STRATEGY RESEARCH PROJECT

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TOWARDS A COHERENT STRATEGY FOR COMBATING BIOLOGICAL WEAPONS OF MASS DESTRUCTION

BY

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USAWC STRATEGY RESEARCH PROJECT

Towards A Coherent Strategy For Combating Biological Weapons Of Mass Destruction

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ABSTRACT

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The proliferation of *Biological Weapons of Mass Destruction* represents a major challenge to our National Security. Biological warfare is one of the oldest forms of warfare: It existed prior to the discovery of bacteria and germ theory. The conventional military superiority of the United States, the recent huge advances in biotechnology and genetic engineering, and the international uncertainty of ill-defined future threats, have allowed this type of asymmetrical warfare to become more probable as a weapon of choice by adversary nations, groups, and individuals. There are no trends which can lead us to believe that biological weapons will not be used in a future battlespace. On the contrary, all indications reveal that biological agent use will become a standard method of warfare, an expected condition of war. Yet, the United States has failed to develop a coherent strategy to combat this known threat. The necessary Department of Defense joint doctrine for the defense against biological agents on a battlefield has not been written. The time has come to brake the paradigms in United States' strategy; to correct the shortfalls in the defense against biological agent use; and to ensure that the military will operate successfully in the biologically contaminated environment of the future. The United States military must take a proactive approach to doctrine verses the traditional impetus for doctrinal development as a reaction to military disaster.

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INTRODUCTION

"If we do not stem the proliferation of the world's deadliest weapons, no democracy can feel secure ..... One of our most urgent priorities must be attacking the proliferation of weapons of mass destruction, whether nuclear, chemical or biological; and the ballistic missiles that can rain them down on populations hundreds of miles away."[1]

President William J. Clinton
Address to the United Nations
27 September 1993

"The proliferation of weapons of mass destruction (WMD) represents a major challenge to our National Security."[2] These weapons can transform the United States (U.S.), almost instantly, into a third world nation: a nation that would be unprotected, ill, vulnerable to exploitation, and at the mercy and will of many adversaries. WMD can convert the U.S. from a super-power to a *super-powerless* nation; where freedom and liberty become words of the past. "Combating WMD through nonproliferation and counterproliferation initiatives should be our only priority, must be our only priority, and in truth, is our only priority."[3]

The U.S. has addressed nuclear and chemical WMD by developing a strategy that continues to be effective in countering these real threats. However, the same cannot be said for biological weapons. Biological warfare (BW) weapons are distinctly different than other types of WMD. The armed forces of the U.S. are not prepared to operate effectively in biological warfare environments. Shortfalls exist at all levels; tactical, operational, and strategic. Without adjusting the strategic "mindset" towards a more appropriate strategy for combating biological WMD, the U.S. will continue to remain in a reactive rather than a proactive posture. Operational and tactical success

will continue to be limited and progress towards overcoming the effects of BW agents will be hampered.

There is no escape from the current trends that indicate that biological weapons will be used on the future battlefield; and in achieving a strategic advantage for one nation over another to enhance its vital interests. BW is becoming an expected condition in war. Whether the BW issue is considered evolutionary or revolutionary does not matter; only the result is important: The introduction and use of BW agents will occur as a standard method of prosecuting both war and operations "other-than-war". The military and National Security implications are enormous. If the U.S. cannot fight and win on a "biological battlefield", it cannot win at all!

> **"..... the biological threat has been recently singled out as the one major threat that still poses the ability for catastrophic effects on a theater-deployed force ....."[4]**
>
> **General Friel**
> **Commander (1992)**
> **US Chemical & Biological**
> **Defense Agency**

U.S. STRATEGY FOR COMBATING WMD

The current U.S. strategy for combating WMD -- nuclear, chemical and biological (NBC) -- encompasses a duel approach; *nonproliferation* and *counterproliferation*. Nonproliferation initiatives are political-diplomatic and economic policies that exert pressures to limit the proliferation of WMD. Nonproliferation is prevention; it is designed to prevent or delay proliferation. The goal is to hamper nation-states from obtaining or producing WMD; "to dissuade any potential proliferator from pursuing NBC and missile programs."[5] Methods to

promote and encourage nonproliferation strategies include; treaties, trade agreements, security assistance, arms control, export controls (including technologies), and international cooperation through the United Nations (U.N.).

Establishing international standards against the acquisition and development of WMD, however, does not guarantee success. There are clearly limitations: "... a growing number of states have rejected or manipulated the norms and associated safeguards to gain access to proscribed technologies"; and, "... a number of hostile states are actively pursuing NBC weapons."[6] A nonproliferation strategy is intended to be effective for nations that are currently devoid of WMD and whom are seeking to obtain these weapons. However, many nations that possess these weapons "pose direct threats to stability in vital regions where the U.S. has long-standing security commitments."[7] Knowing this, how does the U.S. approach nations who already possess WMD or have the technological capability to produce or obtain them?

Counterproliferation initiatives are political-diplomatic and military policies that exert pressures to thwart the use of WMD. Counterproliferation is protection; "designed to protect against the strategic, operational and tactical consequences of proliferation should prevention fail."[8] The goal is to protect nation-states from aggressor nations who may desire to use their WMD. The military plays a central role in counterproliferation: Countering WMD, a mission of the armed forces, includes deterrence, counterforce operations and both active and passive defense (see figure 1 for definitions). "Deterrence remains the first line of defense against NBC weapons."[9] However, should deterrence fail, then the ability to defend against the effects of WMD becomes the deciding factor in determining who will prevail on a battlefield.

WMD -- nuclear, chemical, biological weapons and delivery systems which cause indiscriminate, widespread destruction and casualties[10]
-- weapons that through use or the threat of use can cause large-scale shifts in objectives, phases, and courses of action[11]

Deterrence -- prevent an adversary from using a WMD without using force

Counterforce -- pre-emptive neutralization of a WMD capability using force

Active Defense -- neutralization of WMD en-route to designated targets

Passive Defense -- protection from effects of WMD already delivered

Figure 1: WMD Definitions

Nonproliferation is the primary strategy in the US for combating WMD. "Nonproliferation objectives have long been given high priority by the U.S., which has taken the lead in establishing international legal norms against the possession and the use of NBC weapons."[12] Theoretically, if the U.S. can prevent the spread of WMD, and the technologies and equipment used to produce them, then the U.S. does not have to entirely rely on the more risky counterproliferation measures. Nonproliferation efforts for BW are inherently limited because of the dual use nature of the equipment and processes. Thus, with the widespread availability of biotechnology, there is little likelihood that any strengthening of the BW Convention will limit or deter countries seeking biological weapons. This is a logical approach for nuclear and chemical WMD but only because there exists good counterproliferation capabilities for both deterrence and for operating in radioactive and chemically contaminated environments. This is not true for biological WMD: A significant shortfall exists in U.S. biological weapons defense capabilities.

Counterproliferation efforts, especially in the military, must be accelerated and become the primary strategy for countering biological WMD. Biological weapons and the technology to produce them are proliferating. "Barriers to possessing and using these weapons are actually eroding."[13] Therefore, the ability of the armed forces to operate effectively in biologically contaminated environments must be the first step to success in addressing biological weapons.

Why are biological weapons different from the other WMD? Why does the U.S. have a critical shortfall in its biological weapons defense? And, why does the U.S. need to re-focus the priorities in combating WMD? The remainder of this paper will answer these questions, depict the ends, ways and means model to describe U.S. national strategy to counter WMD, and offer some recommendations that will assure success in combating biological WMD by enabling the military to operate effectively in a biologically contaminated environment.

COMPARISONS BETWEEN TYPES OF WMD

Nuclear Weapons: Nuclear weapons (NW) are the newest of the WMD. Developed and used during WWII, NW have been the centerpiece of cold war issues over the past 50 years. Their destructive capability motivated the development of deterrent strategies, protective procedures, retaliatory capabilities, and a nuclear infrastructure of forces and equipment; all counterproliferation efforts. Nuclear materials are expensive; difficult to hide from intelligence sources and inspection teams; require extensive technologies, equipment and facilities for storage and/or production; are more easily detectable; and one can readily distinguish between an offensive and defensive weapons program. Public awareness, conclusion of the Cold War, international negotiations through the UN, the Nuclear Non-Proliferation Treaty, the Test Ban

Treaty, arms control, export controls, and economic and political pressures have all diminished the possible future use of these weapons. Seven nations have NW programs. Should nonproliferation and deterrence fail, the U.S. has a military infrastructure and a joint doctrine to counter nuclear WMD. This is what makes deterrence effective and nonproliferation a viable strategy.

Chemical Weapons: Chemical Weapons (CW), although older than nuclear weapons, are still a fairly recent modern warfare weapon. Developed in the early 1900's and used during WWI, CW became a centerpiece topic of the "inter-World War period" and for the past 80 years. The destructive nature of these weapons, although less destructive than NW, led to the development of deterrent measures, protective procedures, retaliatory capabilities, and a chemical infrastructure of forces and equipment (counterproliferation efforts). Chemical agents, although relatively inexpensive, require large quantities (metric tons) to be effective as mass destruction weapons. Huge stockpiles require large production and storage facilities that are very difficult to hide. Chemical agents and their precursors are easily detectable and an inspection team or an intelligence source can readily identify a CW program; as well as being able to distinguish between an offensive and a defensive program. Conclusion of the Cold War, public awareness, international cooperation through the UN, the Geneva Convention Protocol of 1925, political and economic pressures, and the recently negotiated CW Convention have all contributed to the diminished possibility of future use of chemical WMD. Eleven nations have CW programs. Should nonproliferation and deterrence fail, the U.S. has a military infrastructure and a joint

doctrine to counter chemical WMD without resorting to CW use. Again, this is what makes deterrence effective and nonproliferation efforts viable.

Biological Weapons: Biological weapons are the oldest of the WMD. "Biological warfare began long before the discovery of bacteria, viruses, and toxins. The earliest accounts of biological warfare (BW) are contained in the Greek, Persian and Roman literature."[14] Although used during virtually every century, biological weapons have never become a centerpiece topic until now. The emergence of biological weapons as an ideal WMD, although sadistically nefarious, has occurred due to a number of factors. They are cheap; simple to produce and store; easy to deliver anywhere either covertly or overtly; stable in many environments; extremely effective in producing mass casualties in minute quantities; and alterable via genetic engineering. Current BW agents are the product of the technological revolution: Biotechnology at its best; "dual-use" technology at its worst!

Nonproliferation efforts are, at this point in time, totally ineffective. Biological weapons can be easily hidden. Intelligence sources and inspection teams cannot distinguish an offensive from a defensive BW program, identify a BW facility, nor detect a BW agent. The technology and equipment for the production and storage of BW agents are commercially available; are identical to any biology, chemistry, or medical research laboratory; and are small enough to fit into a one-car garage. The Biological Weapons Convention is non-verifiable. The U.N. is helpless in preventing the proliferation of biological weapons. Any country that can produce vaccines or pharmaceuticals has, in essence, an offensive BW program. "Today, as many as 100

nations have the technological capability to develop a biological weapons program and more than 20 nations are actively developing offensive programs."[15]

Nonproliferation initiatives should not be the U.S. primary strategy to combat biological WMD. "The difficulty of maintaining an international control regime to check the proliferation of offensive biological warfare capability is readily apparent. Without a "smoking gun," it is virtually impossible to prove that a nation is actively engaged in an offensive, and therefore illegal, BW program."[16] A nonproliferation strategy will not work. If deterrence should fail, does the U.S. have the military counterproliferation capability, infrastructure, and joint doctrine to counter biological WMD? No! "The current NBC defense doctrine, equipment, and organizations will not carry the U.S. military into the 21st Century. There is a need to re-engineer the U.S. approach to operations in an NBC threat environment. The improvements should focus on two imperatives: maintaining operational tempo and protecting the force."[17] The inability to protect the armed forces and effectively operate in a BW environment remains a major U.S. military deficiency.

THE ENDS, WAYS AND MEANS MODEL OF U.S. STRATEGY

Countering WMD is an essential principle in U.S. National Military Strategy (NMS). "We continue efforts to prevent the use of mass destruction weapons and make preparations to operate effectively in environments marked by biological, chemical, or radioactive contamination."[18] Yet, a review of the ends, ways, and means model for our NMS towards WMD depicts a significant shortfall in implementing our military strategy. The shortfall is in the resources (the means). The

U.S. military must have the means to implement the concepts (the ways) to insure we reach our objectives (the ends) -- as depicted in the following chart:

Ends -----	Objectives ----------	Promote Stability and Thwart Aggression (by countering WMD)
Ways ----	Strategic Concepts ---	Deterrence and Fight & Win (effectively operate in a WMD environment)
Means ---	Resources ----------	Doctrine, Training, Leader Development, Structure, Equipment & Materials

Figure 2: National Military Strategy for Countering WMD

For biological WMD, the U.S. currently lacks the means to counter these weapons. There is no joint biological defense doctrine. Unlike nuclear and chemical defense, there is no organizational force structure for biological defense. In fact; the U.S. Army has tasked the Army's Chemical School as the proponency for biological defense and they have applied the "cookie-cutter" approach and adopted a strategy that mirrors the chemical defense strategy. A critical deficiency is the lack of vaccines and preventive medications to protect military forces from widely available BW agents. Another critical deficiency is the lack of a fielded detection device or detection capability. Currently, the military relies on disease surveillance for epidemics and casualty syndromes to detect if it has been contaminated with biological agents. And finally, lessons learned from the Gulf War raised serious doubts in the military's preparedness in

operating in BW environments. Revamping the entire U.S. strategic approach to combating biological WMD is the only solution that will achieve U.S. military success on the future biological battlefield.

RECOMMENDATIONS

(1) Make counterproliferation the primary U.S. strategy for combating WMD.

First and foremost, the U.S. must break the current paradigm and reverse the priorities in the Nation's strategy towards addressing biological WMD. Non-proliferation remains today the primary focus of the U.S. strategy in combating biological WMD. However, history has shown that the technologies, capabilities and methods that provide one nation with an advantage over another, whether that advantage be military or non-military, will eventually be exploited; and used to accomplish its strategic objectives. Therefore, the belief that non-proliferation will be successful is a misleading and false assumption. Non-proliferation is doomed to fail. The U.S. must place counterproliferation as the primary strategy in combating biological WMD; a reversal of the current strategy that is used for combating nuclear and chemical WMD. A new strategic model is depicted here:

Type WMD	Primary Initiative	Secondary Initiative
Biological	Counterproliferation	Nonproliferation
Chemical	Nonproliferation	Counterproliferation
Nuclear	Nonproliferation	Counterproliferation

Figure 3: New Strategic Model for Combating WMD

(2) Separate biological WMD from the other types of WMD.

The U.S. must establish the right "mind set" about biological warfare at the strategic level if it is to implement effective policies that enable military success at the operational and tactical levels. Simply stated, biological weapons are not a subset of WMD and they should not be approached as a common entity; biological agents are uniquely different than other types of WMD. The sole target and destructive effects of biological agents are on people; not buildings, infrastructure, communications equipment or territory. Whether used against a single person (biological assassination) or a group (biological mass casualties), the goal is to kill or make ill those targeted. Whatever the intent, "these weapons do not share: 1) mechanism of injury; 2) preventive measures; 3) basic science requirements; 4) sophistication; 5) or residual effect. In fact, they do not share anything except the terror aspect they impose on political leaders, populations, and perhaps armed forces in the field. Lumping all three of these weapon types and their gradation of destructive power under one title with one type of response is neither credible nor smart."[19]

On the battlefield, biological weapons are actually "weapons of mass casualties" that require a very different and unique response from that used for chemical and/or nuclear weapons use. The U.S. must approach biological warfare as a separate form of warfare and not lump it with other types of WMD. "The concept for biological defense will be different than for chemical and nuclear defense."[20] This new "mindset" is essential if the U.S. is to make progress in combating biological WMD through counterproliferation efforts; defense initiatives.

(3) Accelerate research for vaccines and pre-treatment medicines (internal protection).

Research and development for better vaccines and pre-treatment protocols (a.k.a. chemoprophylaxis) with antibiotics and other medicines must be expanded and pushed to the forefront. Personal protection via immunity and medical neutralization is the cornerstone of passive defense; and passive defense is the foundation of counterproliferation. The development of a joint immunization policy would be the first step for ensuring the protection of service members: A policy written today with today's capabilities. A joint policy would not only establish a baseline for initiating further research but would provide a template for expansion as new vaccines are developed. When individuals are given effective and Food and Drug Administration (FDA) approved vaccinations and preventive antibiotics to protect them from the death and disease associated with biological agents, then military operations can proceed unaffected by the use of these agents. These protective measures would certainly lessen the effects of the most common and most likely biological warfare agents when used against troops. Not only would the protective measures be beneficial to the U.S. military, but they could easily be, assuming no cost constraints, transferred to allies, coalition partners and civilian populations both at home and abroad. The U.S. would be essentially addressing the terrorist and "rogue-state" use of these agents in addition to the expected battlefield use. If successful, the protective capability of vaccines and pre-treatment protocols may eventually lead to the virtual obsolescence of the use of biological agents as a form of warfare; since these weapons may become ineffective because of superior passive defense capabilities.

(4) Enhance physical barriers to shield people from contamination (external protection).

The development of individual protective garments and collective protection shelters when operating in a BW environment must be accelerated: External protection is another important component of passive protection. Protective gear such as masks, garments, and shelters would filter out and shield individuals from biological agents. Since most biological warfare agents are spread via inhalation (air transfer), the mask becomes the most critical device for protecting service members. A "biological mask", if developed, would be much smaller, lighter, and simpler to use than the current chemical mask. One only needs to seal the mouth and nose with a "surgeon's mask" to virtually eliminate the inhalation of biological agent particles. A standard and routine issue of "biological masks" would not only be logical, but would be an effective way to immediately protect people against today's known agents. The protection would not only be militarily beneficial, but would benefit the non-military as well. It seems this simple, effective, and low cost item has not received the attention it deserves. Protective garment and shelter technology already exists but their incorporation into military specific equipment and uniforms is not emphasized enough. In addition, the current advancements in biotechnology and genetic engineering permits U.S. adversaries to alter biological agents so they become less vulnerable to currently used vaccines and antibiotics; the mask and other external "shields" would then become paramount to a successful passive defense.

(5) Develop rapid detection devices for area and point detection; and specific agent identification.

Equipment to detect the presence of, or the contamination with, biological warfare agents before casualties occur is an essential capability for successful military operations. A rapid

detection capability does not currently exist. The occurrence of epidemics as evidenced by developing patterns of disease and death among service members is currently the first "alarm" that a biological agent may have been used as a weapon. This delayed natural detection capability by analyzing symptoms is simply "a little too late and a dollar short": The formation of casualties and corpses is one hell of a way to determine if an enemy is using biological weapons. Although the medical community may be able to confirm that a biological agent was used and that would justifiably allow for retaliation, the military operations would have already been impacted in achieving their intended objectives. Research into the engineering of a detection capability is essential. Both area and point rapid detection, for commanders in the field, and specific agent rapid identification, to maximize the protection of troops and the treatment of casualties, is required. If the U.S. military is to manage a battlefield situation where biological WMD are at play then a timely detection capability is a necessity. It is difficult to deploy, fight, and win when the military is unable to determine the weapons being used against it.

(6) Develop military and medical decontamination capabilities.

Decontamination equipment must be developed and decontamination techniques must be published. Research and development drags in this area as well. Fumigants, such as ethylene oxide and other aerosolizable compounds, can be put into canisters in a battlefield usable form to permit rapid decontamination of surfaces and water which has become contaminated with biological agents. Neutralizers of biological toxins must also be developed in a usable form for the armed forces. Filtration capabilities already exist for individual and small unit use. Filters allow for the production of potable water when in a biologically contaminated area. Yet, the

routine incorporation into unit sets has not been initiated; although water remains a "war stopper" for conducting both war and military-operations-other-than-war (MOOTW). The ability to decontaminate, neutralize and filter-out biological substances will become even more paramount in future military operations where fresh water sources are diminishing.

(7) Teach and develop leaders at all levels about the biological battlefield.

Leader development and education about the biological battlefield should become a greater priority and must be taught routinely in the military educational system. Currently, leader ignorance about biological warfare is pervasive. Take, for example, the U.S. Army War College at Carlisle Barracks, Pennsylvania; WMD are taught during few courses and in a patchwork fashion: The contents of these lectures focuses on the general (lumped together) category of WMD. Emphasis is placed on the strategic level and is almost exclusively addressing non-proliferation, deterrence and retaliation; little is devoted to active and passive defense. And regardless of the relatively small amount of the curriculum that pertains to WMD, by far, nuclear WMD dominate the readings, the discussions, and the dialog; a negligible amount of time and effort pertains to biological warfare. I assume the same is true for all U.S. Training and Doctrine Command schools and sister service military schools at all levels. Leader development at the tactical, operational and strategic levels must become a priority if the U.S. military is to succeed, not only in today's biological agent environment, but in the biological battlefield of the future.

(8) Increase WMD training in all military units.

Training for military operations in a biologically threatened or contaminated environment should become routine from the strategic to the tactical levels. Few exercises currently incorporate biological warfare as an expected element in a particular scenario. Few plans incorporate branches and sequels in the event of a biological weapon being used during an operation. Gaming at the CINC's level, as well as at the unit training centers (JRTC, NTC, etc.), must include biological agents as an expected weapon on the battlefield. Only then can service members and units be trained to operate effectively and accomplish the mission objectives when confronted with biological warfare. Without routine and realistic training, military personnel succumb to the false assumption that biological weapons use and the defense against biological warfare is a helpless and hopeless situation. This is just not true: Reasonable measures can be taken by properly trained and equipped units to shield them from the adverse effects of biological weapons. Training also emphasizes the benefits of proper sleep, nutrition, fitness, safety measures and field sanitation techniques in making people and units less vulnerable to biological warfare agents. Combined training and exercises would also emphasize the importance of biological defense to U.S. allies and coalition partners.

(9) Publish joint doctrine on biological defense.

Develop, produce and disseminate a joint doctrine for the defense against biological warfare agents. There is no cohesive joint doctrine in existence today. This remains a significant shortfall for successful military operations when confronted with biological weapons. A joint doctrine for active and passive defense has to be developed with today's defensive capabilities and

then updated as future developments evolve. A process-action-team (PAT) should be assembled immediately with all Service representation to "hash out" a joint doctrine. The doctrine should include a comprehensive but simple approach to defensive measures such as avoidance, protection, detection, decontamination, medical management of diseased casualties and management of the deceased in a biologically contaminated environment. A comprehensive joint doctrine would overcome a major obstacle to initiating proper individual and collective training programs among all the Services.

(10) Build a biological defense Table of Organization and Equipment (TOE) structure.

Create a separate and distinct biological defense infrastructure. There is currently no military organization nor unit which specializes in biological warfare and which is integrated into tactical and operational units. Biological defense is tasked out as an additional duty to individuals who exist for other unit responsibilities; if it is tasked out at all. While nuclear and chemical warfare issues have the luxury of having forces, equipment, career fields and an integrated infrastructure designed specifically for dealing with these areas, biological warfare issues remain devoid of the same level of attention. There should be a biological warfare expert on the staff of Army Corps, Numbered Air Forces, Naval Fleets, and Marine Air-Ground Task Forces. A biological warfare response capability in each "CINCdom" should also exist. Spearhead responsibilities tasked to the Services pertaining to biological defense are being done but are not being emphasized enough and coordinated among the Services very well. Only by building an infrastructure will the required expertise become integrated into operational units. Civilian

expertise, allied nation capabilities and interagency capabilities must be leveraged and included in the infrastructure.

(11) Create a standing Joint Task Force uniquely ready to conduct counterforce operations.

Develop a unique counterforce capability. An enhanced pre-emptive neutralization of an adversaries biological weapons would not only deter the production and employment of such a weapon but would, in some cases, proactively eliminate enemy employment options. The triad of intelligence, command and control (CJCS-CINC-Interagency-Joint-Combined), and a standing rapid-response joint task force designed to operate at the strategic and operational levels should be developed and integrated into theater operations. This unit must be designed, equipped, and trained specifically for the neutralization of biological weapons of mass destruction, as well as chemical and nuclear WMD, and the destruction of delivery/launch systems prior to weapons being fired-off.

(12) Mature U.S. active defense capability.

Develop a better active defense against biological WMD. Theater Ballistic Missile Defense (TBMD) programs that are currently in development must include the capability of intercepting and destroying biological weapons while in-bound, prior to them reaching the target. Although not as ideal as a counterforce capability, and much more riskier to forces in theater, TBMD capability greatly diminishes the possibility of effecting military operations in theater. The combination of counterforce and active defense capabilities significantly limits enemy employment by making covert means his only option: This automatically reduces the payload and the

probability of success when delivered, and thus effectively reduces the viability of biological agent use. Resurfacing the strategic defense initiative (SDI) is another issue that will have to be addressed in the future as the inevitability of the evolution of biological weapons use to obtain national aims comes to fruition.

1. Make counterproliferation the primary strategy
2. Separate the types of WMD; do not lump them
3. Research newer vaccines and pre-treatment medicines
4. Enhance physical protection; biological masks
5. Engineer rapid detection devices
6. Develop field decontamination/neutralization equipment
7. Enhance leader development
8. Increase BW training and joint exercises
9. Publish joint doctrine for biological defense
10. Build a biological defense infrastructure
11. Create a standing counterforce JTF for WMD
12. Enhance active defense via SDI and/or TBMD

Figure 4: Summary of Recommendations

CONCLUSIONS

"Indeed, the proliferation of WMD -- nuclear, chemical and biological -- is one of our most troubling dangers we face."[21] The current U.S. strategy for combating WMD is a primary emphasis on nonproliferation and a secondary emphasis on counterproliferation. The policies that emanate from these initiatives are logical, realistically implemented, and achieve intended results for all types of WMD except for biological weapons. Biological warfare is so different from nuclear and chemical warfare that we must consider it a separate entity. Biological weapons should not be lumped with the other WMD because the strategic approach to combat them must

be different. Specific biological WMD initiatives and policies must be written based on a different philosophical approach than in dealing with other types of WMD. Just how important is this issue?

> **"The one that scares me to death, perhaps even more so that tactical nuclear weapons, and the one we have the least capability against is biological weapons."[22]**
>
> **General Collin Powell (1993)**

"Will there be biological warfare in the 21st century? The answer to that is almost certainly, Yes."[23] Biological weapons were used in the past; the bio-technological revolution has energized their viability; and there is no indication or reason to believe that they will not be used in the future. The unique characteristics of biological weapons make this one type of weapon the most horrifying, insidious, nefarious, evil, destructive, and deadly threat known to humanity. "The most likely WMD that U.S. forces may face in the coming years is neither nuclear nor chemical: it is biological."[24]

Nonproliferation is a non-issue. Nonproliferation strategies for biological WMD relies entirely on "trust"; and relying on trust is analogous to choosing hope as a course of action. By default, counterproliferation must be our primary strategy and the Armed Forces of the U.S. must be able to operate effectively in environments contaminated with biological warfare agents. Enhancing the U.S. military's passive defense capability is the cornerstone to combating biological WMD. Initiatives in this area must become a priority. The future success for the survival and integrity of U.S. sovereignty will rely on its ability to meet these challenges in the very near future.

ENDNOTES

[1] President William J. Clinton, Extracted from President's "Address to the United Nations," Speech Presentation, 27 September 1993.

[2] President William J. Clinton, A National Security Strategy of Engagement and Enlargement, February 1995, Preface, p. i, para. 1.

[3] Philip Volpe, Extracted from a Conversation in Seminar #19, "A" Wing, 2nd Floor, Root Hall, Class of 1996, US Army War College, Carlisle, PA, October 1995.

[4] J. G. Roos, "Chem-Bio Defense Agency will tackle - Last Major Threat to a Deployed Force," Armed Forces Journal International, December 1992, p. 10.

[5] Robert G. Joseph, "Regional Implications of NBC Proliferation," Joint Force Quarterly, Washington, DC., Autumn 95, Abstract, p. 64.

[6] Ibid., 65.

[7] Ibid., 66.

[8] Ibid., 64.

[9] Ibid., 68.

[10] Gary L. Guertner, Extracted from Lecture, "Deterrence After The Cold War," Course 2; War, National Policy and Strategy, Chairman, Department of National Security and Strategy, U.S. Army War College, Presented on 6 November 1995.

[11] TRADOC Field Manual 100-5, Operations, Headquarters, U.S. Army Training and Doctrine Command, Headquarters, Department of the Army, June 1993, Glossary, p. 9.

[12] Joseph, 65.

[13] Ibid.

[14] Erhard Geisser, Biological and Toxin Weapons Today, Oxford University Press, New York, 1986, p. 7 (taken from Larson and Kadlec, Ridgeway Viewpoints No. 95-4, p. 2, sec II, para. 1, see bibliography)

[15] Robert H. Kupperman and David M. Smith, Biological Weapons: Weapons of the Future?, "Coping with Biological Terrorism," Edited by Brad Roberts, The Center for Strategic and International Studies, Washington, DC., 1993, p. 36

[16] Randall J. Larson and Robert P. Kadlec, Biological Warfare: A Post Cold War Threat to America's Strategic Mobility Forces, Ridgeway Viewpoints No. 95-4, 1995, p. 5

[17] Richard A. Jackson, Nuclear, Biological, and Chemical Defense in the 21st Century, Center for Strategic Leadership, U.S. Army War College, Pamphlet, 1995, Conclusions, p. 21.

[18] General John M. Shalikashvili, National Military Strategy of the United States of America, Joint Chiefs of Staff, Pentagon, Washington, DC., February 1995, p. 15

[19] Kenneth K. Steinweg et al., Weapons of Mass Destruction: Title 10 Implications for the Military, Center for Strategic Leadership, U.S. Army War College, Pamphlet, August 1994, Annex A, p. 44.

[20] Jackson, 19.

[21] Shalikashvili, p. 3.

[22] Richard O. Spertzel, Robert W. Wannemacher, and Carol D. Linden, Global Proliferation: Dynamics, Acquisition Strategies and Responses -- Volume IV - Biological Weapons Proliferation, Technical Report, U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD., (for Defense Nuclear Agency), December 1994, p. 1.

[23] Malcolm Dando, Biological Warfare in the 21st Century, Brassey's (UK) Ltd, Oxford, UK, 1994, Chapter 10, p. 210.

[24] Larson, p. 1.

BIBLIOGRAPHY

Clinton, President William J., U.S. President's "Address to the United Nations," Federal News Service, INC., Washington, DC. 20045, Speech Presentation, 27 September 1993.

Clinton, President William J. A National Security Strategy of Engagement and Enlargement. The National Security Strategy of the United States, by President W. J. Clinton, Office of the President, The White House, Washington, DC., February 1995.

Dando, Malcolm. Biological Warfare in the 21st Century. "Biotechnology and the Proliferation of Biological Weapons." Brassey's (UK) Ltd, Macmillan Publishing Company, Riverside, New Jersey 08075, 1994.

Epstein, William. "NPT Wrap-Up: Indefinite Extension -- With Increased Accountability." The Bulletin of the Atomic Scientists, Educational Foundation of Nuclear Science, Chicago, Illinois 60637, July/August 1995, V. 51, N. 4, pp. 27-30.

Geisser, Erhard. Biological and Toxin Weapons Today. Oxford University Press, New York, 1986.

Guertner, Gary L. "Deterrence After The Cold War." Course 2: War, National Policy and Strategy, Chairman, Department of National Security and Strategy, U.S. Army War College, Carlisle Barracks, Pennsylvania 17013-5050, Lecture, Presented on 6 November 1995.

Jackson, Richard A. Nuclear, Biological, and Chemical Defense in the 21st Century. Center for Strategic Leadership, U.S. Army War College, Carlisle Barracks, Pennsylvania 17013-5050, Pamphlet, 1995.

Joseph, Robert G. "Regional Implications of NBC Proliferation." Joint Force Quarterly, Chairman, Joint Chiefs of Staff, Institute of National Strategic Studies, National Defense University, Washington, DC. 20319-6000, Autumn 1995, pp. 64-69.

Kupperman, Robert H. and David M. Smith. Biological Weapons: Weapons of the Future? "Coping with Biological Terrorism," Edited by Brad Roberts, The Center for Strategic and International Studies, Washington, DC., 1993.

Larsen, Randell J. and Robert P. Kadlec. Biological Warfare: A Post Cold War Threat to America's Strategic Mobility Forces. Ridgway Viewpoints No. 95-4, Matthew B. Ridgway Center for International Security Studies, University of Pittsburgh, Graduate School of Public and International Affairs, Pittsburgh, Pennsylvania 15260, 1995.

Lesson No 2-30/2-31. "Deterrence After The Cold War" and "Nonproliferation and Counterproliferation Strategies." Course 2; War, National Policy and Strategy, Department of National Security and Strategy, US Army War College, Carlisle Barracks, Pennsylvania 17013-5050, 7 November 1995.

Mobley, James A. "Biological Warfare in the Twentieth Century: Lessons from the Past, Challenges for the Future." Military Medicine, Association of Military Surgeons of the United States, Bethesda, Maryland 20814, Volume 160, November 1995, pp. 547-553.

Orton, Major General Robert D., and Robert C. Neumann. "The Impact of Weapons of Mass Destruction on Battlefield Operations." Military Review, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027-1231, December 1993, Volume LXXIII, N. 12, pp. 64-72.

Pell Report (draft). "Adherence To & Compliance With Arms Control Agreements." The Pell Report - Unclassified Version, Arms Control Disarmament Agency, for US Congress, Washington, DC., Draft Report - Pending Release, 24 May 1995.

Preston, Richard M. The Hot Zone. Random House, INC., New York, 1994

Roos, J. G. "Chem-Bio Defense Agency will tackle - Last Major Threat to a Deployed Force." Armed Forces Journal International, Washington, DC., December 1992.

Schneider, Barry R. "Policy Shift: The Defense Counter-Proliferation Initiative." Radical Responses to Radical Regimes; Evaluating Preemptive Counterproliferation, INSS, National Defense University, Washington, D.C., 1994.

Shalikashvili, General John M. National Military Strategy of the United States of America: A Strategy of Flexible and Selective Engagement. Chairman, Joint Chiefs of Staff, Pentagon, US Government Printing Office, Washington, DC. 20402-9328, February 1995.

Spertzel, Richard O., Robert W. Wannemacher and Carol D. Linden. Global Proliferation: Dynamics, Acquisition Strategies and Responses -- Volume IV - Biological Weapons Proliferation. Technical Report, U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, Maryland 21702-5011, December 1994 (for Defense Nuclear Agency, DNA-TR-93-129-V4).

Steinweg, Kenneth K., William R. Betson, Jeffrey A. Matt, Richard F. Riccardelli, Carmen J. Spencer, and Michael N. Ward. Weapons of Mass Destruction: Title 10 Implications for the Military. Center for Strategic Leadership, U.S. Army War College, Carlisle Barracks, Pennsylvania 17013-5050, Pamphlet, August 1994.

TRADOC Field Manual 100-5. Operations. Headquarters, U.S. Army Training and Doctrine Command, Headquarters, U.S. Department of the Army, Fort Monroe, Virginia 23651-5000, June 1993.

TRADOC Pamphlet 525-63. U.S. Army Operations Concept for Biological Defense. Headquarters, U.S. Army Training and Doctrine Command, Headquarters, U.S. Department of the Army, Fort Monroe, Virginia 23651-5000, 1 December 1994.