

# FALLACIES LEADING TO THE MARGINALIZATION OF FUTURE CBRN CAPABILITIES

A Monograph

by

LTC Tammy R. Alatorre  
United States Army



School of Advanced Military Studies  
United States Army Command and General Staff College  
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 data sources, gathering and maintaining the data needed, and completing and reviewing the 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 Washington Headquarters Service, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

<b>1. REPORT DATE (DD-MM-YYYY)</b> 23-05-2013		<b>2. REPORT TYPE</b> Master's Thesis		<b>3. DATES COVERED (From - To)</b> June 2012 - May 2013	
<b>4. TITLE AND SUBTITLE</b> Fallacies Leading to the Marginalization of Future CBRN Capabilities				<b>5a. CONTRACT NUMBER</b>	
				<b>5b. GRANT NUMBER</b>	
				<b>5c. PROGRAM ELEMENT NUMBER</b>	
<b>6. AUTHOR(S)</b> Tammy R. Alatorre, LTC, USA				<b>5d. PROJECT NUMBER</b>	
				<b>5e. TASK NUMBER</b>	
				<b>5f. WORK UNIT NUMBER</b>	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> School of Advanced Military Studies 201 Reynolds Ave. Ft. Leavenworth, KS 66027-2301				<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>	
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD 100 Stimson Ave. Ft. Leavenworth, KS 66027-2301				<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>	
				<b>11. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>	
<b>12. DISTRIBUTION AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited.					
<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b> In both the 2012 National Security Strategy (NSS) and the U.S. Army strategic planning guidance, combatting weapons of mass destruction (WMD) remains a priority. However, the need for fiscal restraint has led in recent years to assessments of acceptable reductions across the range of Department of Defense (DOD) capabilities, based largely on operational lessons learned during the past decade of combat. This has resulted in reduction of U.S. Army chemical, biological, radiological, and nuclear (CBRN) forces, capabilities, and training, despite the national-level recognition of the continued threat of WMD attacks, because CBRN forces have not conducted their primary mission in recent conflicts. In particular, reduction of CBRN forces by 14% over the last five years highlights the U.S. Army's neglect of this critical capability, contrary to the requirements associated with implementing the NSS.  Seven years of Operation Iraqi Freedom (OIF) lessons learned have contributed to a flawed understanding of the WMD threat and a related willingness to accept excessive levels of risk through CBRN capability reductions. Analysis of these lessons learned in contrast to the WMD threat that America faces reveals the degree of risk involved. America's role as a member of North Atlantic Treaty Organization (NATO) also includes the responsibility to provide CBRN capability, such as in support of the ongoing Operation Enduring Freedom (OEF). The recent strategic shift toward the Asia-Pacific region requires a rebalancing of DOD military capabilities. The significant WMD risk resident in this region further highlights the risk involved in U.S. Army CBRN capability.					

**INSTRUCTIONS FOR COMPLETING SF 298**

All of these factors demonstrate that recent CBRN capability reductions rest on a foundation of flawed analysis and therefore warrant a second review. The Active Component Chemical Corps must remain postured to reduce or marginalize realized CBRN threats in order to protect the force as it executes the NSS and DOD priorities. If the recent trend in CBRN force reductions continues, it has the potential to create unacceptable long-term national security vulnerabilities.

**15. SUBJECT TERMS**

Chemical, Biological, Radiological, and Chemical, Iraq, Afghanistan, Asian-Pacific, National Security Strategy, North Atlantic Treaty Organization

**16. SECURITY CLASSIFICATION OF:**

**a. REPORT**  
Unclassified

**b. ABSTRACT**  
Unclassified

**c. THIS PAGE**  
Unclassified

**17. LIMITATION OF ABSTRACT**

UU

**18. NUMBER OF PAGES**

64

**19a. NAME OF RESPONSIBLE PERSON**

Lieutenant Colonel Tammy R. Alatorre

**19b. TELEPHONE NUMBER (Include area code)**

573-842-7542

MONOGRAPH APPROVAL PAGE

Name of Candidate: LTC Tammy R. Alatorre

Monograph Title: Fallacies Leading to the Marginalization of Future CBRN Capabilities

Approved by:

\_\_\_\_\_, Monograph Director  
Mark Calhoun, Ph.D.

\_\_\_\_\_, Seminar Leader  
Clint Benfield, LtCol

\_\_\_\_\_, Director, School of Advanced Military Studies  
Thomas C. Graves, COL

Accepted this 23rd day of May 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

FALLACIES LEADING TO THE MARGINALIZATION OF FUTURE CBRN CAPABILITIES, by LTC Tammy R. Alatorre, 65 pages.

In both the 2012 National Security Strategy (NSS) and the U.S. Army strategic planning guidance, combatting weapons of mass destruction (WMD) remains a priority. However, the need for fiscal restraint has led in recent years to assessments of acceptable reductions across the range of Department of Defense (DOD) capabilities, based largely on operational lessons learned during the past decade of combat. This has resulted in reduction of U.S. Army chemical, biological, radiological, and nuclear (CBRN) forces, capabilities, and training, despite the national-level recognition of the continued threat of WMD attacks, because CBRN forces have not conducted their primary mission in recent conflicts. In particular, reduction of CBRN forces by 14% over the last five years highlights the U.S. Army's neglect of this critical capability, contrary to the requirements associated with implementing the NSS.

Seven years of Operation Iraqi Freedom (OIF) lessons learned have contributed to a flawed understanding of the WMD threat and a related willingness to accept excessive levels of risk through CBRN capability reductions. Analysis of these lessons learned in contrast to the WMD threat that America faces reveals the degree of risk involved. America's role as a member of North Atlantic Treaty Organization (NATO) also includes the responsibility to provide CBRN capability, such as in support of the ongoing Operation Enduring Freedom (OEF). The recent strategic shift toward the Asia-Pacific region requires a rebalancing of DOD military capabilities. The significant WMD risk resident in this region further highlights the risk involved in U.S. Army CBRN capability.

All of these factors demonstrate that recent CBRN capability reductions rest on a foundation of flawed analysis and therefore warrant a second review. The Active Component Chemical Corps must remain postured to reduce or marginalize realized CBRN threats in order to protect the force as it executes the NSS and DOD priorities. If the recent trend in CBRN force reductions continues, it has the potential to create unacceptable long-term national security vulnerabilities.

## ACKNOWLEDGMENTS

The first day of school, the SAMS Director, Colonel Thomas Graves clearly articulated that graduation required crossing one major hurdle. This was a completed, school accepted, and Director approved 10,000-word monograph. At the time, this hurdle appeared daunting for this fearful soul. Through the support, guidance and faith of certain individuals the hurdle is crossed and fear transformed into confidence.

In truth, my monograph director, Dr. Mark Calhoun is due a great deal of credit. He introduced me to Mr. EndNote who has made such a positive impact on this paper. Above all, Dr. Calhoun has patiently read rough draft after rough draft of this monograph without losing heart or faith in me. Lieutenant Colonel Clint Benfield, my seminar leader, deserves mentioning as well for truly believing in the saying, “you can teach an old dog a new trick.” He tirelessly trained this old dog to think about structure, drilling in “thesis, key points, and conclusion” then shamelessly giving out rewards of smiley faces and gold star stickers when I got the process right.

Finally and most importantly, I would be remiss if I did not thank three amazing young people and my husband. My daughters Esperanza, Carmen, and Victoria for understanding why Mommy always talked about weird people like Clausewitz, Jomini, and Friedman at the dinner table, making homework time a family event, and in applying operational art to every school project they brought home. They are the reason Mommy will never quit or fail. Though my husband Joe has been stationed in Saudi Arabia this school year, he remains my greatest inspiration. When lack of sleep and irrational judgment take over Joe has been there to put things right by reminding me that SAMS was my idea.

## TABLE OF CONTENTS

	Page
MONOGRAPH APPROVAL PAGE.....	ii
ABSTRACT .....	iii
ACKNOWLEDGMENTS.....	iv
TABLE OF CONTENTS .....	v
ACRONYMS .....	vii
ILLUSTRATIONS .....	x
INTRODUCTION.....	1
Thesis.....	4
Methodology.....	5
Case Studies.....	6
UNDERSTANDING THE FOUNDATION .....	7
Impact of the U.S. National Security Strategy within the Department of the Army .....	8
National Security Strategy and Security from 1987 to 2006 .....	9
Quadrennial Defense Review 1997-2010 .....	10
National Security Strategy 2010 .....	14
Sustaining U.S. Global Leadership: Priorities for 21 <sup>st</sup> Century Defense .....	16
Army Strategic Planning Guidance 2012 .....	18
CBRN Bottom Line .....	20
CASE STUDIES: NSS PRIORITIES WITHIN THE CONTEXTUAL EVOLUTION OF CBRN THREATS.....	21
THE CBRN THREAT.....	23
Evolving CBRN Mission.....	25
Mintzberg: Realized Threat .....	28
Caution with Lessons Learned.....	31
NATO: U.S. CBRN DEFENSE EXPECTATION .....	34
Building the Expectation .....	37
OEF: Theater Force Protection Umbrella.....	39
CBRN THREAT WITHIN THE PACIFIC THEATER.....	42
Countering Transnational Threats.....	44
Strengthen and Advance Allies and Partnerships .....	47

CONCLUSION .....	50
GLOSSARY .....	54
BIBLIOGRAPHY .....	56

## ACRONYMS

AAR	After Action Review
APBI	Advance Planning Brief for Industry
AOR	Area of Responsibility
ASEAN	Association of Southeast Asian Nations
ASG	Abu Sayyaf Group
AUSA	Association of the United States Army
BCT	Brigade Combat Team
BCA	Budget Control Act
BDE	Brigade
BN	Battalion
BW	Biological Weapons
CALL	Center for Army Lessons Learned
CBO	Congressional Budget Office
CBDP	Chemical Biological Defense Program
CBRN	Chemical, Biological, Radiological, and Nuclear
CBRND	Chemical, Biological, Radiological, and Nuclear Defense
CBRNE	Chemical, Biological, Radiological, Nuclear, and High Yield Explosives
COA	Course of Action
COE	Center of Excellence
COTS	Commercial Off the Shelf
CRS	Congressional Research Service
CW	Chemical Weapons
CWMD	Combating Weapons of Mass Destruction
DA	Department of the Army
DOD	Department of Defense

DOTMLPF	Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities
DTRA	Defense Threat Reduction Agency
EOD	Explosive Ordnance Disposal
FAS	Federation of American Scientist
FM	Field Manual
FY	Fiscal Year
GAO	Government Accounting Office
HAZMAT	Hazardous Material
HQ	Headquarters
IED	Improvised Explosive Device
IH	Ironhorse
ISAF	International Security Assistance Force
JAT	Joint Assessment Team
JDA	Joint Duty Assignment
JI	Jemaah Islamiya
JIIM	Joint, Interagency, Intergovernmental, and Multi-national
JTF-E	Joint Task Force-Elimination
MNC-I	Multi-National Corps-Iraq
MTOE	Mission Table of Organization and Equipment
MTTP	Multi-Service Tactics, Techniques, and Procedures
NATO	North Atlantic Trade Organization
NBC	Nuclear, Biological, and Chemical
NCO	Noncommissioned Officer
NRF	NATO Response Force
NSS	National Security Strategy
OEF	Operation Enduring Freedom

OIF	Operational Iraqi Freedom
POI	Program of Instruction
QDR	Quadrennial Defense Report
RDD	Radiological Disposal Device
ROK	Republic of Korea
ROMO	Range of Military Operations
SACEUR	Supreme Allied Commander, Europe
SACT	Supreme Allied Commander Transformation
SIBCRA	Sampling and Identification of Biological, Chemical, and Radiological Agents
SSE	Sensitive Site Exploitation
STANAG	Standardization Agreement
SUPCOM	Support Command
TAG	The Army Guidance
TDA	Table of Distribution and Allowances
TE	Technical Escort
TIC	Toxic Industrial Chemicals
TIM	Toxic Industrial Materials
TF	Task Force
TFP	Theater Force Protection
UN	United Nations
UNMVIC	UN Monitoring, Verification, and Inspection Commission
USACBRNS	United States Army Chemical, Biological, Radiological and Nuclear School
USPACOM	United States Pacific Command
WMD	Weapons of Mass Destruction

## ILLUSTRATIONS

	Page
Figure 1: OIF Realized CBRN Threat.....	28
Figure 2. OEF Theater Force Protection Plan .....	42
Figure 3. USPACOM AOR Concerns.....	45
Figure 4. Costs of DOD’s Plans in the Context of the BCA .....	51

## INTRODUCTION

“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.”

— General Raymond T. Odierno, *A Statement of the Posture of the United States Army 2012*

The United States Army assigned the pre-9/11 Chemical Corps a simple mission: protect military forces. However, the terrorist attacks such as the anthrax mailings in 2001, and ricin mailings to the White House and Senate between 2003 and 2004 profoundly altered the Chemical Corps’ mission.<sup>1</sup> The Army expanded the definition of “protection” to include supporting homeland defense and conducting sensitive site exploitation, while the list of potential threats from traditional Chemical, Biological, Radiological, and Nuclear (CBRN) hazards continued to grow.<sup>2</sup> Ironically, despite increased strategic CBRN concerns and operational responsibilities, the Army has progressively reduced the size and capability of the Chemical Corps over the past five years.<sup>3</sup>

In September 2002, the United States National Security Strategy (NSS) first codified these changes by identifying the key capabilities of detection, active defenses, and passive defenses as the new basic tenets of Chemical Corps operations. The NSS emphasized combating terrorism within the United States and safeguarding against the use of Weapons of Mass Destruction (WMD), indicating a change in Department of Defense (DOD) budget prioritization

---

<sup>1</sup>Dana A. Shea and Frank Gottron, *Small-Scale Terrorist Attacks Using Chemical and Biological Agents: An Assessment Framework and Preliminary Comparisons* (Washington, DC: Congressional Research Service, 2004), CRS-1, report, RL32391.

<sup>2</sup>USACBRNS, "U.S. Army Chemical Corps History," U.S. Army Chemical Corps Museum, <http://www.wood.army.mil/cbrns/images/History.doc> (accessed November 01, 2012).

<sup>3</sup>Thomas Crow, e-mail message to author with attached spread sheet "Historical Force Structure", November 08, 2012.

to increase related research and development.<sup>4</sup> A decade later President Barack Obama verbalized his priorities in *Sustaining U.S. Global Leadership in the 21<sup>st</sup> Century*, emphasizing the need for fiscal restraint, and identifying lessons learned from Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) as a source of guidance to identify budgeting priorities.<sup>5</sup> This resulted in DOD retaining the responsibility for combatting WMD – still a national priority – but the new policy allowed DOD to assess acceptable risk within the U.S. military CBRN enterprise based on the nature of such missions conducted during OIF and OEF, where the U.S. Army experienced minimal CBRN threat. This led to plans within DOD to reduce CBRN capabilities while leveraging technology to offset these reductions.<sup>6</sup>

The authors of the 2012 Army Strategic Planning Guidance assessed the direction of future Army CBRN operations as impacted by force reduction and technological development through 2018. They found that the Army must retain adequate force structure and capability to

---

<sup>4</sup>George W. Bush, "The National Security Strategy 2002," Department of Defense, under "Prevent Our Enemies from Threatening Us, Our Allies, and Our Friends with Weapons of Mass Destruction," <http://georgewbush-whitehouse.archives.gov/nsc/nss/2002/> (accessed November 10, 2012); Barack Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," Headquarters Department of Defense, under "Counter Weapons of Mass Destruction," [http://www.defense.gov/news/Defense\\_Strategic\\_Guidance.pdf](http://www.defense.gov/news/Defense_Strategic_Guidance.pdf) (accessed October 15, 2012).

<sup>5</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 2-3.

<sup>6</sup>Director of Chemical Biological Defense Program, "Fiscal Year (FY) 2012 Budget Estimates," Department of Defense under "Chemical and Biological Defense Program Procurement Summary," [http://comptroller.defense.gov/defbudget/fy2012/budget\\_justification/pdfs/02\\_Procurement/CBDP\\_PB12\\_PDW\\_Final.pdf](http://comptroller.defense.gov/defbudget/fy2012/budget_justification/pdfs/02_Procurement/CBDP_PB12_PDW_Final.pdf) (accessed February 04, 2013); Chemical and Biological Defense Program Assistant Secretary of Defense, "Department of Defense Fiscal Year (FY) 2013 President's Budget Submission: Chemical and Biological Defense Program Justification Book Procurement, Defense-Wide," Department of Defense, under "Non Traditional Agent (NTA) Defense Emphasis Area," [http://comptroller.defense.gov/defbudget/fy2013/budget\\_justification/pdfs/02\\_Procurement/Chemical\\_and\\_Biological\\_Defense\\_Program\\_PB\\_2013.pdf](http://comptroller.defense.gov/defbudget/fy2013/budget_justification/pdfs/02_Procurement/Chemical_and_Biological_Defense_Program_PB_2013.pdf) (accessed March 01, 2013); Phil Visser, "Chemical Corps Regimental Campaign Plan Fiscal Years 2013-14," USACBRNS, under "CBRN Regimental Strategy," <https://www.us.army.mil/suite/designer> (accessed November 27, 2012); Deputy Chief of Staff G-8, "Army Equipment Modernization Plan 2013," Department of Defense, under "Force Protection Portfolio: CBRN Programs," [http://www.g8.army.mil/pdf/AEMP2013\\_lq.pdf](http://www.g8.army.mil/pdf/AEMP2013_lq.pdf) (accessed January 26, 2013).

support operational and strategic objectives to combat WMD and operate safely in a CBRN environment. *U.S. Army Doctrine Reference Publication 3-37* lists seven critical tasks: provide WMD security cooperation and partnership activity support; conduct WMD interdiction operations; provide WMD threat reduction cooperation support; conduct WMD interdiction operations; conduct WMD offensive operations; conduct WMD elimination operations; conduct CBRN active defense; and conduct CBRN passive defense.<sup>7</sup>

From the NSS to Army strategic planning guidance, combatting WMD remains a priority. However, the need for fiscal restraint has led in recent years to assessments of acceptable reductions across the range of DOD capabilities based largely on operational lessons learned from the Army's experience of combat during the past decade.<sup>8</sup> This has resulted in reduction of Army CBRN forces, capabilities, and training, despite the national-level recognition of the continued threat of WMD attacks, because CBRN forces have not conducted their primary mission in recent conflicts. Specifically, reduction of the CBRN forces by 14% over the last five years is indicative of the Army's failure to implement the President's strategic guidance.

This disconnect between the recognition that DOD must retain a robust counter-WMD capability, and the assessment that based on recent experience the Army can accept risk in CBRN force structure has led to a Chemical Corps that lacks the assets and training necessary to perform its core missions.

---

<sup>7</sup>Department of Defense, "Joint Publications 3-0, Joint Operations," Headquarters Department of Defense, under "Joint Functions: Protection," [http://www.dtic.mil/doctrine/new\\_pubs/jointpub\\_operations.htm](http://www.dtic.mil/doctrine/new_pubs/jointpub_operations.htm) (accessed October 15, 2012); Department of the Army, "Army Doctrine Reference Publication 3-37, Protection," Headquarters Department of the Army, under "Conduct CBRN Operations," <http://usacac.army.mil/cac2/MCCOE/Doctrine2015Tables.asp> (accessed October 16, 2012).

<sup>8</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 3-4.

## Thesis

In recent years, the Department of the Army (DA) has relied on lessons learned from Operations Enduring Freedom and Iraqi Freedom (OEF and OIF) for its main sources of information to determine acceptable risk in Army CBRN capabilities reduction. In both of these operations, the enemy possessed very limited WMD capabilities. Therefore, Army force reduction planners have come to the flawed conclusion that the Active Component Chemical Corps does not need a robust CBRN capability, and therefore represents an acceptable area where the force can assume risk.<sup>9</sup>

This streamlining and reorganization has the potential to put the Army on a slippery path, as the proposed cuts are not keeping an eye on the real enemy: organizations that possess WMD, with intent to use these weapons to further their interests. Carl von Clausewitz wrote that the military practitioner must remember that he treads a slippery path on which the god of war may surprise him, and to keep his eye always on the enemy that he may not have to defend himself with a dress rapier if that enemy takes up a sharp sword.

WMD represents a continuous threat; its apparent absence in OIF and OEF does not change the fact that America faces daily the risk of a WMD attack in any of a number of scenarios, abroad or against the homeland. The Army must remain prepared to deter, protect, and operate in this hazardous environment. There is no room for error when countering this threat. Persistent and non-persistent chemical attacks, weaponized biological agents, radiation contamination, and nuclear annihilation are all means to achieve a common goal: a catastrophic attack with a costly and inhumane death toll.<sup>10</sup> The Army specifically designed and created the

---

<sup>9</sup>Fred Wehling, "Deterring CBRN Terrorism: Lessons from Iraq," Monterey Institute. Youtube video, 1:22:04, [http://www.youtube.com/watch?v=9\\_i7mcyxc2c](http://www.youtube.com/watch?v=9_i7mcyxc2c) (accessed January 18, 2013).

<sup>10</sup>David L. Wilcox, "Chemical Corps: Break Glass in Case of War" (master's thesis, School for Advance Military Studies, 1997), 1-3.

CBRN Corps for this mission, but the Corps suffers current and forecasted shortages in funds, personnel, and materiel, relegating it to insignificance.

### Methodology

Examining three case studies leads to asking and answering several questions. First, does the Army currently understand the strategic CBRN threat it faces, enabling it to reorganize CBRN capabilities? This questions leads to three secondary questions. Does the Army willingly assume risk by underestimating future CBRN threats? If so, and this results in an ill-advised transformation of the Army Chemical Corps, is there a method to offset operational risk?<sup>11</sup> Finally, does military training within combat arms organizations instill sufficient understanding, familiarity, and confidence among most personnel to face a CBRN threat?

The increasing CBRN threat the world faces represents the expansion of the fundamental conditions that led to the creation of the Chemical Corps. Its mission is to train Joint and International Service members, support training in units, and serve as a Joint Combat Developer for the Joint Chemical, Biological, Radiological, and Nuclear Defense Program.<sup>12</sup> Demonstrating that the Chemical Corp's mission nests with both DOD security strategy planning guidance and Army strategic priorities requires an accurate analysis of lessons learned from the past two decades. The analysis that follows reveals that fallacies used in determining acceptable risk in CBRN force structure could lead to ill-informed and unacceptably risky CBRN capabilities reductions.

---

<sup>11</sup>Directorate of Intelligence, "Terrorist CBRN: Materials and Effects," Central Intelligence Agency, under "Spectrum of Terrorist CBRN Threats " [https://www.cia.gov/library/reports/general-reports-1/terrorist\\_cbrn/terrorist\\_CBRN.htm](https://www.cia.gov/library/reports/general-reports-1/terrorist_cbrn/terrorist_CBRN.htm) (accessed November 01, 2012).

<sup>12</sup>Commandant United States Army CBRN School, "CBRN Mission and Vision," USACBRNS, <http://www.wood.army.mil/newweb/chemical/index.htm> (accessed September 02, 2012).

## Case Studies

The analysis of three case studies in accordance with four variables: CBRN threats, delivery systems, asset utilization, and competencies, demonstrates that Army force reduction plans identify CBRN forces and capabilities as an area of acceptable risk based on flawed reasoning.<sup>13</sup> This flawed reasoning stems from overreliance on analysis of America's experience of war over the past two decades, in conflicts that do not provide realistic examples of the WMD risk the United States faces and against which the NSS directs DOD to remain vigilant. From the beginning of OEF and OIF, DOD accepted the WMD risk – a marginalization that proved acceptable in these cases despite the possibility of tragic consequences.

The first case study consists of an analysis of operational level CBRN activities that the U.S. Army undertook during OIF. It addresses the anticipated pre-deployment CBRN mission and compares it to the actual mission once in country. The second case study focuses on OEF Theater Force Protection through a comparative analysis of U.S. military expectations regarding CBRN operations and North Atlantic Treaty Organization (NATO) expectations.<sup>14</sup> Finally, the third case study provides an analysis of potential CBRN threat within the Pacific Theater of Operations. With the potential for a shift in the national security strategy to the Western Pacific, this analysis highlights the shortcomings of applying OIF and OEF lessons learned in developing force structure and capabilities to cope with the reality of today's operational environment and national security challenges.

---

<sup>13</sup>Barack Obama, "Remarks by the President on the Defense Strategic Review" (address, The Pentagon, Virginia, December 25, 2012).

<sup>14</sup>Eric R. Terzuolo, *NATO and Weapons of Mass Destruction: Regional Alliance, Global Threats*, Contemporary Security Studies (London: Routledge, 2006), Chapter 1.

## UNDERSTANDING THE FOUNDATION

Over the past two decades, the Chemical Corps has undergone an end strength reduction, completed transformation in both active duty and reserve components, and adjusted to an amended mission set. Throughout this process, many CBRN personnel have asked why their branch continues to grow smaller when incidents like anthrax and ricin mailing incidents occurring within the United States make it clear that the CBRN threat remains a significant concern and one of the easiest means for enemies to attack the U.S. homeland.<sup>15</sup>

This question directly relates to the Army's ability to conduct CBRN operations. Two decades of reductions have placed the Army in a position in which it may lack the necessary CBRN capabilities that it still requires, including WMD proliferation prevention, WMD counterforce, CBRN defense, and CBRN consequence management activities. The rationale for these reductions comes from federally mandated budget cuts and updates to the DOD strategic guidance – a rationale both simple and broad enough to allow for varied interpretations of policy documents that do not provide a clear logic for specific reductions like those to Army CBRN capabilities.<sup>16</sup> Further anticipated force reductions in this particular range of Army capabilities, while projected, also lack specific justification or any clear logic or evidence of risk analysis or mitigation. This begs a more detailed analysis, both to evaluate the impact of further reductions in CBRN capabilities on the Army's ability to conduct operational art and to determine the risk and potential mitigation should such reductions go forward.

---

<sup>15</sup>Shea and Gottron, *Small-Scale Terrorist Attacks Using Chemical and Biological Agents: An Assessment Framework and Preliminary Comparisons*, CRS-2, CRS-3.

<sup>16</sup>Leon E. Panetta, "Defense Budget Priorities and Choice," Department of Defense, under "From New Strategic Guidance to Budget Choices," [http://www.defense.gov/news/Defense\\_Budget\\_Priorities.pdf](http://www.defense.gov/news/Defense_Budget_Priorities.pdf) (accessed November 20, 2012).

Impact of the U.S. National Security Strategy within the Department of the Army  
Within the Goldwater-Nichols Department of Defense Reorganization Act of 1986,  
Congress amended the National Security Act of 1947 to require annually from each President a  
written document articulating national strategy.<sup>17</sup> This document, now known as the NSS,  
identifies the mid- and long-term strategy that the executive deems necessary to defend and  
further interests vital to the nation's security.<sup>18</sup> In 1996, Congress passed the Armed Forces Force  
Structure Act mandating a Quadrennial Defense Review (QDR). The nation's lawmakers  
intended the QDR to provide a comprehensive examination of the defense strategy, force  
structure, force modernization plans, infrastructure, budget plan, and other elements of the  
defense program and policies with a view toward determining and expressing the U.S. defense  
strategy.<sup>19</sup>

NSS documents from 2008 to the present serve as a baseline for the following analysis. In  
particular, these documents provide a view of the relationship between national strategy and the  
evolution of Army's CBRN capabilities through the reorganization and force structure reductions  
the CBRN community has undergone upon the issuance of each new NSS.<sup>20</sup> The historical  
evolution of these documents provides awareness of the national level priorities and guidance

---

<sup>17</sup> 99th Congress, "Goldwater-Nichols Department of Defense Reorganization Act of 1986," Library of Congress, under "Title 11-Military Advice and Command Functions," <https://digitalndulibrary.ndu.edu/cdm4/document.php?CISOROOT=/goldwater&CISOPTR=956&CISOSHOW=869> (accessed January 25 2013).

<sup>18</sup> Don M. Snider, *The National Security Strategy: Documenting Strategic Vision Second Edition*, Strategic Studies Institute (Pennsylvania: U.S. Army War College, 1995), 1, 3-5.

<sup>19</sup> AUSA Institute of Land Warfare, "Quadrennial Defense Review: From 1997 to 2001," United States Army's Institute of Land Warfare, <http://www.ausa.org/SiteCollectionDocuments/ILW%20Web-ExclusivePubs/Defense%20Reports/DR00-1.pdf> (accessed November 01, 2012).

<sup>20</sup> Barack Obama, "National Security Strategy 2010," Department of Defense, under "Overview of National Security Strategy," [http://www.whitehouse.gov/sites/default/files/rss\\_viewer/national\\_security\\_strategy.pdf](http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf) (accessed October 15, 2012).

that the CBRN community received that led to its future capability development and force posture.

#### National Security Strategy and Security from 1987 to 2006

Along with the NSS, The Army Guidance (TAG) acts as a capstone document that directs future CBRN posture. Changes in American political focus, strategic culture, national values, global security institutions, international organizations, non-state actors, and non-governmental organization influence these documents.<sup>21</sup> Their early evolution led to adoption of the fundamental Chemical Corps mission: protection of the force against WMD.<sup>22</sup>

From 1987 to the mid-1990s, national security considerations adjusted to a post-Cold War international environment. As political scientist Don M. Snider pointed out, one can see the direction America initially followed in the wake of the Cold War in the titles of two sections of the 1993 National Security Strategy Report. They read: “Security through Strength: Legacy and Mandate,” and “The World as It Can Be, if We Lead and Attempt to Shape It as Only America Can.”<sup>23</sup> In 2002 President George H. W. Bush stated in a speech that to “defeat this threat we must make use of every tool in our arsenal—military power, better homeland defenses, law enforcement, intelligence, and vigorous efforts to cut off terrorist financing.”<sup>24</sup> This implied a

---

<sup>21</sup>United States Army War College, "National Security Policy and Strategy," Army War College, <http://www.carlisle.army.mil/usawc/dnss/nsps/nsps.htm> (accessed November 01, 2012); Department of the Army, "Field Manul 1, the Army," Headquarters Department of the Army, under "The National Security Environment," <http://www.army.mil/fm1/presentation.html> (accessed January 26, 2013); Raymond T. Odierno and John M. McHugh, "Army Strategic Planning Guidance 2012," Department of the Army, under "Army Imperatives," <http://usarmy.vo.llnwd.net/e2/c/downloads/243816.pdf> (accessed November 10, 2012).

<sup>22</sup>Albert J. Mauroni, "The U.S. Army Chemical Corps: Past, Present and Future," National Museum: United States Army, <https://armyhistory.org/09/the-u-s-army-chemical-corps/> (accessed November 10, 2012).

<sup>23</sup>Snider, *The National Security Strategy: Documenting Strategic Vision Second Edition*, 9.

<sup>24</sup>Bush, "The National Security Strategy 2002," 3.

return to the idealism that guided Ronald Reagan in his effort to define goals for the nation, even though realism guided his decisions regarding the means the nation used to achieve them.<sup>25</sup> This led to a return during the George H. W. Bush administrations to the Reagan-era focus on maintaining and expanding national strength.

The adjustments to the national strategic azimuth that took place during this period directly influenced CBRN posture, leading to an increase in force structure of 1,404 personnel, and an organizational redesign.<sup>26</sup> Thus, the Army entered the twenty-first century with a strong NBC (CBRN) posture resulting from the Cold War threat and national strategy policies of administrations like those of Presidents Truman and Reagan.<sup>27</sup> By reviewing national strategy documents published since 2006, one can see their effect on the Army's assessment of its mission and capabilities in the area of protection, specifically CBRN capabilities.

#### Quadrennial Defense Review 1997-2010

The quiet end of the Cold War brought about a necessity to reevaluate the standing U.S. national defense strategy. Hence, congress mandated a comprehensive assessment of America's defense strategy in the form of the 1997 QDR. The task of the assessment was a "comprehensive examination of the defense strategy, force structure, force modernization plans, infrastructure, budget plan, and other elements of the defense program and policies with a view toward determining and expressing the defense strategy of the United States and

---

<sup>25</sup>George W. Bush, "The National Security Strategy of the United States of America 2006," Department of Defense, under "Prevent Our Enemies from Threatening Us, Our Allies, and Our Friends with WMD," <http://www.dami.army.pentagon.mil/site/dig/documents/NationalSecurityStrategy-MAR06.pdf> (accessed November 02, 2012).

<sup>26</sup>Crow, e-mail message to author with attached spread sheet "Historical Force Structure".

<sup>27</sup>Nuclear, Biological, and Chemical (NBC) officially changed within the military lexicon in 2008 to Chemical, Biological, Radiological, and Nuclear (CBRN). The term CBRN will be used hereafter regardless which term was in use at a given time, to provide consistency and prevent confusion.

establishing a revised defense program through the year 2005.”<sup>28</sup> The report assessed the essence of the strategy in three elements: shaping, responding, and preparing. The “shaping” element directly and indirectly influenced the future CBRN enterprise, specifically within the concepts titled “Preventing or Reducing Conflicts and Threats” and “Deterring Aggression and Coercion.”<sup>29</sup> Therefore, the Chemical Regiment directives centered on providing capabilities to reduce vulnerabilities and improve survivability under CBRN conditions, resulting in projected budget and force structure increases.

However, the post-Cold War environment continued to force hard choices on national strategy policymakers. Balancing a wider range of risks to the U.S. with fewer resources and smaller budgets proved particularly challenging. As noted in the 2001 QDR, “Some of these risks are familiar, such as the possibility of a major war. Other risks - such as the possibilities of mass casualty terrorism, cyber warfare, or CBRNE warfare - are less well understood.”<sup>30</sup> Because of this unfamiliarity, the Army – along with DOD - relied on lessons learned as a metric for quantifying risk.<sup>31</sup> Lessons learned seemed to provide the logic necessary to facilitate rapid adaptation of initiatives that enabled operationally based decision-making, integration, and innovation throughout the Army.<sup>32</sup> The 2001 QDR provided guidelines on risk management and

---

<sup>28</sup>AUSA Institute of Land Warfare, "Quadrennial Defense Review: From 1997 to 2001," 1-2.

<sup>29</sup>William S. Cohen, "1997 Report of the Quadrennial Defense Review," Department of Defense, under "Shaping the International Environment," <http://www.isn.ethz.ch/isn/Digital-Library/Publications/Detail/?ots783=0c54e3b3-1e9c-be1e-2c24-a6a8c7060233&lng=en&id=32542> (accessed March 20, 2013).

<sup>30</sup>Donald H. Rumsfeld, "Quadrennial Defense Review Report 2001," Department of Defense, under "Strategic Tenents," <http://www.defense.gov/pubs/pdfs/qdr2001.pdf> (accessed November 01, 2012).

<sup>31</sup>Bush, "The National Security Strategy 2002," 3. For clarification, CBRN encompasses conventional and non-conventional CBRN weapons. CBRNE adds to the context of CBRN with the use of high explosives to enhance enemy destructive aim.

<sup>32</sup>Center for Army Lessons Learned, "Center of Army Lessons Learned Mission,"

mandated departmental assessments of the nation's nuclear posture, which enabled further refinement of CBRN guidance.<sup>33</sup> This led Congress to mandate a Nuclear Posture Review that involved a review of the size, structure, and posture of the nation's nuclear forces and the contribution they could make to deterrence in the coming decades.<sup>34</sup> This review subsequently initiated the concept of unifying all CBRN functions under an enterprise concept. For the first time Joint, Interagency, Intergovernmental, and Multi-national (JIIM) organizations were able to embrace universal CBRN training and develop a CBRN methodology and operational approach.

The next QDR, released in 2010, formally assessed DOD's implementation of the 2008 National Security Strategy. The terrorist attacks on U.S. soil in 2001, followed by military responses in Afghanistan (2001) and Iraq (2003), overshadowed the review. Two particular objectives identified in the review held particular importance to the CBRN enterprise. The first of these directed further rebalancing of the capabilities of America's Armed Forces to prevail in modern wars, while building the capabilities needed to deal with future threats. The second focused on the need to "reform the Department's institutions, and processes to better support the urgent needs of the warfighter; buy weapons that are usable, affordable, and truly needed; and ensure that taxpayer dollars are spent wisely and responsibly."<sup>35</sup>

Through these two objectives, the QDR sought to counter fears of WMD proliferation that could undermine global security. To accomplish this, the QDR directed establishment of a

---

Combined Arms Center, under "Mission," <http://usacac.army.mil/cac2/call/mission.asp> (accessed November 13, 2012).

<sup>33</sup>Donald H. Rumsfeld, "Nuclear Posture Review Report 2001," Department of Defense, under "Forward," <http://www.fas.org/sgp/news/2002/01/npr-foreword.html> (accessed November 05, 2012); Rumsfeld, "Quadrennial Defense Review Report 2001," 3-4.

<sup>34</sup>Rumsfeld, "Nuclear Posture Review Report 2001," 2-3; Rumsfeld, "Quadrennial Defense Review Report 2001," 12.

<sup>35</sup>Robert M. Gates, "Quadrennial Defense Review Report 2010," Department of Defense, under "Rebalancing," [http://www.defense.gov/qdr/images/QDR\\_as\\_of\\_12Feb10\\_1000.pdf](http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf) (accessed November 02, 2012).

standing Joint Task Force Elimination Headquarters (JTF-E).<sup>36</sup> Its mission centered on planning and executing WMD-elimination operations, while increasing nuclear disablement, exploitation, intelligence, and coordinated capabilities.<sup>37</sup> The JTF-E, activated in 2004, fell under the command of Headquarters, 20<sup>th</sup> Support Command Chemical, Biological, Radiological, Nuclear, and High Yield Explosives (20 SUPCOM CBRNE).<sup>38</sup> Upon its formation, DOD gave 20<sup>th</sup> SUPCOM CBRNE the charter to exercise mission command of specialized CBRN operations to support Joint and Army force commanders primarily for overseas contingencies and warfighting operations, but also in support of homeland defense.<sup>39</sup>

Additionally, the Army activated in 2007 an operational command: Headquarters, 48<sup>th</sup> Chemical Brigade (BDE). This unit, commanded by the 20<sup>th</sup> SUPCOM CBRNE, serves as the only active duty CBRN BDE.<sup>40</sup> This enhanced the Army's ability to respond to hazardous materials and incidents, enabling it to conduct decontamination by adding full spectrum CBRN dismounted reconnaissance capability and modular decontamination systems for mass casualties

---

<sup>36</sup>Rumsfeld, "Quadrennial Defense Review Report 2001," 33-35; Department of Defense, "Joint Publication 3-40, Combating Weapons of Mass Destruction," Headquarters Department of Defense, under "The Challenge of Weapons of Mass Destruction Threats," [http://www.dtic.mil/doctrine/new\\_pubs/jointpub\\_operations.htm](http://www.dtic.mil/doctrine/new_pubs/jointpub_operations.htm) (accessed November 02, 2012).

<sup>37</sup>Leslie C. Smith, "20th SUPCOM CBRNE Mission," 20th SUPCOM CBRNE, under "Commander of the 20th SUPCOM CBRNE," <http://www.cbrne.army.mil/aboutus.htm> (accessed November 23, 2012); Rumsfeld, "Quadrennial Defense Review Report 2001," 19, 20, 30, 42.

<sup>38</sup>Army Force Management Support Agency, "Force Management Systems Web Site," Department of the Army, under "Authorization Doc. Review: View the details of documents (TDA, JTA and MTOE)," <https://webtaads.belvoir.army.mil/unprotected/splash/> (accessed August 20, 2012).

<sup>39</sup>20th SUPCOM CBRNE Operations, "US Army 20th Support Command," 20th SUPCOM CBRNE, under "Capabilities," <http://www.cbrne.army.mil/> (accessed November 20, 2012).

<sup>40</sup>48th Chemical Brigade, "48th Chemical Brigade History," 20th SUPCOM CBRNE, under "Unit History," <http://www.hood.army.mil/48chem/UnitHistory.html> (accessed November 25, 2012); Army Force Management Support Agency, "Force Management Systems Web Site," Chemical BDE MTOE.

as protection and survivability assets.<sup>41</sup> Furthermore, these organizational changes included the transformation of heavy and light designated companies into lighter maneuverable dual-purpose combat support capabilities – a shift unique to this particular organization.<sup>42</sup> Holistically these CBRN actions improved the ability of the enterprise to achieve the aims and objectives described in the QDR.

#### National Security Strategy 2010

Codification of the QDR's analysis to fit the national security context resonated in the May 2010 NSS. The strategy identified priorities to deny terrorists the ability to acquire or develop a WMD capability. This effort included ensuring the security of all vulnerable nuclear materials by the end of 2013 while taking actions to safeguard knowledge and capabilities in life and chemical sciences that could be vulnerable to misuse.<sup>43</sup> Progress continued but the nuclear security challenges remained a significant threat despite the new countermeasures in place. In particular, nuclear material's security poses a long-term challenge and requires new initiatives, additional funding, and further JIIM collaboration.

Nuclear terrorism warranted special consideration in Afghanistan. At the time, Al-Qaeda maintained a major presence just across the unstable border with Pakistan.<sup>44</sup> This coupled with a large and potentially vulnerable Pakistani nuclear arsenal conveyed further insecurity within an

---

<sup>41</sup>George W. Casey Jr. and Pete Geren, "Army Posture Statement 2009," Headquarters Department of the Army, under "Combating Weapons of Mass Destruction (CWMD)," [http://www.army.mil/aps/09/information\\_papers/combating\\_weapons\\_mass\\_destruction.html](http://www.army.mil/aps/09/information_papers/combating_weapons_mass_destruction.html) (accessed May 07, 2012).

<sup>42</sup>Army Force Management Support Agency, "Force Management Systems Web Site," CBRN Company MTOE's.

<sup>43</sup>Obama, "National Security Strategy 2010," 20.

<sup>44</sup>Stephen Biddle et al., "Obama's NSS: Promise and Pitfalls," Council on Foreign Relations, [http://www.cfr.org/defensehomeland-security/obamas-nss-promise-pitfalls/p22240#expert\\_roundup\\_author\\_7297](http://www.cfr.org/defensehomeland-security/obamas-nss-promise-pitfalls/p22240#expert_roundup_author_7297) (accessed November 10, 2012).

unstable Middle Eastern region based on the possibility of terrorists acquiring nuclear material, or even a complete weapon. Nevertheless, restraint is often the best policy in the face of a tactic designed to spur excess by its targets, and the new strategy wisely cautions against fear and overreaction in responding to terrorism.<sup>45</sup> The 2010 NSS also addressed countering chemical and biological threats that have the potential, if effectively disseminated within a population center, to result in devastatingly unprecedented economic, societal, and political consequences<sup>46</sup>. Of note, in terms of speed of impact on the targeted enemy, the amount of agent needed to cover large areas, and their persistence characteristics, chemical weapons (CW) and biological weapons (BW) differ significantly. However, they share similarities including the type of delivery systems that support them, and the demoralizing psychological impact they have on populations.<sup>47</sup>

The NSS continued to reinforce the need to further organize, adjust training to include CBRN terrorism, equip and resource the Joint Force to deal with all aspects of the threat posed by WMD.<sup>48</sup> The CBRN enterprise thus witnessed increased activity in research and development, commercial off-the-shelf investment, and leader development training. In its strategic context, CBRN commitment underwent slight refinement but ultimately remained consistent. Force strength reached an all-time peak of 8,368, but DOD projected a downhill trajectory to an all-time low of 6,093 in 2017.<sup>49</sup>

---

<sup>45</sup>Gary Ackerman and Jeremy Tamsett, *Jihadists and Weapons of Mass Destruction* (Boca Raton: CRC Press, 2009), 27,37,38.

<sup>46</sup>Obama, "National Security Strategy 2010," 24.

<sup>47</sup>Albert J. Mauroni, *Where Are the WMDs? The Reality of Chem-Bio Threats on the Home Front and the Battlefield* (Maryland: Naval Institute Press, 2006), 21-23.

<sup>48</sup>Visser, "Chemical Corps Regimental Campaign Plan Fiscal Years 2013-14," 1-2.

<sup>49</sup>Crow, e-mail message to author with attached spread sheet "Historical Force Structure".

## Sustaining U.S. Global Leadership: Priorities for 21<sup>st</sup> Century Defense

### The 2012 *Sustaining U.S. Global Leadership: Priorities for 21<sup>st</sup> Century Defense*

included the observation that the Joint Force must “recalibrate its capabilities.”<sup>50</sup> The recalibration is necessary to accomplishing its ten missions while contextually providing continued U.S. military contribution to global security, and a rebalance toward the Asia-Pacific region.<sup>51</sup> The DOD therefore continues to enhance its capabilities, acting with an array of domestic and foreign partners, to conduct effective operations. Specifically, the three specified missions of “Deter and defeat aggression, Counter WMD, and Provide a Stabilizing Presence” warrant adjustment in the future posturing of CBRN capabilities.<sup>52</sup>

Enhancing capabilities inevitably centers on counter-WMD, where the Chemical Corps takes front stage in the operational realm. It does so through a spectrum of activities aimed at preventing the proliferation and use of CBRN weapons.<sup>53</sup> These activities include planning the operations to locate, monitor, track, interdict, and secure WMD material, related components, and the means and facilities to make them. In partnership with other elements of the United States

---

<sup>50</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 11.

<sup>51</sup>*Sustaining U.S. Global Leadership: Priorities for 21<sup>st</sup> Century Defense* identified ten missions are titled: Counter Terrorism and Irregular Warfare; Deter and Defeat Aggression; Project Power Despite Anti-Access/Area Denial Challenges; Counter Weapons of Mass Destruction; Operate Effectively in Cyberspace and Space; Maintain a Safe, Secure, and Effective Nuclear Deterrent; Defend the Homeland and Provide Support to Civil Authorities; Provide a Stabilizing Presence; Conduct Stability and Counterinsurgency Operations; and Conduct Humanitarian, Disaster Relief, and Other Operations. 5-6.

<sup>52</sup>Visser, "Chemical Corps Regimental Campaign Plan Fiscal Years 2013-14," 4-5.

<sup>53</sup>Joseph A. Christoff, "Weapons of Mass Destruction: Defense Threat Reduction Agency Addresses Broad Range of Threats, but Performance Reporting Can Be Improved, GAO-04-330," United States General Accounting Office, under "DTRA's Mission Is to Address all Aspects of the WMD Threat," <http://purl.access.gpo.gov/GPO/LPS45181> (accessed January 05, 2013).

Government, DOD continues to invest in capabilities to detect, protect against, and respond to WMD use, should preventive measures fail.<sup>54</sup>

Counter-proliferation of WMD centers in the early part of the twenty-first century on countries such as Iran and Pakistan, because of their aggressive pursuit of nuclear arms capability.<sup>55</sup> Other players include Republic of Korea, Russia, India, Israel, Brazil, Canada, Japan, Kazakhstan, Netherlands, South Africa, United Kingdom, and China who have active uranium enrichment programs.<sup>56</sup> These countries are potential proliferation targets either through covert or overt methods. In addition, various open source intelligence indicates that Al-Qaeda has attempted to acquire CBRN weapons and develop “dirty bombs.”<sup>57</sup> As a result, stakes in the war against international terrorism increase, and margins for error in selecting appropriate policy instruments or combinations of them to prevent terrorist attacks diminish correspondingly.<sup>58</sup>

Understanding the global implication of WMD, proliferation adjusts the military focus of U.S. CBRN capabilities and aims to international institutions and training enhancement. Accordingly, the Chemical Corps has placed more emphasis in its training program on multi-national and joint improvement. In particular, this includes renewed participation in international agreements, and developing Combating Weapons of Mass Destruction (CWMD) policy and initiatives that support and assist in building the CWMD capabilities and capacity of our allies

---

<sup>54</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 3-4.

<sup>55</sup>Mauroni, *Where Are the WMDs? The Reality of Chem-Bio Threats on the Home Front and the Battlefield*, 27, 128.

<sup>56</sup>Robert Golan-Vilella, Michealle Marchesano, and Sarah Williams, "The 2010 Nuclear Security Summit: A Status Update," Arms Control Association under "National Commitment by Country," [http://www.armscontrol.org/system/files/Status\\_Report\\_April\\_11\\_2011\\_WEB.pdf](http://www.armscontrol.org/system/files/Status_Report_April_11_2011_WEB.pdf) (accessed December 25, 2012).

<sup>57</sup>Directorate of Intelligence, "Terrorist CBRN: Materials and Effects," 1.

<sup>58</sup>Raphael Perl, *Terrorism, the Future, and U.S. Foreign Policy* (Washington, DC: David D. Acker Library and Knowledge Respiratory Defense Acquisition, 2003), 1-3, report, IB95112.

and partners.<sup>59</sup> Specifically, the Army continues to serve on the NATO Joint Capability and Operations Working Groups for CBRNE defense uniting in partnership with British, Canadian, Australian, and New Zealand army's program efforts in CBRNE defense operations.<sup>60</sup>

### Army Strategic Planning Guidance 2012

Military service components synthesize national reports, security guidance, and priorities to allocate budgets and determine force structure. For the Army this analysis resulted in the 2012 Army Strategic Planning Guidance. It integrated lessons learned and capabilities gained in recent operations into the institutional and operational Army.<sup>61</sup> Emphasis remained on continued assessment of capabilities, training leaders, and adapting doctrine to ensure sustainment and further enhancement on gains made from recent operations. This included guidance for the Chemical Corps regarding future posturing of capabilities.

The planning guidance included specific priorities, categorized into near-term (FY 14-15) or mid-term (FY 16-18) benchmarks. Within the guidance, two priorities dealt specifically with CBRN capabilities. The first priority involved the near-term need to provide a ready and trained organization for CBRN and CBRN response force for operations in the Homeland.<sup>62</sup> The preponderance of CBRN capabilities for this priority resides within the Army Reserve component. While this analysis focuses specifically on active component CBRN capabilities, this warrants consideration given the significance of this fact when considering the active force's

---

<sup>59</sup>Casey and Geren, "Army Posture Statement 2009," 5-12; Visser, "Chemical Corps Regimental Campaign Plan Fiscal Years 2013-14," 1-3.

<sup>60</sup>Casey and Geren, "Army Posture Statement 2009," 5-9.

<sup>61</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 4.

<sup>62</sup>Odierno and McHugh, "Army Strategic Planning Guidance 2012," iii-vi; Assistant Secretary of Defense, "Department of Defense Fiscal Year (FY) 2013 President's Budget Submission: Chemical and Biological Defense Program Justification Book Procurement, Defense-Wide," 3-4.

overall CBRN capability. The Reserve component plays an essential role in the total force CBRN capability posture.

The second priority described in the 2012 Army Strategic Planning Guidance, involved the mid-term requirement for an increase in counter-proliferation capabilities. As the document's authors noted, "Counter-proliferation capabilities help the Army shape conditions to prevent the need for counter WMD operations. This includes advising and training partner nations on identification of WMD development and prevention of weapon development in support of interagency partners."<sup>63</sup> Given expected increases in proliferation, and possibly in the scale of the mission, the Army must increase its WMD detection, identification, and elimination capability.<sup>64</sup>

Lastly, supporting strategies such as the Chemical and Biological Defense Program (CBDP) Strategic Plan, published in 2012, further contribute to the all-inclusive national strategy to counter CBRN threats.<sup>65</sup> This national strategy rests on three principal pillars: counter-proliferation, nonproliferation, and consequence management to respond in the event of WMD use.<sup>66</sup> The CBDP assists guiding capabilities development for combating the WMD mission specifically in the areas of passive defense, consequence management, interdiction, and elimination operations.<sup>67</sup> It upholds strategic advancements to enhance CBRN defense

---

<sup>63</sup>Odierno and McHugh, "Army Strategic Planning Guidance 2012," 9.

<sup>64</sup>Gerald W. Parker Jr., "Chemical and Biological Defense Program (CBDP) Advance Planning Briefing for Industry (APBI)," Headquarters Department of Defense, under "Chemical and Biological Defense Report," <http://www.acq.osd.mil/cp/cbd.html> (accessed November 10, 2012).

<sup>65</sup>Department of Defense, "Department of Defense Directive, Roles and Responsibilities Associated with the Chemical and Biological Defense Program (CBDP): Number 5160.05E," Department of Defense, under "Chairman of the Joint Chiefs of Staff," <http://www.dtic.mil/whs/directives/corres/pdf/516005p.pdf> (accessed November 10, 2012).

<sup>66</sup>Gerald W. Parker Jr., "Department of Defense Chemical and Biological Defense Program (CBDP)," Department of Defense, under "Changing Threats," <http://www.dtic.mil/ndia/2012CBRN/Parker.pdf> (accessed December 25, 2012).

<sup>67</sup>Robert M. Gates, "Nuclear Posture Review Report 2010," Department of Defense,

preparedness, to reduce risks to soldiers, and to field the right capabilities for sustained military operations with minimal degradation in combat effectiveness caused by CBRN hazards, threats, or conditions. One can see practical applications furthering these priorities in recent U.S. initiatives such as support to the NATO Combined Joint Chemical, Biological Radiological, and Nuclear (CBRN) Defense Task Force (TF), which consists of a CBRN Joint Assessment Team (JAT) and a CBRN Defense Battalion (BN). This NATO capability is specifically trained and equipped to deal with CBRN events and/or attacks against its allies.<sup>68</sup>

### CBRN Bottom Line

The NSS and defense strategies over recent years have consistently identified CBRN prevention, avoidance, and mitigation as top priorities.<sup>69</sup> To meet these priorities the Army requires a CBRN resource capable of achieving the strategic aims of deterrence and prevention. These priorities, however, do not mesh with the steady reductions in CBRN capabilities since 2006. The future projection through 2017 shows no change in this downward slope. The Army projects a reduction in its CBRN capabilities by 2,073 soldiers within the next four years. This equates to a twenty-seven percent decrease in the Chemical Corps active component strength.<sup>70</sup> Losses include removal of all CBRN specialists in combat arms company's mission table of

---

under "Implications for U.S. Nuclear Weapons Policies and Force Posture," <http://www.defense.gov/npr/docs/2010%20Nuclear%20Posture%20Review%20Report.pdf> (accessed November 22, 2012).

<sup>68</sup>North Atlantic Treaty Organization, "Combined Joint Chemical, Biological, Radiological and Nuclear Defense Task Force: The Alliance's Multinational CBRN Defence Capability," NATO, under "Authority, Tasks and Responsibilities," [http://www.nato.int/cps/en/natolive/topics\\_49156.htm](http://www.nato.int/cps/en/natolive/topics_49156.htm) (accessed November 20, 2012).

<sup>69</sup>Odierno and McHugh, "Army Strategic Planning Guidance 2012," 3; Raymond T. Odierno and John M. McHugh, "A Statement of the Posture of the United States Army 2012," Department of Defense, under "The Strategic Context," [https://secureweb2.hqda.pentagon.mil/VDAS\\_ArmyPostureStatement/2012/APS2012.pdf](https://secureweb2.hqda.pentagon.mil/VDAS_ArmyPostureStatement/2012/APS2012.pdf) (accessed November 02, 2012).

<sup>70</sup>Crow, e-mail message to author with attached spread sheet "Historical Force Structure".

organization and equipment (MTOE). Codification of this action occurred with the 2009 MTOEs.<sup>71</sup>

Several case studies help explain the justification for this mismatch between strategic priorities and operational capabilities. For example, the lessons learned from OIF and OEF provide awareness on the manner in which DA now evaluates risk when assessing manageable reductions in capabilities.<sup>72</sup> In an environment of competitive budgetary requirements, each military service undergoes scrutiny of its capability sustainment and reduction plans in order to meet NSS priorities and aims, and recent lessons learned affect this process. Additionally, analyzing the strategic CBRN threat DOD will face should the national strategic focus indeed shift to the Asia-Pacific region further highlights the disparity between projected Army CBRN priorities and capabilities.<sup>73</sup>

#### CASE STUDIES: NSS PRIORITIES WITHIN THE CONTEXTUAL EVOLUTION OF CBRN THREATS

The ongoing refinement of both the NSS and TAG enable necessary refinements to address the nations' dynamic security needs against known and anticipated threats. These changes both overtly and covertly direct the Army's CBRN capabilities posture. However, since the 1997 QDR two significant concerns lack adequate attention in the national strategy: the proliferation of WMD; and the protection of the United States, its military, and its allies against potentially catastrophic CBRN threats.<sup>74</sup> Reductions of DA CBRN capabilities have the potential to hinder

---

<sup>71</sup>Army Force Management Support Agency, "Force Management Systems Web Site," Combat Arms Company MTOEs.

<sup>72</sup>Mauroni, *Where Are the WMDs? The Reality of Chem-Bio Threats on the Home Front and the Battlefield*, 193, 194; Ackerman and Tamsett, *Jihadists and Weapons of Mass Destruction*, 415,416.

<sup>73</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 2.

<sup>74</sup>George H. W. Bush, "National Security Strategy of the United States," Department of Defense, under "Relating Means to Ends: Our Defense Agenda,"

the Army's operational capability to cope with these strategic concerns.<sup>75</sup> The three case studies that follow highlight flaws in both DA and DOD assessments that have contributed to the recent trend of reduction in CBRN capabilities resulting from their lack of emphasis in national strategy documents.

The first case study provides an analysis of the operational activities of CBRN assets during OIF, juxtaposed against the anticipated CBRN threat pre-deployment, and the actual mission once in country. The evolution of CBRN mission expectations over the course of the campaign contributed to post-OIF lessons learned that cast doubt on how two major issues: how well DA currently understands the strategic CBRN threat the nation faces, enabling it to reorganize CBRN capabilities; and whether DOD willingly has assumed significant risk by underestimating the full range of CBRN threats.

The second case study assesses whether the United States remains prepared to satisfy international expectations of U.S. CBRN support during sanctioned NATO missions. As of 2013, the OEF International Security Assistance Force (ISAF) theater CBRN mission falls under the umbrella of Theater Force Protection (TFP). This arrangement conforms to current NATO doctrine and emerging NATO and U.S. initiatives. Continued U.S. commitment to provide CBRN assets to support coalition partners in future campaigns validates the expectation of NATO and other potential coalition partners that the United States will continue to provide CBRN capabilities to defend and protect the United States and its allies against known and anticipated CBRN threats. Recent strategic priorities, however, do not reflect the intent to retain the capabilities necessary to meet international expectations.

---

[http://bushlibrary.tamu.edu/research/pdfs/national\\_security\\_strategy\\_90.pdf](http://bushlibrary.tamu.edu/research/pdfs/national_security_strategy_90.pdf) (accessed November 02, 2012); Bush, "The National Security Strategy 2002," 14-15; Bush, "The National Security Strategy of the United States of America 2006," 19-23; Obama, "National Security Strategy 2010," 23; Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 4; Odierno and McHugh, "Army Strategic Planning Guidance 2012," 8-9.

<sup>75</sup>Crow, e-mail message to author with attached spread sheet "Historical Force Structure".

The final case study considers the recent NSS directive to shift DOD's strategic focus toward the Asian-Pacific region and the effect this shift will have on future U.S. Army CBRN capabilities. The analysis highlights the shortcomings of OIF lessons learned and the mismatch of OEF expectations and capabilities as guides for developing a modern CBRN capability that can cope with the reality of today's dynamic operational environment and national security challenges. The Army's Chemical Corps has begun executing a military training program in order to address CBRN operational gaps created by 2009 force structure reductions, but this short-term training effort shows little promise when weighed against long-term projections of CBRN capability gaps.

#### THE CBRN THREAT

The terrorist attacks of September 11, 2001 claimed over 2,900 lives, making it the largest terrorist attack on U.S. soil to date. The initial national response centered on military operations in Afghanistan intended to kill or capture the terrorists involved in planning and executing the attacks. However, by 2003 the ongoing conflict spread to Iraq. Clear evidence that the United States would invade Iraq came in the form of Secretary of State Colin Powell's February 5, 2003 address to the United Nations (UN) Security Council. Powell voiced two primary concerns in his address to the full Security Council. He stated that the United States intended to take steps to deal with recent assessments that Iraq still had not complied with UN Resolution 1441, which required Iraq to disarm its WMD.<sup>76</sup> Powell cited the most recent report by Dr. Hans Blix, lead inspector for the UN Monitoring Verification and Inspection Commission (UNMVIC), Iraq, prepared in January 2003. In this report Blix wrote, "Iraq appears not to have

---

<sup>76</sup>Colin L. Powell, "Colin Powell's February 5, 2003 Address to the United Nations Security Council," Wikisource, under "I asked for this session today for two purposes," [http://en.wikisource.org/wiki/Colin\\_Powell%27s\\_February\\_5,\\_2003\\_address\\_to\\_The\\_United\\_Nations\\_Security\\_Council](http://en.wikisource.org/wiki/Colin_Powell%27s_February_5,_2003_address_to_The_United_Nations_Security_Council) (accessed November 27, 2012). The UN Security Council is composed of 5 permanent members (China, France, Russia Federation, United Kingdom, and United States) and 10 non-permanent members elected for 2-year terms by the General Assembly.

come to a genuine acceptance, not even today, of the disarmament, which was demanded of it."<sup>77</sup>

Secondly, Powell provided additional supporting intelligence about Iraq's WMD as well as their involvement in terrorism.

The speech sent a clear message to the UN Security Council and the international community. The United States intended to take action against Iraq, a member of what President Bush called the "Axis of Evil," to force the nation to comply with UN Resolution 1441 or face hostile repercussions.<sup>78</sup> The 2002 National Strategy to Combat WMD supported this aim: "We will not permit the world's most dangerous regimes and terrorists to threaten us with the world's most destructive weapons. We must accord the highest priority to the protection of the United States, our forces, and our friends and allies from the existing and growing WMD threat."<sup>79</sup> Powell's address, Bush's speeches, and U.S. strategic policy documents established a clear and consistent narrative: Iraqi possessed WMD, and U.S. military forces possessed the CBRN capability necessary to operate in this potentially hazardous environment and disarm these weapons.<sup>80</sup>

---

<sup>77</sup>Hans Blix, *Disarming Iraq*, 1st ed. (New York: Pantheon Books, 2004), 130.

<sup>78</sup>George W. Bush, "George W. Bush Makes "Axis of Evil" Speech" (speech, State Capitol Washington, DC, January 29, 2002); George W. Bush, "2002 National Strategy to Combat Weapons of Mass Destruction," Department of State, under "Integrating the Pillars," [www.state.gov/documents/organization/16092.pdf](http://www.state.gov/documents/organization/16092.pdf) (accessed March 25, 2013).

<sup>79</sup>Department of Defense, "Joint Publication 3-40, Combating Weapons of Mass Destruction," I-2, Chapter II; George W. Bush, "National Security Presidential Directive-17," FAS, under "Pillars of Our National Strategy," <http://www.fas.org/irp/offdocs/nspd/nspd-17.html> (accessed November 20, 2012).

<sup>80</sup>Mauroni, *Where Are the WMDs? The Reality of Chem-Bio Threats on the Home Front and the Battlefield*, 215; Powell, "Colin Powell's February 5, 2003 Address to the United Nations Security Council."

## Evolving CBRN Mission

The initial OIF CBRN operational mission in 2003 entailed providing industrial hazard protection capability specifically for hydrogen sulfide, hazardous area assessment, chemical reconnaissance and sensitive site exploitation (SSE), smoke obscuration, biological detection and sampling, to include fixed site thorough decontamination.<sup>81</sup> By the conclusion of Phase III (Dominate) operations for the Iraq War, few indicators of an active WMD program, weapons systems, or CBRN weapons had surfaced.<sup>82</sup>

However, some reports did surface that confirmed presence of limited WMD capability and related CBRN activities. These included the discovery of a single Iraqi artillery projectile containing sarin, a smoke mission conducted to obscure the city of Samarra to facilitate engineers' construction of transportation control points, and chemical hazard mitigation of 11,000 gallons of assorted chemicals poured on Mosul populated streets. All of these events required traditional CBRN capabilities.<sup>83</sup> Nevertheless, the less-than expected reliance on CBRN assets led to a unique change to the CBRN mission in 2007 that carried through to the end of OIF in

---

<sup>81</sup>Ronald D. Gilliam, e-mail sent to author with attachment titled "Task Force Ironhorse (TF IH) Operationa Iraqi Freedom (OIF) Phase III/IV NBC AAR 2003", February 28, 2013; Mark A. Lee, e-mail message sent to author with document titled "2003 Task Force Ironhouse NBC AAR", February 28, 2013.

<sup>82</sup>Jan Hallenberg and Håkan Karlsson, *The Iraq War: European Perspectives on Politics, Strategy and Operations*, Contemporary Security Studies (London; New York: Routledge, 2005), 234, 235.

<sup>83</sup>Headquarters United States Central Command, e-mail message sent to author with attachment titled "News Release 2004", February 28, 2013; Michael Roller, e-mail message sent to author with attachment titled "Smoke Platoon Makes History 2005", February 28, 2013; Pete Lofy, e-mail message sent to author with attachment titled "Managing Sensitive Site Exploitation- Notes from Operation Iraqi Freedom 2003", February 28, 2013; Brian Lynch, e-mail message sent to author with attachment titled "Task Force Environmental Cleanup 2003", February 28, 2003.

2010.<sup>84</sup> CBRN organizations received guidance to expand their focus to include a wider array of chemical hazards and toxins, thereby expanding the scope of the operational CBRN mission.

Another significant change resulted from the inactivation of the Iraq Survey Group in 2005 during Phase IV (Stabilize), which refocused CBRN priorities from WMD strategic intelligence to force protection.<sup>85</sup> This also influenced the operational CBRN mission, which still encompassed its original requirements but expanded to include aspects of the protection warfighting function based on the effects of chemical hazards and toxins on a military force and its equipment. In 2006, CBRN forces supporting OIF added other new priorities to their range of requirements: assessing the problems in securing Iraqi-generated HAZMAT on and off coalition bases, and conducting vulnerability analyses for installations and operating forces.<sup>86</sup>

Additionally, CBRN representatives attended targeting boards in order to address toxic industrial chemical (TIC) and toxic industrial material (TIM) identification and sensitive site exploitation capabilities.<sup>87</sup> Common TICs include chlorine and phosgene, which have effects similar to those of mustard agents. Some TIMs include ammonia, cyanogen chloride, and

---

<sup>84</sup>Stephanie Sanok and Nathan Freier, "The End of Operations Iraqi Freedom and DOD's Future in Iraq," Center for Strategic and International Studies, under "A2 and A3," <http://csis.org/publication/end-operation-iraqi-freedom-and-dods-future-iraq> (accessed December 30, 2012).

<sup>85</sup>XVIII Corps CBRNE Section, e-mail message sent to author with attachment titled "CBRNE Non-traditional Tasks Lessons Learned 2006", February 28, 2013.

<sup>86</sup>William Joseph Eptilo, e-mail message sent to author with attachment titled "25th Infantry Division CBRN Section, Operation Iraqi Freedom 09-11: Tradition versus Reality", February 28, 2013; XVIII Corps CBRNE Section, e-mail message sent to author with attachment titled "CBRNE Non-traditional Tasks Lessons Learned 2006"

<sup>87</sup>NMC-I CBRN Office, e-mail message sent to author with attachment titled "Operation Dragon Den OPSUM 2007", February 28, 2013; V Corps CBRN Section, e-mail message sent to author with attachment titled "V Corps CBRN Section's Lessons Learned 2007", February 28, 2013; Eptilo, e-mail message sent to author with attachment titled "25th Infantry Division CBRN Section, Operation Iraqi Freedom 09-11: Tradition versus Reality"

hydrogen cyanide – these chemicals produce toxic vapors that burn and blister.<sup>88</sup> The lack of systematic accountability of these chemicals and ease with which enemies could acquire large quantities of them highlighted the importance of TICs and TIMs to operational commanders in Iraq. In the hands of terrorists, TICs and TIMs have the potential to cause significant hazards and many casualties if manipulated into an improvised explosive device (IED).

These adjustments to the CBRN mission resulted in the Army fielding commercial off the shelf (COTS) equipment to enable CBRN organizations to protect the force against these hazardous threats.<sup>89</sup> The rapid fielding of COTS brought with it two significant concerns, however: limited new equipment training on proper usage of the equipment, and an ineffective military maintenance system for sustaining COTS equipment.<sup>90</sup> Despite these challenges, CBRN forces adjusted their capabilities to meet the unanticipated demands of the operating environment. Nevertheless, the fact that the significant anticipated WMD threat never materialized led many operational commanders to question the need for traditional CBRN mission capabilities.<sup>91</sup>

---

<sup>88</sup>United States Department of Justice, "Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders," Department of Justice, under "Chemical Agents Detected, TIMs Detected," <https://www.ncjrs.gov/pdffiles1/nij/184449.pdf> (accessed December 31, 2012).

<sup>89</sup>20th SUPCOM CBRNE, e-mail message to author with attachment titled "Command Overview Joint Task Force Elimination 2010", November 10, 2012; V Corps CBRN Section, e-mail message sent to author with attachment titled "V Corps CBRN Section's Lessons Learned 2007"

<sup>90</sup>Multi-National Corps-Iraq CBRN, e-mail message sent to author with attachment titled "Fielding Of Chemical Biological Radiological And Nuclear Defense (CBRND) Equipment and CBRN Defense Preparation", February 28, 2013.

<sup>91</sup>XVIII Corps CBRNE Section, e-mail message sent to author with attachment titled "CBRNE Non-traditional Tasks Lessons Learned 2006; V Corps CBRN Section, e-mail message sent to author with attachment titled "V Corps CBRN Section's Lessons Learned 2007"

## Mintzberg: Realized Threat

Business strategy and planning expert Henry Mintzberg provided a strategy development model in his 1994 book *The Rise and Fall of Strategic Planning* that, adapted to the OIF case, will help illustrate the adaptation of CBRN capability to threat by the end of OIF (see Figure 1).<sup>92</sup> Both the realized threat and lessons learned influence DOD and DA decisions regarding adjustments in CBRN and other mission capabilities. Both the CBRN threat and mission requirements evolved over the year of America's involvement in OIF. The realized threat, or the threat actually faced as opposed to the anticipated threat, turned out to be small terrorist organizations exploiting easily accessible TICs and TIMs, rather than an active Iraqi WMD program.

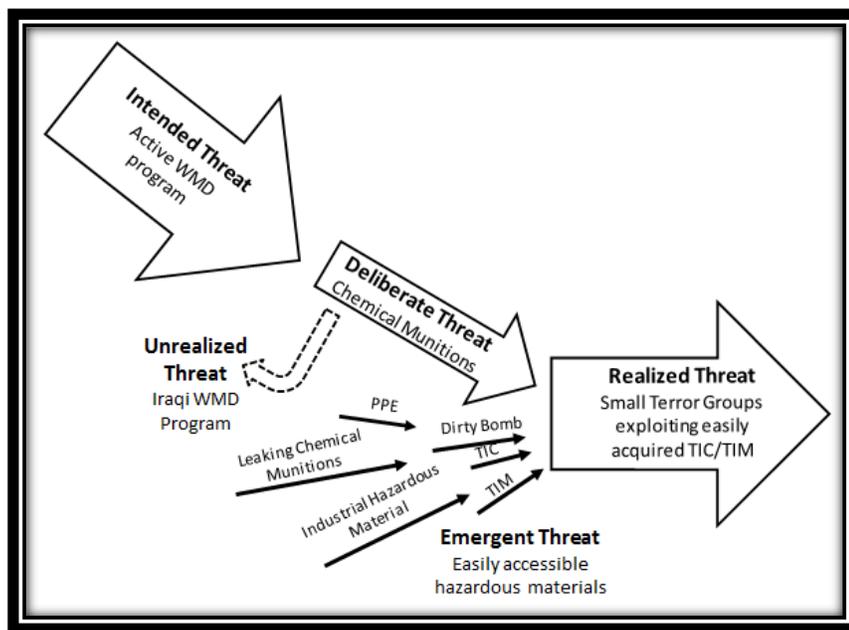


Figure 1: OIF Realized CBRN Threat

Source: Created by author using OIF lessons learned comments collected by CALL and applying them to Mintzberg's Strategy as addressed in the book *The Rise and Fall of Strategic Planning: Reconceiving Roles for Planning, Plans, and Planners*.

<sup>92</sup>Henry Mintzberg, *The Rise and Fall of Strategic Planning: Reconceiving Roles for Planning, Plans, Planners* (Toronto; New York: Free Press; Maxwell MacMillan Canada, 1994), 34.

Both the NSS and the TAG contain the recurring priority of WMD protection. CBRN capabilities revolve around this priority. This meshed well with the anticipated threat at the onset of OIF: a robust Iraqi WMD program.<sup>93</sup> All CBRN capabilities honed their mission around this potentially catastrophic threat. However, after the conventional fight coalition forces learned that instead of a WMD program, they would have to deal with a different threat – terrorist acquisition and employment of various chemical munitions. Contrary to the popular view, some evidence of a WMD program did appear. U.S. and coalition forces reported finding degraded munitions containing weaponized mustard and sarin gasses.<sup>94</sup> Additionally, the UNMVIC found several suspect items at the Taji ammunition depot, including six unfilled chemical weapons including 122mm rocket warheads and munitions base plates of varying sizes.<sup>95</sup> However, this minimal evidence of the anticipated threat, combined with the emerging threat of TICs and TIMs led to a change in CBRN forces' mission priorities.

A few primary factors combined to drive rapid COTS fielding to enable U.S. CBRN forces to counter the realized threat of terrorists employing TICs and TIMs. These included contractors restricted to forward operating bases because they lacked individual protection equipment (IPE), and standing CBRN protection protocols coupled with the desire for improved

---

<sup>93</sup>Hallenberg and Karlsson, *The Iraq War: European Perspectives on Politics, Strategy and Operations*, 151, 196; Powell, "Colin Powell's February 5, 2003 Address to the United Nations Security Council."

<sup>94</sup>Chris Lawrence, "Chemical Weapons Discovered in Iraq," *Outside the Beltway* (June 2006), under "Description," [http://www.outsidethebeltway.com/chemical\\_weapons\\_discovered\\_in\\_iraq/](http://www.outsidethebeltway.com/chemical_weapons_discovered_in_iraq/) (accessed January 10, 2013); Headquarters United States Central Command, e-mail message sent to author with attachment titled "News Release 2004"

<sup>95</sup>Iraq Survey Group, "Comprehensive Report of the Special Advisory to the Director of Central Intelligence on Iraq's WMD," Iraq Survey Group, under "Weaponization," [https://www.cia.gov/library/reports/general-reports-1/iraq\\_wmd\\_2004/chap5.html](https://www.cia.gov/library/reports/general-reports-1/iraq_wmd_2004/chap5.html) (accessed December 31, 2012).

threat standoff detection and expedient analysis.<sup>96</sup> CBRN COTS fielding included only limited new equipment training, minimal contractor maintenance, and no doctrinal references. Thus, maneuver units utilized unfamiliar COTS that often produced false positive readings. Because units lacked contractor support to correct these identified problems, they often simply opted not to use the newly fielded equipment. When they did attempt to use it, units often reacted poorly to the inaccurate or misinterpreted information the equipment provided.<sup>97</sup> These factors proved central to the faulty OIF CBRN lesson learned – units often made negative assessments of CBRN capabilities without recognizing that these forces did not face the anticipated threat, and therefore found themselves attempting to mitigate an unrealized threat for which the Army poorly prepared them.<sup>98</sup>

Seven years into OIF, the emerging CBRN threats continued to expand, including easily accessible hazardous materials that terrorists and insurgents could utilize to manufacture “dirty bombs” and a growing variety of TICs and TIMs.<sup>99</sup> The coalition quickly defeated enemy conventional forces during Phase III of OIF, but small terrorist and insurgent pockets of resistance emerged throughout Phase IV. According to intelligence reports, the acquisition and usage of TICs could potentially represent the most effective method by which these small groups

---

<sup>96</sup>XVIII Corps CBRNE Section, e-mail message sent to author with attachment titled "CBRNE Non-traditional Tasks Lessons Learned 2006; Multi-National Corps-Iraq CBRN, e-mail message sent to author with attachment titled "Fielding Of Chemical Biological Radiological And Nuclear Defense (CBRND) Equipment and CBRN Defense Preparation; V Corps CBRN Section, e-mail message sent to author with attachment titled "V Corps CBRN Section's Lessons Learned 2007"

<sup>97</sup>Multi-National Corps-Iraq CBRN, e-mail message sent to author with attachment titled "Fielding Of Chemical Biological Radiological And Nuclear Defense (CBRND) Equipment and CBRN Defense Preparation"

<sup>98</sup>Andrew Silke, *Research on Terrorism: Trends, Achievements and Failures*, Cass Series on Political Violence, (London; Oregon: Frank Cass, 2004), 72, 79.

<sup>99</sup>Lofy, e-mail message sent to author with attachment titled "Managing Sensitive Site Exploitation-Notes from Operation Iraqi Freedom 2003"

could produce a WMD-like weapon capability requiring CBRN countermeasures.<sup>100</sup> TICs are hard to detect in small quantities, normally identified as common chemicals, easy to acquire, transportable, with disruptive, hazardous, or potentially catastrophic effects if used with IEDs or with a combustible agent.<sup>101</sup> In Iraq coalition forces found many ordinary elements of society possessed the need and capability to produce, store, and transport large quantities of TICs for normal day-to-day industrial activities.<sup>102</sup> Terrorists and insurgents soon found ways to exploit these materials to their ends. Analysis of these emerging threats reveals the nature of the realized CBRN threat during the OIF campaign. CBRN units adapted to protect the force against this realized threat – small terrorist groups with access to TICs and TIMs and the ability to militarize them to create CBRN weapons.<sup>103</sup>

#### Caution with Lessons Learned

DA drew two significant CBRN lessons learned from the realized threat. First, future CBRN threats would similarly consist of non-traditional weapons in the form of those created in Iraq using easily acquired TICs and TIMs.<sup>104</sup> Secondly, future CBRN threats would potentially involve smaller enemy/terrorist groups in possession of limited chemical threat capabilities rather than a well-developed WMD program like that the United States expected to find in Iraq before

---

<sup>100</sup>Iraq Survey Group, "Comprehensive Report of the Special Advisory to the Director of Central Intelligence on Iraq's WMD," Chapter 5.

<sup>101</sup>Department of the Army, "Technical Escort Battalion Operations, FM 3-11.20 (FM 9-20)," Headquarters Department of the Army, under "Support to Combatant Commanders," [https://armypubs.us.army.mil/doctrine/DR\\_pubs/dr\\_c/pdf/fm3\\_11x20.pdf](https://armypubs.us.army.mil/doctrine/DR_pubs/dr_c/pdf/fm3_11x20.pdf) (accessed December 30, 2012).

<sup>102</sup>Silke, *Research on Terrorism: Trends, Achievements and Failures*, 76, 77; Ackerman and Tamsett, *Jihadists and Weapons of Mass Destruction*, 140-141; Iraq Survey Group, "Comprehensive Report of the Special Advisory to the Director of Central Intelligence on Iraq's WMD," Chapter 5.

<sup>103</sup>Ackerman and Tamsett, *Jihadists and Weapons of Mass Destruction*, 421, 443-448.

<sup>104</sup>*Ibid.*, 191-192.

2003.<sup>105</sup> Both are grounded in seven years of operational experience, and operations since 2010 uphold these findings. However, the Army should employ caution when interpreting and acting on these lessons learned to make changes in future CBRN capabilities.

The first lesson learned contains two main elements. The concern over enemy militarized CBRN weapons remains relevant because open source shows as of the year 2000, twenty-six states possessed, pursued, or had the capability to acquire CBRN weapons and missile delivery systems.<sup>106</sup> To address this concern, the Army has stretched its CBRN organizations' capabilities to include the basic Chemical Corps functions of early warning, detection, and protection, while maintaining only two Technical Escort (TE) and six Combat Support BNs within the active force.<sup>107</sup>

The second element pertains to the non-traditional CBRN threats encountered in Iraq. TE BNs and CBRN reconnaissance assets are suited for mitigating these threats and the associated hazards. Current DA modular force structures challenge how these CBRN capabilities can best support the force. Research and analysis at the United States Chemical, Biological, Radiological, and Nuclear School (USACBRNS) supports the recommendation to standardize the existing CBRNE Teams within TE BNs.<sup>108</sup> This recommendation includes increasing the size of CBRNE Teams to 15 personnel (this includes three explosive ordinance disposal (EOD) soldiers) with an

---

<sup>105</sup>Phil Visser, "Chemical Corps Goals and Issues," USACBRNS, <https://www.us.army.mil/suite/designer> (accessed November 01, 2012).

<sup>106</sup>Counterproliferation Program Review Committee, "Report on Activities and Programs for Countering Proliferation and NBC Terrorism," Department of Defense, under "Assessment of Progress in Meeting Combating WMD Goals," <http://www.fas.org/irp/threat/nbcterror2011.pdf> (accessed January 01, 2013); Golan-Vilella, Marchesano, and Williams, "The 2010 Nuclear Security Summit: A Status Update," 13-24.

<sup>107</sup>Visser, "Chemical Corps Goals and Issues," 1.

<sup>108</sup>The 20<sup>th</sup> SUPCOM CBRNE task organization includes both Army Ordnance and CBRN units. The command is capable of providing CBRN and high yield explosive assets to combatant commands (CBRNE). CBRNE's uniqueness is the capability to detect, advise, protect, and disarm high yield explosives through explosive ordinance disposal assets.

aggregate increase of 249 soldiers in the Chemical Corps.<sup>109</sup> However, this does not account for the possibility that the Army will encounter non-traditional future operational CBRN threats much like those encountered during OIF. This possibility warrants expansion of the role of existing CBRN teams and further increase in CBRN capabilities and numbers of personnel and equipment.

The second lesson holds that the CBRN threat could potentially come from smaller enemy groups in possession of limited improvised CBRN weapons. This lesson learned also contains two elements. First, as mentioned above, states possessing traditional CBRN munitions could potentially employ them, and U.S. Army force need to retain the capability to counter this threat.<sup>110</sup> The second element – smaller enemy groups employing non-traditional WMD-like weapons – could lead to an excessively risky reduction in CBRN resources and capabilities if force planners come to view this as the sole or primary CBRN threat the Army will face in the future. Materials and expertise remain significant components of this threat, illustrated by various terrorists groups' stated intent to acquire and use CBRN materials; the severity of injury and damage a CBRN weapons can inflict; the proliferation of information on WMD through the internet and other factors associated with globalization; and the dual-use nature of many relevant technologies and precursors. All of these factors make CBRN materials difficult to control and weapons increasingly likely to fall into the wrong hands.<sup>111</sup> Hence, CBRN requirements entail educating the fighting force and CBRN specialists regarding how to detect and protect against

---

<sup>109</sup>Visser, "Chemical Corps Goals and Issues," 1; Department of the Army, "Technical Escort Battalion Operations, FM 3-11.20 (FM 9-20)," 7-1, 7-2.

<sup>110</sup>Counterproliferation Program Review Committee, "Report on Activities and Programs for Countering Proliferation and NBC Terrorism," 36, 37.

<sup>111</sup>Bureau of Counterterrorism, "Chapter 4: The Global Challenge of Chemical, Biological, Radiological, and Nuclear (CBRN) Terrorism," Department of State, under "Nonproliferation Efforts," <http://www.state.gov/j/ct/rls/crt/2011/195548.htm> (accessed January 01, 2013).

these smaller enemy groups. However, the Army must develop the doctrine needed to facilitate fielding of COTS or other technological capability advancements used to mitigate CBRN risks, while not losing sight of traditional WMD threats in the range of possible future scenarios the Army might face.<sup>112</sup> Above all technology provides a platform to protect the Army during a CBRN environment but CBRN specialists analyze and interpret the data for making operational decisions.

#### NATO: U.S. CBRN DEFENSE EXPECTATION

In aftermath of World War II, the major Western and European powers had no desire to fight another world war. United in this sentiment, the United States and several of its allies signed the North Atlantic Treaty in 1949. Through signing this treaty, the signatories sought to counter the Soviet Union military threat and prevent both the spread of communism and the revival of nationalist militarism. Consequently, NATO divided the great powers into a bipolar world consisting of the Western Democracies and Eastern Communist states.<sup>113</sup> NATO operated under the charter of protecting the freedom and safety of the members of the alliance by agreeing that its members would treat an armed attack against any of the allies as an attack against them all.<sup>114</sup> Respectively the allies pledged, "To consult together whenever, in the opinion of any of them, the territorial integrity, political independence, or security of any of the Parties is threatened."<sup>115</sup>

---

<sup>112</sup>Visser, "Chemical Corps Goals and Issues," 1; XVIII Corps CBRNE Section, e-mail message sent to author with attachment titled "CBRNE Non-traditional Tasks Lessons Learned 2006; V Corps CBRN Section, e-mail message sent to author with attachment titled "V Corps CBRN Section's Lessons Learned 2007"

<sup>113</sup>North Atlantic Treaty Organization, "A Short History of NATO," NATO, under "A Treaty for Our Age," <http://www.nato.int/history/nato-history.html> (accessed January 13, 2013).

<sup>114</sup>Yale Law School, "The Avalon Project: Documents in Law, History and Diplomacy: NATO Treaty of April 4, 1949," Lillian Goldman Law Library, [http://avalon.law.yale.edu/20th\\_century/nato.asp#art4](http://avalon.law.yale.edu/20th_century/nato.asp#art4) (accessed January 13, 2013); North Atlantic Treaty Organization, "A Short History of NATO," 1.

<sup>115</sup>Yale Law School, "The Avalon Project: Documents in Law, History and Diplomacy:

Forty years later the global context changed with the fall of the Berlin Wall, followed by the collapse of the Soviet Union in 1991. These events symbolized the end of an era and the dawn of a new one.

In keeping with the end of the bipolar world, NATO adjusted its security understanding from geographical to functional in order to cope with the emerging and varied challenges of the twenty-first century. NATO no longer focused on collective defense – specifically the capability to deter and, if necessary, defeat any strategic attack against Allied territory by the Warsaw Pact.<sup>116</sup> The end of the Cold War did not mean an end to conflict, however, only a change in its nature as seen in the many small wars that have taken place since 1989. One example of the varied challenges NATO faced in this era emerged within the United States on September 11, 2001 when terrorists attacked Americans in the homeland. The destructive reality of what these challenges could produce jump-started NATO innovations. Other perceived volatile and less predictive hazards include acts of terrorist, WMD proliferation and other advanced weapons technologies proliferation, and cyber-attacks against current communications systems.<sup>117</sup>

The Prague 2002 NATO Summit put these types of challenges on center stage, spotlighting hazard mitigation and emphasizing the necessity of future military concept innovation in this area. With international consensus, two specific declarations set the azimuth for innovation via the development of a NATO Response Force (NRF) and NATO multinational CBRN Defense TF.<sup>118</sup> The summit's governmental declarations included U.S. commitment of a

---

NATO Treaty of April 4, 1949," Article 4.

<sup>116</sup>North Atlantic Treaty Organization, "NATO Review: Istanbul Summit Special 2004," NATO, under "The Meaning of Enlargement: New Threats, New Missions," <http://www.nato.int/docu/review/2004/istanbul/2004-istanbul-e.pdf> (accessed January 15, 2013).

<sup>117</sup>Sten Rynning, *NATO Renewed: The Power and Purpose of Transatlantic Cooperation* (Virginia: Palgrave MacMillan, 2005), 121, 122.

<sup>118</sup>Heads of State and Government, "2002 Prague Summit Declaration " North Atlantic Treaty Organization, under " We have therefore decided to: a. and e.,"

brigade combat team (BCT) to the NRF mission. It projected rotating the BCT's BNs on regular cycles to Europe for training and exercises, creating opportunities for special operation forces to advise and assist ally partners within other regions. This resulted in a tangible U.S. investment in new forms of cooperation, responsiveness, and agility.<sup>119</sup> CBRN capabilities designated to support these rotational BNs came from both organic and nonorganic assets nested within the NRF mission.<sup>120</sup>

The Combined Joint CBRN Defense TF, unlike the NRF, only received a U.S. agreement of concept. It was not until 2011 that the United States agreed to collaborate on a reach-back capability to engage in discourse and share innovations regarding CBRN defense, doctrine, standards, and interoperability. The lead developmental nation for the Combined Joint CBRN TF and Joint CBRN Defense Center of Excellence (COE) is the Czech Republic. The Combined Joint CBRN TF has the mission of providing CBRN detection, warning, protection, and hazard mitigation for all allied forces supporting NATO-sanctioned missions.<sup>121</sup>

A core NATO expectation is to safeguard the freedom and security of all its members. Militarily, the presumption exists to maintain a combined military force of designated assets to deter potential aggression and help maintain the territorial integrity of member states and their allies.<sup>122</sup> Since Reagan's second administration to the present, each new NSS has included

---

<http://www.nato.int/docu/pr/2002/p02-127e.htm> (accessed January 15, 2013); North Atlantic Treaty Organization, "NATO Review: Istanbul Summit Special 2004," 5.

<sup>119</sup>Leon E. Panetta, "Remarks by Secretary Panetta at King's College" (speech, King's College, London, January 18, 2013).

<sup>120</sup>Visser, "Chemical Corps Regimental Campaign Plan Fiscal Years 2013-14," 5.

<sup>121</sup>North Atlantic Treaty Organization, "Combined Joint Chemical, Biological, Radiological and Nuclear Defense Task Force: The Alliance's Multinational CBRN Defence Capability," 1.

<sup>122</sup>North Atlantic Treaty Organization, "NATO 2020: Assured Security; Dynamic Engagement. Analysis and Recommendations of the Group of Experts on a New Strategic Concept for NATO," NATO, under "An Enduring Foundation,"

explicit priorities for capabilities the United States will provide to NATO. This cementing action helped reinforce NATO's built-in expectation of the United States' support to initiatives such as the NRF and the NATO Combined Joint CBRN Defense TF.<sup>123</sup> America's pledge of money and forces to the NRF and a reach-back synthesis for the Combined Joint CBRN Defense TF through the Joint CBRN Defense COE continues to affirm a collaborative NATO – U.S. relationship.<sup>124</sup>

### Building the Expectation

The concept behind the NRF is to provide a rapid military response to an emerging crisis for either collective defense purposes or other crisis response operations within 5 to 30 days.<sup>125</sup> As a first in, first out rotational force, it would deploy rapidly but leave once regular forces move into the area and assumed responsibility. The NRF has a 30-day "stand-alone" capacity, meaning it can sustain itself for thirty days before it requires assistance from logistics units.<sup>126</sup> Dependent on the type of mission, a tailored TF with all of the required capabilities, including CBRN defense, will replace the NRF.<sup>127</sup>

---

[http://www.nato.int/cps/en/natolive/official\\_texts\\_63654.htm?selectedLocale=en](http://www.nato.int/cps/en/natolive/official_texts_63654.htm?selectedLocale=en) (accessed January 01, 2013).

<sup>123</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 5, 8; Obama, "National Security Strategy 2010," 23, 30; Michael G. Mullen, "2011 the National Military Strategy of the United States of America: Redefining America's Military Leadership," Department of Defense, under "Enduring National Interest and National Military Objectives," [http://www.jcs.mil/content/files/2011-02/020811084800\\_2011\\_NMS\\_-\\_08\\_FEB\\_2011.pdf](http://www.jcs.mil/content/files/2011-02/020811084800_2011_NMS_-_08_FEB_2011.pdf) (accessed February 05, 2013).

<sup>124</sup>North Atlantic Treaty Organization, "Prague Summit 2002: Selected Documents and Statements," NATO, under "Prague Summit Declaration issued by the Heads of State and Government," <http://www.nato.int/docu/0211prague/speeches-e.pdf> (accessed January 15, 2013); Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 23.

<sup>125</sup>North Atlantic Treaty Organization, "The NATO Response Force: At the Center of NATO Transformation," NATO, under "Transformation," [http://www.nato.int/cps/en/natolive/topics\\_49755.htm](http://www.nato.int/cps/en/natolive/topics_49755.htm) (accessed March 28, 2013).

<sup>126</sup>Rynning, *NATO Renewed: The Power and Purpose of Transatlantic Cooperation*, 146.

<sup>127</sup>Jeffrey P. Bialos and Stuart L. Koehl, *The NATO Response Force: Facilitating*

As mentioned previously the United States military commitment identifies a U.S. based BCT to rotate a battalion-sized TF to Germany for exercises and training, ensuring that NATO has the support required to conduct expeditionary operations in defense of common interests.<sup>128</sup> Among the capabilities required by the American BCT, it must provide CBRN support for its subordinate troops and their equipment.<sup>129</sup> Viewed within the context of the greater NRF structure, it follows that alliance forces must prepare to operate in the same types of operational environments for which all NATO forces train. An enemy capable of posing a CBRN threat constitutes but one element of this potential security environment.<sup>130</sup> For this reason, NATO ensures its security forces possess a CBRN capability via the Combined Joint CBRN Defense TF. While it too can deploy independently within 5 to 30 days, it operates in support of the NRF.<sup>131</sup> The TF's assets facilitate a layered Joint CBRN Defense plan aiming to prevent CBRN incidents, protect NATO forces from the effects of CBRN incidents, and conduct recovery actions so that NATO forces can accomplish the mission and maintain freedom of action in a CBRN environment.<sup>132</sup>

---

*Coalition Warfare through Technology Transfer and Information Sharing* (Washington, DC: National Defense University 2005), 1-4, report.

<sup>128</sup>Leon E. Panetta, "Munich Security Conference Delivery" (speech, Munich Security Conference, Munich, February 04, 2012).

<sup>129</sup>Army Force Management Support Agency, "Force Management Systems Web Site," BCT HQ and subordinate BN MTOEs.

<sup>130</sup>North Atlantic Treaty Organization, "NATO's Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats," NATO, under "Protecting Against WMD Attack or CBRN Event," [http://www.nato.int/cps/en/natolive/official\\_texts\\_57218.htm](http://www.nato.int/cps/en/natolive/official_texts_57218.htm) (accessed March 05, 2013).

<sup>131</sup>North Atlantic Treaty Organization, "Combined Joint Chemical, Biological, Radiological and Nuclear Defense Task Force: The Alliance's Multinational CBRN Defence Capability," 1-4.

<sup>132</sup>NATO Standardization Agency, "Allied Joint Doctrine for Chemical, Biological, Radiological, and Nuclear Defence AJP-3.8(a), Edition A. Version 1," North Atlantic Treaty

The NATO capabilities in this line of protection have steadily grown over an eight-year period. At the 2004 NATO Istanbul Summit, the Supreme Allied Commander, Europe (SACEUR) declared the Combined Joint CBRN Defense TF full operationally capable and transferred responsibility for the organization to the strategic command of Allied Command Operations.<sup>133</sup> The NRF achieved full operating capacity of about a 20,000 force in November 2006.<sup>134</sup> In 2011, the United States formally committed to membership within the Joint CBRN Defense COE.<sup>135</sup> Again, U.S. actions supporting these NATO initiatives further reinforce an expectation that the United States will provide the requisite military capability to perform the duties associated with a NATO-sanctioned mission, including any necessary CBRN capabilities.

#### OEF: Theater Force Protection Umbrella

From 2005 to the present, OEF provides a very recent example of allies providing CBRN capabilities as agreed upon in NATO doctrine and Allied standardization agreements. CBRN defense, inside NATO doctrine, is a function within the national force protection capabilities. *Allied Joint Publication for Force Protection -3.14* states, “troop-contributing nations are

---

Organization, <http://engineers.ihs.com/document/abstract/JBOZEBAAAAAAAAAAAA> (accessed March 01, 2013).

<sup>133</sup>North Atlantic Treaty Organization, "Combined Joint Chemical, Biological, Radiological and Nuclear Defense Task Force: The Alliance's Multinational CBRN Defence Capability," 1-2.

<sup>134</sup>Department of Defense, *Military Construction Program FY 2011 Budget: North Atlantic Treaty Organization Security Investment Program* (Virginia: Department of Defense, 2010), 3, justification; James Jones, "DOD News Briefing with General Jones from the Pentagon" (address, The Pentagon, Virginia, August 17, 2006).

<sup>135</sup>Joint CBRN Defence Centre of Excellence, "History of JCBRN Defense COE," Joint CBRN Center of Excellence, under "History," [http://jcbncoe.cz/joomla/index.php?option=com\\_content&view=category&layout=blog&id=35&Itemid=60](http://jcbncoe.cz/joomla/index.php?option=com_content&view=category&layout=blog&id=35&Itemid=60) (accessed March 08, 2013).

responsible for providing their own force protection, as well as for contributing to and integrating into the wider force protection plans of the Allied joint force of assignment.”<sup>136</sup>

NATO assumed command of operations in Afghanistan in 2003.<sup>137</sup> However, for U.S. forces, OEF began on October 7, 2001 in direct response to the terrorist attacks of September 11, 2001.<sup>138</sup> OEF operations toppled the Taliban regime and attacked the Al-Qaeda terrorist network hosted by the Taliban.<sup>139</sup> Unlike the planning for OIF, United States military planners anticipated no major WMD threat; however, concerns did exist that Al-Qaeda and affiliated terrorist groups sought to acquire and use WMD in order to carry out spectacular attacks.<sup>140</sup> Hence, a joint CBRN defense approach developed in the form of an ISAF TFP plan. Three key CBRN lines of effort (allied capability contributions, internal collaboration, and reach-back capability) underwent further assessment and refinement as CBRN initiatives actualized.<sup>141</sup>

Since the beginning of the OEF mission, support grew from four troop-contributing nations, along with material help from Germany, France, Italy, Japan, and other countries. Eventually the alliance grew to over 50 force-contributing nations.<sup>142</sup> General James Jones,

---

<sup>136</sup>NATO Standardization Agency, "Allied Joint Doctrine for Force Protection AJP-3.14," North Atlantic Treaty Organization, <http://engineers.ihs.com/document/abstract/HFCJCCAAAAA> (accessed March 10, 2013).

<sup>137</sup>International Security Assistance Force, "About ISAF: History," ISAF, under "History," <http://www.isaf.nato.int/history.html> (accessed March 28, 2013).

<sup>138</sup>Barbara Salazar-Torreon, *U.S. Periods of War and Dates of Current Conflicts* (Washington, DC: Congressional Research Service, 2012), 6, report, RS21405.

<sup>139</sup>Andrew Feickert, *U.S. And Coalition Military Operations in Afghanistan: Issues for Congress* (Washington, DC: Congressional Research Service, 2006), 1, report, RL33503.

<sup>140</sup>Abdullah Toukan and Anthony Cordesman, *Terrorism and WMD: The Link with the War in Afghanistan* (Washington, DC: Center for Strategic and International Studies, 2009), 5-7, study.

<sup>141</sup>NATO, *Allied Joint Doctrine for Chemical, Biological, Radiological and Nuclear Defence, Edition 4*, STANAG 2451, (Belgium 2012),

<sup>142</sup>Stephen Tanner, *Afghanistan: A Military History from Alexander the Great to the War*

SACEUR, faced the challenge in 2006 of receiving troop support from some partner states that lacked all of the military capabilities needed to function alongside other NATO forces.<sup>143</sup>

Establishment of the ISAF TFP Cell helped alleviate this problem with respect to CBRN. ISAF HQ now had an umbrella cell capable of providing oversight of each nation's protection capabilities with the ability to identify gaps and limitations.<sup>144</sup>

CBRN capabilities made up one component of this overall force protection umbrella. Contributing nations reported tactical and operational CBRN capabilities, opening dialog for internal regional and external ISAF collaboration.<sup>145</sup> National doctrine, training, and language often limit collaboration, but the establishment of the NATO Joint CBRN Defense COE helped overcome this constraint. The COE's charter was to develop CBRN defense doctrines, standards, and knowledge sharing systems to improve interoperability and common capabilities.<sup>146</sup> Put simply, the Joint CBRN Defense COE helped in establishing a common CBRN language for the alliance. This gave ISAF a CBRN reach-back capability through the Joint CBRN Defense COE to collaborate or help resolve friction points which ultimately reinforced interdependence and strengthened expectations within the alliance (see Figure 2).<sup>147</sup> Furthermore, this action highlights

---

*against the Taliban*, Revised, 1st ed. (Massachusetts: Da Capo Press, 2009), 300. Nations supporting U.S. initial OEF operations with military forces include the United Kingdom, Australia, Canada and Norther Alliance.

<sup>143</sup>Paul Belkin, *NATO in Afghanistan: A Test of the Transatlantic Alliance* (Washington, DC: Congressional Research Service, 2009), 10, report, RL33627.

<sup>144</sup>MACOMs Commanders, Technical Team Reviews, e-mail message to author with attachment titled "Force Protection 2005", February 28, 2013.

<sup>145</sup>NATO Standardization Agency, "Allied Joint Doctrine for Force Protection AJP-3.14," 2-7, 2-8; Army Force Management Support Agency, "Force Management Systems Web Site," BCT HQ and subordinate BN MTOEs.

<sup>146</sup>Joint CBRN Defence Centre of Excellence, "The Mission of the JCBRN Defense COE," JCBRN Defence COE, under "Mission," [http://jcbncoe.cz/joomla/index.php?option=com\\_content&view=article&id=51&Itemid=64](http://jcbncoe.cz/joomla/index.php?option=com_content&view=article&id=51&Itemid=64) (accessed March 28, 2013).

<sup>147</sup>North Atlantic Treaty Organization, "Combined Joint Chemical, Biological,

NATO's expectation of continued U.S. commitment of CBRN capabilities to defend against known and emerging threats. Though the CBRN threat in Afghanistan was minimal in comparison to the initial OIF threat, a threat does exist.

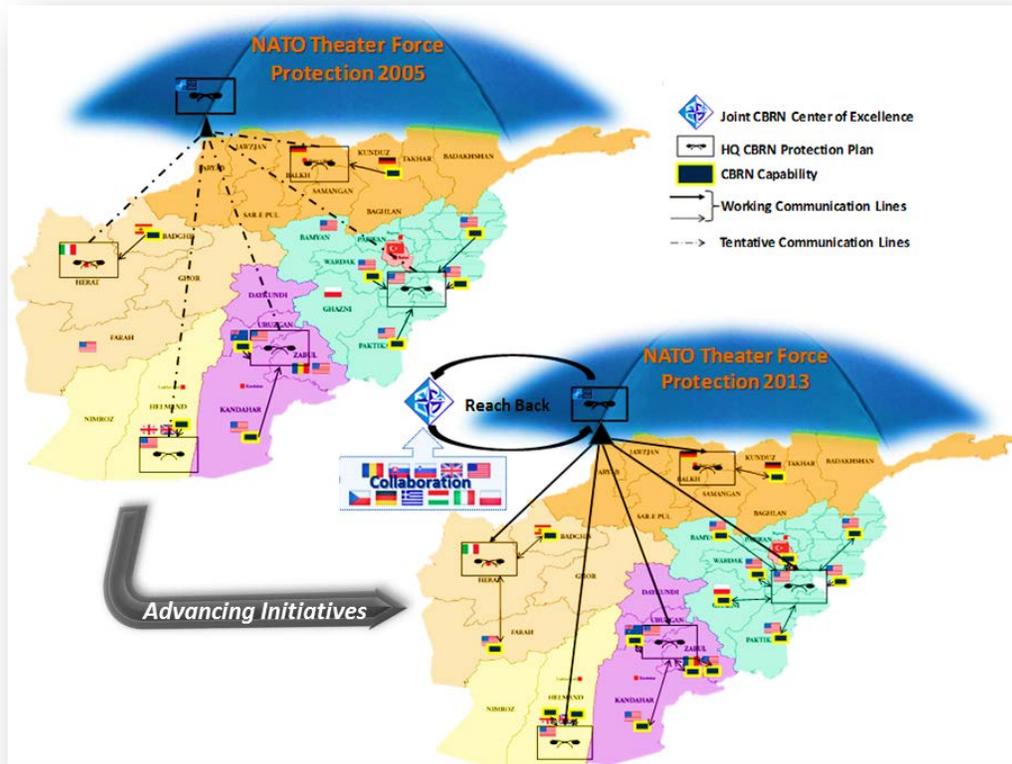


Figure 2. OEF Theater Force Protection Plan

Source: Created by author from open source information on both ISAF, [www.isaf.nato.int](http://www.isaf.nato.int), and Joint CBRN Defense COE websites, [jcbncoe.cz](http://jcbncoe.cz).

## CBRN THREAT WITHIN THE PACIFIC THEATER

The most recent NSS, *Sustaining U.S. Global Leadership: Priorities for 21<sup>st</sup> Century Defense 2012*, directed a strategic shift by DOD toward the Asia-Pacific region to reinforce old

---

Radiological and Nuclear Defense Task Force: The Alliance's Multinational CBRN Defence Capability," 1.

partnerships, build new ones, and address regional security challenges.<sup>148</sup> However, because the U.S. military must remain globally available and regionally focused, a rebalancing of capabilities is necessary to meet this strategic shift.<sup>149</sup> United States Pacific Command (USPACOM) guides its efforts in this new top-priority status with the following mission statement: “to protect and defend the U.S, its territories, Allies, and interests; alongside Allies and partners, promotes regional security and deters aggression; and, if deterrence fails, is prepared to respond to the full spectrum of military contingencies to restore Asia-Pacific stability and security.”<sup>150</sup>

USPACOM seeks to accomplish this mission through an operational approach consisting of five strategic focus areas that include strengthening and advancing alliances and partnerships, maturing the U.S.-China military-to-military relationship, developing the U.S.-India strategic partnership, remaining prepared to respond to the Korean Peninsula contingency, and countering transnational threats.<sup>151</sup> This analysis addresses only two of these focus areas – countering transnational threats and maintaining alliances and partnerships – because these highlight the shortcomings of OIF lessons learned and OEF assumptions with respect to the topic of this study.<sup>152</sup> The reality of today’s operational environment directly and indirectly influences U.S.

---

<sup>148</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 2.

<sup>149</sup>Lisa Daniel, "Asia-Pacific Shift Will Improve Relations, Commander Says," *American Forces Press Service* (February 2012), under "Description," <http://www.defense.gov/news/newsarticle.aspx?id=67360> (accessed March 11, 2013). Current NSS says to maintain defense efforts in the Middle East to sustain regional gains and uphold commitments while rebalancing priority to the Asia Pacific region. While in a period of budget cuts these directive make this strategy unreasonable.

<sup>150</sup>Robert F. Willard, "United States Pacific Command Strategic Guidance 2012," USPACOM, under "Strategic Guidance," <http://www.pacom.mil/about-uspacom/strategic-guidance.shtml> (accessed March 12, 2013).

<sup>151</sup> Ibid.

<sup>152</sup>Obama, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," 4; Mullen, "2011 the National Military Strategy of the United States of America: Redefining America's Military Leadership," 13.

Army CBRN capabilities. However, pragmatic concerns like programs and budgets continue to drive CBRN along the present trend of descending capacity. This warrants further assessment.

### Countering Transnational Threats

The nations in USPACOM'S area of responsibility (AOR) include three of the world's top six when measured by overall defense budget, and six that possess some of the world's largest militaries (the United States, China, Vietnam, North Korea, South Korea, and India). Perhaps most pertinent to this study, the USPACOM AOR consists of thirty-six countries, and of those twenty-eight percent possess, are pursuing, or are capable of acquiring in the near term some form of a WMD capability.<sup>153</sup> Within the region, North Korea remains the most pressing military threat to U.S. interests. Terrorism also continues to pose a threat to the stability of states within South and Southeast Asia as well as to the United States homeland. Despite considerable progress against regional terrorist groups such as Jemaah Islamiya and the Abu Sayyaf Group over the past decade, these extremist type groups continue to operate in various parts of the AOR (Figure 3).<sup>154</sup> USPACOM aims to counter these regional transnational threats by working with allies and partners to build capacity, share information, and collaborate with other nations to counter WMD proliferation and associated technologies.<sup>155</sup>

---

<sup>153</sup>Federation of American Scientist, "States Possessing, Pursuing or Capable of Acquiring Weapons of Mass Destruction," FAS, under "State," [http://www.fas.org/irp/threat/wmd\\_state.htm](http://www.fas.org/irp/threat/wmd_state.htm) (accessed March 15, 2013).

<sup>154</sup>National Counterterrorism Center, "Counterterrorism 2013 Calendar: Jemaah Islamiya (JI)," U.S. Counterterrorism Center, under "JI," <http://www.nctc.gov/site/groups/ji.html> (accessed March 16, 2013); National Counterterrorism Center, "Counterterrorism 2013 Calendar: Abu Sayyaf Group (ASG)," U.S. National Counterterrorism Center, under "ASG," <http://www.nctc.gov/site/groups/asg.html> (accessed March 16, 2013).

<sup>155</sup>Willard, "United States Pacific Command Strategic Guidance 2012," 1.



Figure 3. USPACOM AOR Concerns

Source: Created by author from open source information gathered at the USPACOM website, [www.pacom.mil](http://www.pacom.mil), and reports from both the Center for Strategic Studies and International Studies, [csis.org](http://csis.org), and the Federation of American Scientist, [www.fas.org](http://www.fas.org).

USPACOM must therefore maintain a posture that demonstrates both the readiness and the capacity to fight and win if challenged. Recent tests and other evidence of activity in North Korea's nuclear weapons and ballistic missile program, for example, constitute a real threat to U.S. national security, as well as regional and international security.<sup>156</sup> Hence, USPACOM's aims of capacity building, sharing information, and collaboration serve as a bridge between shaping the strategic environment and contingency preparation. However, domestic decisions related to defense spending, sequestration, and force posture all have the potential to undermine operational capability. Assessing these requirements from the context of lessons learned during OIF further highlights these challenges.

<sup>156</sup>Barack Obama, "Statement by the President on North Korean Announcement of Nuclear Test" (press release, The White House, Washington, DC, February 12, 2013).

As stated in the CBRN threat case study, OIF demonstrated that conventional CBRN weapons and small terrorist groups exploiting hazardous materials that fall under the heading of WMD could present significant challenges to U.S. security. Current regional limitations in operational CBRN capabilities require innovative solutions to protect the force as it attempts to sustain a position of strategic advantage as directed by the 2012 NSS.<sup>157</sup> To support USPACOM, the USACBRNS focuses on improving CWMD activities. It can accomplish this goal through new initiatives such as hazard response and assessment and mitigation of the impact of all hazardous material threats and environments across the Range of Military Operations (ROMO). The ROMO includes WMD elimination, and WMD passive defense measures intended to minimize or negate both the vulnerability to and the potential effects of CBRN attacks – particularly with respect to building partner capacity.<sup>158</sup> Contrary to these priorities, however, the Army faces proposed CBRN reductions that would save relatively little money while exposing USPACOM to significantly increased risk throughout its AOR.

Additionally, the DA force reductions of 2009 resulted in the removal of all CBRN specialists from combat arms companies.<sup>159</sup> This meant that combat arms companies retained their previously authorized CBRN equipment, but lost their USACBRNS-trained specialist who could properly operate and maintain this specialized equipment, analyze the data, and advise the commander regarding operations conducted in a CBRN environment. This personnel change greatly reduced protection at the tactical level – a vulnerability that proved even more significant at higher echelons because of the operational limitations caused by the resulting information gap.

---

<sup>157</sup>Gregory T. Kiley and Nicholas F. Szechenyi, *U.S. Force Posture Strategy in the Asia Pacific Region: An Independent Assessment* (Washington, DC: Center for Strategic and International Studies, 2012), Option 2, 62-72, study.

<sup>158</sup>Damon M. Yourchism, e-mail message to author with attachment titled "CBRN Force Design Update 2013", March 30, 2013.

<sup>159</sup>Army Force Management Support Agency, "Force Management Systems Web Site," Combat Arms Company MTOEs.

USACBRNS developed two options to bridge this gap: standardized CBRN Officer or Noncommissioned Officer (NCO) instruction at the installation level as an Additional Duty Program of Instruction (POI), and production of a Multi-Service Tactics, Techniques, and Procedures (MTTP) manual for CBRN Aspects of Command and Control in 2010.<sup>160</sup>

However, both options have limitations. The first offers additional duty training in a relatively complex and perishable skill. Commanders must choose between routinely having Soldier perform their additionally duty in order to remain proficient or perform their primary combat arms specialty then if time and mission permit their additional duty. This option obviously does not replace the full-time and specifically trained CBRN soldiers previously assigned to combat arms companies. The second option relies on user familiarization with CBRN-specific technical language. Within the Asia-Pacific region, the high percentage of countries with WMD programs or goals to establish them makes the CBRN limitations within company-level combat arms units particularly disconcerting. Put in context with America's growing awareness of WMD-related threats to regional stability, these CBRN capability reductions warrant particular concern.

#### Strengthen and Advance Allies and Partnerships

Militarily refocusing efforts to the Asian-Pacific region entails strengthening alliances; deepening partnerships with emerging powers; building a stable, productive, and constructive relationship with China; and empowering regional institutions.<sup>161</sup> USPACOM further interprets

---

<sup>160</sup>USACBRNS, "Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Aspects of Command and Control," USACBRNS, under "Application," [https://itsweb.us.army.mil/armypubs.asp?doctrine/DR\\_pubs/dr\\_aa/pdf/atp3\\_11x36.pdf](https://itsweb.us.army.mil/armypubs.asp?doctrine/DR_pubs/dr_aa/pdf/atp3_11x36.pdf) (accessed April 01, 2013). The MTTP supports non-CBRN personnel in performing collateral duties as additional duty CBRN officers or NCOs. It contains procedures for characterizing and managing CBRN threats and hazards.

<sup>161</sup>Tom Donilon, "The United States and the Asia-Pacific in 2013" (address, The Asia Society, New York, March 11, 2013).

the NSS directive to mean strengthening existing alliances and leveraging those lines of communication to shape the environment for building multilateral relationships and a more effective presence. The command envisions accomplishing these goals by assuring allies and partners of U.S. security commitments through consistently meeting their expectations. Additionally, USPACOM must enhance alliances and partnerships in order to build full spectrum capability in its military activities. Given the significance of engagement and influence in USPACOM's approach to achieving its objectives in the new strategic climate, U.S. forces in the region cannot afford to risk failing to meet regional allies' and potential partners' expectations in any key area – particularly one with the repercussions involved in failure to deal effectively with a WMD threat.

One can restate the goal of “assuring allies and partners of U.S. security commitments by meeting expectations,” quite simply: America must back up its words with action.<sup>162</sup> Because joint doctrine does not define the term “assurance,” one must look elsewhere for a definition. According to the Merriam-Webster online dictionary, “assurance is a pledge, guarantee, security, or something that inspires confidence.”<sup>163</sup> Put in these terms, America's Allies and partners in the Asia-Pacific region expect a pledge that U.S. forces will maintain the capability to counter the increasing military threat posed by countries like North Korea and China. For example, in 2008 the Secretary of Defense pledged to retain 28,500 personnel on the Korean Peninsula. Beyond mere numbers, however, the flags of the 8th Army, the 2nd Infantry Division, and the 210th Artillery BDE serve as important symbols of United States commitment to the independence and prosperity of the Republic of Korea (ROK).<sup>164</sup> The CBRN organizations that support this pledge

---

<sup>162</sup>Willard, "United States Pacific Command Strategic Guidance 2012," 1.

<sup>163</sup>Merriam-Webster, "Merriam-Webster Dictionary," Encyclopedia Britannica Company, under "Assurance," <http://www.merriam-webster.com/dictionary/assurance> (accessed March 18, 2013).

<sup>164</sup>Kiley and Szechenyi, *U.S. Force Posture Strategy in the Asia Pacific Region: An*

currently consist of only one BN, a TE company, and a hazardous response company.<sup>165</sup> In a force dedicated to the defense of a regional partner against an enemy with the most aggressive WMD designs in the region, this seems a weak commitment at best.

With respect to enhancing alliances and partnerships in order to build capacity over the full spectrum of military activities, former Chairman of the Joint Chiefs of Staff Admiral M. G. Mullen interpreted “enhancement to mean leveraging military capabilities and forward presence to help other nations achieve security goals that can advance common interests.”<sup>166</sup> Within the Asia-Pacific region, supporting and emphasizing a relationship with the Association of Southeast Asian Nations (ASEAN) and other multilateral forums serves as an example of enhancement. ASEAN seeks to promote political and economic cooperation and regional stability throughout the region. In 2011, PACOM deployed a liaison officer to ASEAN for the dual purpose of encouraging information sharing with DOD on multi-national security programs in Southeast Asia, and encouraging deepening and sustained engagement in ASEAN defense-related dialogue.<sup>167</sup>

Simply put, the liaison provides ASEAN reach-back capability to USPACOM in order to collaborate and directly address matters of U.S. national security interests. This runs parallel to a 2011 American agreement to provide reach-back capability through the NATO Joint CBRN Defense COE for current and future NATO CBRN operations and training. Both the assignment of the liaison officer and the agreement enhance America’s alliances and partnerships in the

---

*Independent Assessment*, 51, 53, 55, 57.

<sup>165</sup>Damon M. Yourchism, e-mail message sent to author with attachment titled "CBRN Regiment 2020 and Beyond", March 30, 2013.

<sup>166</sup>Mullen, "2011 the National Military Strategy of the United States of America: Redefining America's Military Leadership," 1.

<sup>167</sup>Department of State, "U.S. Institutional Support for ASEAN," U.S. Department of State, under "Defense Liaison Officer," <http://www.state.gov/r/pa/prs/ps/2012/11/200825.htm> (accessed March 18, 2013).

region by establishing a strong bond with ASEAN. This strengthens regional expectations that the United States will provide capabilities support in order to build capacity over the full spectrum of military activities in the Asia-Pacific Region. For America's words to match its deeds, the CBRN forces in the region must possess the forces and capabilities necessary to mitigate the risk posed by the many actors with a WMD program or the goal of creating one. Currently, CBRN forces in USPACOM do not appear adequate to meet this requirement.

## CONCLUSION

The beginning of the paper states "Army force reduction planners have come to the flawed conclusion that the Active Component Chemical Corps does not need a robust CBRN capability, and therefore represents an acceptable area where the force can assume risk." The three cases studies validate this statement and highlight concerns planners should consider when recommending force reductions. Considerations include NSS guidance, DOD's budget and priorities, and DA's ability to projection future capabilities. Moreover, these considerations identify a problem with the current projected reductions in CBRN capabilities. These reductions have the potential to create unacceptable long-term national security vulnerabilities.

Now consider the question "why is this important?" For DOD it is important because since 1994 the Presidents of the United States have repetitively addressed all forms of WMD threats as a priority concern in the NSS. However, a consistent limiting factor for DOD to consider when developing its military strategy is the defense budget. The 2013 enactment of 2011 Budget Defense Act (BCA) further restricts and challenges DOD to prioritize service dollars (see Figure 4). DA's challenge therefor is to consider both strategic and operational lessons learned to predict how best to balance between DOD military priorities and NSS guidance. Bottom-line: DA must determine where to assume acceptable vulnerabilities, with possibly, reduced capabilities in

order to carry out guidance's given budgetary restrictions.<sup>168</sup> However, inaccurate analysis of lessons learned lead to false assumptions when determining acceptable vulnerabilities in capabilities. Highlighting this point is the current NSS directive to maintain defense efforts in the Middle East to sustain regional gains while rebalancing priority to the Asia Pacific region. These directive are strategically unreasonable when viewed within the context of U.S. anticipated budget cuts.

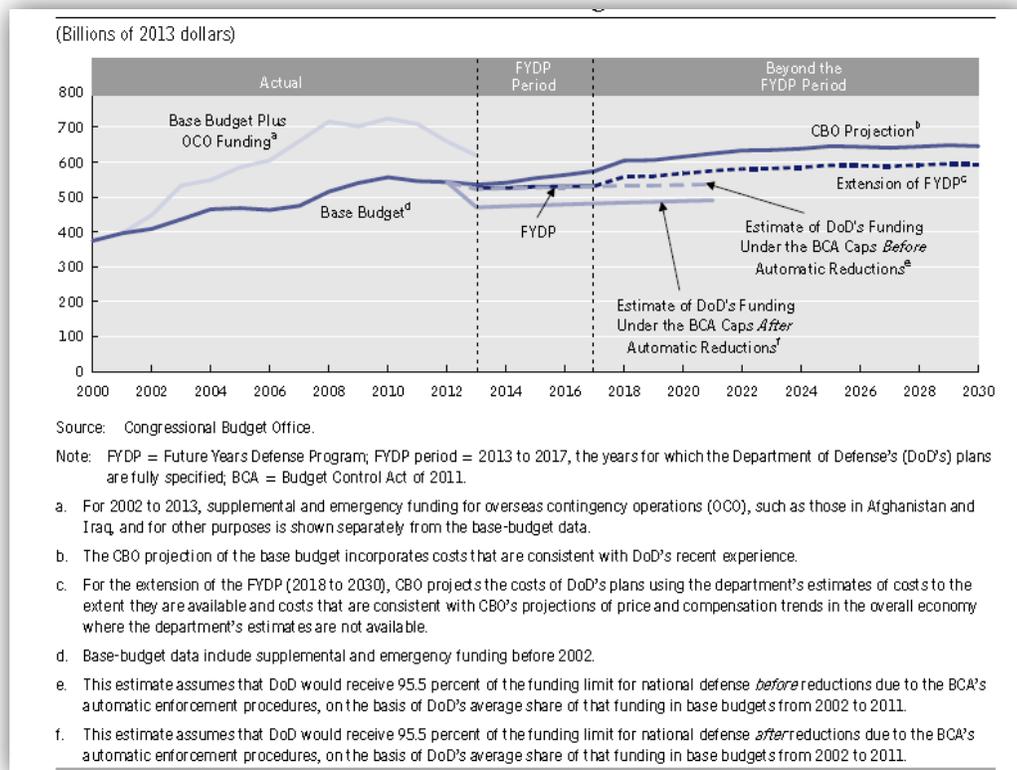


Figure 4. Costs of DOD's Plans in the Context of the BCA

Source: Graph developed by the Congressional Budget Office. This figure is in the "Long-Term

<sup>168</sup>The CBO estimates funding for national defense during the 2013–2021 periods would be about \$80 billion less than what would have been provided if appropriations increased with inflation in 2012. The BCA automatic reductions lower national defense caps on discretionary funding by an additional \$492 billion over the same period, therefore the reduction spreads evenly at nearly \$55 billion per year. <http://www.cbo.gov/sites/default/files/cbofiles/attachments/01-12-Sequestration.pdf>

*Implications of the 2013 Future Years Defense Program” on page 10. This document is accessible at [www.cbo.gov](http://www.cbo.gov).*

U.S. military operations over the past twelve years demonstrate traps planners fall into when using flawed lessons learned when recommending CBRN capability reductions. Bryan Lawson’s book *How Designers Think: The Design Process Demystified* provides awareness of two traps force reduction planners entered. First is the image trap; planners demonstrated a mismatch between intention and realization of realized CBRN threats and validated expectations to provide capabilities to address them.<sup>169</sup> OIF lessons learned identified a CBRN emerging threat as small terrorist groups with access to TICs and TIMs. This addresses a need to develop a CBRN capability to protect the force against both emerging threats and militarized CBRN weapons. Second, NSS and demonstrative action provide its allies with an expectation of capabilities support. OEF validated a U.S. CBRN expectation with the integrated support to the TFP Plan.

Last is a number trap where planners looked at a mathematical solution to plan future capabilities. The United States military rebalancing to the Asian-Pacific highlights the vulnerabilities created at the tactical and operational level by removing CBRN specialist from combat arms companies. This decision hinged on a flawed OIF CBRN threat assessment and budget constrains necessitating a force reduction. Summarized, cut CBRN force and mitigate this loss through CBRN Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) force design update. USACBRNS’s efforts to support DA reduction moreover, mitigate CBRN vulnerability gap was unfortunately not enough because its effectiveness directly depends on tactical level command emphasis.

---

<sup>169</sup>Bryan Lawson, *How Designers Think: The Design Process Demystified*, 4th ed. (Oxford; Massachusetts: Elsevier/Architectural, 2006), Chapter 13.

Since the reductions in CBRN capability result from flawed analysis, then what areas warrant a second review? The below are some potential areas emerging from the analysis of the case studies. They are only four areas; it is not an all-inclusive list:

1. Provide echeloned technical expertise (units and planning staffs) at the point of decision for successful CWMD operations by reinstating USACBRNS trained specialist in combat arms units at the tactical level.
2. WMD partner activities improve partner and allied capacity to combat WMD across the mission areas through military-to-military contact, burden sharing arrangements, combined military activities, and support to international activities. This could potentially influence adversary decisions through demonstration of U.S. and partner capabilities to impose cost or deny benefits of WMD development or use.
3. Provide an integrated early warning and reporting capability that queries and disseminates critical, time-sensitive CBRN defense information throughout the operational environment to enhance overall protection.
4. CBRN doctrine review addressing both CBRN emerging and realized threats and how COTS equipment integrates into the dynamic hazardous environment.

In closing, a more accurate statement for future CBRN capabilities should be that the Active Component Chemical Corps needs a CBRN capability that is postured to reduce or marginalized realized CBRN threats in order to protect the force as it executes the NSS and DOD priorities. If the force posture continues to march in current DA capabilities path, reduced CBRN capabilities have the potential to create unacceptable long-term national security vulnerabilities.

## GLOSSARY

**Abu Sayyaf Group.** The most violent of the Islamic separatist groups operating in the southern Philippines and claims to promote an independent Islamic state in western Mindanao and the Sulu Archipelago.

**CBRN Capability.** An umbrella term for USACBRNS trained personnel responsible for providing CBRN and hazardous assessments, analysis and recommendation for planning considerations, avoidance, and protection of the force, equipment, installations, and civilian population. Additionally, CBRN military or commercial off the shelf equipment capable of providing personal and equipment protection, early warning and detection, identification, decontamination, obscuration, and reconnaissance.

**CBRN Defense.** Plans and activities intended to mitigate or neutralize adverse effects on operations and personnel resulting from: the use or threatened use of chemical, biological, radiological or nuclear weapons and devices; the emergence of secondary hazards arising from counter-force targeting; or the release, or risk of release, of TIM into the environment.

**CBRN environment.** The conditions found in an area resulting from immediate or persisting effects of chemical, biological, radiological, or nuclear attacks or unintentional releases.

**CBRN hazards.** CBRN elements that could cause an adverse effect through their accidental or deliberate release, dissemination, or impacts.

**CBRN protection.** Include measures taken to keep CBRN threats and hazards from having an adverse effect on personnel, equipment, or critical assets and facilities.

**CBRN passive defense.** Measures taken to minimize or negate the vulnerability to, and effects of, CBRN attacks. This mission area focuses on maintaining the joint force's ability to continue military operations in a chemical, biological, radiological, or nuclear environment.

**Dirty bomb.** One type of a radiological dispersal device (RDD) that combines conventional explosives, such as dynamite, with radioactive material.

**Individual protective equipment.** In nuclear, biological, and chemical warfare, the personal clothing and equipment required to protect an individual from biological and chemical hazards and some nuclear effects.

**Jemaah Islamiya.** An Indonesia-based terrorist network encompassing southern Thailand, Malaysia, Singapore, Indonesia, Brunei, and the southern Philippines. JI is responsible for a series of lethal bombings targeting Western interests in Indonesia and the Philippines from 2000-2005. Since 2009, JI splinter groups have become exceedingly more aggressive.

**Operational approach.** A description of the broad actions the force must take to transform current conditions into those desired at end state.

**Protection.** Preservation of the effectiveness and survivability of mission-related military and nonmilitary personnel, equipment, facilities, information, and infrastructure deployed or located within or outside the boundaries of a given operational area.

**Protection warfighting function.** The related tasks and systems that preserve the force so the commander can apply maximum combat power to accomplish the mission.

**Toxic industrial chemical.** Any chemical manufactured, used, transported, or stored by industrial, medical, or commercial processes. For example: pesticides, petrochemicals, fertilizers, corrosives, poisons, etc.

**Toxic industrial material.** Any toxic industrial material manufactured, stored, transported, or used in industrial or commercial processes. It includes toxic industrial chemicals, toxic industrial radiological, and toxic industrial biological.

**WMD.** A CBRN weapons or devices capable of a high order of destruction WMD and/or causing mass casualties and exclude the means of transporting or propelling the weapon where such means is a separable and divisible part from the weapon.

**WMD elimination.** Include actions undertaken in a hostile or uncertain environment to systematically locate, characterize, secure, and disable, or destroy weapons of mass destruction programs and related capabilities.

## BIBLIOGRAPHY

- 20th SUPCOM CBRNE. "Command Overview Joint Task Force Elimination." edited by Tammy Alatorre. Maryland: 20th SUPCOM CBRNE, 2012.
- 20th SUPCOM CBRNE Operations. "US Army 20th Support Command." 20th SUPCOM CBRNE. <http://www.cbrne.army.mil/> (accessed November 20, 2012).
- 48th Chemical Brigade. "48th Chemical Brigade History." 20th SUPCOM CBRNE. <http://www.hood.army.mil/48chem/UnitHistory.html> (accessed November 25, 2012).
- 99th Congress. "Goldwater-Nichols Department of Defense Reorganization Act of 1986." Library of Congress. <https://digitalndulibrary.ndu.edu/cdm4/document.php?CISOROOT=/goldwater&CISOPTR=956&CISOSHOW=869> (accessed January 25 2013).
- Ackerman, Gary and Jeremy Tamsett. *Jihadists and Weapons of Mass Destruction*. Boca Raton: CRC Press, 2009.
- Army Force Management Support Agency. "Force Management Systems Web Site." Department of the Army. <https://webtaads.belvoir.army.mil/unprotected/splash/> (accessed August 20, 2012).
- Assistant Secretary of Defense, Chemical and Biological Defense Program. "Department of Defense Fiscal Year (FY) 2013 President's Budget Submission: Chemical and Biological Defense Program Justification Book Procurement, Defense-Wide." Department of Defense. [http://comptroller.defense.gov/defbudget/fy2013/budget\\_justification/pdfs/02\\_Procurement/Chemical\\_and\\_Biological\\_Defense\\_Program\\_PB\\_2013.pdf](http://comptroller.defense.gov/defbudget/fy2013/budget_justification/pdfs/02_Procurement/Chemical_and_Biological_Defense_Program_PB_2013.pdf) (accessed March 01, 2013).
- AUSA Institute of Land Warfare. "Quadrennial Defense Review: From 1997 to 2001." United States Army's Institute of Land Warfare, <http://www.ausa.org/SiteCollectionDocuments/ILW%20Web-ExclusivePubs/Defense%20Reports/DR00-1.pdf> (accessed November 01, 2012).
- Belkin, Paul. *NATO in Afghanistan: A Test of the Transatlantic Alliance*. Washington, DC: Congressional Research Service, 2009. report, RL33627.
- Bialos, Jeffrey P. and Stuart L. Koehl. *The NATO Response Force: Facilitating Coalition Warfare through Technology Transfer and Information Sharing*. Washington, DC: National Defense University 2005. report.
- Biddle, Stephen, Laurie Garrett, James M. Lindsay, Steward M. Patrick, Adam Segal, Steven Simon and Paul B. Stares. "Obama's NSS: Promise and Pitfalls." Council on Foreign Relations, [http://www.cfr.org/defensehomeland-security/obamas-nss-promise-pitfalls/p22240#expert\\_roundup\\_author\\_7297](http://www.cfr.org/defensehomeland-security/obamas-nss-promise-pitfalls/p22240#expert_roundup_author_7297) (accessed November 10, 2012).
- Blix, Hans. *Disarming Iraq*. 1st ed. New York: Pantheon Books, 2004.

- Bureau of Counterterrorism. "Chapter 4: The Global Challenge of Chemical, Biological, Radiological, and Nuclear (CBRN) Terrorism." Department of State. <http://www.state.gov/j/ct/rls/crt/2011/195548.htm> (accessed January 01, 2013).
- Bush, George H. W. "National Security Strategy of the United States." Department of Defense. [http://bushlibrary.tamu.edu/research/pdfs/national\\_security\\_strategy\\_90.pdf](http://bushlibrary.tamu.edu/research/pdfs/national_security_strategy_90.pdf) (accessed November 02, 2012).
- Bush, George W. "2002 National Strategy to Combat Weapons of Mass Destruction." Department of State. [www.state.gov/documents/organization/16092.pdf](http://www.state.gov/documents/organization/16092.pdf) (accessed March 25, 2013).
- , George W. "George W. Bush Makes "Axis of Evil" Speech." speech, Washington, DC, January 29, 2002.
- , George W. "National Security Presidential Directive-17." FAS. <http://www.fas.org/irp/offdocs/nspd/nspd-17.html> (accessed November 20, 2012).
- , George W. "The National Security Strategy 2002." Department of Defense. <http://georgewbush-whitehouse.archives.gov/nsc/nss/2002/> (accessed November 10, 2012).
- , George W. "The National Security Strategy of the United States of America 2006." Department of Defense. <http://www.dami.army.pentagon.mil/site/dig/documents/NationalSecurityStrategy-MAR06.pdf> (accessed November 02, 2012).
- Casey, Jr. George W. and Pete Geren. "Army Posture Statement 2009." Headquarters Department of the Army. [http://www.army.mil/aps/09/information\\_papers/combating\\_weapons\\_mass\\_destruction.html](http://www.army.mil/aps/09/information_papers/combating_weapons_mass_destruction.html) (accessed May 07, 2012).
- Center for Army Lessons Learned. "Center of Army Lessons Learned Mission." Combined Arms Center. <http://usacac.army.mil/cac2/call/mission.asp> (accessed November 13, 2012).
- Christoff, Joseph A. "Weapons of Mass Destruction: Defense Threat Reduction Agency Addresses Broad Range of Threats, but Performance Reporting Can Be Improved, GAO-04-330." United States General Accounting Office. <http://purl.access.gpo.gov/GPO/LPS45181> (accessed January 05, 2013).
- Cohen, William S. "1997 Report of the Quadrennial Defense Review." Department of Defense. <http://www.isn.ethz.ch/isn/Digital-Library/Publications/Detail/?ots783=0c54e3b3-1e9c-be1e-2c24-a6a8c7060233&lng=en&id=32542> (accessed March 20, 2013).
- Commandant United States Army CBRN School. "CBRN Mission and Vision." USACBRNS, <http://www.wood.army.mil/newweb/chemical/index.htm> (accessed September 02, 2012).
- Commanders, MACOMs, Technical Team Reviews. "Force Protection." edited by Tammy Alatorre. Kansas: Center for Army Lessons Learned, 2013.

- Counterproliferation Program Review Committee. "Report on Activities and Programs for Countering Proliferation and NBC Terrorism." Department of Defense. <http://www.fas.org/irp/threat/nbcterror2011.pdf> (accessed January 01, 2013).
- Crow, Thomas. "Historical Force Structure." edited by Tammy Alatorre. Missouri: USACBRNS, 2012.
- Daniel, Lisa. "Asia-Pacific Shift Will Improve Relations, Commander Says." *American Forces Press Service* (February 2012). <http://www.defense.gov/news/newsarticle.aspx?id=67360> (accessed March 11, 2013).
- Department of Defense. "Department of Defense Directive, Roles and Responsibilities Associated with the Chemical and Biological Defense Program (CBDP): Number 5160.05E." Department of Defense. <http://www.dtic.mil/whs/directives/corres/pdf/516005p.pdf> (accessed November 10, 2012).
- . "Joint Publication 3-40, Combating Weapons of Mass Destruction." Headquarters Department of Defense. [http://www.dtic.mil/doctrine/new\\_pubs/jointpub\\_operations.htm](http://www.dtic.mil/doctrine/new_pubs/jointpub_operations.htm) (accessed November 02, 2012).
- . *Military Construction Program FY 2011 Budget: North Atlantic Treaty Organization Security Investment Program*. Virginia: Department of Defense, 2010. justification.
- . "Joint Publications 3-0, Joint Operations." Headquarters Department of Defense. [http://www.dtic.mil/doctrine/new\\_pubs/jointpub\\_operations.htm](http://www.dtic.mil/doctrine/new_pubs/jointpub_operations.htm) (accessed October 15, 2012).
- Department of State. "U.S. Institutional Support for ASEAN." U.S. Department of State. <http://www.state.gov/r/pa/prs/ps/2012/11/200825.htm> (accessed March 18, 2013).
- Department of the Army. "Field Manul 1, the Army." Headquarters Department of the Army. <http://www.army.mil/fm1/presentation.html> (accessed January 26, 2013).
- . "Technical Escort Battalion Operations, FM 3-11.20 (FM 9-20)." Headquarters Department of the Army. [https://armypubs.us.army.mil/doctrine/DR\\_pubs/dr\\_c/pdf/fm3\\_11x20.pdf](https://armypubs.us.army.mil/doctrine/DR_pubs/dr_c/pdf/fm3_11x20.pdf) (accessed December 30, 2012).
- . "Army Doctrine Reference Publication 3-37, Protection." Headquarters Department of the Army. <http://usacac.army.mil/cac2/MCCOE/Doctrine2015Tables.asp> (accessed October 16, 2012).
- Deputy Chief of Staff G-8. "Army Equipment Modernization Plan 2013." Department of Defense. [http://www.g8.army.mil/pdf/AEMP2013\\_lq.pdf](http://www.g8.army.mil/pdf/AEMP2013_lq.pdf) (accessed January 26, 2013).
- Director of Chemical Biological Defense Program. "Fiscal Year (FY) 2012 Budget Estimates." Department of Defense. [http://comptroller.defense.gov/defbudget/fy2012/budget\\_justification/pdfs/02\\_Procurement/CBDP\\_PB12\\_PDW\\_Final.pdf](http://comptroller.defense.gov/defbudget/fy2012/budget_justification/pdfs/02_Procurement/CBDP_PB12_PDW_Final.pdf) (accessed February 04, 2013).

- Directorate of Intelligence. "Terrorist CBRN: Materials and Effects." Central Intelligence Agency. [https://www.cia.gov/library/reports/general-reports-1/terrorist\\_cbrn/terrorist\\_CBRN.htm](https://www.cia.gov/library/reports/general-reports-1/terrorist_cbrn/terrorist_CBRN.htm) (accessed November 01, 2012).
- Donilon, Tom. "The United States and the Asia-Pacific in 2013." address, New York, March 11, 2013.
- Epotilo, William Joseph. "25th Infantry Division CBRN Section, Operation Iraqi Freedom 09-11: "Tradition" Versus "Reality"." edited by Tammy Alatorre. Missouri: Army Chemical Review, 2013.
- Federation of American Scientist. "States Possessing, Pursuing or Capable of Acquiring Weapons of Mass Destruction." FAS. [http://www.fas.org/irp/threat/wmd\\_state.htm](http://www.fas.org/irp/threat/wmd_state.htm) (accessed March 15, 2013).
- Feickert, Andrew. *U.S. And Coalition Military Operations in Afghanistan: Issues for Congress*. Washington, DC: Congressional Research Service, 2006. report, RL33503.
- Gates, Robert M. "Nuclear Posture Review Report 2010." Department of Defense. <http://www.defense.gov/npr/docs/2010%20Nuclear%20Posture%20Review%20Report.pdf> (accessed November 22, 2012).
- , Robert M. "Quadrennial Defense Review Report 2010." Department of Defense. [http://www.defense.gov/qdr/images/QDR\\_as\\_of\\_12Feb10\\_1000.pdf](http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf) (accessed November 02, 2012).
- Gilliam, Ronald D. "Task Force Ironhorse (TF IH) Operationa Iraqi Freedom (OIF) Phase III/IV NBC AAR." edited by Tammy Alatorre. Iraq: 4th Infantry Division, 2013.
- Golan-Vilella, Robert, Michealle Marchesano and Sarah Williams. "The 2010 Nuclear Security Summit: A Status Update." Arms Control Association [http://www.armscontrol.org/system/files/Status\\_Report\\_April\\_11\\_2011\\_WEB.pdf](http://www.armscontrol.org/system/files/Status_Report_April_11_2011_WEB.pdf) (accessed December 25, 2012).
- Hallenberg, Jan and Håkan Karlsson. *The Iraq War: European Perspectives on Politics, Strategy and Operations* Contemporary Security Studies. London; New York: Routledge, 2005.
- Headquarters United States Central Command. "News Release." edited by Tammy Alatorre. Florida: CENTCOM, 2013.
- Heads of State and Government. "2002 Prague Summit Declaration " North Atlantic Treaty Organization. <http://www.nato.int/docu/pr/2002/p02-127e.htm> (accessed January 15, 2013).
- International Security Assistance Force. "About ISAF: History." ISAF. <http://www.isaf.nato.int/history.html> (accessed March 28, 2013).
- Iraq Survey Group. "Comprehensive Report of the Special Advisory to the Director of Central Intelligence on Iraq's WMD." Iraq Survey Group. [https://www.cia.gov/library/reports/general-reports-1/iraq\\_wmd\\_2004/chap5.html](https://www.cia.gov/library/reports/general-reports-1/iraq_wmd_2004/chap5.html) (accessed December 31, 2012).

- Joint CBRN Defence Centre of Excellence. "The Mission of the JCBRN Defense COE." JCBRN Defence COE. [http://jcbrncoe.cz/joomla/index.php?option=com\\_content&view=article&id=51&Itemid=64](http://jcbrncoe.cz/joomla/index.php?option=com_content&view=article&id=51&Itemid=64) (accessed March 28, 2013).
- . "History of JCBRN Defense COE." Joint CBRN Center of Excellence. [http://jcbrncoe.cz/joomla/index.php?option=com\\_content&view=category&layout=blog&id=35&Itemid=60](http://jcbrncoe.cz/joomla/index.php?option=com_content&view=category&layout=blog&id=35&Itemid=60) (accessed March 08, 2013).
- Jones, James. "DOD News Briefing with General Jones from the Pentagon." address, Virginia, August 17, 2006.
- Kiley, Gregory T. and Nicholas F. Szechenyi. *U.S. Force Posture Strategy in the Asia Pacific Region: An Independent Assessment*. Washington, DC: Center for Strategic and International Studies, 2012. study.
- Lawrence, Chris. "Chemical Weapons Discovered in Iraq." *Outside the Beltway* (June 2006). [http://www.outsidethebeltway.com/chemical\\_weapons\\_discovered\\_in\\_iraq/](http://www.outsidethebeltway.com/chemical_weapons_discovered_in_iraq/) (accessed January 10, 2013).
- Lawson, Bryan. *How Designers Think: The Design Process Demystified*. 4th ed. Oxford; Massachusetts: Elsevier/Architectural, 2006.
- Lee, Mark A. "Task Force Ironhorse NBC AAR." edited by Tammy Alatorre. Texas: 4th Infantry Division, 2013.
- Lofy, Pete. "Managing Sensitive Site Exploitation-Notes from Operation Iraqi Freedom." edited by Tammy Alatorre. Missouri: Chemical Review, 2013.
- Lynch, Brian. "Task Force Environmental Cleanup." edited by Tammy Alatorre. Kentucky: 101st Airborne Division, 2003.
- Mauroni, Albert J. *Where Are the WMDs? The Reality of Chem-Bio Threats on the Home Front and the Battlefield*. Maryland: Naval Institute Press, 2006.
- , Albert J. "The U.S. Army Chemical Corps: Past, Present and Future." National Museum: United States Army. <https://armyhistory.org/09/the-u-s-army-chemical-corps/> (accessed November 10, 2012).
- Merriam-Webster. "Merriam-Webster Dictionary." Encyclopedia Britannica Company. <http://www.merriam-webster.com/dictionary/assurance> (accessed March 18, 2013).
- Mintzberg, Henry. *The Rise and Fall of Strategic Planning: Reconceiving Roles for Planning, Plans, Planners*. Toronto; New York: Free Press; Maxwell MacMillan Canada, 1994.
- Mullen, Michael G. "2011 the National Military Strategy of the United States of America: Redefining America's Military Leadership." Department of Defense. [http://www.jcs.mil/content/files/2011-02/020811084800\\_2011\\_NMS\\_-\\_08\\_FEB\\_2011.pdf](http://www.jcs.mil/content/files/2011-02/020811084800_2011_NMS_-_08_FEB_2011.pdf) (accessed February 05, 2013).

- Multi-National Corps-Iraq CBRN. "Fielding of Chemical, Biological, Radiological, and Nuclear Defense (CBRND) Equipment and CBRND Preparation." edited by Tammy Alatorre. Iraq: Multi-National Corps-Iraq, 2013.
- National Counterterrorism Center. "Counterterrorism 2013 Calendar: Abu Sayyaf Group (ASG)." U.S. National Counterterrorism Center. <http://www.nctc.gov/site/groups/asg.html> (accessed March 16, 2013).
- . "Counterterrorism 2013 Calendar: Jemaah Islamiya (JI)." U.S. Counterterrorism Center. <http://www.nctc.gov/site/groups/ji.html> (accessed March 16, 2013).
- NATO Standardization Agency. "Allied Joint Doctrine for Force Protection AJP- 3.14." North Atlantic Treaty Organization. <http://engineers.ihs.com/document/abstract/HFCJCCAAAAAAAAAAAA> (accessed March 10, 2013).
- . "Allied Joint Doctrine for Chemical, Biological, Radiological, and Nuclear Defence AJP-3.8(a), Edition A. Version 1." North Atlantic Treaty Organization. <http://engineers.ihs.com/document/abstract/JBOZEBAAAAAAAAAAAA> (accessed March 01, 2013).
- NMC-I CBRN Office. "Operation Dragon Den Opsum." edited by Tammy Alatorre. Iraq: NMC-I CBRN Office, 2013.
- North Atlantic Treaty Organization. "The NATO Response Force: At the Center of NATO Transformation." NATO. [http://www.nato.int/cps/en/natolive/topics\\_49755.htm](http://www.nato.int/cps/en/natolive/topics_49755.htm) (accessed March 28, 2013).
- . "Prague Summit 2002: Selected Documents and Statements." NATO. <http://www.nato.int/docu/0211prague/speeches-e.pdf> (accessed January 15, 2013).
- . "NATO Review: Istanbul Summit Special 2004." NATO. <http://www.nato.int/docu/review/2004/istanbul/2004-istanbul-e.pdf> (accessed January 15, 2013).
- . "NATO's Comprehensive, Strategic-Level Policy for Preventing the Proliferation of Weapons of Mass Destruction (WMD) and Defending against Chemical, Biological, Radiological and Nuclear (CBRN) Threats." NATO. [http://www.nato.int/cps/en/natolive/official\\_texts\\_57218.htm](http://www.nato.int/cps/en/natolive/official_texts_57218.htm) (accessed March 05, 2013).
- . "NATO 2020: Assured Security; Dynamic Engagement. Analysis and Recommendations of the Group of Experts on a New Strategic Concept for NATO." NATO. [http://www.nato.int/cps/en/natolive/official\\_texts\\_63654.htm?selectedLocale=en](http://www.nato.int/cps/en/natolive/official_texts_63654.htm?selectedLocale=en) (accessed January 01, 2013).
- . "Combined Joint Chemical, Biological, Radiological and Nuclear Defense Task Force: The Alliance's Multinational CBRN Defence Capability." NATO. [http://www.nato.int/cps/en/natolive/topics\\_49156.htm](http://www.nato.int/cps/en/natolive/topics_49156.htm) (accessed November 20, 2012).
- . *Allied Joint Doctrine for Chemical, Biological, Radiological and Nuclear Defence, Edition 4*, STANAG 2451, Belgium NATO Standardization Agency, 2012.

- . "A Short History of NATO." NATO. <http://www.nato.int/history/nato-history.html> (accessed January 13, 2013).
- Obama, Barack. "National Security Strategy 2010." Department of Defense. [http://www.whitehouse.gov/sites/default/files/rss\\_viewer/national\\_security\\_strategy.pdf](http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf) (accessed October 15, 2012).
- , Barack. "Remarks by the President on the Defense Strategic Review." address, Virginia, December 25, 2012.
- , Barack. "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense." Headquarters Department of Defense. [http://www.defense.gov/news/Defense\\_Strategic\\_Guidance.pdf](http://www.defense.gov/news/Defense_Strategic_Guidance.pdf) (accessed October 15, 2012).
- , Barack. "Statement by the President on North Korean Announcement of Nuclear Test." press release, Washington, DC, February 12, 2013.
- Odierno, Raymond T. and John M. McHugh. "Army Strategic Planning Guidance 2012." Department of the Army. <http://usarmy.vo.llnwd.net/e2/c/downloads/243816.pdf> (accessed November 10, 2012).
- Odierno, Raymond T. and John M. McHugh. "A Statement of the Posture of the United States Army 2012." Department of Defense. [https://secureweb2.hqda.pentagon.mil/VDAS\\_ArmyPostureStatement/2012/APS2012.pdf](https://secureweb2.hqda.pentagon.mil/VDAS_ArmyPostureStatement/2012/APS2012.pdf) (accessed November 02, 2012).
- Panetta, Leon E. "Defense Budget Priorities and Choice." Department of Defense. [http://www.defense.gov/news/Defense\\_Budget\\_Priorities.pdf](http://www.defense.gov/news/Defense_Budget_Priorities.pdf) (accessed November 20, 2012).
- , Leon E. "Munich Security Conference Delivery." speech, Munich, February 04, 2012.
- , Leon E. "Remarks by Secretary Panetta at King's College." speech, London, January 18, 2013.
- Parker, Jr. Gerald W. "Chemical and Biological Defense Program (CBDP) Advance Planning Briefing for Industry (APBI)." Headquarters Department of Defense. <http://www.acq.osd.mil/cp/cbd.html> (accessed November 10, 2012).
- . Gerald W. "Department of Defense Chemical and Biological Defense Program (CBDP)." Department of Defense. <http://www.dtic.mil/ndia/2012CBRN/Parker.pdf> (accessed December 25, 2012).
- Perl, Raphael. *Terrorism, the Future, and U.S. Foreign Policy*. Washington, DC: David D. Acker Library and Knowledge Respiratory Defense Acquisition, 2003. report, IB95112.
- Powell, Colin L. "Colin Powell's February 5, 2003 Address to the United Nations Security Council." Wikisource. [http://en.wikisource.org/wiki/Colin\\_Powell%27s\\_February\\_5,\\_2003\\_address\\_to\\_The\\_United\\_Nations\\_Security\\_Council](http://en.wikisource.org/wiki/Colin_Powell%27s_February_5,_2003_address_to_The_United_Nations_Security_Council) (accessed November 27, 2012).

- Roller, Michael. "Smoke Platoon Makes History." edited by Tammy Alatorre. Chemical Enlisted Newsletter: 1st Infantry Division Public Affairs Office, 2013.
- Rumsfeld, Donald H. "Nuclear Posture Review Report 2001." Department of Defense. <http://www.fas.org/sgp/news/2002/01/npr-foreword.html> (accessed November 05, 2012).
- , Donald H. "Quadrennial Defense Review Report 2001." Department of Defense. <http://www.defense.gov/pubs/pdfs/qdr2001.pdf> (accessed November 01, 2012).
- Rynning, Sten. *NATO Renewed: The Power and Purpose of Transatlantic Cooperation*. Virginia: Palgrave MacMillan, 2005.
- Salazar-Torreon, Barbara. *U.S. Periods of War and Dates of Current Conflicts*. Washington, DC: Congressional Research Service, 2012. report, RS21405.
- Sanok, Stephanie and Nathan Freier. "The End of Operations Iraqi Freedom and DOD's Future in Iraq." Center for Strategic and International Studies. <http://csis.org/publication/end-operation-iraqi-freedom-and-dods-future-iraq> (accessed December 30, 2012).
- Shea, Dana A. and Frank Gottron. *Small-Scale Terrorist Attacks Using Chemical and Biological Agents: An Assessment Framework and Preliminary Comparisons*. Washington, DC: Congressional Research Service, 2004. report, RL32391.
- Silke, Andrew. *Research on Terrorism: Trends, Achievements and Failure*. London; Oregon: Frank Cass, 2004.
- Smith, Leslie C. "20th SUPCOM CBRNE Mission." 20th SUPCOM CBRNE. <http://www.cbrne.army.mil/aboutus.htm> (accessed November 23, 2012).
- Snider, Don M. *The National Security Strategy: Documenting Strategic Vision Second Edition* Strategic Studies Institute. Pennsylvania: U.S. Army War College, 1995.
- Tanner, Stephen. *Afghanistan: A Military History from Alexander the Great to the War against the Taliban*. Revised, 1st ed. Massachusetts: Da Capo Press, 2009.
- Terzuolo, Eric R. *NATO and Weapons of Mass Destruction: Regional Alliance, Global Threats* Contemporary Security Studies. London: Routledge, 2006.
- Toukan, Abdullah and Anthony Cordesman. *Terrorism and WMD: The Link with the War in Afghanistan*. Washington, DC: Center for Strategic and International Studies, 2009. study.
- U.S. 99th Congress. "Goldwater-Nichols Department of Defense Reorganization Act." <http://www.jcs.mil/page.aspx?id=29> (accessed September 25 2012).
- United States Army War College. "National Security Policy and Strategy." Army War College. <http://www.carlisle.army.mil/usawc/dnss/nsps/nsps.htm> (accessed November 01, 2012).

- United States Department of Justice. "Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders." Department of Justice. <https://www.ncjrs.gov/pdffiles1/nij/184449.pdf> (accessed December 31, 2012).
- USACBRNS. "Multi-Service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Aspects of Command and Control." USACBRNS. [https://itsweb.us.army.mil/armypubs.asp?doctrine/DR\\_pubs/dr\\_aa/pdf/attp3\\_11x36.pdf](https://itsweb.us.army.mil/armypubs.asp?doctrine/DR_pubs/dr_aa/pdf/attp3_11x36.pdf) (accessed April 01, 2013).
- . "U.S. Army Chemical Corps History." U.S. Army Chemical Corps Museum. <http://www.wood.army.mil/cbrns/images/History.doc> (accessed November 01, 2012).
- V Corps CBRN Section. "V Corps CBRN Section's Lessons Learned." edited by Tammy Alatorre. Germany: V Corps, 2013.
- Visser, Phil. "Chemical Corps Goals and Issues." USACBRNS. <https://www.us.army.mil/suite/designer> (accessed November 01, 2012).
- , Phil. "Chemical Corps Regimental Campaign Plan Fiscal Years 2013-14." USACBRNS. <https://www.us.army.mil/suite/designer> (accessed November 27, 2012).
- Wehling, Fred. "Deterring CBRN Terrorism: Lessons from Iraq," Monterey Institute. Youtube video, [http://www.youtube.com/watch?v=9\\_i7mcyxc2c](http://www.youtube.com/watch?v=9_i7mcyxc2c) (accessed January 18, 2013).
- Wilcox, David L. "Chemical Corps: Break Glass in Case of War." master's thesis, School for Advance Military Studies, 1997.
- Willard, Robert F. "United States Pacific Command Strategic Guidance 2012." USPCOM. <http://www.pacom.mil/about-uspacom/strategic-guidance.shtml> (accessed March 12, 2013).
- XVIII Corps CBRNE Section. "CBRNE Non-Traditional Tasks Lessons Learned." edited by Tammy Alatorre. North Carolina: XVIII Airborne Corps, 2013.
- Yale Law School. "The Avalon Project: Documents in Law, History and Diplomacy: NATO Treaty of April 4, 1949." Lillian Goldman Law Library. [http://avalon.law.yale.edu/20th\\_century/nato.asp#art4](http://avalon.law.yale.edu/20th_century/nato.asp#art4) (accessed January 13, 2013).
- Yourchism, Damon M. "CBRN Force Design Update 2013." edited by Tammy Alatorre. Missouri: USACBRNS, 2013.
- , Damon M. "CBRN Regiment 2020 and Beyond." edited by Tammy Alatorre. Missouri: USACBRNS, 2013.