. The primary importance of emergency response operations remains saving lives, protecting property and the environment.

Response reduction essentially becomes a matter of efficiency. This evaluation criteria primarily addresses ability to provide depth of varied resource levels.

Unity of Effort Through Unified Command

Unified command applies when more more than one agency has jurisdiction over an incident. Under this condition the Incident Command System directs cooperation between designated representatives from each responsible jurisdiction to develop a single set of objectives within the incident action plan (Department of Homeland Security 2008b, 149). Cooperative development of unifying objectives focuses the direction of all actions and commitment of resources towards the same ends. Unified command thus relies upon unity of effort for success. This is achieved by using the ICS as established in NIMS. The ICS structure accomodates interoperability between multi-jurisdictional agencies without infringing on their responsibility or authority (Department of Homeland Security 2008b, 11). Operations within a unified command require each participating organization to clearly understand their roles and responsibilities to achieve unity of effort.

Unity of effort is evaluated based on the organizations ability to operate within the nationally prescribed NRF and accompanying NIMS. The origin of the response element is not considered as the importance of this criteria is support to the incident command within jurisdictional and functional boundaries. This evaluation criteria examines understanding roles and responsibilities.

Readiness to Act

Readiness to act addresses the conditions existing and actions taken prior to the requirement of an emergency response. During an incident decisive action is required by responders with an understanding of the risks and hazards they may face. Effective communication through engaged partnerships appears again as a function of readiness. This is manifested in the protocols that facilitate requests from subordinate jurisdictional levels through state, interstate, regional, and federal echelons. It also incorporates the estimated time required for approvals. Incident command authorities must possess the ability to communicate on site with response elements as well as externally to convey mitigating measures in the interest of public safety. This includes details about the cause, location, size of the event as well as prudent measures such as evacuation routes, shelter protocols, and alert actions. Readiness to act relies on pro-active pre-incident planning and organization to improve the timeliness of response efforts (Department of Homeland Security 2008b, 11).

As expected of an integrated doctrine, preceding principles of national response affect the principle of readiness to act. Factors analysed under preceding principles are not addressed again unless the factor results in a new and distinct effect. This is to avoid duplication or skewing results based on a single factor. Viewed as evaluation criteria, readiness to act is treated as the responsiveness of emergency capabilities. This includes the time required for travel to the incident site and organizational capability to perform stand-by missions establishes pre-approvals and forward positions teams. This performance is evaluated under readiness to act. Readiness to act as an evaluation criteria considers time, distance, and availability of forces.

Evaluation Scale

The evaluation scale used assigns relative value discriminators to each organizational model as compared to the evaluation criteria. Two styles are identified in comparative studies, descriptive and normative. Normative analysis is evaluative with the prime objective to identify the best among alternatives or improve existing conditions (Routio 2007). The scale uses the existing principals of national response doctrine as the evaluation criteria (Department of Homeland Security 2008b, 8). Scores are subjectively determined through an evaluation of the degree each model supports the defined national doctrine. The score range consists of four possible results relative to the models support of each criteria. Evaluation scores include: (1) fully, (2) partially, (3) do not, and (4) inconclusive. Results of the narrative analysis is captured in tabular format to consolidate the overall evaluation and present visual representation for ease of understanding. This is represented in the blank evaluation matrix (table 1).

Table 1. Evaluation Matrix

CRITERIA / MODEL	Model 1	Model 2
Engaged Partnership		
Tiered Response		
Scalable, Flexible, Adaptable Operational Capabilities		
Unity of Effort through Unity of Command		
Readiness to Act		

Source: Created by author.

Summary and Conclusions

This chapter identified the method of research and analytical approach used in resolving the research questions. Background material assists understand the reasons for their selection and the need for inclusion and discussion of specific areas in relation to WMD-CST evaluation. Furthermore, definitions of each evaluation criteria is established and explained for clarity. The next chapter further describes the two models and assesses each respective to the listed evaluation criteria. This approach is applied in the analysis of each of the models relative to ability to meet the criteria. This analysis forms the basis for comparison of the two models.

CHAPTER 4

ANALYSIS

Rebuilding our economy must include putting ourselves on a fiscally sustainable path. As such, implementing our national security strategy will require a disciplined approach to setting priorities and making tradeoffs among competing programs and activities. Taken together, these efforts will position our nation for success in the global marketplace, while also supporting our national security capacity—the strength of our military, intelligence, diplomacy and development, and the security and resilience of our homeland.

— *National Security Strategy*, 2010

This chapter provides an analysis of chemical, biological, radiological, nuclear (CBRN) threat, national strategy, and the Weapons of Mass Destruction-Civil Support Team (WMD-CST) program. The CBRNE Response Enterprise (CRE) structure is discussed to understand the WMD-CST role during response and the impact changes to the WMD-CST program may necessitate. As explained in chapter 3, evaluation is determined as the relative value of each of two organizational models against national doctrinal response principles. This analysis establishes how well each of the considered models meets the national response principles.

CBRNE Threat

Nuclear proliferation along with the spread of materials and technologies for chemical or biological weapons programs is a national concern. The threat to the U.S. by CBRNE attack includes several possible sources. Potential aggressors include any combination of nations, nation sponsored terrorist factions, independent terrorist organizations, and foreign or domestic individual actors. Probable threat of nations or nation sponsored terrorism is strongly reduced by the effectiveness of diplomacy for the

first and lack of evidence in the second (Clapper 2011, 5). Remaining CBRNE threat from individual or organized groups of terrorists is minimally impacted by diplomacy. The organization, ideology, and goals of each directly influences the degree of appeal to terrorists for employing CBRN methods (Robertson 2011). Historical evidence clearly shows CBRNE weapons are a considered or used by many aggressors. In the six years from 1999 through 2005 the global average is 53 CBRNE incidents and 71 hoaxes per year (Ackerman 2005). These incidents exclude non-attack accidents.

The use of a CBRNE in a terrorist attack requires the ability to procure and employ it within acceptable cost level to the the attacker. Globalized information networks transmit data dually usable for beneficial as well as nefarious means. Materials are similarly available with the same dual-use potential. However, the ability to generate CBRNE does not equal imminent use. The cost must be considered relative to the benefits achieved. An undeniable benefit is the psychological impact on the target population (Kumar 2012, 9). The effectiveness of CBRNE or investment needed is less clear.

Production of CBRNE as a weapon is a process that demands precursor materials, resource demanding work space, and terrorist organizations that are not well organized or funded are likely unable to overcome these combined obstacles. Larger, better organized and funded terrorist organizations capable of overcoming these barriers may be dissuaded from using CBRNE in the interest of organizational preservation. As organizational size increases so does its susceptibility to interdiction and targeting by law enforcement and intelligence entities. Fear of the expected military reprisals may restrain terrorist

organizations with CBRNE capability in much the same way diplomacy and international treaties control programs of nations.

The effectiveness of CBRN as a terrorist tool remains in question. Although the biological mechanisms through which CBRN cause damage are known, many CBRN have not demonstrated a WMD capability in practice. The agenda of terrorist organizations varies, but a commonality is the use of fear to achieve their goals. A frequent method of creating fear is through attacks that inflict massive casualties. The deadliest CBRN attack to date is was Aum Shinrikyo's 1995 release of sarin gas in a Tokyo subway; there were 12 fatalities (Robertson 2011, 1-2). This example and others captured in the Monterey Institute WMD Terrorism Database demonstrate CBRN is and continues to be utilized for terrorist attacks, but is not yet effective as a WMD or mass casualty producing option for terrorists (Ackerman, Asal, and Rethemeyer 2008).

A common principle is found when assessing terrorist CBRNE threat. The principle is essentially optimal effectiveness for least effort and risk. This is identified as the mini max principle, which consists of striving to inflict maximum damage on society while expending the minimum resources and with minimal risk that the organization will be detected and eliminated (Kumar 2012, 17). Assessment currently indicates CBRN materials don't fit that niche (Mauroni 2009, 8).

Chemical

Chemical precursors are the most widely available materials within the CBRNE group. Materials are commonly present in medical, research, industrial, agricultural, construction facilities, often in bulk quantity. These locations infrequently have robust security measures intended to deal with threats greater than typical criminal activities.

While chemicals from these sources do not possess the lethality of their military grade counterparts, they are infinitely more accessible. The accessibility may provide an additional benefit by reducing transportation requirements from point of production to point of use or eliminate the need to overcome border security issues. Another benefit enticing to terrorist is the minimal training and equipment required for chemical use (Mauroni 2009, 8). Although the chemicals available for commercial or chemical application have significantly lower lethality than military grade chemical weapons, they operate by the same mechanisms and only require greater dosage for similar relative affect. When used in open areas chemical effects are rapidly impacted by temperature, wind, air volume, and precipitation limiting their potential benefits. These same factors lend their application to confined areas where environmental controls can be eliminated.

Biological

Biological weapons are unique because many have the natural characteristic of self perpetuating their own spread. This is not true of all bioweapons as toxins and prions do not have this capability, though bacteria and viruses do. Production of a biological agent begins with starter material from a pathogen from an infected patient or a laboratory stock culture. Security at many laboratories that house infectious agents is questionable. A 2008 investigation by the Government Accounting Office indicated most U.S. biolevel four facilities failed one or more of the mandated security protocols. Similar laboratories in many developing countries have significantly less rigorous biosecurity because of limited budgets (Graham et al. 2008, 5). Though potential opportunity exists to procure source media, producing infectious agents is a highly technical process with limited historical example of successful intentional use. The 2001 delivery of anthrax

through the U.S. postal service is most noteworthy with 22 infections and five fatalities (Shea 2004, 1). In this case Bruce Ivins had access to source material as a senior biodefense researcher at the U.S. Army Medical Research Institute for Infectious Disease. As a microbiologist Ivins possessed a dangerous combination of education, years of experience working with anthrax, and use of world class laboratory facilities (Mauroni 2009, 9). Acknowledging that his intent did not appear to be causing mass casualties, dissemination of the developed and produced agent remains a challenge.

Biological weapons may attempt to avoid causing direct human casualties by targeting plant or animal food sources. This application damages a populations financial base as well as creating longer term suffering and fear. Research indicates biological incidents account for the greatest economic damage, on the order of 10 to 20 times that of a chemical or radiological event (Ferguson and Smith 2009, 42). The frequently prolonged onset and transmission potential between infected organisms complicates detection of biological agents. For this reason, the most effective defense is standard sanitation protocols and an effective public safety program.

Nuclear

The existence of nations with nuclear capabilities form the basis of nuclear threat, especially those with interest conflicting with the U.S. and its allies. Programs in North Korea and Iran are exemplify this point (Clapper 2011, 5-6). The proliferation of nuclear weapons is a fact. As a result, the President states “the American people face no greater or more urgent danger than a terrorist attack with a nuclear weapon” (White House 2010, 1). The threat of nuclear attack has increased since the end of the Cold War due to excessive remaining stockpiles. Additionally more nations currently possess nuclear

weapons than during the Cold War. Non-proliferation treaties are violated by both individuals and nations. Nuclear secrets and materials are available through black market trade to terrorists committed to procuring nuclear weapons (White House 2010, 23).

Additionally the five existing nuclear powers of Russia, China, France, the United Kingdom, and the U.S. continue to contribute to global threat through theft or attack on their nuclear weapons. The independent nuclear surety measures of each of these national programs is the key aspect preventing increased nuclear threat. Cooperative international actions intelligence efforts, enforcement of nuclear non-proliferation treaties, and incorporation of detection capabilities further increase the difficulty of using a nuclear device for a CBRNE attack (Ferguson and Smith 2009, 30).

Radiological

Attacks using effects of radiation to cause damage include radiation dispersal device (RDD), radiation emission device (RED), and radiation incendiary device (RID) (Ferguson and Smith 2009, 23). Each uses varying dissemination methods to achieve exposure of targets but all rely on some type of radiological source. Most experts agree that few casualties are likely to result from either an RDD or RID other than those in the immediate area. Low casualties expectations are a function of the combination of environmental and weather effects as well as the relative ease non-emitting radiation sources can be shielded (Shea 2004, 2-5). This doesn't reduce the potential psychological or economic impacts that may result. RED possess greater casualty potential but sources are more difficult to obtain and present greater hazard to potential users and consequently necessitate more protective measures that make employment problematic. The U.S. has taken action to address radiological threat further such as expanding detection capability

at border entry points and with emergency responders as well as increasing regulatory requirements for storage and transportation of radiological materials (Kumar 2012, 30). These actions reduce the attractiveness of an already questionable attack method.

National Strategy

The proliferation of WMD is well nested across the NSS, NDS, and NMS as the greatest threat to the U.S. Nuclear and biological weapons are identified as the most dangerous of the the WMD threats. The potential WMD proliferation results from the increased transfer of information, materials, and people characterized by globalization. This aspect of the current operating environment as well as the importance of economic security are recognized and pervade national, defense, and military strategies. Improved economic security is stressed through economic growth, reduced government spending, and debt reduction. These fiscal imperatives constrain the means used in achieving strategic objectives and increase the importance of prioritization.

The key theme resonant in the overarching security strategy is integration of interested organizations. This includes cooperative activities with international partners, cooperation across U.S. agencies, and coordination between federal, state, and local entities. This whole of government approach increases national resilience through deterrence and response (White House 2010, 15). Through integrated action, the national strategy focuses on an active approach to requiring growth of counter WMD capability in intelligence, interdiction, international partnered threat reduction, and material surety programs (Department of Defense 2010, 34-35).

Other than active measures in nonproliferation and counterproliferation, national strategy includes DoD response requirements for consequence management, primarily in

a supporting role to DHS. Although DoD is not the lead agency, it lists providing assistance to domestic civil authorities during attack or following natural disasters as a primary mission (Department of Defense 2010, 68). Military support is identified primarily as focused on is planning, control, consequence management, and logistic support to the Department of Homeland Security.

Two ways of posturing for DSCA include multiple levels of close coordination and geographic dispersion (Department of Defense 2010, 35). These actions are specifically apparent in two distinct organizations NORTHCOM and the National Guard. The NMS directly addressess the continued dedication, funding, and training of a portion of the National Guard specifically for homeland defense and DSCA (Chairman, Joint Chiefs of Staff 2006, 10-11). The consequence management aspect of DSCA is defined as restoring essential services following a WMD event in the homeland. Successful consequence management is measured as assisting U.S. civil authorities minimize effects, attribute the source of an attack, and ensuring U.S. civilian agencies are capable partners in combating WMDs (Chairman, Joint Chiefs of Staff 2006, 7-8).

Homeland Security Presidential Directive (HSPD) 8 establishes several directives to enhance national security through domestic all-hazards preparedness. Amongst these are fifteen scenarios across a range of threats for emergency planning and exercises. Scenarios are designed to challenge a broad spectrum of capabilities and are applicable to all levels of government. Their use is intended to reduce planning uncertainty and drive capability improvement. The NRF groups these scenarios into eight sets based upon common characteristics for improved integration (figure 1).

Key Scenario Sets	National Planning Scenarios
1. Explosives Attack – Bombing Using Improvised Explosive Device	• Scenario 12: Explosives Attack – Bombing Using Improvised Explosive Device
2. Nuclear Attack	• Scenario 1: Nuclear Detonation – Improvised Nuclear Device
3. Radiological Attack – Radiological Dispersal Device	• Scenario 11: Radiological Attack – Radiological Dispersal Device
4. Biological Attack – <i>With annexes for different pathogens</i>	• Scenario 2: Biological Attack – Aerosol Anthrax • Scenario 4: Biological Attack – Plague • Scenario 13: Biological Attack – Food Contamination • Scenario 14: Biological Attack – Foreign Animal Disease
5. Chemical Attack – <i>With annexes for different agents</i>	• Scenario 5: Chemical Attack – Blister Agent • Scenario 6: Chemical Attack – Toxic Industrial Chemicals • Scenario 7: Chemical Attack – Nerve Agent • Scenario 8: Chemical Attack – Chlorine Tank Explosion
6. Natural Disaster – <i>With annexes for different disasters</i>	• Scenario 9: Natural Disaster – Major Earthquake • Scenario 10: Natural Disaster – Major Hurricane
7. Cyber Attack	• Scenario 15: Cyber Attack
8. Pandemic Influenza	• Scenario 3: Biological Disease Outbreak – Pandemic Influenza

Figure 1. Key Sets of National Planning Scenarios

Source: Department of Homeland Security, *National Response Plan* (Washington, DC: Federal Emergency Management Agency, January 2008), 75.

Four of the eight key scenario sets specify a CBRN event with three of the remaining sets potentially involving CBRN elements. Only cyber attack does not indicate a requirement for CBRN response capability. Within the national planning scenarios ten are CBRN attacks with probable CBRN concerns in four others. Again only considerations of cyber attack omit CBRN threat. This depicts a clear direction for preparedness from the national perspective.

CBRNE Response Enterprise

The composition of the CRE began with establishment of the WMD-CST program. Though not identified as the CRE at the time, this enterprise has grown in both the active and reserve component to its present configuration completed at the end of 2012 (National Guard Bureau 2013, 21). The CRE is structured to provide for tiered

response. Layers of the CRE vary in size, response time, and capabilities. The lower tiers are provided by the National Guard as part of the state response while the higher tiers are a combination of both active and reserve component forces under federal control. Each tier is structured to provide specific capabilities at different points in the response cycle. The initial response by the WMD-CST focuses on event assessment and mitigation, progressing to CERFP and HRF with lifesaving functions accompanied by enhanced control structure, and ultimately the DCRF and C2RE with expanded lifesaving, robust sustainment, and large scale control capacity. The WMD-CST is unique as the only CRE unit assigned a single mission. All other forces comprising the CRE have an assigned Army warfighting mission for which they are organized with the incumbent training and maintenance requirements. The size, number, and general capabilities of discrete CRE elements are depicted in figure 2.

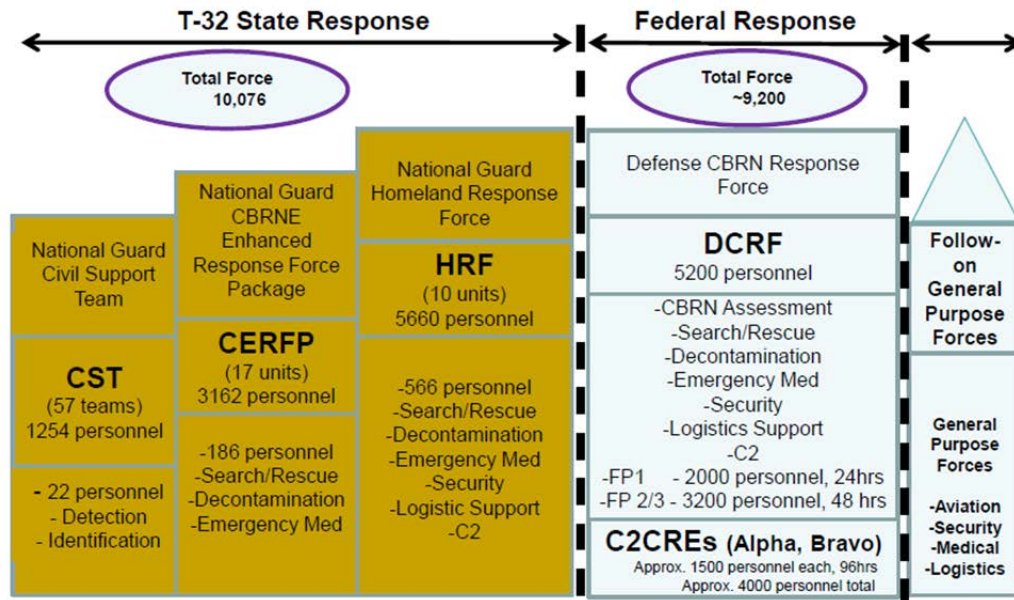


Figure 2. CBRNE Response Enterprise Overview

Source: Colonel Heinrich Reyes, “CBRNE Response Enterprise” (Presentation, Arlington, VA, National Guard Bureau Strategy and Policy Division, March 14, 2012), 10.

The SECDEF modified the operation concept along with the force structure of the CRE in the 2010 QDR. The revision expanded one CCMRF to the DCRF, reduced the two remaining CCMRF to C2RE, and formed ten HRF. It is a command and control structure with 566 personnel that responds within 6-12 hours established as a bridge between initial NG response and AD capabilities (National Guard Bureau 2013, 21). The overall actions of restructure shifted designated CRE forces from active duty to the National Guard forces. The CRE concept change is intended enhance their lifesaving capabilities, maximize their flexibility, and reduce their response times (Department of Defense 2010, 19). Reducing national level structure in lieu of regional capabilities produces multiple impact on responsiveness. The geographic stationing in each of the ten

FEMA regions reduces response time through simple proximity. Response time is further improved by the reduced complexity of mobilizing smaller forces. Closer proximity coupled with the increased number of forces supports development of closer ties to civilian response authorities through planning, training, and exercising. The greater number of smaller forces improves flexibility for multiple events as well as easing scalability for single events of varied magnitude (Department of Defense 2010, 19). Flexibility is additionally enhanced through status options under the governors for SAD or T32 duty or by the President under T10 authority. The restructure also reduces the burden on the active component. The combined CRE state response forces are within 250 miles of 80 percent of the U.S. population (National Guard Bureau 2013, 21) (figure 3).

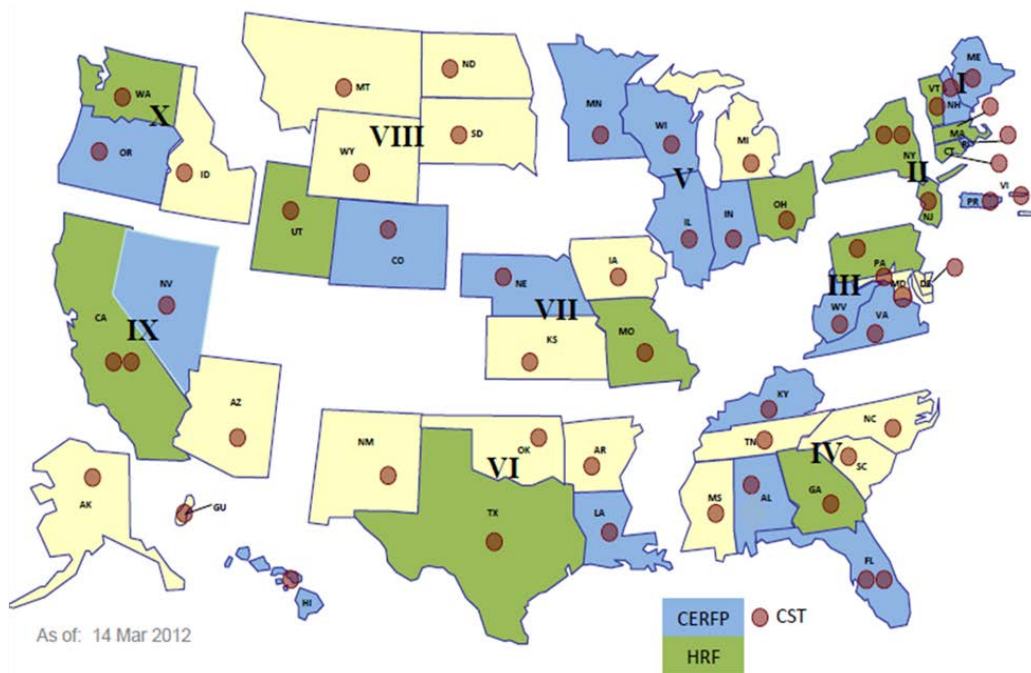


Figure 3. National Guard CRE Assignment

Source: Colonel Heinrich Reyes, “CBRNE Response Enterprise” (Presentation, Arlington, VA, National Guard Bureau Strategy and Policy Division, March 14, 2012), 12.

Alteration of the CRE as part of the 2010 QDR sought improved responsiveness through organization modification. Modification adhered to the concept of tiered response by rebalancing national level forces in lieu of increased regional and state level capability. The forces that compose the CRE within both the state and national level response are based upon projected DSCA demand throughout a response event. The tiered CRE structure provides for progressive resource capabilities. Each layer is shaped by the capabilities of CRE forces at the next echelon. This is observable with the development of the HRF and C2CRE. These new structures were not created independently, but considered multi-echelon capabilities with changes affecting several tiers of the CRE. Future mandated program review by GAO, DOD IG, independent investigators will most likely identify additional deficiencies and improvements of the CRE. Due to the mutual reliance and connection between response tiers, structural changes affecting capacity in any tier directly impact that of adjacent tiers.

WMD-CST Operations

The mission of the WMD-CST is to support civil authorities at a domestic CBRNE incident site by identifying CBRNE agents, assessing current and projected consequences, advising on response measures, and assisting with appropriate requests for additional state support (Department of the Army 2012, 1). Congress expanded and clarified the scope WMD-CST mission in the 2007 NDAA which specifies to include intentional or unintentional release of CBRN materials and natural or man-made disasters in the U.S. that could result in the catastrophic loss of life or property (Inspector General 2012, 1). A clear understanding of the WMD-CST mission is required to determine the degree that each model meets the national response doctrine. The mission, individual

team organization, equipment, and regulatory requirements remain the same in both models examined. The single point of variance is the number of teams and those elements directly impacted by reduction in the number of teams.

Operational mission categories include response, stand-by, and assist. Response is the fundamental team mission that occurs when the deployed in support of a validated unplanned request. Stand-by missions are deployments to provide expertise and forward staging at events of high significance. In a stand-by capacity the WMD-CST may be the sole asset or integrated with other response forces. The last mission set of assist covers the broadest range of activities. Assist include liaison duties, capability briefs, technical assistance, reconnaissance, vulnerability assessments, and training events demonstrating team capabilities (National Guard Bureau 2011, 6). When not conducting missions, WMD-CSTs prepare for possible missions in compliance with existing guidance. This is primarily done through training and inspections oversight inspections.

The technical skills and professionalism of assigned members necessitates a rigorous training program. The critical training event for teams is the periodic external evaluation (EXEVAL) every 18 months to maintain DoD certification. Preparation for EXEVAL is the cumulative result of extensive individual and collective training. Assigned team members are required to complete 376 to 1,148 hours of individual training depending upon duty position. At the extreme end this equates to 144 training days to achieve full qualification in one duty position. This individual training is in addition to basic military occupational skills qualification, branch training, military leadership schools requirement, or professional degrees. After attaining qualification for their individual position, teams pursue increased competence and readiness by qualifying

in additional team positions. This provides a degree of depth to cover for individuals absences for training, leave, illness, or personal emergencies. Subordinate to the EXEVAL units are required to perform a minimum of twelve unit collective exercises annually. Additional training is required to maintain competency with equipment and at the section level, but is not specifically quantified. Initial personnel qualification, proficiency sustainment, and cross training for WMD-CST operations requires a significant and continual expenditure of time.

As an Army unit, the provisions of Army Regulation 1-201 Organizational Inspection Program (OIP) apply to the WMD-CST. The WMD-CST program additionally requires Standardization, Evaluation, and Assistance (SEAT) inspections conducted 12 to 30 month intervals dependent upon previous inspection results(National Guard Bureau 2011, 51). Although the OIP strives to consolidate inspections in the interest of minimizing unit training plans, the various inspections and SEAT requirements demand a significant amount of the team time. This reduces time available for other activities.

Teams perform numerous additional tasks outside of missions, inspections, and training. The individual, section, and unit training requires effective training management plans to coordinate unit activities. Training meetings and training preparation area subsets that cannot be overlooked in this process. Unit operating procedures and operations plans are developed to inform team actions in garrison, through mobilization, and during operations. Functional procedures warrant regular rehearsals and experience based revisions. Assorted military and civilian vehicles, equipment sets, and instrumentation are maintained and calibrated. Area assessment are performed to include considerations of

deployment means, routes, possible event sites. Liaison with local law, fire, medical, and HAZMAT teams builds relationships. During liaison capabilities, plans, tactics, techniques, and procedures are shared. This includes pre-event deconfliction of communications systems, integration or revision of existing plans, and identification of means for accessing team capabilities. Personnel improve personal safety and longevity to operating in protective gear through challenging physical fitness regimes. Finally, WMD-CST must perform the routine administrative and personal tasks incumbent within any organization.

As a state resource, WMD-CST are always available for state response under their governor's authority. Teams are established to conduct continuous operations for at least 72 hours before relief arrives or dropping to limited operations. Planning for subsequent WMD-CST support at incidents of large scope or long duration is managed by NGB with the response management plan (RMP). The plan establishes three monthly rotating response categories and accompanying deployment timeline standards. Categories include Gold immediate response, Silver standby response. The RMP divides the country into six response sectors and places one team in Gold and Silver status in each sector with remaining teams in Bronze. Upon notification of either a Gold or Silver status team for mission a Bronze team is queued into a higher status to replace it. Teams unable to respond are placed in Black until their capability is restored (National Guard Bureau 2011, 3).

WMD-CST Model 1 (Current)

The first model examined is model 1 defined as WMD-CST program as it currently exists. There are 57 teams with one in every state, the territories of Guam, U.S. Virgin Islands, Puerto Rico, and the District of Columbia. There are second teams in each

New York, Florida, and California. Model one represents the status quo and is the baseline of analysis against national response doctrine.

Engaged Partnerships

Engaged partnerships begin prior to the onset of emergency events. This is done through developing emergency response plans and protocols specific to varied scenarios and the resources required to respond to them. As a state level asset, the WMD-CST is incorporated into state level plans prepared by the state emergency management agency (SEMA). SEMA planners must understand the capabilities and limitations of their WMD-CST for appropriate inclusion into state emergency plans. Teams dedicated to each state allow for close liaison between WMD-CST and SEMA planners for preparation and revision of state plans.

Deployment of WMD-CST is an authority of the governor as the commander-in-chief of the state's military force. Approval for WMD-CST deployment is at the discretion of the Adjutant General of the state's National Guard managed by their respective joint operations centers (JOC). Team utilization in an emergency response is managed by the SEMA. The protocol for accessing WMD-CST capabilities is a request for assistance from the city or county through the SEMA to the JOC. Additional notifications are provided to other agencies, but the approval protocol only requires an originating request followed by SEMA and JOC approval to deploy the team. Both approval authorities are in a knowledgeable position of other potential state requirements. This streamlined validation and approval process facilitates rapid activation and response to support subordinate jurisdictions in a timely manner.

Mandated EXEVALs and many of the twelve annual directed training events conducted by the WMD-CSTs are performed within the jurisdictional boundaries of their assigned states. These exercises are practice events employing technical expertise to support the incident commander. While training events occur that are independent of external organizations, the preponderance are embedded with varied emergency responders within the jurisdictional area. Each training event exposes the WMD-CST and the participating response organization to each other enhancing understanding of separate capabilities and how to integrate them under the conditions of the exercise. This forms the foundation for future training events and potential response operations. During both the preparation for the exercise and during the post exercise reviews, response plans, protocols, and procedures play a role and can be adjusted to accommodate future integration (Government Accountability Office 2006, 16). Selection of participating response organizations is at the discretion of the state and local emergency managers as well as the WMD-CST commander. This allows targeting higher probability scenarios, response organizations, and sites. While it is not feasible for a team to conduct training events to include all emergency response elements contained in the state, their scope is defined by the boundaries of the state.

Missions performed by teams in each state may be performed outside of state jurisdictional boundaries. This remains both possible and probable for large scale events such as the attacks of September 11, 2001 and following anthrax attacks, Hurricanes Katrina, Rita, and Wilma in 2005, and numerous other national responses (Department of the Army 2007, 1-2). Teams also perform stand-by missions in other states for high profile events and provide coverage for fellow teams under the RMP. Outside of these

operations, missions are predominately within the boundaries of their assigned states with similar development of relationships and plans as observed with training. The inclusion of the WMD-CST into state emergency plans, request, validation, and deployment protocols controlled at state level, and frequency of joint training events fully supports the doctrinal principle of engaged partnerships.

Tiered Response

The first component of the WMD-CST mission is to identify. Without the ability to identify a potential CBRNE agent the following steps of assess, advice, and assist are characteristically more difficult to perform. During an emergency event a number of indicators may lead responders to believe a CBRNE agent is involved. Apparent factors may directly show the type of agent involved allowing responders to employ local capabilities. For example medical personnel treating patients from a multiple vehicle collision showing respiratory problems or skin irritation in the vicinity of a wrecked truck with HAZMAT placards. Responders can request a HAZMAT response and treat the patients accordingly. In cases without such obvious signs, an identification capability is required. Where causes of symptoms are unknown or local HAZMAT teams are unavailable the county emergency manager requests deployment of the WMD-CST from the state emergency management agency. The required capability is available to onsite responders at the next response tier at the state level.

The WMD-CST capabilities exceed most civilian response teams and are a vital asset for state response (Government Accountability Office 2006, 16). Nationwide WMD-CSTs performed 1,720 mission establishing a high demand rate (National Guard Bureau 2013, 21). The principle of resolving incidents at the lowest level possible is met

with state control of assets under this frequency of demand. Resident capability to identify, assess, and advise separated from needed initial response level by only one tier fully supports response doctrine.

Scalable, Flexible, and Adaptable

The WMD-CST is required to conduct operations for a minimum of 72 hours. Shortly after reaching this point a single team at a single event requires augmentation by another team to maintain continual operations. Teams can operate with reduced capability as two smaller elements for small scale operations (Department of the Army 2007, 4-4). The short duration capability and operational area limitation of a single WMD-CST requires additional teams for larger events or when events span a period greater than 72 hours. The national availability of 57 WMD-CSTs coordinated through NGB mitigates this limitation. Depth of WMD-CST response is provided in the RMP by identifying a primary and alternate alert team in Gold and Silver status to assist regional responses. As a discrete unit each team can directly support an incident commander, unified commander, or another WMD-CST. The national team density is 1 team per state or territory. At this density teams are available to respond concurrently to 57 separate events, operate regionally with 5-6 teams in each region, or any similar combination. The maximum response load sustainable over 72 hours is 28 incidents. This planned functionality adds depth to teams operating in unison to increase operations over time at a single event or over distance at multiple events. Active management of the RMP with 57 discrete teams in rotation fully supports the scalability, flexibility, adaptability principle of the national response.

Unity of Effort Through Unity of Command

Unity of effort is built into response operations through numerous instruments beginning with the NRF and NIMS. Regardless of the entities involved in supporting the incident jurisdictional authorities and responsibilities are retained (Department of Homeland Security 2008b, 11). Unified command requires participants to understand their roles to achieve unity of effort. Preparatory action to ensure this occurs is accomplished through directed training covering the NRF and NIMS for all WMD-CST personnel. Training roles and responsibilities is sustained and reinforced as the framework in which all exercises are performed (Department of the Army 2007, 1-2).

During operational missions the WMD-CSTs first action, as indicated by both national response requirements and Army organizational doctrine, is report to the incident commander. The initial discussion between the incident commander and WMD-CST representative defines the teams role in the response (Department of the Army 2007, 5-8). This role is then documented by both the incident and team commanders in separate incident action plans that are mutually supporting to achieve the same goals. Each plan is provided to the other party to ensure maintained unity of effort. Additional standart protocol is assignment of a liaison officer from the WMD-CST to provide continual clear understanding between the two of actions taken and progress towards the incident objectives.

Commentary from both WMD-CST team members and civilian response personnel indicate that during exercises participants understand each others capabilities and how to integrate them into an effective response (Government Accountability Office 2006, 17). Mandated individual training, use of NIMS during exercises, and reliance on

the incident action plan continually instruct and reinforce the roles and responsibilities of WMD-CST personnel at an incident site. Model 1 achieves unity of effort through unity of command, fully supporting the doctrinal principle.

Readiness to Act

The criterion of responsiveness addresses time, distance, and availability. As outlined under WMD-CST operations, teams have numerous requirements beyond the conduct of operational missions. These activities ensure the program maintains technical proficiency, adheres to established guidance, and allows for team members quality of life. This requires periods of degraded response capability. Predictable periods are provided through the RMP. Also in this category are pre-mission preparations and post mission recovery tasks (Department of the Army 2007, 4-2).

Current stationing of teams optimizes geographic proximity to urban centers containing concentrations of infrastructure and population. Teams are arrayed based on a response radius of 250 miles and time of 5 hours. The mutual support of teams within these time distance factors meets threat based criteria, with some risk in western Texas, as determined by the recent assessment provided to Congress (Abbot et al. 2010, 41).

During fiscal year 2011 WMD-CSTs conducted over 1,720 mission missions encompassing responses, standby, and assist missions (National Guard Bureau 2013, 21). Viewed as an average this equates to around 30 missions per team to illustrate the mission load teams must balance with other requirements, though distribution of mission is not equal between teams. The decision of whether or not to deploy teams is under the authority of state governors as guided by applicable law, policy, and regulations. Mission validation procedures are managed by the state emergency management agency that is

often a dual role assigned to the TAG of the state's National Guard forces. This agency is positioned to best understand the resources available for emergencies and apply the appropriate judgement for allocating resources. Although requests for WMD-CST support can be denied, no reports have been identified disputing denied service nor flaw in meeting other requirements due to excessive operational tempo (Abbot et al. 2010, 41). This indicates teams are available through state emergency management channels.

WMD-CST response time of less than 5 hours and distance under 250 miles combined with mutual coverage during unavailability as provided by the RMP demonstrates model 1 fully supports the doctrinal requirement of readiness to act. Availability is further confirmed through mission assessment reported in 2011.

WMD-CST Model 2 (Reduced)

Model 2 consists of ten WMD-CST teams located in Massachusetts, New York, Pennsylvania, Georgia, Illinois, Texas, Missouri, Colorado, California, and Washington. The model basis is the ten teams initially fielded prior to subsequent program expansion (Government Accountability Office 1999, 4). Team locations are represented in figure 4 within each of the ten FEMA regions, but each team is under state control unless federalized.



Figure 4. FEMA Regions

Source: Department of Homeland Security, *National Response Framework* (Washington, DC: Federal Emergency Management Agency, January 2008), 61.

The physical difference of model 2 from the current program, as represented in model 1, is a reduction of 47 teams and the absence of the associated personnel organized within those teams. The reduction in personnel is the cost savings possible as shown in figure 6. The approximate personnel cost in pay and benefits are approximately \$1.5 million per team. The annual savings provided by model 2 with reduction of 47 teams is \$70.2 million. Additional savings would result from equipment modernization, operating costs, training funds, medical plans, retirement payments, and facilities upkeep amongst other areas. These areas are omitted in this analysis as widely different and variable factors between teams or from year to year. Personnel cost is a relatively stable quantifiable value that adequately demonstrates potential gain to consider against

program reduction. A separate finding, inclusive of many of the costs beyond personnel reports the cost as \$3.4 million annually (Government Accountability Office 2006, 12).

Table 2. Team Annual Pay and Allowance

Grade	Positions per Team	Annual Salary	Basic Allowance for Subsistence	Basic Allowance for Housing	Hazard Duty	Annual Grade Cost
O5	1	\$103,080	\$2,911	\$1,582	\$1,800	\$109,373
O4	3	\$87,408	\$2,911	\$1,394	\$1,800	\$280,539
O3	4	\$74,880	\$2,911	\$1,154	\$1,800	\$322,980
E8	1	\$67,092	\$4,227	\$1,092	\$1,800	\$74,211
E7	5	\$58,776	\$4,227	\$1,014	\$1,800	\$329,085
E6	4	\$43,812	\$4,227	\$937	\$1,800	\$203,104
E5	4	\$36,768	\$4,227	\$843	\$1,800	\$174,552
				Total per Team		\$1,493,844

Source: Created by author. Based upon Defense Finance Accounting Service rates for 2013 with maximum pay at each grade. BAH utilizes transient rate with dependents. Special pay for health professionals and retention pays are not included.

Engaged Partnerships

Developing engaged partnerships through preparation of pre-incident emergency response plans and protocols with FEMA regionally based teams involves additional jurisdictional authorities. As a state level asset in a regional concept, the WMD-CST is incorporated into regional level plans coordinated by the FEMA regional office and prepared by each of the SEMA within the region. SEMA planners must understand the capabilities and limitations of the regional WMD-CST for appropriate inclusion into their state emergency plans, including necessary de-confliction. Since regional teams coverage

includes 4-8 states, their availability to coordinate with the SEMA and National Guard planners for preparation and revision of state plans is limited.

Deployment of WMD-CST for the state the team is regionally assigned within is under that governor's authority. This is managed by their JOC in collaboration with the SEMA with the same protocols and benefits as discussed for model 1. However, support to other states within the FEMA region adds variation to the protocol. In the event of a state requiring WMD-CST support that does not directly control a team they would request federal assistance or activate an established emergency mutual assistance compact with the controlling state. A request for federal assistance processes through the regional FEMA office to national level for Presidential approval. Assistance through state mutual support is coordinated between the governors and SEMA of the states. The protocol for accessing WMD-CST capabilities originates from the city or county through their SEMA, to either FEMA or the SEMA controlling the team, to their JOC. This adds additional approval authorities. Although detailed information can be conveyed with the request, the extra state SEMA and JOC are not in a knowledgeable position of other potential state requirements or resource utilization. This validation and approval process respects the authorities of each participant to provide subordinate jurisdictional support across state boundaries but is not ideal for frequent or rapid response.

Regional based teams retain the mandated certification and annual training requirement to perform 12 collective training events each year. The benefits of these events when conducted with responders external to the team provides the same benefits as discussed for model 1. Selection of participating responders is at the discretion of emergency managers and the WMD-CST commander, but as a regional asset would incur

greater influence from the FEMA regional director. Targeted response shifts to the owning state and regional concerns for selection of high probability scenarios, likely response organizations, and sites. The frequency of interaction on an appreciable level toward building partnership is less than when primarily operating within state jurisdiction. Additionally, a decline in the number and strength of close ties within the state is unavoidable due to the requirements introduced by regional requirements. The conduct of missions confers the same benefits as training with similar regional focus. Planning and conduct of missions and the development of state compacts to cover those states without an assigned WMD-CST increases the interaction of the regionally aligned team, state level emergency managers, and regional FEMA leaders. This is an added benefit of the regionally based model 2. This benefit does not outweigh the loss of local partnerships as the primary utility of the team is at the incident commander level.

Regionally based teams provides for inclusion into each states' emergency plans, a protocol for request and validation, and a limited degree of training and operations all focused at the regional level. The WMD-CSTs are not fully integrated into state emergency plans. Protocols for local request, multi-state validation, and approval cross numerous jurisdictions degrading their effectiveness. Teams do not have sufficient time to train with local and multi-state responders with regular frequency. Assessment of plans, protocols and training factors shows model 2 only partially supports the principle of engaged partnerships.

Tiered Response

An incident commander managing an incident site may suspect a CBRNE event has occurred. Where the local level of response doesn't have the capabilities to confirm

or deny these suspicions the next tier of emergency response is accessed. This requires additional time as this type of incident is not characteristic of the majority of emergency response. Where chemical hazardous are more likely city, state, or industrial HAZMAT teams are more prevalent often with basic radiological equipment. Under the model 2 the WMD-CST is only directly available in ten states. Events in all other states must engage an additional tier of response through either a state to state compact or the federal process of emergency declaration. Both inherently require greater time to accomplish the primary task of correctly identifying the hazard to enable the appropriate response actions to protect life, property, and the environment. Requiring incident commanders to channel request to state level on to regional level through a national response or state to state compact only partially supports the doctrine principle of tiered response.

Scalable, Flexible, and Adaptable

The WMD-CST in model 2 retains the minimum operations requirement of 72 hours. However with only ten teams available nationally the RMP is not feasible as currently structured. Applying the same response categories nationally between regions elevates the management from a regional rotation to a national rotation. Under this design one team is in Gold and Silver status at any given time for a national response with the remaining 8 teams in Bronze. This rate places teams in each status at the same frequency as model 1 but requires handling national rather than regional demand. A single event exceeding 72 hours necessitates deployment of an alert team with subsequent alert of a Bronze team to Gold or Silver. An incident covering a large operational area has similar effect. As discrete units each team is still capable of supporting an incident commander, unified command, or another WMD-CST to increase depth. National density under this

model is less than one team for every ten states and territories. The maximum response capability sustainable exceeding 72 hours is 5 incidents. This functionality provides some depth over time at a single event or over distance at multiple events; however capability is quickly depleted due to absence of an extended pool from which to draw. Depth for multiple concurrent events for greater than 72 hours is The modified RMP with 10 discrete teams only partially supports the scalability, flexibility, adaptability principle of the national response.

Unity of Effort through Unified Command

Assessment made in discussion of model 1 concerning unity of effort through unified command apply to model 2. Some effects of engaged partnerships enhance unity of effort but are already assessed separately under that criteria. No significant differences specific to unity of command is present. Adherence to the doctrinal principle unity of effort through unified command is assessed as fully supported.

Assessment of unity of effort through unified command within both models is equal. The purpose of a comparative study is focus on the differences between similar models. In the case of this evaluation criteria there is no discrimination between the two models eliminating its utility as a point of comparison. Because unity of effort through unified command does not contribute to the determination of the best model, it is not used for further analysis.

Readiness to Act

Drawing projections from 2011 WMD-CSTs mission totals and applying the execution to model 2 results in as an average of 172 mission per team. Adding the

additional travel and recovery time to support mission across state lines exacerbates the impact and increases the likelihood of conflicting demands for support. By any standard this level of operational tempo imposes excess demand on the available resource.

Stationing of teams in model 2 is functionally linked to FEMA regions. Support times and distances between team coverage areas is not quantified. Based upon a program reduction of 47 teams constituting 82 percent of the WMD-CST program it is reasonable state response time is significantly reduced in numerous areas.

Air mobility is required for any support to non-contiguous states and territories as FEMA basing of teams doesn't provide for Alaska, Hawaii, or the territorial islands. Air mobility remains a transportation option to reduce the greater travel times under this model. However, air mobility introduces additional time for loading and unloading equipment. Reliable air mobility may require commitment of team dedicated aircraft and crews increasing program cost. The alternative to dedicated air lift is to rapidly identify closest available at the time of the incident incorporating yet more support and cost for support. The effects of increased response time and distance as a result of geographic dispersion combined with reduced availability due to mission load confirms model 2 does not support the doctrinal principle of readiness to act.

Model Comparison

The WMD-CST operational characteristics are used to analyze two models against the five principles of national response doctrine. Model 1 represents the current WMD-CST program of state assignment and fully supports all evaluation criteria. The second model represents program reduction for ten regional teams. Model 2 assesses as fully supporting the principle of unity of effort through unity of command. It partially

supports three principles of (1) engaged partnerships, (2) tiered response, and (3) scalable, flexible, and adaptable operational capabilities. Model 2 does not support the principle of readiness to act (table 3). Model 1 supports national response principles better than model 2 in four of the five evaluation criteria used. One criterion, unity of effort through unity of command, is assessed as equal between two models. Sufficient information is available for each model to assess all evaluation criteria precluding assessment of any category as inconclusive.

Table 3. Evaluation Matrix

CRITERIA / MODEL	Model 1	Model 2
Engaged Partnership	Fully	Partially
Tiered Response	Fully	Partially
Scalable, Flexible, Adaptable Operational Capabilities	Fully	Partially
Unity of Effort through Unity of Command	Fully	Fully
Readiness to Act	Fully	Does not

Source: Created by author.

Summary

This chapter provides an analysis of potential CBRNE attack in the U.S. and the national security strategy developed to protect against its occurrence. Within the areas of CBRNE weapons, detonation of a nuclear device is the least probable but is the most destructive, while an event involving chemical materials is the most likely but would create the least damage. To cope with the risk of CBRNE use in the U.S. the national security strategy employs a whole of government approach reliant on integration internationally, nationally, and locally. The preponderance of action is active prevention

while concurrently preparing to respond domestically. Preparedness and consequence management of the all hazards response covers the spectrum of events possible in the U.S., but centers around CBRNE incidents.

Two models for the WMD-CST program are established. Model 1 is the current configuration with teams in each state and territory under direct control of the governor. The second model is program reduction of 47 teams yielding personnel cost savings of approximately \$70.2 million annually. This model is under state control in ten states based on FEMA regional areas with capability available to other jurisdictions through interstate agreement or federal directive. Model 1 representing the current WMD-CST better supports four of five principles of the national response doctrine. Model 1 and 2 are equally support one doctrinal response principle.

Chapter 4 expands on the analysis conducted and draws conclusion to the questions posed in this research study. The impact of these results is discussed as well as what this means to the WMD-CST program and the CBRNE response enterprise as a whole. Chapter 4 will additionally highlight additional related topics for further research that arose during the course of this project.

CHAPTER 5

SUMMARY & CONCLUSIONS

However, it is simply not possible to validate (evaluate) predictive models of rare events that have not occurred, and invalidated models cannot be relied upon. An additional difficulty is that rare event assessment is largely a question of human behavior, in the domain of the social sciences, and predictive social sciences models pose even greater challenges than predictive models in the physical sciences.

— JASON, *Rare Events* 2009

This chapter is divided into five sections. The first section reviews both the purpose of the study and summarizes the findings from chapter 4. The following section provides conclusions of this study leading to recommended actions for the WMD-CST program in section three. Areas of future study are identified in section four. Chapter 5 concludes with an brief summary of the overall research study.

Purpose of Research

Purpose of this research is to examine the current organizational structure to answer the primary research question, how practical is cost saving reduction? This possibility is driven by the concern over the national budget and requirement for significant spending reductions within DoD. To answer the primary research question, two secondary research questions must be addressed. What is the current threat of CBRNE use within the U.S. and what role does the WMD-CST program meet in the national strategy for CBRNE response? These questions place focus on the two primary factors that define the need for the WMD-CST program, threat and the strategy. Determining potential reduction neccessitates an understanding of the threats WMD-CST

respond to as well as the national strategy to cope with results from those threats and the role of the WMD-CST in that strategy.

Analysis examined the threat of CBRNE weapons use against the U.S. and the national strategies applicable to reduce the threat and deal with potential consequences. Threat assessment covers the threat entities and substances. The decision of individuals or organizations to pursue CBRNE methods is affected by many considerations, but three trends are prevalent. First, large well funded organizations are concurrently more capable of overcoming barriers of CBRNE procurement and susceptible to interdiction by intelligence and law enforcement agencies. Secondly, outside of military application, CBRNE effectiveness for directly producing large scale casualties does not exist. Finally and most important, is that those seeking to harm the U.S. or its population operate under the mini max principle to achieve greatest effect while incurring the lowest financial or risk cost.

CBRNE threat substances possess two primary characteristics concern, the probability of their use and their impact. Based on these two characteristics nuclear explosion is the most destructive but least likely while chemical use is the least destructive but is the most likely for use. Biological agents fall in between chemical and nuclear use when assessed for probability, but have the potential for the greatest spread and economic impact. Radiological remain a possible threat but present the least likely and least destructive effects.

The current U.S. the strategy to reduce CBRNE threat focuses on active measures that leverage a whole of government approach through international, national, and local integration. Active measures are layered along multiple lines of operation including

intelligence, interdiction, reduction, and surety programs. These lines apply within the U.S. and decrease the probability of domestic use, however within the U.S actions center on all hazard preparedness and consequence management. The NRF outlines the framework for domestic response with the DHS serving as lead agency. The DoD provides support domestically through DSCA and has formed the CRE inclusive of tiered active and reserve component forces specifically to respond to incidents involving CBRNE. The initial response within the CBRNE Response Enterprise to directly assist the incident commander is the WMD-CST.

Two models of WMD-CST program organization were analyzed with model 1 representing state based allocation and model 2 based upon regional team allocation. Each model is evaluated against the five principles of national response doctrine identified in the NRF. Results of the analysis are summarized in three showing model 1 fully supports all five principles while model 2 fully supports one principle of unity of effort through unified command. Model 2 is determined as not supporting the principle of readiness to act and partially supporting the three remaining criterion.

Conclusions

The use of CBRNE weapons is discouraged by the U.S. and its international partners for improved global security. Implementation and revision to strengthen nonproliferation treaties and CBRNE disarmament programs is a primary tool in this endeavor. Further pro-active measures including material surety enhancement, international intelligence activities, and interdiction increase the risk to nations and large organizations pursuing CBRNE development programs. The expected military retaliation expected following attribution of a CBRNE attack by a nation or large organization

significantly reduces the attractiveness CBRNE weapons may otherwise provide. This is true even accepting “terrorist networks, including Al Qaeda have shown interest in WMDs” (Department of Defense 2010). These considerations are a strong deterrent for nations and large organizations from employing CBRNE weapons, but are less effective against individuals or smaller organizations.

Many challenges exist for the use of CBRNE weapons by individuals and small organizations. Although they are less susceptible to interdiction, they face greater difficulties in procuring adequate source material and overcoming technical barriers. Individuals and small organizations are often less well funded. Their lower funding combined with technical barriers makes procurement of adequate CBRNE sources, material refinement, research, processing, transportation, and dissemination too great a challenge to overcome. Greater access to CBRNE information and potential to obscure activities through dual use technologies does not guarantee the knowledge and experience required to produce and employ an effective CBRNE weapon.

Strategies to address the CBRNE threat recognize the difficulties faced threat elements as well as their potential benefits as a weapon to cause fatalities, damage or deny use of infrastructure, degrade the economy, and generate widespread fear. In light of this situation the U.S. adopts a multi-layered approach to reduce the probability of their use and mitigate their effects. Prevention is the overall focus both internationally and domestically, cooperating with global partners to strengthen anti-CBRNE intelligence, monitoring, and interdiction activities. Domestic mitigation is enhanced along similar lines by improving integration of government, non-government organizations, and the private sector to prepare, prevent, respond, mitigate, and recover from emergency events

including CBRNE attack. The U.S. government continues to improve domestic readiness by increasing source surety programs, reorganizing federal agencies such as forming and improving the Department of Homeland Security, and refining response forces such as the CBRNE Response Enterprise. The continued attention on these collective multi-layered activities decreases both the probability of a CBRNE attack taking place and the resulting consequences.

It is unrealistic to believe the CBRNE threat can be completely eliminated. National security is achieved through preventative measures and preparedness for response to any type of CBRNE response. Based upon the potential consequences nuclear and biological threats are the greatest hazards within the CBRNE spectrum. The Commission on Prevention of Proliferation and Terrorism identified:

Prevention alone is not sufficient, and a robust system for public health preparedness and response is vital to the nation's security. In order to deter biological attacks, we need to demonstrate—through effective preparedness measures and public exercises—that we are capable of blunting the impact of an attack and thus thwarting the terrorists' objectives. (Graham 2008, 23-24)

Preparedness and response capability are overseen by DHS in cooperation with other federal departments as outlined by the national security strategy. The NRF provides the structure for national response and codifies common doctrine for all government efforts. Additional instruments such as the NIMS, National Response Guidelines, and National Planning Scenarios provide the foundation for preparedness and response.

The designation of the CRE is another national measure, thorough DoD, to increase domestic readiness to respond to a CBRNE event and in the process provide a degree of deterrence. Evaluation and modification of the CRE is a continual process to improve responsiveness as shown with the divestment of two DCMRF in favor of 17

HRF with greater flexibility and more rapid availability. The growth of the WMD-CST program has occurred within the design of the CRE under direction of evolving national security strategies and the national response framework.

Comparison of two WMD-CST models as evaluated against the five criteria showed significant difference in the degree each complies with the principles of national response doctrine. The current WMD-CST configuration with a team in each state, territory, the District of Columbia, and second teams in three states is determined to fully support all five criteria. This is expected as development of national response doctrine occurred in parallel with formation of additional teams to enhance response. The regionally based model 2 provides an alternative to the current configuration. This alternate configuration is a program reduction of 47 teams cost saving measure. Results show only one criteria as fully support, three criteria partially support, and one criteria does not support. Comparing results between models for each criteria yields parity in one criteria, decreased compliance under three criteria, and failure to support one criteria.

Based upon this comparison, adoption of model 2 is not in accordance with the current national security strategy or response framework the program is intended to support. The saving of \$70.2 million annually means little if the program does not cover the gap for which it is designed. The capability gap created using model 2 necessitates development of an additional capability to meet national response principles of (1) engaged partnerships, (2) tiered response, (3) scalable, flexible, adaptable operational capabilities, and especially (4) readiness to act. Development of additional capabilities demands additional investment potentially negating cost savings achieved through WMD-CST program reduction to 10 regional teams.

The potential use of CBRNE weapons remains a real and significant threat to U.S. security. The varied individuals and organizations seeking to inflict harm on the U.S. provide different degrees of threat and can be expected to pursue those methods that provide the least cost to themselves with the greatest potential consequences towards achieving their objectives. Recent events demonstrated the effectiveness of conventional means applied in unconventional methods, such as the 9/11 attacks. Thus, application of the mini max principle under current conditions indicates a deliberate CBRNE attack is a low probability because. However conditions continue to change and application of this same principle at some uncertain future point may demonstrate CBRNE attack is likely or even certain. This uncertainty is highlighted as “our Joint Force must prepare for an increasingly dynamic and uncertain future” (Chairman, Joint Chiefs of Staff 2011). Given the uncertainties of the future and the principle duty of government to provide for the safety of its citizens, accepting a higher degree of risk in the interest of relatively modest cost savings is unjustified. The current multi-national approach combining preventative measures with response capabilities and the investment of national treasure required is a responsible approach. This does not imply preventative and readiness actions should be conducted without scrutiny to program operation and effective spending. The opposite is true. Oversight must ensure best practices and efficiencies sought were possible, and acceptance of risk where appropriate.

Decisions for large scale capability changes must be deliberate, risk based, and focused on the future environment. Economic and budgetary realities remain an integral component for consideration in all discussions of national security or program modifications. Recognizing that DoD must reduce its operating cost carries cautions

against complete capability divestment as the future demands on the U.S. Armed Forces can never be fully known (SECDEF 2012, 3-6). This caution applies to the WMD-CST program with special emphasis on the time required to retrain the technical skills, gain operational experience, and establish relationships with emergency responders.

Recommended Action

The initial plan for this study included evaluation of WMD-CST team structure by position to identify potential excesses for elimination or grade reduction cost savings. It was readily apparent during evaluation of the unit mission set, operational tempo, and training requirements against duties and responsibilities that the WMD-CST is very lean in terms of personnel authorizations. Team manning concerns include the early report indicating that only the survey section contains multiple personnel assigned the same duties, “all other members of the RAID team who could not respond to a deployment call would create a loss of capability for the team” (Government Accountability Office 1999, 12). More recently, *Before Disaster Strikes* reports “that 35 percent of CST positions are ‘one deep’ in specialized skills sets with no ability to train replacements quickly” and recommends “augmenting these teams with no fewer than six additional personnel would improve each team’s ability to meet mission requirements for continuous operations for a minimum of 72 hours” (Graham et al 2010, 41). These repeat suggestions for team expansion supports a recommendation of program growth to improve the depth of each individual team. Research of potential expansion models should address an array of duty statuses including assignment of traditional guardsmen similar to previous light RAID teams.

Further Study

The recommendation for increasing each team from 22 to 28 members does not address specific roles or responsibilities for growth, nor are suggested personnel grades mentioned. Future team augmentation should be preceded by a detailed review of current positions to maximize effectiveness and manage cost increase of additional personnel. This provides an opportunity for possible reallocation of current grades to improve retention of technical expertise and response experience, perhaps through conversion of positions to the warrant officer category, pending a comprehensive manning model and cost review.

Another area of further study follows the outline of this research by comparing a civilian model to the existing WMD-CST. Emergency response is inherently a civilian responsibility so it is appropriate that response structure designed be civilian. Other than immediate actions to save lives, prevent suffering, and prevent great property loss, DoD's role is to respond when civilian capabilities are overwhelmed or to provide specialized capabilities. Military units are designed for combat operations but often have utility in emergency response. Establishment of a specialized CBRNE response capability of civilian structure provides civilian responders with the specialized equipment and expertise to prevent events from exceeding their capabilities and the subsequent requirement for DoD support.

A recommendation for this theoretical model transitions the individual team and national WMD-CST to include doctrine, training, and equipment. This proposal maintains the response unit remains under state control with federal oversight and funding to achieve rapid response and enhance national response. Several details beyond

the scope of this study are required for this comparison. Development of civilian equivalent skill structure is required in combination with an appropriate pay scale. Potential benefits of this model include minimizing longevity concerns, cost savings, and improved unity of command under direct authority of the state emergency management agency. The most significant restriction identified under this proposed model is loss of the ability to operate in either T10 or T32 status unique to National Guard forces.

Construction of this model is similar to existing HAZMAT Response Units (HMRU) in large cities or through federal agencies. These specialized HMRU at national level generally cover one or two aspects of CBRNE while city and regional HAZMAT primarily focus on chemical. The proposed model varies from HMRU by covering all of CBRN response as performed by WMD-CST.

Summary

U.S. security strategies must operate within the confines of the U.S. budget as affected by economic trends and concerns specific to economic security. Present budgetary realities require a reduction of DoD expenditures demanding difficult choices. Responsible choices are risk based weighing the expected need for programs or resources against potential outcomes should the event occur. It is this risk based program investigation that initiated this research study into practicality of reducing WMD-CST organization as a cost saving measure.

Review of CBRNE threat provides a spectrum of use probability paired with potential consequences. Although CBRNE use is less likely than an attack applying conventional devices in unconventional means, it remains an attainable method that could have devastating results. Local responders prepare and respond to certain, likely, and

probable events as part of their daily routine. The federal government serves as the resource provider in cases of rare and infrequent events. This places the greater share for readiness of CBRNE specialized capabilities at state and federal levels. Within DoD this is established under the tiered CRE including the lead echelon of WMD-CST. Evaluation of the current WMD-CST program against a reduced model substantiates the current organization in supporting national response doctrine under the current national security strategy. Program reduction to a ten team regional concept results in significant capability loss and increased risk of achieving national security goals.

GLOSSARY

- CBRNE response enterprise (CRE). Department of Defense organizations specifically designated for response to a CBRNE incident tiered from federal to state level including DCRF, C2CRE, HRF, CERFP, and WMD-CSTs.
- Chemical, biological, radiological, and nuclear (CBRN). Threat or incident of chemical components, biological agents, nuclear or radiological material.
- Chemical, biological, radiological, nuclear, and high explosive (CBRNE). Threat or incident of chemical components, biological agents, nuclear or radiological material, and/or high explosives.
- Civil authorities. Those elected and appointed officials and employees who constitute the federal, state, district, and territorial governments of the U.S.
- Civil support team (CST). National Guard military force under state control organized, equipped, and trained for U.S. domestic response in support of civil authorities during CBRNE event.
- Consequence management (CM). Actions to restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, man-made, or terrorist incidents. (Department of Defense 2007)
- Crisis management (CrM). Measures to identify, acquire, and plan the use of resources needed to anticipate, prevent, and/or resolve a threat or an act of terrorism. It is predominantly a law enforcement response, normally executed under federal law. (JP 3-28)
- Defense coordinating element (DCE). A staff and military liaison officers who assist the defense coordinating officer in facilitating coordination and support to activated emergency support functions. (Department of Defense 2007)
- Defense coordinating officer (DCO). Department of Defense single point of contact for domestic emergencies. Assigned to a joint field office to process requirements for military support, forward mission assignments through proper channels to the appropriate military organizations, and assign military liaisons, as appropriate, to activated emergency support functions. (Department of Defense 2007)
- Defense support to civilian authorities (DSCA). Support provided by federal U.S. military forces, DoD civilians, DoD contractors, Department of Defense component assets, and National Guard forces (when the Secretary of Defense, in coordination with the governors of the affected states, elects and requests to use those forces in T32, U.S.C. status) in response to requests for assistance from civil authorities for domestic emergencies, law enforcement support, and other

- domestic activities, or from qualifying entities for special events. (Department of Defense 2007)
- Federal emergency management agency (FEMA). Federal agency responsible for U.S. domestic support to the population and emergency responders in all hazards emergency preparedness, mitigation, and response.
- Force protection (FP). Preventive measures taken to mitigate hostile action, accidental injury, or weather effects against response personnel, resources, facilities, and critical information.
- Homeland. The area composed of the continental United States, Alaska, Hawaii, United States possessions and territories, and surrounding territorial waters and airspace.
- Homeland defense (HD). The protection of United States sovereignty, territory, domestic population, and critical defense infrastructure against external threats and aggression or other threats as directed by the President. (Department of Defense 2007)
- Homeland security (HS). National effort to prevent terrorist attacks within the United States; reduce America's vulnerability to terrorism, major disasters, and other emergencies; and minimize the damage and recover from attacks, major disasters, and other emergencies that occur. (Department of Defense 2007)
- Immediate response. Any form of immediate action taken to save lives, prevent human suffering, or mitigate great property damage under imminently serious conditions when time does not permit approval from a higher authority. (Department of Defense 2007)
- Incident. An occurrence, caused by either human action or natural, which require action to prevent or minimize loss of life or damage to property and/or natural resources. Incidents include major disasters, emergencies, terrorist attacks, terrorist threats, civil unrest, wild land and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, tsunamis, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response. (NIMS 2008, 139)
- Incident command post (ICP). The field location at which the primary tactical-level on-scene incident command functions is performed. It may be collocated with the incident base or other incident facilities and normally identified by a green rotating or flashing light. (Department of Defense 2007)
- Incident command system (ICS). A standardized on-scene emergency management construct designed to aid in the management of resources during incidents. Consists of facilities, equipment, personnel, procedures, and communications established for this purpose. (Department of Defense 2007)

Incident management. The broad spectrum of activities and organizations providing effective and efficient operations, coordination, and support applied at all levels of government, utilizing both governmental and nongovernmental resources to plan for, respond to, and recover from an incident, regardless of cause, size, or complexity. (NIMS 2008, 140)

Law enforcement agency (LEA). An agency chartered and empowered to enforce U.S. laws in the following jurisdictions: The United States, a state (or political subdivision) of the United States, a territory (or political subdivision) of the United States, a federally recognized Native American tribe or Alaskan Native Village. (Department of Defense 2007)

Mutual Aid Agreement or Assistance Agreement. Written or oral agreement between and among agencies/organizations and/or jurisdictions that provides a mechanism to quickly obtain emergency assistance in the form of personnel, equipment, materials, and other associated services. The primary objective is to facilitate rapid, short-term deployment of emergency support prior to, during, and/or after an incident. (NIMS 2008, 143)

National emergency. A condition declared by the President or the Congress by virtue of powers previously vested in them that authorize certain emergency actions to be undertaken in the national interest. Action to be taken may include partial, full, or total mobilization of national resources. (Department of Defense 2007)

National incident management system (NIMS). The operating principles that provides a systematic, proactive approach guiding government agencies at all levels, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity. (NIMS 2008, 143)

National response framework (NRF). U.S. Government plan published by Department of Homeland Security for all-hazard response to domestic emergency.

National special security event (NSSE). A designated event that, by virtue of its political, economic, social, or religious significance, may be the target of terrorism or other criminal activity. (Department of Defense 2007)

Request for assistance (RFA). A request based on mission requirements and expressed in terms of desired outcome, formally asking the Department of Defense to provide assistance to a local, state, tribal, or other federal agency. (Department of Defense 20078)

Response. Activities to address the short-term, direct effects of an incident including actions to save lives, protect property, and meet basic human needs. Response also includes the emergency operations plans and of mitigation activities designed to limit the loss of life, personal injury, property damage, and other unfavorable outcomes. As indicated by the situation, response activities include applying

intelligence and other information to lessen the effects or consequences of an incident; increased security operations; continuing investigations into nature and source of the threat; ongoing public health and agricultural surveillance and testing processes; immunizations, isolation, or quarantine; and specific law enforcement operations aimed at preempting, interdicting, or disrupting illegal activity, and apprehending actual perpetrators and bringing them to justice. (NIMS 2008, 146)

Special events for homeland security (SEHS). Those special events designated as having an impact on homeland security. (Department of Defense 2007)

Table of distribution and allowances (TDA). U.S. Army organizational document designating unit specific data, mission, references, equipment, and personnel positions.

Title 10, U.S.C (T10). U.S. legal code governing the U.S. Army, U.S. Navy, U.S. Marine Corps, U.S. Air Force, and Reserve Components.

Title 32, U.S.C (T10). U.S. legal code governing the National Guard.

Toxic industrial compound (TIC). Chemical compounds used or produced in industrial processes that are chemical or physical hazard to humans animals, or plants.

Toxic industrial material (TIM). Any noxious industrial substance manufactured, stored, transported, or used in industrial or commercial purposes including hazardous described as toxic industrial chemical, toxic industrial biological or toxic industrial radiological.

Weapons of mass destruction (WMD). Weapons including, but not restricted to, CBRNE capable of causing greater numbers of casualties or destruction than conventional weapons.

REFERENCE LIST

- Abbot, Steve, Frank Keating, James Carafano, Dennis Celletti, James Greenwood, Jerry Grizzle, Ronald Harrison, Timothy Lowenberg, James Metzger, George Nethercutt, Raymond Rees, Dennis Reimer, and Ervin Rokke. 2010. *Before disaster strikes: Imperatives for enhancing defense support to civil authorities*. Santa Monica, CA: RAND Corporation, September.
- Ackerman, Gary A., Victor H. Asal, and R. Karl Rethemeyer. 2008. Connections can be toxic. June. www.hks.harvard.edu/netgov/files/NIPS/Rethemeyer_ConnectionCanBeToxic_IDs.pdf (assessed March 28, 2013).
- Assistant Secretary of Defense. 2012. *Department of defense fiscal year 2013 President's budget submission: Chemical and biological defense program justification book*. Washington, DC: Department of Defense, February.
- Besosa, Miguel A. 2001. The role of the National Guard in responding to weapons of mass destruction attacks in the U.S.: Where do we stand. Research Report, Air Command and Staff College, Maxwell Air Force Base.
- Bogart III, Adrian T. 2001. Weapons of mass destruction civil support teams. *Army Logistician* 33, no. 4 (July/August): 21-24.
- Brown, Robert W. 2004. National Guard weapons of mass destruction civil support teams-are they ready and capable to support the global war on terrorism. Research Project, United States Army War College, Carlisle, PA.
- Carpintero-Santamaría, Navidad. 2012. Asymmetric threats. *Terrorism Electronic Journal* 1, no. 2 (December): 1-12.
- Central Intelligence Agency. 2003. Terrorist CBRNE: Materials and effects. May. https://www.cia.gov/library/reports/general-reports-1/terrorist_cbrn/terrorist_CBRN.htm (accessed November 24, 2012).
- Chairman, Joint Chiefs of Staff. 2012. CJCSI 3125.01C, *Defense response to chemical, radiological, biological, and nuclear incidents in the homeland*. Washington, DC: Department of Defense, June.
- . 2011. *The National military strategy 2011: Redefining America's military leadership*. Washington, DC: Joint Chiefs of Staff, February.
- . 2006. *National military strategy to combat weapons of mass destruction*. Washington, DC: Department of Defense, February.
- Clapper, James R. 2011. *Statement for the record on the worldwide threat assessment of the U.S. intelligence community for the house permanent select committee on*

- intelligence*. Washington, DC: Office of the Director of National Intelligence, February.
- Coffin, William J. 2002. The operational framework for homeland security: A primary mission for the National Guard. Monograph, School of Advanced Military Studies, Fort Leavenworth, KS.
- Craigin, Charles L. 2000. Civil support teams: Separating fact from fiction. *National Guard* 54, no. 3 (March): 11.
- Dall, Nicholas K. 2011. The Department of Defense chemical, biological, nuclear and high yield explosive response enterprise: Have we learned the lessons to ensure an effective response? Master's thesis, Command and General Staff College, Fort Leavenworth, KS.
- Department of Defense. 2010. *Quadrennial defense review report 2010*. Washington, DC: Government Printing Office, February.
- . 2007. Joint Publication 3-28, *Civil support*. Washington, DC: Government Printing Office, September.
- Department of Homeland Security. 2012. *National response framework*. Pre-Decisional Draft. Washington, DC: Federal Emergency Management Agency.
- . 2009. *National infrastructure protection plan: Partnering to enhance protection and resiliency*. Washington, DC: Department of Homeland Security.
- . 2008a. *National incident management system*. Washington, DC: Federal Emergency Management Agency, September.
- . 2008b. *National response framework*. Washington, DC: Federal Emergency Management Agency, January.
- . 2007. *National preparedness guidelines*. Washington, DC: Department of Homeland Security, September.
- Department of the Army, Department of the Air Force. 2001. Army Regulation 130-5, Air Force Mission Directive 10, *Organization and functions of the National Guard bureau*. Washington, DC: Department of the Army and Department of the Air Force, December.
- Department of the Army. 2012. *Civil support team table of distribution and allowances*. Arlington, VA: National Guard Bureau, September.
- . 2011. Army Doctrinal Publication 3-0, *Unified land operations*. Washington, DC: Government Print Services, October.

- . 2007. Field Manual 3-11.22, *Weapons of mass destruction civil support team operations*. Washington, DC: Government Print Services, December.
- DoD Tiger Team. 1998. Department of Defense plan for integrating National Guard and reserve component support for response to attacks using weapons of mass destruction. January. <http://www.dod.mil/pubs/wmdresponse/> (accessed October 23, 2012).
- Dolnik, Adam. 2003. Die and let die: Exploring links between suicide terrorism and terrorist use of chemical, biological, radiological, and nuclear weapons. *Studies in Conflict and Terrorism* 26, no. 1: 17-35.
- Erichsen, Sven C. 2002. National Guard weapons of mass destruction civil support teams: performing as required? Monograph, School of Advanced Military Studies, Fort Leavenworth, KS.
- Ferguson, Charles D., and Michelle M. Smith. 2009. Assessing radiological weapons: attack methods and estimated cost. *Defense Against Terrorism Review* 2, no. 2 (Fall): 15-34.
- Gault, Paul T. 2011. Enhancing domestic response: The implementation of the homeland response force. Strategy Research Project, United States Army War College, Carlisle Barracks, PA.
- Government Accountability Office. 2009. *Homeland defense: Planning, resourcing, and training issues challenge DoD's response to domestic chemical, biological, radiological, nuclear, and high-yield explosive incidents*. Washington, DC: Government Accountability Office, October.
- . 2006. *Homeland defense: National Guard Bureau needs to clarify civil support teams' mission and address management challenges*. Washington, DC: Government Accountability Office, May.
- . 1999. *Combating terrorism: Use of National Guard response teams is unclear*. Washington, DC: Government Accountability Office, June.
- Graham, Bob, Jim Talent, Graham Allison, Robin Cleveland, Steve Rademaker, Tim Roemer, Wendy Sherman, Henry Sokolski, and Rich Verma. 2008. *World at risk: The commission on the prevention of WMD proliferation and terrorism*. New York: Vintage Books.
- Hayden, Nancy Kay. 2007. *Terrifying landscapes: A study of scientific research into understanding motivations of non-state actors to acquire and/or use weapons of mass destruction*. Albuquerque, NM: Defense Threat Reduction Agency, June.

- Inspector General, Department of Defense. 2012. *Better oversight needed for the national guard's weapons of mass destruction civil support teams*. Washington, DC: Office of the Inspector General, July.
- . 2001. *Management of National Guard weapons of mass destruction-civil support teams*. Washington, DC: Office of the Inspector General, January.
- Ivanova, Kate, and Todd Sandler. 2006. CBRN incidents: Political regimes, perpetrators, and targets. *Terrorism and Political Violence* 18, no. 3: 423-448.
- JASON Program Office. 2009. *Rare events*. McLean, VA: The MITRE Corporation.
- Koblentz, Gregory D. 2011. Predicting peril or the peril of prediction? Assessing the risk of CBRN terrorism. *Terrorism and Political Violence* 23, no. 4 (August): 501-520.
- Kumar, Chanchal. 2012. Challenges in global terrorism-strategies, dimensions and response: In search of a perspective. *International Affairs and Global Strategy* 3: 7-20.
- Lairsey, Johnny. 2012. The CBRNE response enterprise in the homeland. August. <http://smallwarsjournal.com/blog/the-cbrn-response-enterprise-in-the-homeland> (assessed March 22, 2013).
- LeJune, Christine. 2010. Consequence management: Steps in the right direction? *National Security Watch*, no. 8 (September): 1-8.
- Mauroni, Albert J. 2009. Homeland insecurity: Thinking about CBRN terrorism. *Homeland security affairs* 6, no. 3 (September): 1-17.
- McHugh, John M., and Raymond T. Odierno. 2012. *A statement on the posture of the United States Army 2012*. Washington, DC: Government Printing Office, February.
- Milliner, Charles D. 1998. Essential civil support tasks. Master's thesis, Command and General Staff College, Fort Leavenworth, KS.
- Moe, Steven C. 2009. Efficacy of regional headquarters for National Guard and homeland defense missions. Master's thesis, Command and General Staff College, Fort Leavenworth, KS.
- National Guard Bureau. 2013. *2013 National Guard posture statement: Security America can afford*. www.nationalguard.mil/features/ngps (assessed March 20, 2013).
- . 2012. National Guard homeland response force and National Guard weapons of mass destruction civil support teams fact sheet. January. <http://www.national>

- guard.mil/features/ngps/2013/docs/National_Guard_Homeland_Response_Force_(Jan_2012)end-of-year-review-v1.pdf (accessed March 28, 2013).
- . 2011. National Guard Regulation 500-3/Air National Guard Instruction 10-2503, *Weapons of mass destruction civil support team management*. Arlington, VA: National Guard Bureau Strategy and Policy Division, May.
- National Security Council. 1995. Presidential Decision Directive-39, *U.S. policy on counterterrorism*. Washington, DC: White House, June 21.
- Nelson, Robert W. 2012. Concept of operations for CBRN wireless sensor networks. Master's thesis, Naval Postgraduate School, Monterey, CA.
- Office of Management and Budget. 2012. *Fiscal year 2012 historical tables: Budget of the U.S. government*. Washington, DC: Government Printing Office.
- Ramseger, Kalinowski A., Martin B. Kalinowski, and Lucia Weiß. 2009. CBRN Threats and the Economic Analysis of Terrorism. Economics of Security Working Paper Series, Network for the Economic Analysis of Terrorism (NEAT), Berlin, Germany.
- Renaud, John D. 2005. National Guard homeland defense white paper: September 11, 2001, Hurricane Katrina, and beyond. White paper. Washington, DC: National Guard Bureau G5, October 11.
- Reyes, Heinrich. 2012. CBRNE response enterprise. Presentation, Arlington, VA, National Guard Bureau Strategy and Policy Division, March 14.
- Robertson, James. 2011. How appealing are CBRN weapons to terrorist groups? July. <http://www.e-ir.info/2011/07/26/how-appealing-are-cbrn-weapons-to-terrorist-groups/> (assessed April 4, 2013).
- Schrews, Alan K. 20012. Reorganizing the 7th Civil Support Command in Europe. Strategy Research Project, Army War College, Carlisle, PA.
- Schumer, Charles E. 2012. Schumer urges senate armed services committee to fully fund Fort Hamilton's National Guard WMD civil support team. May. <http://www.schumer.senate.gov/Newsroom/record.cfm?id=336824> (assessed December 20, 2012).
- SECDEF. 2012. *Sustaining U.S. global leadership: Priorities for the 21st century*. Washington, DC: Department of Defense, January.
- Shea, Dana A. 2004. *Radiological dispersal devices: select issues in consequence management*. Washington, DC: Congressional Research Service, December 7.

- Shea, Dana A., and Frank Gottron. 2004. *Small-scale terrorist attacks using chemical and biological agents: An assessment framework and preliminary comparisons*. Washington, DC: Congressional Report Service, May 20.
- Taylor, James E. 2000. The National Guard weapons of mass destruction civil support team: Structured for success or failure? Monograph, School for Advanced Military Studies, Fort Leavenworth, KS.
- Turabian, Kate L. 2007. *A manual for writers of research papers, theses, and dissertations*. 7th ed. Chicago, IL: University of Chicago Press.
- U.S. Army Command and General Staff College. 2012. ST 20-10, *Master of military art and science (MMAS) research and thesis*. Fort Leavenworth, KS: USA CGSC, July.
- Van Camp, Bret. 2012. Chemical, biological, radiological, and nuclear response enterprise: A way ahead. Strategy Research Project, Army War College, Carlisle, PA.
- White House. 2010. *National security strategy*. Washington, DC: White House, May.
- Woodward, Jason T. 2012. Achieving homeland security in a time of diminishing resources. Master's thesis, Command and General Staff College, Fort Leavenworth, KS.