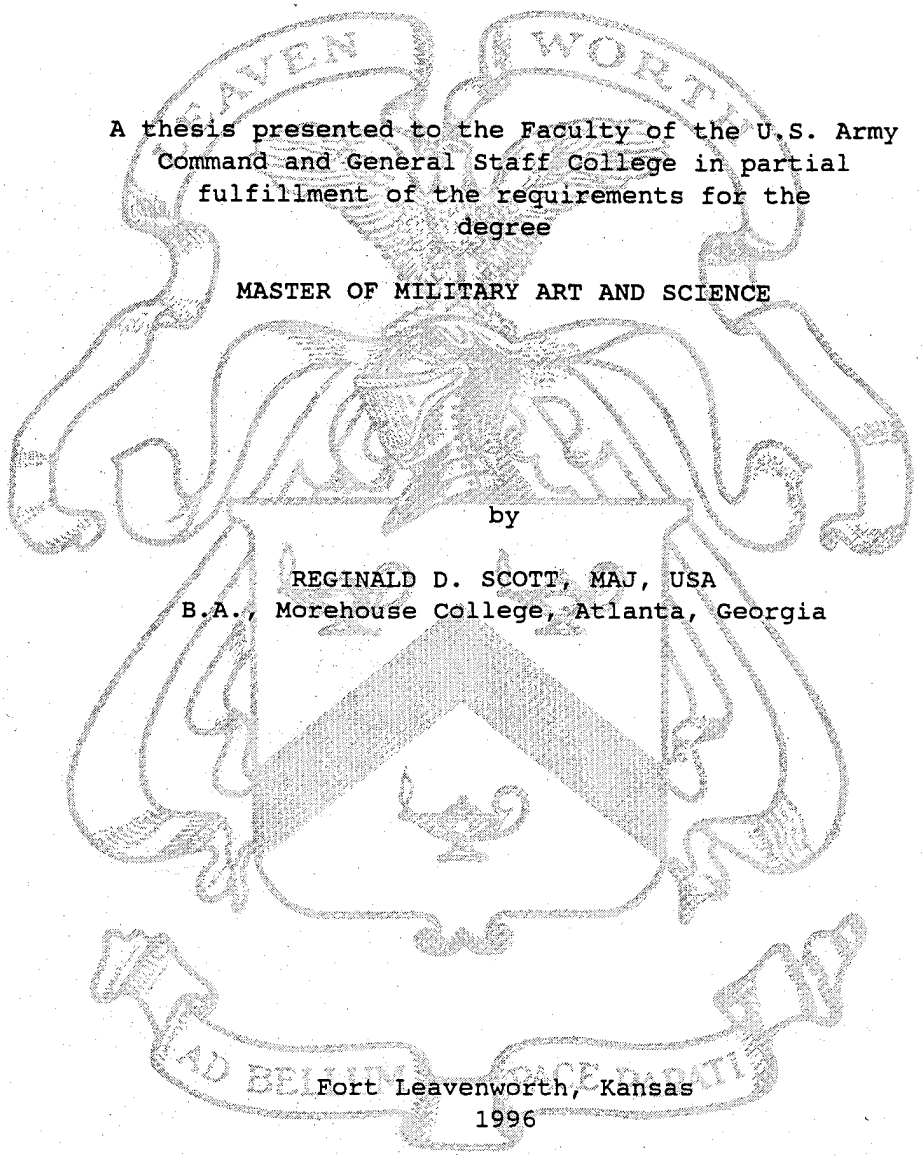
THE UNITED STATES INITIATIVE FOR CHEMICAL WEAPONS ARMS CONTROL



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

MASTER OF MILITARY ART AND SCIENCE

by

REGINALD D. SCOTT, MAJ, USA
B.A., Morehouse College, Atlanta, Georgia

Fort Leavenworth, Kansas
1996

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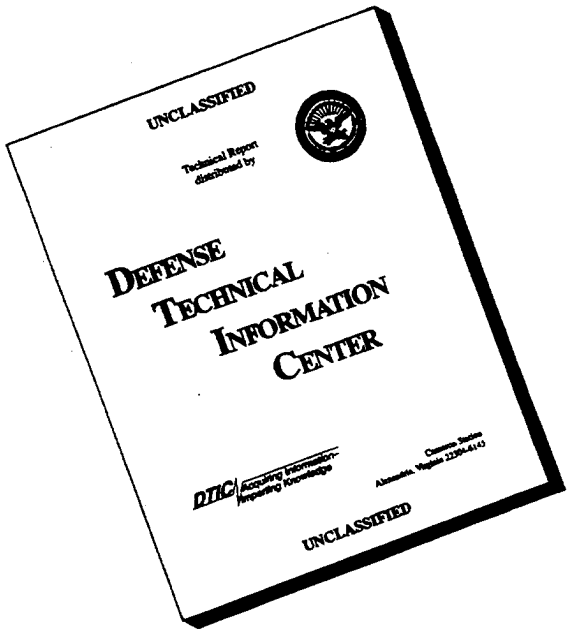

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This research investigates the US policy initiative renouncing the employment of chemical weapons. The focus of the research is to determine if such an initiative will achieve the national objective for elimination of chemical weapons worldwide via implementation of the Chemical Weapons Convention (CWC). If the initiative does not meet the national objective are there feasible options for the United States Government (USG)? In 1993, the USG established a policy banning the use of chemical weapons. This act may have won the battle for the moral high ground, but it will not deter nor eliminate the use of chemical weapons worldwide. The relative ease by which a nation can take various combinations of chemical compounds and produce a lethal chemical agent makes deterrence and/or complete elimination virtually impossible. The US should continue to employ the elements of diplomatic, informational, military, and economic policy regarding nonproliferation inclusive of a proven deterrent-CW. No use of CW or any weapon of mass destruction is best but until the CWC is ratified a deterrent should be maintained by the US.

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THE UNITED STATES INITIATIVE FOR CHEMICAL WEAPONS ARMS CONTROL

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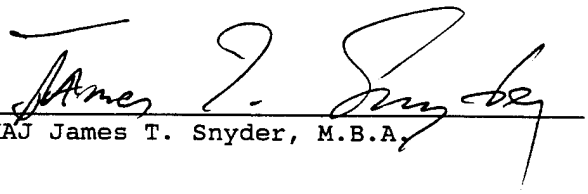
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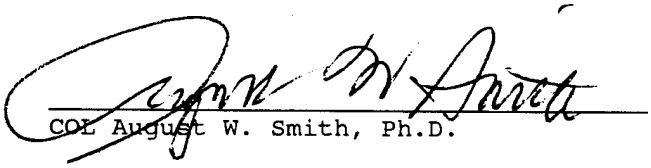
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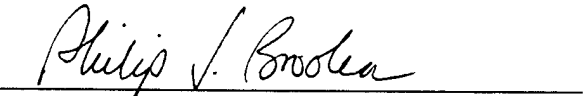
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ABSTRACT

THE UNITED STATES INITIATIVE FOR CHEMICAL WEAPONS ARMS CONTROL by MAJ Reginald Scott, USA, 104 pages.

This research investigates the US policy initiative renouncing the employment of chemical weapons (CW). The focus of the research is to determine if such an initiative will achieve the national objective for implementation of the Chemical Weapons Convention (CWC). If the initiative does not meet the national objective are there feasible options for the United States Government (USG)? In 1993, the USG established a policy banning the use of chemical weapons. This act may have won the battle for the moral high ground, but it will not deter nor eliminate the use of chemical weapons worldwide. The relative ease by which a nation can take various combinations of chemical compounds and produce a lethal chemical agent makes deterrence and/or complete elimination virtually impossible. The US should continue to employ the elements of diplomatic, informational, military, and economic policy regarding nonproliferation inclusive of a proven deterrent-CW. No use of CW or any weapon of mass destruction is best, but until the CWC is ratified a deterrent should be maintained by the US.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AC: Hydrogen Cyanide

ACDA: Arms Control Defense Agency

BDA: Bilateral Destruction Agreement

BZ: An incapacitating agent

BWC: Biological Weapons Committee

CG: Phosgene

CD: Conference on Disarmament

CK: Cyanogen Chloride

CN: Chloracetophnone

CS: O-chlorobezl-malononitrile

CW: Chemical weapons

CWC: Chemical Weapons Convention

CWIWG: Chemical Weapons Interagency Working Group

CX: Phosgene Oxime

DF: Methylphosphonic difluride

DM: Adamsite

DoD: Department of Defense

DoE: Department of Energy

EIF: Entry into Force

GA: Tabun

GB: Sarin

GD: Soman

GF: a chemical nerve agent

HD: Sulfur Mustard

HN: Nitrogen mustard

IAEA: International Atomic Energy Agency

IAW: In accordance with

L: Lewisite

MOU: Memorandum of Understanding

NATO: North Atlantic Treaty Organization

NBC: Nuclear, Biological, and Chemical

NPT: NonProliferation Treaty

OPA: isopropanol

OPCW: Organization for the Prohibition of Chemical Weapons

OOTW: Operation other than war

OSIA: On-Site Inspection Agency

QL: Ethyl 2-diisopropylaminoethyl methylphosphonite

PREPCOM: Preparatory Commission

SALT: Strategic Arms Limitation Talks

START: Strategic Arms Reduction Talks

US: United States

USG: United States Government

VX: a persistent nerve agent

CHAPTER 1

INTRODUCTION

The United States Government (USG) continues its attempt to set the tone in the international arms control arena for the nonproliferation of chemical weapons(CW). In 1993, the USG established a policy banning the use of chemical weapons. This act may have won the battle for the moral high ground, but it will not deter nor eliminate the use of chemical weapons worldwide. The explanation for this unfortunate dilemma is that chemical weapons are an inexpensive yet effective combat multiplier. As seen in the Tokyo subway attack of 1995, chemical weapons (agents) are an ideal terrorist weapon. The relative ease by which a nation or group can take any combination of over 100,000 chemical compounds and produce a lethal chemical agent makes deterrence and/or complete elimination virtually impossible. These chemical agents afford the attacker an opportunity to defeat and/or terrorize an opposer with minimal loss of personnel to the attacker. Though the attacker must be prepared to operate in a contaminated environment, the element of surprise or the ability to employ CW without fear of retaliation inkind will work to the attacker's advantage.

Consequently, arms control of chemical weapons through nonproliferation will not be an easy accomplishment for USG

policymakers. Such potential problems associated with nonproliferation lead to the thesis for the research.

Primary Research Question

Should the USG reactivate the chemical binary program because the current US policy of deterrence may not ensure ratification of the Chemical Weapons Convention (CWC) nor deter the use of CW against US forces or her allies? The primary question to answer is, Will the US policy banning the use of CW achieve the nation's objective for implementation of the CWC?

Several questions must be answered to effectively develop the research work. First, what impact will the US policy have on US National Security and Military Strategy? Second, what are the political objectives associated with US ratification of the CWC? Third, is there a timing factor associated with ratification of the CWC by the US? Fourth, what alternatives are available to the US regarding the CWC? Finally, what are the political problems associated with the CWC? Terms used within this research are defined as follows:

Arms control. The measures implemented to either restrict or monitor the procurement, transfer, stockpiling, production, or employment of a (chemical) weapon.

Binary chemical munition. Munition consisting of two relatively nontoxic chemicals which combine during flight and produce a toxic chemical agent upon impact. (Binary weapons/munitions are interchangeable.)

Binary program. Those components involving cost, production, research and development, and stockpiling of such weapons/munitions

Chemical agent. A mixture of one or more chemical compounds that when mixed will have a debilitating effect on humans. The agents are specifically designed to affect humans. Their use in military operations are intended to kill, seriously injure, or incapacitate through their physiological effects. These exclude riot control agents, herbicides, smoke, and flame. (Each agent is discussed in detail in chapter 2.)

Chemical warfare. All aspects of military operations involving the employment of lethal and incapacitating munitions/agents and the warning and protective measures associated with such offensive operations.

Chemical weapon. A munition (mine, bomb, rocket, canister, spray tank, and/or artillery shell) used to disperse a chemical agent.

Contamination. The deposit and/or absorption of radioactive material or biological or chemical agents on and by structures, areas, personnel, or objects; food and/or water made unfit for human or animal consumption by the presence of environmental chemicals, radioactive elements, bacteria, or organisms.

Contamination avoidance. Measures taken to avoid or minimize NBC (Nuclear, Biological, Chemical) attacks and reduce the effects of NBC hazards.

Decontamination (decon). The process of making any person, object, or area safe by absorbing, destroying, neutralizing, making

harmless, or removing chemical or biological material, or removing radioactive material clinging to or around it.

Declaration. A document which contains classified/unclassified data for chemical weapons' storage and production facilities, aggregate CW agents quantities, and types of chemical munitions and agents.

Demilitarization. To abolish the military character, the object will cease to have a military significance; no longer useful for military (tactical) application.

Detection. Measures to detect by use of chemical detectors or radiological monitoring/survey teams the location of NBC hazards placed by the enemy.

Entry into Force (EIF). The effective date (beginning) that an agreement and/or treaty is legally binding. The EIF date will assist in the determination of all phases tiered to implementation of the treaty.

Nonpersistent. An agent that, when released, dissipates and/or loses its ability to cause casualties after a passage of 10 to 15 minutes

Nonproliferation. The elimination of the reproduction of chemical weapons and their agents.

Passive defense measures. Measures taken to reduce possibilities of NBC attack.

Precusor. A chemical that can be mixed or chemically combined with another substance to become a lethal agent.

Persistent. An agent that continues its casualty-producing effects after release for an extended period of time (one or more hours). However, it is weather dependent.

Protocol. The document used to implement a treaty or agreement. It will outline the rules by which both parties must abide for compliance and other related verification measures.

Regime. A political system (agreement) between two or more countries designed to outline the governmental association for a specific issue.

Significance of The Research

The relevance of this research is to provide support to the theory that the United States' lead role in the CW arena is too broad to achieve continuing and lasting success. Chemical weapons will continue to be a threat not only to the United States but to every nation. Additionally, the aims of the CWC are too general and have no policing authority to prosecute violators. Subsequently, the best defense for the deterrence and future elimination of chemical weapons is to sustain a strong offensive capability. This technique though in-and-of-itself threatening to any society has served its purpose well. The US established a retaliatory policy following World War I and as a result has not encountered a confirmed chemical weapons attack for more than 50 years. A policy of retaliation worked then and can work now without adversely affecting the CWC. Accordingly, the USG should reverse its current policy and reintroduce the binary program at Pine Bluff Arsenal (PBA).

Scope and Limitations

There are two pronounced limitations to this research. One is a related component of the Chemical Weapons Convention which is the

implementation of the Memorandum of Understanding (MOU) between the United States and the former Soviet Union (Russia). This MOU was completed in November 1994 and contains results of the MOU which are being withheld for security reasons by the USG. Access to this documentation would enhance the research regarding the USG initiative. The MOU is referred to only for those issues which are cleared for public disclosure. Specific details of inspection results in Russia and the United States are not to be discussed due to their security sensitivity and classification.

Secondly, ongoing negotiations in The Hague, Moscow, and Washington, D.C., contain some information that may be outdated by the time this research is completed. The arms control environment is in a constant state of flux and is rapidly changing. Accordingly, goals and objectives of negotiations are also changing during the course of delegation visits. Yet, this research will portray a relatively accurate snapshot of the current state of affairs in chemical weapons arms control.

Several areas/issues are specifically defined in this research. Specifically, a comparison of conventional weapons to weapons of mass destruction is beyond the scope of this research. Weapons of mass destruction imply strategic rather than tactical application. In this context, weapons of mass destruction would be employed to affect the outcome of a campaign. Further, weapons of mass destruction are "war gamed" more so at the political level for incorporation in achieving objectives of national interest. Conventional weapons on the other hand, are employed at the tactical level to win meeting engagements at

the lower unit or the squad level. The focus of the research will address issues at the political levels.

This research discusses the prototype 155 millimeter (mm) binary munition and its components initially researched and developed for military employment. Such a focus of all binary munitions requires extensive research into the military's Research and Development Program. Research and development generally include a five-plus-year-phased program before an item is approved and the appropriate procurement procedures are completed. Such was not the case with the 155 mm munition which began production before termination in 1983.

This research focuses on a "shelved" program. There is no need to renew research and development because the binary program was implemented before production was suspended. The research document intends to show that an alternative to the current USG policy is needed in an expeditious manner; therefore, the shelved binary program should be implemented immediately. The current binary program could conceivably become operational within a 16-month time period.

Military force on force rather than the terrorist threat is discussed in this research document. Though incidents, such as the Tokyo subway attack of 1995, can and may occur throughout history the reactivation of the binary program would be for employment against a military force. The use of binary weapons is more suitable for full-scale employment in war as opposed to lowlevel to midlevel intensity conflicts. The USG would not retaliate with CW against an individual or a small group or organization. Other initiatives would be used to deal

with such threats. The mentioning of the Tokyo incident is only to relay the ease by which proliferation of CW can occur.

This research acknowledges the varying cost of destruction versus the cost of production of binary weapons. However, such costs are not relative to the CWC implementation issue. The current unitary stockpile will be eliminated as mandated by Congress. Furthermore, the current stockpile is becoming unsafe due to age and must be destroyed. Accordingly, this mandate has received the appropriate level of funding to begin destruction in 1998. Funds would not be diverted from the destruction program to production regarding replacement with binary. Funding for the reactiviation of the binary weapons program would require initiation of the funding process which is not a focus of this research. Additionally, destruction funding programs have been developed unlike cost projection start-up for the mothballed binary program.

This research focuses on the potential employment of CW rather than other weapons of mass destruction. The USG policy banning the use of biological weapons was instituted in 1972 by President Nixon. Regarding the employment of nuclear weapons, it is highly improbable that nuclear weapons would be used in retaliation of a CW attack on US forces or her allies. Nuclear weapons employment would be based on the nation(s) involved and/or the potential political backlash the US would incur from the US public (the will of the people) or other nations.

Finally, as with terrorist activities, this research discusses military force on force rather than stability and support operations, formerly operations other than war (OOTW) or the employment of binary

weapons at the operational or tactical level. As with the terrorist threat the USG would potentially use other means to achieve its objectives rather than employ chemical weapons or any weapon of mass destruction. Further, as previously stated, issues regarding weapons of mass destruction employment occur more so at the political and not the operational or tactical level of war. Therefore, detailed discussion in these areas is limited in scope or not addressed within the research.

Delimitations

This research discusses several chemical weapons issues within the arms control arena spanning the early 1960s to the end of 1994. It will show how political indecision, loopholes within the verification process, and economic ease of production of chemical weapons will defeat the United States initiative. These issues reflect how the United States' Congress and the Presidents of the United States have grappled with the destructive power of chemical weapons for several years. The research also discusses the vital linkage between the Memorandum of Understanding, the Bilateral Destruction Agreement (BDA), and the Chemical Weapons Convention.

Order of the Study

Chapter 2 of the research provides a concise history of the binary weapon's program. Further, the chapter discusses the development and first employment of CW in modern history (circa 1917). The potential threat of CW attacks are outlined inclusive of who, why and how, and the USG initiatives. Arms control and issues related to

implementation and USG policy and obstacles to implementation complete chapter 2.

Chapter 3 outlines the research design with specific concentration on the three chemical agreements. Chapter 4 provides details of the political discussion regarding CWC implementation. This chapter further illustrates problems of implementation, the issues the USG continues to grapple with, and the level of Russian compliance. Chapter 5 provides alternatives to the current US policy with summation of this politically sensitive promulgation.

CHAPTER 2

REVIEW OF LITERATURE

This chapter and chapter 3 discusses literature regarding binary weapons and the issues relative to the CWC. The literature on binary weaponry is limited because the program was halted in 1983. Information regarding the history of the binary program and the reason for its termination are outlined in this chapter. Additional information (historical) on the binary program will be discussed as necessary. Issues relative to the CWC (chapter 3) cover the period 1960 to 1995. A more detailed discussion of the CWC, MOU, and BDA is the focus of chapter 4.

History

Binary Program

The binary program did not begin at Pine Bluff though significant strides ultimately occurred at that facility. A presidential report on foreign policy caused binary weaponry to gain notoriety. The US President's foreign policy report to Congress in 1973, stated that the US administration remained firmly committed to achieving effective international restraints on chemical weapons and not their elimination. Efforts were limited by the Strategic Arms Limitation Talks (SALT) and Strategic Arms Reduction Treaty (START) I and II negotiations. Further, CW issues within the US remained at the intragovernmental level. Chemical weapons took a back seat to nuclear

nonproliferation in the eyes of the US policymakers. This occurred because policymakers considered CW a lesser threat to national security.

Such could be said about the performance of the former Soviet Union during this period. Neither nation developed initiatives in CW; however, both concluded that some sort of action must be taken regarding nonproliferation. A Russian communiqué referred to the possibility of a bilateral agreement (US-Russian), yet no action occurred to resolve the CW issue. Such floundering by both superpowers left CW policymaking at a "stand still" for approximately 19 years. Discussion of a distinct CWC ultimately played second fiddle to nuclear nonproliferation until 1989. A CW threat remained; therefore, US policymakers and Department of Defense (DoD) representatives warmly embraced a continued CW production and stockpiling program.

The current US unitary CW stockpile was roughly 30 years old as discussions continued regarding its elimination or continued readiness status. The intent had never been to stockpile the weapons but to use them during World War II (WW II). Accordingly, research was not performed on the shelf life of these munitions filled with corrosive chemical agent. Consequently, policymakers and the local populace where these munitions were stored were becoming gravely concerned about potential CW hazards. Technology was required to enhance storage shelf life while minimizing hazards to the local community.

In 1973, the Secretary of the Army announced plans for the first stage of a new round of CW (binary weapons) made available for insertion in artillery shells. The new weapon would replace the aging CW stockpile and would prove safer for long-term storage--a key concern

for local politicians and their voting communities. This would be followed by the Bigeye bomb, a joint Navy-Air Force binary development. Rockets, spraytanks, cluster bombs, and missile warheads were also included with a program budget of $10 million per year.

DoD officials would later confirm that the ultimate objective was to replace the current US nerve-gas stockpile with binary CW munitions. The book value of the then present inventory was $214 million; destruction was likely to cost approximately $750 million, and its binary program would range from $800 to $1400 million. Initially DoD had requested $6 million of procurement of the binary program during the 1974-1975 budget session which was denied. There was concern that such an investment would have a negative impact to discussions and negotiations on nuclear and chemical issues with the former Soviet Union. DoD pressed for the binary program, yet they were scarcely seeking to sabotage the Geneva talks. The DoD viewpoint was the dogma case of like-with-like deterrence with the unquestioned belief that a retaliatory nerve gas capability would be the best safeguard against the possibility of an attack with chemical weapons on North Atlantic Treaty Organization (NATO) forces in Europe.

DoD was concerned because a DoD routine stockpile review had determined that the immediately useable portion of the nerve-gas stockpile, especially the weapons in the Federal Republic of Germany, was quantitatively and qualitatively inadequate for the contingency plans in the military theater. The DoD findings posed three grave concerns for the USG. One, the thought of the production of binary as a replacement for existing CW stockpiles would place the US in an

uncomfortable position regarding chemical weapons nonproliferation. Ostensibly, how could one argue for the elimination of an item while continuing to produce the same or an improved version of that item. Secondly, the binary program according to DoD data was considerably more cost effective for "modernizing" the nerve-gas stockpile. An initial plan considered using the existing nerve agent to fill the binary munition. This concept was different from the binary program ultimately approved by Congress in the late 1950s. Third, the binary program was a means for providing field commanders with a broader range of chemical ammunition, thus allowing them greater flexibility in matching their weapons to immediate field requirements. Several different precursors could be provided for each munition with each precursor resulting in a toxic agent of different field behavior. Cognizant of the nonproliferation concern these issues set the binary program in motion.

The advancement of binary munitions in the early 1960s was one small element in the five-year plan for expanded CW research and development. Much of the data needed for the chemical process side of the work was already available from nerve agent (GB and VX) manufacturing experience. On the delivery hardware side, the work was performed by the Navy at the Naval Ordnance Test Station at China Lake, California. The Army contracted for the agent mixture with private industry. Both services worked on massive aircraft bombs that generated VX by the binary concept. By 1969, the first unclassified reference to the program appeared in DoD Congressional testimony.

The binary program had achieved several goals of DoD planners. The planners had always expressed the safety of the binary program over

the unitary munitions. They were able to express these views in response to questions about the hazards to human life of having nerve gas in storage so close to the Denver airport, at Rocky Mountain Arsenal. Public opinion of CW had reached an all-time low following several CW mishaps. In 1968, the Air Force while testing spraytanks containing VX killed several thousand sheep. In 1969, a VX leak at Okinawa hospitalized several US soldiers. Further, in 1960, at Rocky Mountain Arsenal the Army had disposed of nerve agent GB in a hole several thousand feet deep which was later discovered to flow into a ground reservoir.

During Congressional hearings, DoD representatives reiterated the safety aspect of the binary munition. It was briefed that binary munitions were "relatively nontoxic." Detailed or elaborate investment in safety measures would not be a prerequisite for their manufacture, thus permitting their procurement from industry by competitive contract purchase. Further, the US would no longer have a need for DoD to maintain its expensive and highly specialized nerve-gas factories.

The advantages claimed for binary munitions were twofold: they would do away with the need for expensive factories and they would cut back on stockpiling necessities. In addition to the safety concern, another safety aspect of the binary munition was declared. The binary munition was designed so that one of the two chemical components was inserted, along with the fuze and burster. The other component would be shipped separately and inserted prior to firing. During storage and transportation, the two components were separated so that even if serious accidents occurred there would be no possibility for the two

components to mix and produce a lethal toxic hazard. The prospect for removing storage hazards were paramount to the Navy, but the transportation issue was much more important and became the selling factor to ensure that Naval support for the binary program was staunch. Though binary munitions generally were an Army employment system and potentially an Air Force system as well, the Navy was responsible for transportation of CW. Therefore, their support was necessary to provide a strong unified military front when congressional hearings on binary munitions began.

Following much Congressional deliberation, the first publicly released picture of the XM687 155 mm binary GB howitzer projectile was made. The USG policy was not clearly defined to the nations of the world, but one thing was clear and that was the USG had decided to continue its CW production using the binary munition to initially augment aging unitary munitions. Ultimately, it was perceived that binary munitions would replace the unitary stockpile. Consequently, in 1973, the binary program had advanced to the point where Pine Bluff Arsenal, Arkansas, was selected as the site for production of one of the chemicals for the XM687 projectile. The United States was keenly aware of the effects chemical weapons could have as seen in World War I and opted to maintain a retaliatory capability.

Chemical Agents

Although chemical warfare had not been employed on a large scale since the Germans used them in World War I, the world maintained a high level of interest in this area of military technology. The United States was and is concerned about chemical warfare due to the emphasis

it receives from Third World countries. CW is considered to be the "poor man's" weapon of mass destruction. They (CW) are inexpensive to produce, and the ease by which any country can obtain them can not be monitored. To date, the verification process remains in dispute thereby hindering agreement amongst most nation states. These disputes which are reflective of the "legal loopholes" of the CWC cause nations to remain cautious about CW nonproliferation. Additionally, CW have not been outlawed internationally, as seen as recent as the Iran-Iraq war; therefore, a dangerous precedent for future conflicts exits.

Chemicals in war have been used over several centuries; however, the modern history of chemicals in war began in WW I with the first full-scale chlorine gas attack in April 1915. Germany had become locked in trench warfare with France and Britain in southern Europe. The French had experimented with grenades filled with ethyl bromoacetate, a nontoxic tear agent, several months earlier. In an attempt to break the deadlock the French employed these grenades but were unable to assess the results. Germany, aware that the French had a chemical weapon, began research on their own chemical weapons program. After several attempts at developing an agent that would meet strategic and tactical needs Germany made plans to employ their CW in combat.

One late afternoon in April 1915, German artillery commenced heavy bombardment around the Belgium city of Ypres. These containers, actually large gas cylinders, released the gas on and to the rear of the French and British lines in the Ypres sector. Within an hour, the winds brought a gaseous chemical cloud to the French trenches. British and Canadian troops observed as French soldiers emerged from the cloud

disoriented and confused. This attack had caused a four-mile-wide gap in the allies' lines. Hundreds of allied troops were either comatose or dying. German forces attacked through this gap, but underestimated the effect of the gas and could not exploit their tactical success. CW had provided the Germans with an effective combat multiplier, but more importantly this began the chemical weapons arms control race.

Since World War I, many countries have performed research and development programs, but only the Germans succeeded in finding a new and more potent class of chemical agent. Chemical agents are categorized according to their physiological effect on the body. There are eight categories of chemical agents: blister, choking, blood, incapacitating, riot control, tear, vomiting, and nerve. Some are referred to by their actual chemical name while others are given one or two letter codes as identification.

Blister agents (Sulfur Mustard--HD or H, Nitrogen mustard--HN, Phosgene Oxime--CX, and Lewisite--L) are compounds of chlorine, sulfur, carbon and hydrogen. First used in World War I, they were dispersed as an oily liquid and smelled like mustard. These agents cause large water blisters on exposed skin and irritate the throat and lungs when inhaled. Inhalation of the gas can be fatal depending on the dose.

Lewisite is a systemic poison which causes subnormal body temperature, low blood pressure, diarrhea, and weakness. Special clothing and a protective mask must be worn for protection. These agents react more rapidly than other blister agents and induce severe pain.

Choking agents are Phosgene (CG), diphosgene, and chlorine. They are delivered as a gas or liquid which affect the lungs and cause damage to the capillaries. These chemical compounds flood the air cells and the victim dies of oxygen deficiency. Consequently, fluid builds up in the lungs until the victim chokes on his own fluid. Choking agents are relatively lethal and have a delayed reaction time of three hours.

Blood agents are not as useful in combat because they are lighter than air and disperse rapidly. However, they do break down the charcoal filters of protective masks thereby making the user more susceptible to further CW agent attacks. Hydrogen Cyanide (AC) and Cyanogen Chloride (CK) poison the central nervous system and act immediately when inhaled. Carbon monoxide interferes with the body's utilization of oxygen and affects the heart which could result in death.

There is only one known incapacitating agent--BZ. BZ produces physiological mental effects, such as hallucinations, and may produce delirium. The effects of BZ may persist for hours or days following exposure. BZ will render an individual incapable of any type of concerted physical or mental effort. Complete recovery of incapacitating agent casualties is expected without medical treatment.

Riot control, tearing, and vomiting agents have similar effects on the human body. Riot control agents are not categorized as warfare agents though they have been used in warfare. The US used them in Vietnam to achieve objectives with less casualties. There are two types of riot control agents--tear producing and vomiting producing. Though not considered lethal they are capable of causing serious illness or death if used in confined spaces.

Tear agents Chloroacetophnone (CN) and O-chlorobezyl-malononitrile (CS) cause the flow of tears and irritation of the upper respiratory tract and skin. High concentrations of tearing agents can cause nausea and vomiting. Some tear agents can also produce choking agent symptoms. The sole vomiting agent--Adamsite (DM)--can cause discomfort to the entire body. This agent effects the eyes and mucous membranes and will induce coughing, severe headaches, pain and tightness in the chest, nausea, and vomiting.

The last and most severe chemical agents are nerve agents. Nerve agents Tabun (GA), Sarin (GB), Soman (GD), GF, and VX. GB and VX are the chemical agents of choice due to their lethality. The first nerve agents GA, GB, and GD, were developed by the Germans as pesticides in the 1930s. Nerve agents break down the body chemical that prevents muscles from contracting continuously. The muscle receives a steady stream of "contract" signals which will cause them to eventually seize up and stop functioning. Essentially, a small dose (approximately greater than .0003 milligrams per cubic meter) which could fit on the head of a pin is fatal within 15 minutes after contact with the skin. Victims first experience muscle spasms, then lose control of the bladder and bowels, and finally lose control of the diaphragm, which leads to suffocation. A nerve agent was used in the development of binary munitions.

The binary munition as previously stated combined two "relatively nontoxic" chemical compounds to produce a lethal agent once the compounds were mixed while in flight. The binary munition was to produce similar effects as nerve agents--specifically GB and VX.

Following extensive research, two components were found to be compatible and suitable to meet the military needs. The first component was Methylphosphonic difluoride (DF). DF (the binary equivalent for GB) is a liquid which is very stable in storage. A second component is Ethyl 2-diisopropylaminoethyl methylphosphonite (QL). QL is the binary equivalent to VX. These two components when added to OPA (the compound mixed with either chemical agent to produce the toxic agent) are the key elements of the XM687 binary munition.

The XM687 is a high-capacity projectile developed by the Army in its improved conventional munitions program. The two chemical components DF and QL are contained in two plastic cans with either placed one behind the OPA into the projectile casing. The interfaced ends of the two cans are ruptured under the influence of set-back force. Once these two components mix, the binary product is disseminated by a burster-charge in the nose of the projectile. Advanced development prototypes were field-tested in 1969. The binary program began engineering development in 1971. The significance of these tests were to improve the munitions that would be used to disseminate chemical agents.

Unitary chemical agents are disseminated by munition systems that include bombs, artillery rounds, rockets, grenades, missiles, and aerial spraytanks. Unitary chemical munitions have unique characteristics in contrast to conventional weapons systems. Gases and aerosols can penetrate crevices, thereby reaching personnel physically protected from high explosives. Additionally, chemicals are directly effective against personnel, but they leave intact the cities and

industrial facilities which are destroyed by high explosives and nuclear weapons. Chemical weapons produce a wide variety of physiological effects depending on the nature of the agent. These effects can range from death to mild incapacitation. The terms chemical agent and chemical munition are indeed different as outlined above. However, the terms are oftentimes used interchangeably. Accordingly, in further discussions, these terms on CW within the context of this document may be used, generally speaking, interchangeably.

Research on chemical agents and weapons (referred to as CW) after WW I led to the elimination of all but a few chemicals as having practical battlefield significance. For example, during WW II, the only chemicals considered to be of practical significance to the US and her allies were mustard and phosgene. The discovery of the nerve agents by Germany led to the availability of a new class of lethal compounds more potent than previous chemical agents. These new agents could cause death within minutes instead of hours. This increase in lethality and improved munition and delivery systems resulted in the employment of CW no longer being restricted to local tactical situations. CW could now be used at long range through an aircraft or a missile. CW moved from the tactical level of war to the strategic level. Such a potent and potentially damaging threat was the reasoning for the USG to maintain a CW retaliatory capability initially with unitary munitions.

The Threat

Several nations see CW as a cheap and readily obtainable means of redressing the military balance against more powerful adversaries.

CW is the "poor man's" answer to nuclear weapons. That said, conceivably the CWC will not be ratified nor adhered to. It is only logical that any nation would want to protect its national interest. Thus if diplomacy, economic sanctions, and informational data processing (sharing information via satellite, computer, etc.) do not work, the only other option is the military arm. When military force is required, nations want to have an advantage or at best make a "level," i.e., equal battlefield. If the adversary possesses an advanced weapon system, larger force, or any type of weapon of mass destruction the outcome of the conflict is weighed in their favor. These nations with such capabilities are considered military superpowers. Because the US meets the definition of a superpower, any Third World nation or non-signatories of the CWC will always attempt to gain and maintain a CW capability. Consequently, the US and her allies will always face the possibility of a CW attack with no viable deterrent.

A CW attack would involve one of two specific agents--mustard or nerve. Mustard and nerve agents are among the most important and lethal CW of the poor man's available arsenal of weapons of mass destruction. Although mustard is not as lethal as nerve, its unique characteristic of producing casualties at a low concentration renders it an important weapon. Nations of particular concern for potential employment of CW are Iraq, Syria, Iran, and Libya.

The prospect for global peace and stability is gravely affected in the Middle East based on these nations' capabilities to employ CW. Proliferation of CW in this region therefore impacts on the national security strategy of the US. Intelligence community information alleges

that Iraq still has a CW capability following the Persian Gulf war. Iraq began CW production in the early 1980s with Syria and Iran beginning chemical agent and munition production shortly thereafter. Libya is the last of the four to begin large-scale production of chemical agents and munitions.

The chemical weapons programs of Iraq, Iran, Syria, and Libya have three common traits. One, their programs were given high priority by their respective governments and were cloaked in secrecy. Second, the production complexes were accorded very restrictive security. In many instances, attempts were made to conceal them as legitimate industrial facilities. Third, assistance from foreign suppliers was crucial to their development (proliferation). Foreign assistance was the key element that enabled these nations to develop a capability to produce CW within a few years. Various foreign suppliers provided assistance in: technical and operational expertise, construction of production facilities; supplying precusor chemicals, supplying production equipment, supplying parts for munitions, and training personnel at all or several of the nations. These nations took that assistance and technology to develop and/or enhance their initial CW programs. In some cases, several of these nations progressed more rapidly than others.

Iraq's war with Iran prompted an accelerated program by Iraq to develop a CW capability. Iraq's main CW production facility at Samarra produced several thousand tons of chemical agent. From Iraq's program inception Western Europe was key in the supplying of chemical processing equipment, chemical precursors, and technical expertise. These

suppliers remained even after Samarra began operations independent of foreign assistance. Samarra produced mustard agents and GA and GB.

Iraq first employed CW against Iran in 1983. Iraq continued to use CW throughout the war. Iraq also used persistent and nonpersistent CW against Kurdish civilians. Though Iraq had an established history of CW, during the Persian Gulf War, conclusive evidence was never gained to verify usage of CW. From the outset of this (the Gulf War) conflict, the US sought to destroy Iraq's CW capability and thereby negate the employment of CW. Whether used or not, the potential impact of chemicals on the battlefield shaped the battle plans of all nations involved in the conflict. Had the Iraqi government attempted to substantially influence the war with CW only speculation could fathom the possible outcome. The bottom line is that the US and allies had to contend with such a prospect that will not be changed by ratifying the CWC or the current USG non-use policy. The next adversary may attempt to shape the battle at the very outset of hostilities by employing CW.

Syria, like Iran, began producing CW in the mid-1980s. Their main facility is located in Damascus. Syria has continued in its attempts to conceal its program and will likely continue to expand its capability. Iran, after numerous CW attacks from Iraq, began production of CW at its facilities is Tehran. They would later employ their CW against Iraqi troops. Iran's stockpile includes mustard, blood, and nerve agents. Western European to include Asian assistance afforded Iran the opportunity to quickly establish a CW program to counter that of Iraq. Despite Iran's current cease-fire with Iraq, Iran continues to expand her CW program.

Varying reasons drove Libya to develop a CW program. Libya has constructed the largest CW production facility in the Third World. Libya's facility is located in a remote area near Rabta, southwest of Tripoli. This facility is expected to produce mustard and nerve agents at a rate of approximately ten thousand agent tons per day. As with the other nations mentioned, Libya received foreign assistance from West European and Asian countries. Reports indicate that West German assistance was extensive to the Libyan CW production plant. Furthermore, Japanese firms assisted in the construction of metal fabrication areas. Several other European suppliers were also involved in varying aspects of facility production. Undoubtedly, over time Libya will become less dependent on foreign assistance, but without implementation of a strong and binding CWC now or in the near future, Libya will pose an even greater CW threat.

Government Initiatives

US policymakers and government officials may believe no use is the answer to deterrence and that eventual implementation of the CWC will occur. The first moratorium on the use of CW was in 1969, with complete stoppage of the binary production program in 1985. The final blow to the US CW program (unitary or binary) was in 1993, when the USG initiated its policy of no usage of CW. Several reasons were given for this decision though the potential threat of a CW attack remains. The USG stated that pursuit of a comprehensive and verifiable ban on the production and usage of CW should be a top priority for the USG. Accordingly, an adequate CW deterrent policy should be based on an improved defensive CW posture. The major reason (which is the specific

reason that the binary program was shelved) was the perception that if the USG embarked on a new CW modernization program (binary), it would undermine major US foreign policy, arms control, and budgetary considerations.

The Subcommittee on International Security and Scientific Affairs examined policy, arms control, and budgetary considerations reaching the following conclusion. Their findings suggested that a decision to modernize the US offensive CW capability by producing binary CW undermined a variety of military, technical, political, psychological, and moral constraints that generally had inhibited nations from producing or using CW. The production of binary weapons would not only enhance the prospect for the proliferation of CW in the world but would also initiate the start of another expensive and dangerous arms control race. The establishment of the 1993 policy decision using the reasons given had a substantial impact on the US National Security Strategy and the US National Military Strategy.

US National Security Strategy

A focus of the 1995 US National Security Strategy is enhancing US security. The USG assumes responsibility for protecting the lives and personal safety of Americans, maintaining the political freedom and independence as a nation, and promoting the well being and prosperity of the nation. No matter how powerful the US is as a nation, it can not secure these basic goals unilaterally. Accordingly, the only responsible US strategy is one which seeks to ensure US influence over

and participation in collective decision making in a wide range of circumstances.

The US playing the lead role in defending common interests helps ensure that the US will remain an influential voice in international affairs-political, military, and economic--that affect the US well being, so long as the US retains the military wherewithal to underwrite its commitments. To protect (defend) her interests, the US must deploy robust and flexible military forces that can accomplish a variety of tasks--one of which is countering weapons of mass destruction. The USG will devote greater efforts to stem the proliferation of weapons of mass destruction and their delivery means, but at the same time will improve its capabilities to deter and prevent the use of such weapons and protect US personnel against their effects.

Weapons of mass destruction pose a major threat to US security and to that of US allies and other friendly nations. Accordingly, a key part of the US strategy is to stem the proliferation of such weapons and to develop an effective capability to deal with these threats. Most importantly for the USG will be to seek implementation of existing strategic arms agreements--the BDA and CWC. Countries' weapons programs and their levels of cooperation with the US nonproliferation efforts will be the most important criteria in judging the nature of US bilateral and multilateral relations.

The Clinton Administration supports the earliest possible ratification and entry into force (EIF) of the CWC as well as new measures to deter violations of and enhance compliance with the Biological Weapons Convention (BWC). The US also supports improved

export controls for nonproliferation purposes both domestically and multilaterally. The proliferation problem is global, but the US will tailor its approaches to specific regional contexts. The USG has concluded an agreed framework to bring North Korea into full compliance with its nuclear nonproliferation obligations. The US will continue efforts to prevent Iran from advancing its weapons of mass destruction objectives nuclear, biological, and chemical (NBC), and to thwart Iraq from reconstituting its previous program. In the Middle East and elsewhere, the USG will encourage regional arms control agreements that address the legitimate security concerns of all parties. These tasks are pursued with other states that share the USG concern for the enormous challenge of stemming the proliferation of weapons of mass destruction.

The US seeks to prevent additional countries from acquiring NBC weapons and the means to deliver them. The USG continues with its allies to develop a policy framework to consider how to reinforce ongoing prevention efforts and to reduce the proliferation threat and protect against it. However, should such efforts fail, the US must be prepared to deter, prevent, and defend against their use.

Policymakers apparently are swayed more to the aspect of defending US forces against the use of CW. Policymakers see CW as a condition of the battlefield which can be breached. This concept is to avoid contamination, protect against agent attack, detect chemical agents, fight contaminated or as the situation permits decontaminate, and continue the mission. This concept will require improved defensive capabilities. To minimize the vulnerability of US forces to weapons of

mass destruction, the USG must place a high priority on improving the ability to locate, identify, and disable arsenals of weapons of mass destruction, production and storage facilities for such weapons, and their delivery systems. The risk associated with this concept is what will an opponent do with their CW capability if a 100 percent destruction does not materialize during a military conflict? Prior to hostilities, the prevention of such a fate lies within the arms control community.

Arms control is an integral part of the USG national security strategy. Arms control can help reduce incentives to initiate an attack and enhance predictability regarding the size and structure of forces, thus reducing fear of aggressive intent. Further, it can reduce the size of national defense industry establishments and permit the growth of more vital, nonmilitary industries; ensure confidence in compliance through effective monitoring and verification; and ultimately, contribute to a more stable and calculable balance of power.

The USG perceives future arms control efforts as more regional and multinational. Regional arrangements should add predictability and openness to security relations, advance the rule of international law and promote cooperation among participating nations. They should maintain deterrence and a stable military balance at regional levels. The US is prepared to promote, help negotiate, monitor, and participate in regional arms control undertakings harmonious with US national security interests.

As arms control becomes increasingly multilateral, the Conference on Disarmament (CD) in Geneva will play a significant role.

The USG's intent is to support measures which will increase the effectiveness and relevance of the CD. Arms control agreements can block potential arms races--CW. Accordingly, the USG will continue to seek greater responsibility and restraint in the transfer of conventional weapons and global military spending. The lack of massive conventional weaponry may cause a nation to be less apt to build a CW stockpile. This philosophy is reflective in the US National Military Strategy.

US National Military Strategy

The US National Military Strategy is outlined in President Clinton's National Security Strategy. According to General John Shalikashvili, Chairman of the Joint Chiefs of Staff, the National Military Strategy will enhance USG security by maintaining a strong defense capability, promoting cooperative security measures, working to open foreign markets and spur global economic growth, and promoting democracy abroad. This strategy is achieved through national military objectives. These military objectives fall under the umbrella of two areas--promoting stability and thwarting aggression. Issues relative to CW are within the scope of thwarting aggression.

The strategic concept within thwarted aggression comprises three tasks: remaining constructively engaged in peacetime cooperation; acting to deter aggression and prevent conflict; and fighting and winning wars when called upon. During a war US forces are focused on fighting a defensive oriented CW conflict. This concept will encompass early warning and detection of CW, CW avoidance measures, and decontamination procedures. Still the highest priority to the US

military strategy is to deter a nuclear attack against US forces or her allies. CW is considered to be more of an arms control issue which will hopefully be resolved through negotiations and ultimately with implementation of the CWC.

The National Military Strategy states that arms control efforts contribute significantly to US security by limiting and reducing the number and types of weapons that can threaten the US and by reducing regional arms buildups that can raise tensions and risks. Recognizing the contributions that arms control agreements can make to national security, the USG seeks to broaden the range of arms control efforts to include chemical and biological weapons. The military strategy makes the assumption that once the CWC is implemented it will guarantee the destruction of all chemical weapons and their production facilities. This assumption may be too much of a leap of faith. The CWC may never be ratified. Furthermore, if and when the CWC is ratified, violators will still maintain their CW stockpile conceivably achieving the upper hand from nations which have either destroyed or never had chemical weapons.

CHAPTER 3

REVIEW OF LITERATURE

Chemical Weapons Convention

This chapter discusses the evolution of the CWC from the US-Russian perspective. Several areas discussed include the relationship of the MOU, BDA, and CWC Protocols; obstacles/problems surrounding implementation of the CWC; unique aspects of verification from the USG standpoint; weapons proliferation; USG political posturing; and the promotion of NBC defense as the plan of action when CW is employed against US forces converse retaliation in kind.

In 1928, an international treaty banned the use of CW but not their development and production. The CWC would require such a follow-on. The US signed the CWC in 1993 but have not ratified the agreement. Once ratified by at minimum 65 countries, the document would enter into force. The US also signed two bilateral agreements with Russia aimed at destroying both countries' CW stockpile--the MOU and BDA. These agreements would serve as the model for CW arms control and ultimately influence other countries to sign the CWC, e.g., facilitate ongoing negotiations on the CWC.

After more than 20 years of negotiations, the convention was opened for signature in January 1993. As of January 1995, 154 of the 192 "modern" countries had signed the convention; however, only four had

ratified the CWC. The CWC restricts signatory countries from developing, producing, acquiring, stockpiling, retaining, transferring, or using CW; requires destruction of exiting CW stockpiles and facilities; controls the export of items used in the production of CW; and provides for inspections to ensure compliance. Monitoring the implementation of the CWC will be an international body, the Organization for the Prohibition of Chemical Weapons (OPCW) based in The Hague, Netherlands. The Preparatory Commission, a predecessor of OPCW, will be the permanent agency charged with execution and enforcing the CWC.

To date, of the major military superpowers (US and Russia), significant technical, political, and financial obstacles have prevented Russia from beginning destruction of its CW. However, the US and Russia have made progress. The two countries agreed that a US contractor would develop a comprehensive plan for the Russian CW destruction program. Nevertheless, much uncertainty exists over Russia's ability to safely destroy her CW. The On-Site Inspection Agency, the US executive agent for treaty inspections, currently assists the Russian government with language training in the area of destruction terminology. The first course was held at Aberdeen Proving Grounds, Maryland, November 1994 to April 1995. A second course was held June to September 1995. Additional courses will be conducted as necessary IAW a bilateral destruction support agreement between the two countries.

US-Russian Bilateral Agreements

Under terms of the MOU, signed September 1989, the US and Russia agreed to exchange CW data on stockpiles, facility locations, and

equipment and to verify this data using on-site inspections. The BDA, another bilateral agreement between the US and Russia, signed in 1990, called for destruction of most of both countries' CW stockpiles and additional inspections. Russia has not begun nor made plans for destruction of her stockpile, but the US will IAW a Congressional mandate. Disputes over the number of verification inspections to conduct, verification procedures, and procedures for conversion of CW production facilities to civilian use, cost effectiveness/cost estimates have delayed Russian implementation.

MOU, BDA, AND CWC Protocols

The MOU required each party (US and Russia) to declare all current and previous CW storage and production facilities in accordance with the guidelines of the CWC. Further, each party agreed to conduct a total of five inspections (one inspection in each country would be a challenge inspection) in the US and in Russia. The MOU also identified various rights and privileges that the inspectors and the inspected country should abide by during the conduct of inspections.

In the conduct of inspections, inspectors would have the right to: (1) receive the inviolability given to diplomatic agents; (2) use 15 inspectors during the inspection; (3) unintrusive access and shall fulfill their functions with "minimal" impact to the inspected site; (4) ensure inspector safety during the inspection; (5) ask "relevant" factual questions; (6) conduct sampling and analysis of suspected chemical agents; (7) have the right to take "relevant" photographs of objects or buildings; and (8) request clarification if ambiguities arise, yet place unresolved issues in the inspection report. The

inspected side shall: suspend CW movement; conduct exit monitoring to show that no CW departed the facility; conduct a safety briefing consisting of no more than eight hours for storage inspections or three hours for challenge inspections; allow managed access of sensitive areas; coordinate sampling and analysis; coordinate video recording; remove sensitive papers, shroud displays and equipment; restrict sampling and analysis to schedule 1, 2, and 3 chemicals (schedules are discussed in chapter 5); and provide on-site escorts during the inspections.

The objective of storage or production inspections IAW the MOU was to determine the quantity and types of CW at a declared facility and build confidence in the accuracy of the declaration. Inspections vary based on the type of facility to be inspected. Storage site inspections will consume no more than seven days, production sites will consume no more than two days, and a challenge inspection of either type site will consume no more than 84 hours.

> The BDA is in essence the next step in a logical progression to the CWC. It's the bridge connecting the requirements of the MOU to those of the CWC. 'The Parties hereby reaffirm the obligations undertaken pursuant to the MOU between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics (Russia) regarding a bilateral verification experiment and data exchange related to as the Memorandum'.[1]

Each party, again the US and Russia, agree to begin destruction of their CW stockpile based on the declared data exchanged during the MOU.

The BDA consists of four phases. Phase I is the completion of destruction testing of a declared destruction facility not later than June 1997. Phase I also is the initial destruction of at least 1 percent of the country's declared CW stockpile at the declared

destruction facility NLT June 1998. Phase II and III will involve the destruction of 20 and 40 percent of each country's declared stockpile identified in the MOU, respectively. Phase IV would occur in the year 2004 with a reduction in total CW stockpile for each country to no more than 5,000-agent tons.

The rights and privileges of inspectors and the inspected side are the same as those of the MOU. The objectives of the inspections are also the same with one exception. The objective at destruction facilities is to confirm specific types and quantities of CW brought to the site for destruction and confirm destruction. These inspections will involve year-round monitoring at the destruction site. The objective of production site inspections is to confirm no resumption of production and confirm no specialized CW production equipment is removed from the site. The inspection time line at a production facility would not exceed two days.

The CWC is the culmination of the efforts of the US and Russia. The rights of the inspector and inspected side are the same as those of the MOU and BDA. The CWC will apply to all signatories and include several portions of the protocol of the MOU and BDA with the inclusion of the conduct of interviews and the conduct of off-site sampling and analysis verification. The MOU and BDA concepts will serve as the bridge or gateway to the CWC.

Obstacles to Implementation

Underlying the implementation problem is a lack of technical and financial resources needed to destroy Russia's CW in a timely and safe manner. However, in 1994, the US agreed to fund a US contractor to

develop a program for destruction. The US will also fund an analytical chemical agent destruction testing laboratory in Moscow. This operation will also be the responsibility of On Site Inspection Agency (OSIA). Aside from the US, Germany is the only other country to assist Russia. The US has pledged over $55 million with a potential pledge of over $89 million. Germany has pledged $2.9 million to aid in the Russian destruction program. Russia has stated that she will need several more million to destroy her stockpile and has suggested that she would like the US or OPCW to incur the cost.

The CWC is facing several obstacles that could hinder its goal of eliminating the production, stockpiling, and use of CW. The obstacles include several suspected countries have not and probably will not sign the CWC--Egypt, Libya, Iraq, Syria, North Korea, and Taiwan. Taiwan is not recognized by the UN and therefore, is ineligible to sign the CWC.[2] They [Taiwan] conceivably will fall under China in 1999. Sixty-five countries must ratify the CWC and submit their instruments of ratification before it can enter into force.

The initial target date was January 1995. Many countries look to the US and Russia to ratify the CWC before them. The US initially planned hearings for ratification in early 1994, which were delayed until after the execution of the MOU. After completion of the MOU numerous questions remained, therefore ratification was delayed indefinitely. Russia's changing political situation makes ratification for them unlikely in the near term as well.

In the meantime, the USG is concerned that Russia is developing a new binary program. The Russian binary program is significantly

different from the US program. The Russians conducted research and development combining two lethal nerve agents. An attack with such a weapon would potentially have an effect on several bodily functions requiring extensive medical support and initial accurate diagnosis.

The true irony of CW is that in 1925, the Geneva protocol was signed by 140 countries inclusive of the US and former Soviet Union (Russia). The Protocol entitled "Prohibition of the use in war of Asphyxiating Poisonous or Other gases and Bacterial Methods of Warfare" banned the use of CW. However, the Germans found "loopholes" to operate around the true intent of the protocol developing and employing nerve gas in WW I. These activities caused many other nations to develop and sustain a CW stockpile as either a deterrent or for retaliation. The initial intent of the US was to have a CW capability and then institute a binary program to replace the aging unitary CW stockpile. This policy was "modified" when the USG moved from general usage to primary retaliatory usage. This was revamped in 1992, when the US established a no use policy implemented in 1993.

Government and Arms Control

The National Security Council provides overall US policy direction for the CW agreements and serves as the National Authority for ensuring that declarations (the data regarding CW stockpiles, facilities, and former production) are made and inspections are carried out in a timely manner. The Arms Control Defense Agency (ACDA) serves as the Office of the US National Authority and is responsible for compiling required declaration data and reports, acting as the US liaison with OPCW, and providing administrative support for US

implementing procedures. Coordinating implementation is an interagency working on chemical matters known as the Chemical Weapons Interagency Working Group (CWIWG) with representatives from the State Department, Department of Defense (DoD), Department of Commerce (DoC), Justice Department, Department of Energy (DoE), ACDA, the Joint staff, and the intelligence community. The intelligence community is made up of several organizations, but security reasons will not permit the disclosure of which organizations are involved in CW. Accordingly, any reference to one or more intelligence gathering, providing, and analyzing agencies will only be referred to as the intelligence community.

The US has a program to prepare for the verification inspection process under the MOU, BDA, and CWC. Participating in the program are various components of the DoD, including the military services, the Joint staff, OSIA, DoE, DoC, the Justice Department, the State Department, ACDA, the intelligence community, and the Defense Nuclear Agency (DNA). These organizations have and continue to work on the details to implement the CWC. If and when called upon by the President of the United States or Congress these organizations will ultimately bear the burden of verification and compliance requirements for the US. But first, the President and Congress must agree on just how to proceed in the CW arms control arena.

The major question the President or Congress will have to answer is what will happen if someone violates the CWC. Of a more urgent need is, What will happen if there is a violation or unresolved issue(s) on the MOU and/or BDA? Presidents from John F. Kennedy to

George Bush have had to convince Congress as to the impact of such actions especially by the Russians. Once caught then what? Congressional debate over treaty compliance have followed a discernible pattern. Critics point out Russian transgressions, whereas supporters dwell on the benefit of the agreements.

President Kennedy

Some suggest that regarding CW the US do as President Kennedy did regarding the limited Test Ban Treaty to influence countries to support the CWC. President Kennedy was however in a stronger position than Clinton to defuse compliance issues. Kennedy's foreign policy program had the support that the Clinton Administration appears to lack. Despite reluctance, Kennedy broke the moratorium on atmospheric testing in 1961, following the example of France and Russia. In doing so, he demonstrated that if the Russians reneged the possibility of US discontinuance was more than an idle threat.

President Nixon

President Richard M. Nixon had to contend with the Russian expansion of the intercontinental ballistic missile launcher program, a violation of the Interim Agreement of the Strategic Arms Limitation Talks (SALT) I. His response was to draft the Jackson Amendment requiring follow-on agreements to provide for equal levels of intercontinental strategic forces. Nixon was firmly committed to proceed with the B-1 bomber, Trident submarine, and various other programs to strengthen his hand in subsequent negotiations with the

Russians and Congress. Russian non-compliance figured prominently in the SALT II debates. One-third of Congress opposed the treaty based on passed Russian activities. One point should be addressed regarding CW and the Nixon Administration. In 1969, Nixon sought passage of a multilateral CW agreement; however, it failed because riot control agents and herbicides were not included in the proposal. Such an omission would violate the 1925 Geneva Protocol. President Ford would later include riot control agents and herbicides which led to US ratification of the 1925 Protocol 50 years later.

President Carter

President Jimmy Carter, unlike Kennedy and Nixon, was in a poor position to rebut Russian violations. The perceived benefits of the SALT II Treaty were not exceedingly appreciated, and the president's resolve in dealing with the Kremlin was widely questioned. Nonetheless, all three avoided a prosecutorial approach to the compliance issue, seeking instead to corral problems using new definitions of ambiguous treaty provisions. However, the Reagan administration made known the suspected Russian noncompliance and continued a US buildup--the development of a continued deterrent.

US Presidents have repeatedly emphasized a firm policy of no arms control without the necessary verification measures. Congress remained concerned that adequate verification of compliance should be an indispensable part of any international arms control agreement. Verification has and will always be a sore point within arms control. How to conduct it, when and what happens when a nation is caught

violating the agreement remain an issue in Congress which no presidential administration will successfully overcome.

Public Understanding

Several issues will always face the President and Congress regarding arms control verification. The US general public is at the top of the list of issues relative to arms control of CW. An unfortunate point is that public perception having an indirect impact on verification holds a very simplistic view of the process. The general public, for whom the President and Congress are suppose to represent, sees an agreement to eliminate CW or any weapon of mass destruction as being basic and simple to implement which is not the case. The public believes that if a nation were to violate the agreement they should be "punished" accordingly. The question would be, How and by whom should the violators be punished? Further, the question of the type of "punishment" imposed would also require an answer.

The US general public does not realize that in reality arms control is a very complex subject. The complexity arises from verification's multidiminsionality; verification involves issues of a variety of perspectives--technical, legal, strategic, military, and political. Appreciating verification's nature and developing policies that properly take into account these conflicting perspectives are major challenges to the President, Congress, and national policymakers. Additionally, the general public may not be aware of the amount of uncertainty associated with verification.

Verification

The fundamental concept of standards of verification is simple: How much uncertainty is acceptable regarding US ability to verify compliance? This level of acceptability is purely subjective. Defense Analyst Michael Gordon attempts to focus this issue by identifying the following questions to consider when policymakers assert that something is not effectively verifiable: (1) What activity is not in some sense verifiable? (2) Why is it important to limit a particular activity? (3) What maximum level of uncertainty in verifying a particular activity is acceptable? (4) Why isn't an activity verifiable? What particular dimension-technical, legal, strategic, military, political or combination of dimensions prevent the US from verifying a nation's compliance with the required confidence? (5) If the activity somehow "magically" became verifiable, would a country then favor an agreement limiting an activity? (6) Are there any related strategically or militarily significant activities that could be limited instead that would be verifiable?

The answer to these questions according to Gordon are the responsibility of the President, Congress, and the arms control community. Their analysis and recommended solution(s) are essential to public acceptance. Unfortunately, as history has shown agreement among these elements is very elusive.

A lengthy committee report on CW both unitary and binary provides a different slant. The Subcommittee on International Security and Scientific Affairs examined foreign policy and arms control policy implications of CW and the appropriate direction of the US CW policy for

the President and Congress. The report concluded in 1980 that: (1) preservation of an adequate CW deterrent policy should be based on a defensive CW posture; and (2) launching a new CW program (binary) would undermine US foreign policy, arms control, and budgetary considerations. These findings were instrumental in the congressional rejection of the 1978 Reagan administration's proposal to modernize the US CW stockpile with binary as a replacement for the aging and potentially hazardous unitary stockpile.

Proliferation

A major foreign policy issue raised during congressional debate on the Reagan proposal concentrated on the impact to CW proliferation. The argument that the US production of binary weapons would promote CW proliferation was based on a premise that the international political situation would allow such an outcome. CW would proliferate vertically and horizontally. Vertical proliferation is characterized by the further build-up of currently existing arsenals. Horizontal proliferation is the spread of such weapons to states not currently possessing them. Vertical proliferation would occur if countries currently possessing chemical weapons modernize, diversify, and expand their stockpiles.[3] Build-ups occur in response to changing perceptions of the military threat. Other factors might include a desire to exploit a commanding CW capability to gain political leverage or war-time advantage, or a loss of confidence in an existing deterrent capability or in the arms control process.

The focus of this research is horizontal proliferation. Several of the necessary preconditions for CW proliferation exist. The

international legal regime for the authority over CW is neither comprehensive, universal, nor adequately verifiable. There is reason to believe that the international system is becoming less anarchic or that conflict will become less likely in the near future. The trends would seem to be in the opposite direction: an extensive international arms trade exists, there is a general trend towards increasing armament.

> In addition, evidence exists of the periodic use of chemical weapons: there are allegations, for instance, of the use of chemical agents in at least 29 of the 200 or more wars between 1914 and 1970.[4]

Horizontal proliferation of CW could occur as a chain reaction whereby one nation acquires CW therefore "enticing" its regional competitors to gain a matching capability. Proliferation in one region could spread to other regions as political and legal barriers to proliferation are broken down. Though the threat of CW proliferation is real, the level of actual proliferation is limited. During the twentieth century, the number of nations known to have CW declined. It is understood amongst allies of the US that the US armed itself chemically to deter the former Soviet Union and that the limited binary program by the US occurred within an overall policy of no first use. Though with the Soviet Union no longer a combat threat other nations have come to the forefront as potential CW threats to the US and her allies. Given the threat, the US sought other alternatives.

In 1983, the US began an intensive pursuit of arms control negotiations in both bilateral and multilateral forums.[5] The US intensively adjusted its position in Strategic Arms Reduction Talks (START) and the Intermediate-Range Nuclear Forces (INF) bilateral negotiations. The US also began major initiatives with the Committee on

Disarmament to ban chemical weapons. Unfortunately, the lack of agreement on procedures, terms of inspection verification, and the cost caused progress in the chemical arena to lag far behind the nuclear initiatives. Furthermore, the threat of nuclear war appeared suicidal. This posed a problem to national security in that no one would win a nuclear conflict therefore, elimination of nuclear weapons should be the objective toward world peace. On the other hand, chemical warfare was perceived to be a combat multiplier and a condition of the battlefield and not "the" decisive blow. Chemical weapons warfare would require alternative solutions yet victory was possible. Policymakers accepted this theory and as a result we may never eliminate CW.

The same severity that the US used to rationalize the elimination of nuclear weaponry should have been applied to chemical weapons. Chemical weapons though not as destructive as nuclear weapons pose the same grave danger. What should be kept in mind is that the scope and complexity of the nuclear treaties and chemical agreements are massive. Furthermore, the objectives are considerably different.

Treaty Comparison

There is only one nuclear agreement which is multilateral and approaches the scope and complexity of the regime envisioned in the proposed CWC. It is the program of international safeguards defined by the Nuclear Nonproliferation Treaty and agreements between the International Atomic Energy Agency and individual nations. These agreements express the differing obligations and requirements of nuclear

weapons states and nonweapon states with regard to nuclear weapon safeguards.

Some similarities between NPT and CWC are the infrastructure and procedures necessary to implement the treaty, including data gathering from government and commercial facilities for submittal to an international treaty agency, and the opening of domestic facilities to international officials for on-site inspection. A basic difference between the two is that IAEA safeguards apply only to declared facilities that are intended for peaceful use. Procedures within the CWC arena are intended to apply to all facilities, both military and civilian, that are engaged in activities covered by the treaty.

> Differences in technology, history, and objectives further weaken the CWC/NPT analogy, since the proposed CWC goes beyond nonproliferation and is also intended to impose identical controls on all signatories regardless of their status as a chemical weapon state.[6]

Unique experiences gained over thirty years of international nuclear safeguards and several years of US IAEA inspections have provided important lessons for the proposed CWC. An evaluation of the NPT to the CWC is not the focus of this research. This information was provided merely to show a general comparison of verification protocol. An evaluation would only compare "apples to oranges" and require review of classified data which will not be included in this document.

> An additional difference of the NPT to the CWC is that at least five nations have detonated nuclear explosives (United States, the former Soviet Union, the United Kingdom, France, and China) but 20 nations are reported to possess chemical weapons, including a number of nations with quite limited technological infrastructure.[7]

This potentially confirms the relative ease by which CW capability may be acquired, compared to nuclear weapons. The IAEA claims that no anomaly that might suggest diversion to non-peaceful use

has yet been found, implying the success of its activities. Loop-holes within the CWC however, will not afford those who must police or enforce this agreement to make the same statement. Unfortunately, these legal loop-holes are not the only impediments to the CWC.

CWC Implementation Obstacles

The CWC is facing numerous obstacles that could impede its goal of eliminating the production, stockpiling, and use of CW. Several countries suspected of having or developing CW have not signed and may not sign the CWC. In addition, the prospects for early ratification of the CWC were discouraging. Only four signatory countries have submitted instruments of ratification, and the CWC missed its EIF target date of January 1995. Furthermore, approximately one-half the signatory countries have not paid their assessed share of expenses to the Preparatory Commission (PrepCom) or participated in the commission's plenary sessions.

Since its inception the PrepCom has established an organizational framework, developed a budget, recruited staff, and begun to draft regulations and procedures for the Organization for the Prohibition of Chemical Weapons (OPCW). However, it lacks input from signatory countries. Most countries are awaiting the lessons learned and recommendations from the US-Russian MOU and possibly the BDA initiatives. Their actions will undoubtedly determine the effectiveness of the CWC.

The CWC would enter into force 180 days after 65 countries ratified the document. The Presidents of the United States and Russia

declared their intention to promote treaty ratification as quickly as possible and both anticipated EIF of the CWC not later than 1995. Early ratification, however, was improbable.

> As of December 1993, only Sweden, Fiji, Mauritius, and the Seychelles had submitted instruments of ratification with the United Nations. Saudi Arabia, Norway, and Oman have ratified the CWC but have not deposited their instruments of ratification.[8]

Many countries are looking to the United States and Russia to ratify the CWC before doing so themselves. In the United States, the CWC was submitted to the Senate for ratification in 1993. Several questions relating to the success of the MOU have delayed discussion of the CWC until those issues are resolved with Russia. Russia's prospects for early ratification are uncertain because of the changing political situation and determination of the organization that will assume responsibility for the chemical weapons program. Additionally, Russian officials have stated that achieving $1 billion in foreign assistance and funding the 1990 BDA are essential to their ratification of the CWC.

As of 1993, 154 of the 192 countries of the world had signed the CWC. As stated of the 154 countries only four have ratified the CWC. Among the non-signatory countries are Egypt, Libya, Iraq, Syria, North Korea, and Taiwan. All of these countries are suspected of having or developing chemical weapons. Countries that refuse to sign the CWC face restrictions of receiving CW or to receive transfer of dual-use CW.

> The PrepCom has made little progress as a result of limited advancement by the US and Russia or by receiving little support from many signatory countries. As of December 1993, 71 of the 154 signatory countries had not paid any of their 1993 assessment.[9]

In addition, attendance at the PrepCom's five plenary sessions was marginal. At these sessions, important decisions affecting the commission were discussed for approval or rejection. Unfortunately, low

attendance may have hindered crucial verification requirement procedures from discussion thereby allowing the development of legal loop-holes within the CWC.

Several articles discuss arms control of chemical weapons and theorize why the task of ratification of the CWC may be too colossal to overcome. Dr. Christopher Green, M.D., Head, Biomedical Science, General Motors Laboratories, and member of the Army Science Board, has difficulty with the classification and the language of what constitutes a chemical weapon or a toxin weapon or a biological weapon or a chemical weapon derived from biological means or a biological weapon derived from chemical means. Furthermore, he states, tacticians can not agree on the utility of these weapons nor agree on the moral imperative or lack of a moral imperative as to their use. He identifies the concern of the world regarding the destructive power of chemical weapons and states the paradox it poses within the arms control arena. The paradox is that most nations will express great aversion at the thought of usage of CW, but there are no other weapon systems for which proliferation is as assured or is as rampant. Though Dr. Green has no solution, he is an advocate for exploring the need for solutions to nonproliferation.

Doctor Green elaborated on four reasons as to why the nations of the world should be concerned (if not worried) about the proliferation of CW. First, within the past decade there has been evidence of CW use; second, there has been evidence of proliferation and dual-use chemical processed technology; third, manufacturing technology and technology for stockpiling and distribution has shown signs of increase; and fourth, advancing technology in the areas of biology and

chemistry are achieving an apex which could double within the next twenty years. Unless these issues are addressed and resolved quickly, proliferation of CW could span from approximately twenty nations to sixty or more with relative ease.

Doctor Green outlined five reasons why arms control of CW has not achieved elimination of these weapons. First and probably foremost is that the verification process is for intention rather than for material. He questions whether or not the arms control process even has relevance to the issue of chemical and biological warfare, particularly with the advent of advancing technology in chemistry and biology. In addition to the ease of production, assuming a nation has such a capability, are the low capital requirements (cost) for start-up, research, development, implementation, dual-use facilities as well as the products.

Secondly, Dr. Green believes the US should consider the unthinkable and exotic weapons as a grouping--one class of weapons. The rationale for this is, especially in genetic engineering where the pace of discovery is extremely fast, US society can be guaranteed that policymakers are out of date with technical advances. This lack of knowledge, though no fault of the policymaker, allows for the development of legal loopholes within the text of any potential arms control agreement. Weapons agreements and treaties are specific in nature. Accordingly, if data is not included during initial negotiations such information will not be prohibitive or limiting following EIF. This assumption became reality during inspection activities related to the MOU.

Thirdly, the past problems that have defined the military issues of chemical use were primarily associated with fratricide or friendly force operations within a contaminated environment. Such issues would be solved by prophylaxis of troops, thorough decontamination, and medical treatment. However, CW and their future use on the battlefield is not defined to the extent that we are able to define the battlefield.

Fourth, developing nations will achieve advanced technology on CW. Consequently, these nations should develop some common strategies to make their knowledge base worldwide. Their technology should focus on research and development for commercial usage and not for war. Accordingly, these nations should share their strategy for the prevention of terrorist action and actions by urban guerrilla groups to prevent the use of CW. This defensive strategy negates employment by the attacker because the attacker no longer has an advantage. And finally, the arms control community should draft language geared toward stopping proliferation.

Mr. Nabil Fahmy, Arms Control Officer of the Mission of Egypt to the United Nations and Vice Chairman of the First Committee of the United Nations General Assembly, echoed these and additional concerns related to the problems with ratification of the CWC identified by Dr. Green. Mr. Fahmy characterized the development of the CWC as slow but favorable in terms of success. He indicated that efforts to prohibit CW is one in which the international community finally committed itself to in 1989.

The aftermath of the Iran-Iraq war brought the proliferation and use of CW to the forefront in 1989. Coupled with this, and related to the negotiations on the prohibitions of CW at the Conference of Disarmament were indications that the US, inclusive of other Western countries, envisioned retaining a CW deterrence. This deterrence would be composed of a modernized CW stockpile--binary weapons. Though the US had stated its intention of no first use of CW, the idea that the US still possessed such weapons caused grave concern among many nations.

The political pressure and momentum towards prohibiting CW had been energized by events of the Iran-Iraq war. Arguments supporting interim measures emerged and threatened to shift the focus of international endeavors away from totally prohibiting CW, towards reaffirming the prohibition of the use and/or preventing the proliferation of CW. These two factors competed against each other to set the direction of the international effort. Such political bickering amplified the lack of verification procedures.

In 1986, Mr. Dennis Miller, Executive Director of the Board on Army Science and Technology at the US National Academy of Sciences spoke specifically to the US policy and capabilities. Mr. Miller concedes that CW is abhorrent to humanity. He further stated that while the US has a CW stockpile the former Soviet Union has and some will argue continue to improve their CW capability. Though, since the end of the cold war in 1989, Russia does not pose a threat to the US she could sell her CW (proliferation) to the "highest" bidder. Based on the economic situation in Russia such an option can not be ruled out. That said, the

only "logical" counter to such a large offensive CW arsenal is an equivalent capability, according to Mr. Miller.

The US and Russia had followed a strategy of deterrence. However, it was clear that policymakers in Russia believed their huge investment in CW was an important part of their conventional warfare arsenal. The US, on the other hand, had always considered its CW as a last resort, which would not be employed except in retaliation. US policymakers believed that the Russians intended to make offensive use of its CW stockpile in time of war, therefore large investment in the area of US CW was made.

> President Ronald Reagan in a letter dated February 26, 1985, to Senator Barry Goldwater stated, "I assure you that regaining a chemical warfare deterrent is high among the priorities of the Administration, and I pledge vigorous efforts in pursuing this objective."[10]

President Reagan pointed out, however, that if a verifiable ban on CW was agreed to, binary weapons could easily be destroyed.

Review of Literature Summary

The research goal is to determine if reactivation of the binary program by the US rather than the current policy renouncing the use of chemical weapons could result in ratification of the CWC to deter and potentially eliminate all chemical weapons. There was no historical data relative to the binary program beyond 1986. Further, there was no current information regarding unitary CW employment beyond 1970. These years coincide with the program and/or production suspension dates for each type of CW munition. While this data is outdated it did provide some insight into arms control initiatives and political planning assumptions.

The reviewed data focused on several issues relative to the 1960-1985 time frame; however, as mentioned previously issues within the arms control arena are in a constant state of change. Issues of the day may be irrelevant tomorrow. This is a problem with arms control. The reviewed literature discussed funding for the Russian CW destruction program as a major ordeal for success. It also relayed that funding to the Russians would not be easily obtained due to violations in other treaties/agreements which have occurred from President Kennedy to President Reagan.

No resolution for Russian violations was reached, but the public opinion had a major impact on such issues. At times it appeared that the USG swayed never resolving issues, gaining the full backing of the general public or gaining international support. There was discussion about the arms control community, and several flaws within this community which adversely effected arms control negotiations.

First, these policymakers assumed that all issues [discrepancies] with the Russians involving CW arms control would be resolved and the CWC would be implemented as scheduled-January 1995. Secondly, they assumed that all "civilized" nations of the world would embrace the CWC inspection provisions with open arms. Many nations have grave concerns about foreign "inspectors" in their country reviewing proprietary or governmentally sensitive information under the guise of a CWC verification inspection.

US policymakers had since WW I viewed the US CW policy as being three-pronged. The US sought to (1) use CW initially as the situation permitted; (2) maintain a strong CW defensive posture; and (3) use the

arms control community to resolve proliferation issues and ultimately aid in implementation of the CWC. In hindsight, no contingency plans were developed to address the diplomatic, economic, military, informational, or societal changes of the world. Several other issues were discussed; however, none had the impact of those mentioned regarding EIF of the CWC. Lastly, the research discussed the US Nuclear, Biological, and Chemical (NBC) defensive program as the major deterrent to CW.

What the review of literature did not discuss was what the US would do if the CWC or bilateral agreements failed. There was no discussion of a continued or renewed deterrent. The NBC defensive program was in effect while the US produced CW; therefore, this program appears to have become the US deterrent by default. There was no discussion of possible solutions regarding potential violations of the CWC. Other treaties in effect did not offer viable answers for the CWC due to its complexity and global application. Ultimately, limited discussion was offered regarding linkage between an effective deterrent and policy to influence implementation of the CWC.

CHAPTER 4

RESEARCH DESIGN

The research methods employed were the existing survey and operations research/systems analysis. The research consisted of a review of books, articles, reports, and military manuals which relate to chemical weapons' political aspects, defense, and deterrence. As mentioned, approximately 95 percent of the available data was produced between 1960 to 1986. It was imperative to incorporate information from the Memorandum of Understanding, Bilateral Destruction Agreement, and the Chemical Weapons Convention Protocols. These documents offered the most current data for treaty/agreement implementation.

Various news articles and chemical/engineering journals also provided current information and insight on the status of the CWC. Unfortunately, no information was available regarding the binary program beyond 1985. Many articles covered arms control solely in the nuclear environment; however, some data was extrapolated relative to CW. This research confers on various sensitive yet unclassified issues with representatives of the arms control community at the Department of State and the Interagency Affairs level. This research also gained information through interviews with personnel of the On-Site Inspection Agency (OSIA). These organizations are involved at the ground level of

arms control verification. Further, they are intimately involved in the MOU, BDA, and CWC.

The MOU and the BDA are bilateral agreements between the US and Russia which fall under the umbrella of the CWC. The CWC has worldwide applicability, has stronger provisions, yet allows for bilateral arrangements to augment and support its (CWC) objectives. The bilateral agreements are designed to gain confidence in the CWC provisions and inspection procedures, encourage CWC membership, facilitate completion of the CWC objectives, and support CWC implementation.

A general overview of the three agreements is provided, however, each agreement was discussed in detail in chapter 2. The CWC will produce a worldwide ban on chemical weapons and their employment. To accomplish this several provisions (objectives) must be enacted among all signatories. First, the CWC seeks to prohibit the development, production, and use of CW. Second, the CWC will require the destruction of CW stockpiles and CW production facilities. However, the CWC will allow for defensive CW work. Third, the CWC requires extensive reporting on current stockpiles and production facilities to establish verification data for inspections. This data would be used in verification measures-routine and challenge inspections. Inspections are applicable to any signatory nation with regards to that nations' military facilities, governmental facilities, and civilian chemical industry. Lastly, violators of the provisions will incur some form of international action.

Overview

The CWC has been under negotiations for some 24 years. It recieved stimulation from the Reagan Administration when then Vice President George Bush set several US proposals to the CWC in motion in April 1984. The final draft of the CWC, commonly referred to as the "rolling text" was completed in 1992. This document was approved by the United Nations and opened for signature in Paris in January 1993. A total of 157 nations have signed the CWC; however, only four of the needed 65 nations have ratified the CWC. Once ratified the CWC will EIF 180 days following submission of the 65th signature of ratification.

The MOU and BDA precede the CWC. As mentioned earlier both the MOU and BDA fall under the umbrella of the CWC. To date, only the MOU has been implemented and completed. The MOU was signed in September 1989. The purpose of the MOU was to: (1) gain confidence in the exchange of data guidelines between the two major super powers for inspection activities and (2) facilitate completion of the CWC. In essence, the MOU was to be a model of the CWC. This model would allow OPCW and the nations of the world to gain some practical understanding of how the CWC would achieve its objectives.

The MOU would be conducted in two phases. Phase I consisted of the data exchange and familiarization visits. Phase II included a more detailed data exchange and culminated with several on-site inspections to verify data and test inspection procedures. These inspections were conducted in accordance with the draft CWC procedures. Phase I of the MOU began in 1990 and Phase II was completed in 1994.

The BDA serves as a bridge between the MOU and the CWC. This agreement between the US and Russia was signed in 1990 with an expected EIF of 1992. Obstacles in the MOU caused delays to the BDA which is still pending implementation. As the bridge, the BDA was to be the next logical progression from the MOU-exchange and verification of data to limited destruction. The BDA's purpose is to facilitate destruction and non-production of CW and measures to facilitate the CWC on banning CW. Ostensibly, once the US and Russia agreed and executed the data exchange and appropriate inspections, both would proceed with destruction of their respective stockpiles inclusive of destruction or conversion of former production facilities. The rationale being that once the super powers agreed on the procedures and destroyed a percentage of their stockpiles other nations would take note of this commitment and follow suit.

The intent of this bilateral agreement was to halt CW production, reduce US and Russian stockpiles over a ten-year period, foster a spirit of cooperation between the super powers regarding destruction, protect the environment and safety of people, encourage CWC membership, and facilitate completion of the CWC. The BDA would be conducted similarly to that of the MOU. Both countries would conduct a detailed data exchange which would be followed by a series of on-site inspections. These agreements differed in that the BDA would include inspection of destruction facilities. Unfortunately, the BDA ran into several obstacles which have hindered implementation.

The BDA has experienced very slow progress in negotiations regarding several sensitive issues. The original implementation

protocol is considered outdated requiring potentially a major revision. The EIF has slipped indefinitely from the originally scheduled date of December 1992. A Russian CW destruction program is not expected until 1997. Yet, the most important hurdle of all is that the BDA must still receive approval from the congresses of each country.

The outlook for the BDA is bleak. An anticipated completion date of new negotiations has passed with no "new" projected completion date. Subsequently, EIF is also indefinitely postponed. Issues regarding the inspection baseline and/or annual quotas hang in the balance. When and if implemented the BDA will be the final step toward successful implementation of the CWC.

CHAPTER 5

ANALYSIS

MidLevel Military Conflicts

When considering the CW threat, what could the US do if a scenario as outlined materialized within the next six to ten months. Tensions rise in North Korea over nuclear reactors. The US had negotiated with North Korea to dismantle their nuclear weapons and nuclear energy programs with the condition that resources would be provided by South Korea. After three months of strained acceptance, North Korea charged South Korea with providing substandard materials. Two weeks of diplomatic discussions broke off when North Korea initiated a military offensive to capture Seoul (the South Korean capital). The north continued its attack southward in an attempt to unify the peninsula and gain control of the South Korean industrial base. These hostilities draw the US and other United Nations' countries into the conflict.

The US deploys four Army divisions to the region. This buildup to five US divisions (the 2nd Infantry Division is permanently garrisoned in Korea) is sufficient to block a continued North Korean penetration north of Taegu; however, two additional US divisions are required to join United Nations' forces in a counteroffensive to defeat the North Korean Army and restore the internal north-south border. As the counteroffensive begins other nations seek to enhance their

territorial control while the US and United Nations' forces are employed in Korea.

Syrian forces seize control of the Suez Canal and declare war on Israel. Likewise, Iraq declares war on Israel in an attempt to make it a "holy war." Saudi Arabia states she will come to the assistance of Israel if hostilities persist. At that offering, Libya states she will enter the conflict in support of Syria and Iraq. NATO sends forces to the conflict and the US deploys two divisions from Europe in support of NATO. Unfortunately, the military drawdown to the US and other European and Western nations has created a void and in some cases hollow forces. Further, NATO still maintains forces in Bosnia. US military strategists and tactical planners indicate that four Army divisions will be required to assist Israel and protect US interests in the region. Russia has remained neutral in both regional conflicts and talks have not to date swayed them to support the United Nations or NATO. Chemical weapons have been employed but on a limited scale using nonpersistent agents. Such employment in both regions combined with the element of surprise allowed North Korea, Syria, and Iraq to make enormous territorial gains while employing fewer divisions and sustaining few casualties.

These countries can afford to deploy their ground forces as deemed strategically and tactically necessary potentially employing CW where and when they chose without threat of retaliation. These countries in fact have tipped the battlefield in their favor. Neither forces from the US, NATO, or the United Nations can provide additional forces to influence the battlefield outcome. The "poor man's" weapon of mass destruction can and conceivably will be used to deter and/or stall

enemy forces until they (Syria, Iraq, and Libya) can maneuver sufficient ground forces to the area of interest to counter an enemy land force threat.

In this scenario several factors had an impact on the US failure to protect her national and/or military interests. One, the US downsized Army potentially could not handle two midlevel to highlevel conflicts. The effectiveness of a ten division army in this scenario was not enough combat power to influence the outcome nor protect US interests. Second, possible support from Russia never materialized. Though Russia is not considered a threat to the US or her allies, Russia did not or could not provide forces possibly due to internal unrest or instability. Third, the US did not have a CW retaliatory capability to use as a combat multiplier or political deterrent.

CW will not win nor deter war. However, when an opponent is aware that they will suffer the same battlefield conditions, e.g., enduring the same stress, hazard, and fatigue of CW, they may opt not to employ CW. When one knows the affects of CW, fear of retaliation with CW has and will deter their employment. A strong defensive posture will only potentially minimize casualties not deter enemy employment. For more than fifty years the US has had a CW retaliatory capability and as a result no known CW attacks were made on US forces--a proven deterrent. Its understandable that public opinion has mixed, if not negative, feelings about the employment of CW as a form of warfare. Its also understandable that the loss of an American life in combat in the public eye is unacceptable as we advance into the technological age of weaponry and warfare--Force XXI. Some USG agreement must be met to reassure the

US general public and achieve US objectives. The no use policy and dependence on CW arms control may not be the answer.

Current Status of the CWC

After one-quarter century of diplomatic squabbling and posturing about on-site inspections, sanctions, and side payments, the Chemical Weapons Convention was finally submitted to the Senate in 1993. In preparation for a ratification vote, the Senate began hearings on an industry-supported international accord that would impose a global ban on CW. The CWC would subject all commercial chemical plants to inspections and other verification procedures. The treaty, negotiated under the auspices of the United Nations and endorsed by 155 nations, was signed by former President Bush shortly before leaving office in January 1993.[11]

President Clinton submitted the CWC to the Senate for ratification in November 1993.

> At a Senate Foreign Relations Committee hearing, Secretary of State Warren Chritopher called ratification of the accord "a high priority for this Administration," and said it "promises to eliminate a scourge that has hung over the world for almost 80 years."[12]

Unfortunately, the hopes of arms control advocates and the chemical industry were spurted when the Senate failed to ratify the CWC. The issues which stalled the advancement of the CWC in the Senate concerned Russia's ability to meet her obligations under the treaty and provisions related to riot control agents.

> Most interested observers thought that these issues could have been overcome-and the treaty ratified-had the Clinton Administration addressed them expeditiously and at a fairly high level.[13]

A noted opponent of the CWC Senator Jesse Helms (Republican--North Carolina), chairman of the Foreign Relations Committee, aided in the no vote for the CWC. He opposed ratification, citing Russia's alleged binary weapons program and that country's lackluster efforts to develop a chemical weapons destruction program. Helms may use the treaty as a lever to prod Russia to be more open and proactive about its CW program and drive to move more rapidly in developing a destruction program. Several supporters of the CWC disagree with Helms stating that the allegations of the existence of a binary production program could best be addressed through the CWC. Discussions continue but no hope for immediate resolution is expected between those for or against.

Once ratified Chemical manufacturers (the civilian industry) as well as the military will have to open their doors to international inspections on a recurring basis. Governments, even those in compliance, will be subjected to on-site, short-notice challenge inspections at facilities so sensitive their very existence has been shrouded in secrecy. Parties may be required to impose sanctions against violators and against nonsignatories, even if those violators are their allies.[14]

Further, governments will have to implement exit controls on commercially imported chemicals, and enact legislation to penalize countries who violate the controls.

Unlike the current international law governing chemical weapons, the 1925 Geneva Protocol, the CWC bans all use of chemical weapons, not just first use. The ban makes it impossible for states to

justify use of chemical weapons by accusing their enemies of having used them first, as Iraq falsely accused Iran during the Iran-Iraq War.[15]

Many analysts had considered ratification by the United States a foregone conclusion because the treaty has general support in the Senate. But U.S. lawmakers and analysts have raised a number of concerns. Environmentalists consider the Army's chosen method for destroying chemical weapons unsafe. Other organizations such as the Chemical Manufacturers' Association is satisfied that the risk of loss of proprietary information in the course of inspections is minimal. Yet many individual companies disagree. Policymakers and corporate legal representatives state that companies may argue that the treaty violates their Fourth Amendments rights. Some lawmakers are worried that rogue nations will not sign the treaty, and if they do that they will cheat. So the process of ratification remains complex and challenging. The process is further slowed due to verification.

Verification is the single most contentious issue in the 25-year-long negotiations over the CWC.

> Disputes arose initially between East and West, with the East bloc arguing up until 1987 that on-site inspections would legitimize spying [with] the West maintaining that a chemical ban would be meaningless without a provision for anywhere, anytime on-site, inspections with no right of refusal.[16]

When the Soviet Union accepted highly intrusive suspect site inspections, the United States concluded that risks to sensitive facilities posed by "anywhere, anytime" inspections were too intrusive. In 1991, the United States, formally proposed less intrusive inspections than those that the Soviet Union had supported in 1987. Meanwhile, the Cold War and the West were growing more concerned about Third World proliferation and less about Russia. Third World countries long silent

on the subject of verification began voicing objections to intrusive inspections. The United States found itself on the side of states suspected of having something to hide, including Iran, Pakistan, India, and China, and opposed by most of Europe.[17]

Ultimately a compromise was reached. Inspectors would be granted physical access to any site, but inspected parties would be allowed to "manage access," including to lock data or equipment in safes and to shroud sensitive equipment.

The final agreement on intrusiveness provides for both routine inspections of declared facilities and challenge inspections.

> All parties must declare and submit to routine inspections of all former production and stockpile sites, chemical weapon destruction facilities, activities related to chemical weapons defense, and specified types of chemical manufacturing.[18]

Chemicals covered by the CWC are divided into three classes-schedules: (1) warfare agents, (2) ease of conversion to such agents; and (3) the extent to which they are used by industry. The intrusiveness and frequency of inspections depend on the types and quantities of chemicals produced or processed. Schedule 1 chemicals are chemical agents, toxins, or immediate chemical precursors with few uses other than as warfare agents. Schedule 2 chemicals agents are immediate precursors used in small quantities by industry. Schedule 3 chemicals are agents or precursors widely used by industry. In addition, "other relevant facilities" that produce a specified quantity of discrete organic chemicals and thus pose a risk will also be monitored.

Two distinctive features of the CWC make it more effective at deterring cheating. First, it focuses on both facilities and materials in selecting sites for routine inspection. It targets sites at which

specific materials are present but also those considered to pose a risk to treaty objectives. Any facility that could be converted to manufacturing chemical agents are subject to routine inspection. Secondly, if any CWC party becomes suspicious about activities at any site--including undeclared sites where no chemical manufacturing has ever taken place--it can demand a challenge inspection.

When the treaty enters into force, problems will certainly arise. For example, consider that it would be easy for the treaty regime to expend most of its routine inspection funds in Western Europe, the United States, and Japan, where most schedule 2 chemical production occurs, but where the danger of proliferation is small. To focus on these countries would be to repeat the mistake of the International Atomic Energy Agency, which spends more than half its inspection budget in Canada, Japan, and Germany. The decision to make "other relevant facilities" subject to routine inspection increased the number of facilities in developing countries that will be targeted. The deterrent value of inspections will be slim, for there are simply too many such facilities and the cost of inspecting a fraction of them too high for deterrence to be prohibitive. Routine inspections as now envisaged will provide a baseline picture of the world chemical industry but are unlikely to catch cheaters.[19]

Two possible remedies exist for increasing the deterrence value of the CWC. The first depoliticize challenge inspections by demanding them in sufficient numbers that they are no longer associated with crises. Second, allow parties secretly to nominate facilities for routine inspections.

Despite modifications in the challenge inspection regime, the risks posed by the CWC's extraordinarily intrusive inspections are still debated by policymakers and analysts. Of concern to industry is who would be liable if sensitive information were revealed.

> Policymakers are reminded that after testing of the managed access approach in (a) series of trial inspections, the United Kingdom concluded that there was no site so sensitive from a national security perspective that some form of access to it could not be granted, albeit rigorously managed, and with respect to commercial secrets, the need to protect confidentiality can be reconciled with an inspection team's requirements for extensive access.[20]

Other problems exist with the CWC. The CWC bans the export of chemical weapons and prohibits the export of certain precursors to nonsignatories. Three years after the treaty enters into force, trade in schedule 2 chemicals will be permitted only among CWC parties, trade with nonparties will be banned. Export of schedule 3 chemicals to nonparties will require certificates. Five years after the treaty enters into force, parties will consider whether export controls on schedule 3 chemicals should be strengthened. However, the CWC does not explicitly control exports of equipment or technologies, nor does it provide for ongoing research into the types of chemical agents actually sought by proliferants or the types of technologies, precursors, or equipment proliferants actually in use.

Another problem is devising an effective sanction mechanism. Clear mandatory sanctions would greatly enhance deterrence. Nations are reluctant to relinquish sovereignty. Leaders are abominate to agree to impose sanctions against all violators without knowing what broader foreign policy goals may be at stake--or whether some of those violators may turn out to be friends.

The last major problem is those who negotiated the CWC, struggled constantly with the dilemma posed by the tradeoff between ratifiability and enforceability. A stringently enforced treaty that includes export controls, intrusive inspections, and potent sanctions is most likely to deter cheating. But these same measures may deter countries from joining the regime because they impose heavy costs on complying parties as well as noncomplying ones.

The Rand Study

The Rand study used both the 1984 U.S. Draft Convention, tabled at Geneva by Vice President Bush, and the "Rolling Text," a periodically published UN document summarizing the results of multilateral CW negotiations at the UN Conference on Disarmament, as primary sources for defining the objectives, roles, and activities likely to be involved in US implementation of the CWC.

The study concluded that it was generally agreed that surveillance alone would be inadequate for treaty monitoring of technologically advanced countries and that verification, to be effective, would require a combination of surveillance monitoring, and routine on-site inspection of declared facilities, and short-notice or challenge inspections of undeclared but suspect sites.

> Furthermore, the media-resorted U.S. reluctance to reveal certain information regarding sensitive intelligence and satellite sources suggests that even if a comprehensive ban were to be implemented, the United States and other nations could require considerable time to convince allies and others that a potential circumvention of the treaty has occurred.[21]

Related to the issue of effective verification is the need to define militarily significant quantities for chemicals whose diversion

to military purposes could be important. Militarily significant quantities are highly scenario dependent and are influenced by a number of factors that are not well identified. Presumably, treaty proposals would reflect these various scenarios as the focus of interest shifts from East-West issues to nonproliferation and preventing the production, possession, or use of CW by less developed countries. The shifting focus could also alter the final configuration of the treaty toward emphasis on controlling diversion, exports, and the international distribution network that supplied Libya, Iran, and Iraq with CW know-how, technology, and materials. Several industrialized Western nations plus Japan, are controlling proliferation by harmonizing export controls on chemicals that could facilitate CW production. Therefore a number of additional changes in the CWC should be anticipated before it is in final form.

The Rand Study--Recommendations

Principal observations, conclusions, and recommendations of the study include the following:

1. The Chemical Weapons Convention (CWC) differs from other arms control agreements because of the role of private industry in producing chemicals that have legitimate commercial use but could be diverted to CW production. Although industry's role is unofficial and advisory, it is a number of smaller enterprises including producers, suppliers, processors, traders, brokers, and shippers who could be affected by the treaty who have not yet been brought into U.S. treaty

deliberations. An aggressive attempt should be made to involve these firms and to ensure awareness of the special problems they pose.

2. The US chemical industry generally supports the concept of the CWC in contrast to the opposition to the 1925 Geneva Protocol. Although chemical company representatives support the treaty, they question the effectiveness of a system which omits surveillance of traders, brokers, and shippers who may facilitate the international distribution of chemical weapons-related materials. Industry is sensitive to the potentially intrusive nature of on-site treaty verification, and it continues to press for a verification system that could be less stringent. Industry would prefer that key precursor facilities be inspected solely as a result of short-notice challenge of sites that are suspected of noncompliance or diversion, presumably to be requested infrequently.[22]

3. Industry is most concerned about the loss of intellectual property[,] such as proprietary material, trade secrets, and confidential business data.[23]

4. From the legislative history of the US-IAEA safeguards, the study team judged that Congress should raise a number of questions during the ratification hearings pertaining to the impact of the treaty's intrusiveness on the competitiveness of domestic industry, particularly the impact on smaller firms who may be affected by its implementation and who would find the additional burdens of reporting and inspections to be burdensome.

5. Current chemical reporting procedures mandated by environmental and other statues cannot provide the specific data required for treaty compliance in an efficient and effective manner.

6. Although a number of important questions still remain to be answered, the study foresaw no fundamental barriers to the implementation of a domestic system in the United States for demonstrating compliance with the CWC.

> Significant barriers to progress, if they exist, come from a widely held skepticism regarding the ability to verify adequately or, at the international level, from the complexity and detail that negotiators in Geneva are addressing with regard to verification, the volatile political context in which multilateral negotiations occur, East-West and North-South difference, and the increasing involvement of both the United States and world chemical industry as participants.[24]

Implications for the CWC

National security critics of "anytime, anywhere" on-site inspections have not seriously addressed CWC verification. The Rand study team suspect that arguments similar to those for INF and START will be made against permitting Soviet (and other nations') inspectors to visit sensitive facilities that are not identified in CWC declarations. This poses a difficult problem for policymakers who must formulate an on-site inspections regime that can provide the benefits of effective worldwide CWC certifications while narrowing the universe of non CW-related national defense establishments that may be challenged. If resolution of the problems is to restrict on-site inspections to facilities that are associated with the chemical weapons, it seems likely that certain commercial chemical production facilities will still

be subject to on-site inspection, perhaps even of the "anytime, anywhere" type.

On the other hand, if challenge or short-notice on-site inspections are invoked more frequently, a maximum set by an agreed quota, decisions about its use would be less highly challenged and it could better promote confidence building. Presumably, the US/USSR experience over short-notice and routine inspections of CW sites would provide insight into the "routinization" of on-site inspections via the MOU.

Few experimental data exist to determine whether on-site inspections of chemical plants can adequately verify compliance. A singular on-site inspection, even one that is quite rigorous, may be unable to detect episodes of cheating in the recent past, and may only be decisive in the unlikely situation of a "smoking gun."

> Since any short-notice inspection could involve inevitable delays of 24 to 48 hours and perhaps longer from the time that incriminating data are first obtained until an OSI [On-Site Inspection] team can enter a suspicious facility, a technically adept plant operator could cover up signs of cheating, particularly in a multipurpose facility.[25]

While it would be difficult to determine whether a suspect site has in the past or is likely in the future to engage in illicit activities, the study team recommended that negotiators may wish to consider a new challenge protocol that includes the right to establish an on-site program of safeguards at a suspect facility. The program would include continuous monitoring and/or on-site inspections until the facility is no longer designated as suspect.

Government

The Commerce Department's Bureau of Export Administration (BXA)has been reorganizing its offices, computerizing its operations, and developing the forms and regulations needed to implement the CWC.

> But once the treaty becomes effective, industry will have to begin reporting production, possession, or use of treaty-specified chemicals to BXA's Office of Chemical & Biological Controls & Treaty Compliance.[26]

This office will then report industry's declarations to the U.S. National Authority, which will reside in the Arms Control & Disarmament Agency (ACDA). The National Authority will review and compile the data to protect proprietary information and submit them to the Organization for Prohibition of Chemical Weapons (OPCW) in the Hague.

The first thing Commerce did to carry out its treaty-related responsibilities was to reorganize BXA to bring its "structure up to date with current proliferation realities. This action established the Chemical & Biological Controls & Treaty Compliance office, headed by Steven C. Goldman, and a Division of Treaty Compliance headed by Charles M. Guernieri. Additionally, a chemical engineer and a Ph.D. chemist have brought Guernieri's operation to eight people. Their responsibilities are divided between biological and chemical treaty concerns. However, Commerce's fiscal 1996 budget request included $3.4 million to hire another 24 people whose sole responsibilities would be implementation of the chemical weapons treaty.

Commerce recently completed a rewrite of its entire body of basic regulations. The regulations that will eventually be written will include definitions, guidelines, and operating procedures spelling out

in detail "industry's obligations and its right under the treaty." Industry is being consulted informally.

In addition to writing regulations, BXA will test the reporting forms industry will use to declare treaty specified data to OPCW. After months of massaging ACDA-developed declaration forms, BXA is ready to field-test their forms. The ultimate judges of their utility, user-friendliness, and burden hours will be the private companies receiving the forms-about a dozen large and small chemical companies producing Schedule 1, 2, and 3 chemicals, and discrete organic chemicals.

One form of interaction that some companies have said they don't necessarily want is a Commerce official accompanying an international inspection team. Commerce, however, expects to participate in inspections at U.S. facilities, designed to verify that company declarations are accurate and that no illicit activity is occurring. Because some companies have raised objections, it is not definite that Commerce, ACDA, or both will send representatives to accompany inspection teams.

> If during an inspection there was a breach of confidentiality because of some action by a Commerce official, Commerce would be held liable. Section 12(c) of the Export Administration Act provides for rigorous protection of confidential business information, and violations of that act are subject to a variety of different penalties, both fines and potential incarceration.[27]

If, however, one of the international inspectors were to breach confidentiality, liability would fall to OPCW.

Endorsement

As the Senate deliberates ratification of the chemical weapons treaty, chemical warfare experts are debating its merits. The latest

exchange took place at the Washington-based Center for Strategic & International Studies (CSIS). Conference organizer and CSIS analyst Brad Roberts challenged 200 government officials, policy analysts, and chemical industry representatives to probe beneath the challenges, and stakes associated with implementing the Chemical Weapons Convention.

Roberts noted that in 1984 a chemical arms treaty seemed only a remote possibility. In the year 2004 the chemical arms control regime will either be fully functioning or completely abandon. Getting it right at this specific turning point in history will protect large security dividends, however, getting it wrong will reap large security risk.

Both the US and the Preparatory Commission (PrepCom) in The Hague are working feverishly to make sure they get it right. Elisa Harris, the White House National Security Council's Director for Nonproliferation and Export Controls offered "a snapshot" of the enormity the government will embrace. She stated the government is near agreement on what will comprise the US National Authority-the group that will function as the liaison between industry and the international organization implementing the treaty. She commented that the US has to prepare declarations on its stockpile destruction facilities, and permitted chemical weapons activities. These actions will be followed by arrangements for the actual destruction of weapons and production facilities, followed by the collection of data from the chemical industry on production, consumption, and processing of chemicals listed in the pact.

The US will participate in the international treaty implementing organization, the Organization for the Prohibition of Chemical Weapons (OPCW). This groundwork will be undertaken by the Arms Control & Disarmament Agency (ACDA). But, Harris insists, that the chemical weapons nonproliferation policy will be consistent and complementary to the provisions of the (treaty) as the primary role as stated by the State Department.

The Clinton Administration sent the treaty to the Senate for ratification in 1993, but it did not send Congress the required implementing legislation. The Administration was on the verge of submitting (this) legislation. Harris stated that the intent was to implement this convention on January 1995, the earliest possible date for entry into force.

To meet the January deadline, the Senate had to ratify the treaty July 1994. Ratification was within reach, according to John D. Holum, ACDA's Director. Our goal was to move quickly on the convention to demonstrate international leadership. If the US did not act, implementation would be delayed, or it may never happen.

Robert Mikulak, deputy head of the US delegation to PrepCom, confirmed Holum's thesis. People (at The Hague) look to us to provide technical and political leadership. Once the US ratifies, a steam of countries should be behind us.

Sergei Kissley, counselor in the Russian Embassy in The Hague, said Russian leadership was also important in ensuring the CWC became effective at the earliest possible date. He outlined several issues of importance to the Russians in the ratification debate. The first

consideration was the ability to fulfill its chemical weapons destruction obligations under the treaty. This is an acute problem for Russia, a problem that is economic, not political.

Another key consideration for ratification is Russia's means to financially support its obligations under the verification provisions of the treaty, Kisselev explained. The Russian parliament wants to adopt a considered and well-thought-out position to meet its treaty obligations.

At the international level, Mikulak noted that PrepCom's work during its first year was on track but several important tasks required intensified work. Among those tasks were the development of a security policy for protecting sensitive information and the organization's facilities, and screening inspectors for reliability. Additionally, declaration formats, especially those for industrial facilities, must be finalized to allow the US and other countries to begin collecting required data.

The PrepCom will shift its focus to establishing the infrastructure for the treaty's verification system. Mr. John Gee, Director of PrepCom's verification division, what ultimately becomes the OPCW, has begun the building process by hiring inspectors. PrepCom began a 215 trainee inspector program to ensure that it would have the requisite 185 in place six months after the treaty enters into force. The first group selected began a three-module training program in August 1994. Training with basic instruction, moved to specialist training, and will end with field training and team building. Gee's group assumes that the 185 inspectors will monitor only civilian facilities. The US and Russia, under the BDA expected to be finalized eventually, will

monitor the destruction of their own military stockpiles and weapons production facilities.

But, what happens if the bilateral agreement is not finalized before the international accord becomes effective? If the BDA is not enforced, then the inspection requirement on the OPCW increases considerably. Either the OPCW will hire and train more inspectors which has severe resource implications--or the OPCW will have to do double the job with the same number of inspectors, which means inspecting more efficiently.

According to Kathleen C. Bailey, the number of OPCW inspectors is irrelevant because the treaty is only minimally verifiable by technical means. Bailey, a member of the staff of the director of Lawrence Livermore National Laboratory, Berkeley, California, argued against Senate ratification of the treaty. Instead, she advocated amending the 1925 Geneva Protocol to include a ban on the production of chemical weapons. By amending the protocol, Bailey suggests the US would have a regime that is only marginally verifiable until the time we have the technical ability to verify the Chemical Weapons Convention.

> Bailey argues that chemical companies will bear a disproportionate share of the financial burden because they must develop specialized reporting, institute measures to try to ensure security for proprietary data, and host inspections.[28]

And if unscrupulous inspectors collect secret samples to be analyzed off site, chemical companies could bear severe financial losses due to industrial espionage.

Will D. Carpenter, Chairman of the Chemical Manufacturers Association's Chemical Weapons Working Group, acknowledged that a useful treaty will have a negative impact on the chemical industry. The

challenge to those participating in the process is to obtain that valid, certifiable document while minimizing the negative impact. Such impacts include the cost of compliance and building an industrial bureaucracy to interface with the National Authority.

Industry cannot yet estimate the cost of compliance. But Carpenter stated that the treaty is no more than a "glorified" international regulatory approach. It will take five to ten years for the complicated regulatory mechanism to be reduced to reality. We must not be dismayed because of mistakes that will be made.

Russia's Arms Treaty Compliance Faulted

The Clinton Administration is very much concerned about Russia's compliance with three major arms control agreements: the Biological Weapons Treaty; the Chemical Weapons Treaty, which has not yet entered into force; and an earlier agreement on chemical arms data exchange--the Wyoming Memorandum of Understanding (MOU). These concerns were detailed in a recent State Department report to Congress.

Despite lingering questions about Russia's willingness and ability to comply with its obligations, the State Department report paints the brightest picture possible. But as the report repeatedly declares, their efforts are often hampered by intransigence at lower levels, bureaucratic mismanagement, economic woes, and public resistance. The end result was less than satisfactory: data exchanges were not timely or complete, and several sensitive issues remained unresolved. Accordingly, the report stated, the US will judge Russia's future compliance by its actions.

Ratification failed in Congress during the 1994 session because it was perceived as an orphan with no strong constituency supporting it according to Kyle B. Olseon, Executive Vice President of the private Arlington, Virginia based Chemical & Biological Arms Control Institute. Future treaty ratification will be considered by a more hostile Senate. Conservative Republicans Strom Thurmond of South Carolina and Jesse Helms of North Carolina chaired the Armed Services and Foreign Relations Committees, respectively, and both have long been suspicious of Russia's intentions. Knowledgeable observers expect Helms, and possibly Thurmond, to hold additional hearings before the treaty is sent to the full Senate for its consent to ratification.

Additional hearings will delay ratification, however, the good news, is that they will give the Administration the opportunity to make a stronger case for the treaty than it did in 1994.

> For example, good arguments can be offered that apprehensions about Russia's lack of a chemical weapons destruction program and allegations of a binary weapons production program-both concerns of Helms-can best be addressed through the treaty once its enters into force.[29]

Further, the Administration is convinced that US ratification of the chemical arms treaty will trigger an avalanche of ratification's by other countries. This will increase the pressure on Russia to ratify quickly so as to be among the original parties to the treaty.

Russia's "problematic" implementation of the Wyoming MOU also factored into the debates over ratification of the chemical arms accord.

> The bilateral MOU was undertaken to build confidence in both countries' commitment to banning chemical weapons, to facilitating negotiations, and ultimately to ratifying the global chemical arms treaty.[30]

In effect, the MOU served as a trial run for monitoring and verifying compliance with a global accord once it enters into force.

Russia must still take concrete steps to follow through on commitment and rectify existing problems with its compliance with the MOU.

To prod Russia, the Clinton Administration has stated it may withhold funds slated to help Russia's chemical disarmament effort if required data are not at hand. The release of these Nunn-Lugar funds is contingent on the Administration's certifying that Russia is complying with all arms control accords. The Administration stated it could not make the certification without the necessary Russian data.

Given the conservative Republican makeup of the Senate and Russia's continuing problems with meeting existing treaty obligations, the Clinton Administration is going to have to push hard if the Chemical Weapons treaty is to be ratified. Despite the continuing problems associated with the CWC such problems have not swayed policymakers to rethink or modify the current US CW policy. The current policy renounces use of CW, offers no deterrent, and promotes chemical defense (the nuclear, biological, chemical defense) NBC as the US plan of action if chemicals are used against US forces.

NBC Defense

The US NBC defensive program incorporates contamination avoidance, chemical agent detection, protection, and chemical decontamination operations into all levels of unit training. Avoidance, the first fundamental of NBC defense, is the best defense against an enemy employment of CW. Avoidance reduces the risk of becoming a lucrative target for CW and minimizes the effects of CW contamination hazards. To survive and accomplish the mission, units must take precautions to avoid or minimize effects of initial and remnants of CW

hazards. However, the unit must first know where contamination exists or how long the hazard may persist.

Chemical detection is the process to "sniff" by use of chemical detectors the location of a CW hazard emplaced by the enemy. Detection includes identification and marking contaminated areas. Though a time consuming process the identification and marking of a contaminated area allows the commander to maintain freedom of maneuver. By knowing the location of contamination units can employ the first fundamental of NBC defense.

Protection, considered the second fundamental of NBC defense, includes actions to counter the enemy's fire power and actions to maintain the health and morale of personnel. The goal of protection is the conservation of the combat fighting potential of the force so it may be applied at the decisive place and time on the battlefield. US protection encompass individual and collective protection measures. Individual protection involves those actions taken by individual soldiers to survive and continue the mission under NBC conditions.[31] Collective applies to the use of shelters which provide a contamination free environment.

The final fundamental of NBC defense is decontamination. Protection by individual clothing or collective shelters provide only temporary relief. Decon, which is removal, destruction, or neutralization of CW, offers a more permanent form of relief. Unfortunately, decon can delay momentum and can be very labor intensive and time consuming. Nevertheless, decon is a better option than to fight contaminated while wearing chemical protective clothing. Though

the fundamentals are not an effective deterrent as actual CW retaliation, the US's intent is to employ advanced technology through conventional weapons' systems, advanced detection systems, and enhanced protective equipment and clothing to keep the battlefield tilted in her favor and win.

CHAPTER 6

CONCLUSIONS and RECOMMENDATIONS

The research conclusions based on the findings of the research, review of literature, and further analysis of current issues follow directly from the evidence surrounding the primary research question. Political bickering (internationally and internally to the USG) and a continued desire of the USG to take the lead role in international affairs-specifically arms control lead the USG to a position which should have been avoided. Although it is without question that no use of CW or any weapon of mass destruction is best, until the CWC is ratified a deterrent should be maintained by the USG.

This research concludes that the USG policy banning the use of CW will not achieve the nation's objective for implementation of the CWC. The significance of the research outlined several issues which hinder implementation of the CWC and add support to the thesis in that the binary program should be reactivated. CW will continue to be a threat with or without ratification of the CWC. Several nations have made strong indications that they will not sign such a treaty. Further, the CWC as drafted in 1992 is still too broad in scope and generalities. This creates numerous legal loopholes for the CWC to be effective. Several key factors affect implementation of the CWC: the US status as a "superpower"; the continuing Russian noncompliance in the MOU; Russian governmental instability and economic problems; the inadequate CWC

verification procedures; the Organization for the Prohibition of Chemical Weapons (OPCW) future development; and continued and projected CW proliferation pending effect in force ratification and implementation of the Chemical Weapons Convention. Until these issues are resolved and regardless of USG efforts the CWC will remain only a well intended document which failed to achieve its goal.

The USG is a "superpower" and will continue to be viewed as such in the future. As the USG moves away from employing weapons of mass destruction other nations see such weapons as the only countermeasure against the US. As Force XXI becomes reality the use of massive conventional weaponry will be replaced with advanced technology producing more accuracy and requiring less ammunition. Presumably, proliferation will continue as nations seek to protect their national interest whether against the US or other nations. Further, proliferation will continue because of the ease of production and the selling factor of munitions and CW production technology. Verification does not adequately address the proliferation issue.

Verification continues to negatively impact on the US initiative. The number and type of inspections allowed within the CWC, the procedures afforded inspectors and the rights of the inspected side, funding of inspections, and conversion of former production facilities remain unresolved thereby adding to the CWC ratification woes. The OPCW has not developed, nor established itself, within the arms control arena to influence such discussions. Neither does the OPCW have the expertise to answer such questions involving inspection provisions or conversion. Until the organization fully establishes itself as a "key player" in CWC

issues, the CWC must depend on the US which many nations perceive as bias.

Another conclusion is that the continuing impact to the United States initiative lacks Russian technical and financial resources to conduct a destruction program. According to US and Russian officials, Russia can not safely destroy its CW using its current facilities. A massive infusion of US money and technology will be required to upgrade Russia's capabilities.

The US and Russia signed an agreement whereby the US would provide reportedly $25 million in CW destruction assistance to Russia. Most of the funds are to be used to develop a comprehensive destruction plan. Additional funds have been offered to assist Russia in developing an analytical chemical weapons destruction laboratory in Moscow, Russia.

Recommended USG Policy Alternatives

Renewed production of US CW is only one of several alternatives that the US has to manage the problems and threats that binary production would be intended to address. Four other alternatives are considered: (1) continued unilateral restraint through the preservation of the moratorium on CW production; (2) an upgrade of the current unitary stockpile; (3) a continued reliance on arms control; or (4) a policy mix of options number 2 and 3.

Continued US unilateral restraint and preservation of the unilateral moratorium on CW is offered by many as the primary alternative. Arguments that this would substantially inhibit the proliferation of CW include: nonproduction would deprive other nations of the same technology of binary; US nonproduction would make less

likely the absorption of CW into conventional arsenals; and the US has more to gain from the international prestige amassing to the perception of maintaining the moral high ground.

US nonproduction and nonuse may be helpful but is clearly not a sufficient circumstance for nonproliferation. Non-production will not rid the world of CW. Most of the technology and chemistry of CW is already known, and will continue to be so known. Nor will it rid the world of the will to use such weapons under certain conditions. CW stockpiles will not disappear without an effective arms control agreement which the CWC in its current state is not.

A second US policy alternative is to upgrade the current US CW [unitary] stockpile. The US has the capability to complete such a task, but such resumption would not impact positively on binary production nor unilateral restraint. The binary program would need to be reinstated to support better storage and safety concerns.

Another alternative is reliance upon arms control to solve the kind of problem that an improved deterrent is supposed to address. The questions and problems associated with arms control seem insurmountable. A move toward ratification of the CWC is slow if not at a elongated standstill. Some form of deterrent should exist until implementation of the CWC. The last alternative would be a mix of the above-mentioned alternatives.

The CWC is at a stalemate leaving the US without a "declared" weapons' deterrent. The USG has incorrectly assumed that reliance on arms control will resolve CW proliferation. The dilemma for the US is how to maintain moral leadership in the political arena while seeking to

eliminate weapons of mass destruction. As a "superpower" the US can conceivably fight and win conflicts without such weapons which is the focal point (problem) of the US initiative. However, the US will not be able to fight two simultaneous conflicts based on the "downsizing" of the US military. Following the Gulf War all nations recognize the US as a "superpower" and seek a means to balance the battlefield if need be against the US or attain superiority over another nation in time of military conflict. Until all nations are willing to ban CW production, stockpiling, selling of technology and/or equipment/materials the US initiative will not be met.

The USG National Security Strategy and National Military Strategy have been handicapped by the current policy regarding CW employment. Regional stability will remain in jeopardy as nations achieve the strategic edge over others by use of CW. Consequently, if US military force is required to maintain stability this force will fight on a potentially chemically contaminated battlefield using NBC defensive measures. These measures though reliable in reducing our casualties will degrade the combat effectiveness of the force by increasing stress and fatigue and by hindering momentum.

The political objective of the USG is leadership within the arms control arena. The key to such a role is the verification process of the CWC. However, verification and proliferation are the problems faced by US presidents and Congress. Additionally, the international legal regime for authority over CW is not verifiable.

Recommendations

Several specific recommendations based on the evidence are presented. First, the USG must maintain a retaliatory capability by reactivating the chemical binary program because the current USG policy will not result in ratification of the CWC. A second recommendation is that due to Post Cold War developments the USG must revise its arms control policy and concept for National Security Strategy regarding chemical weapons of mass destruction. A third recommendation is that the USG should continue to seek resolution through the arms control arena by petitioning the OPCW to revise the CWC to eliminate legal loopholes, accurately define verification procedures and penalties for violations. A fourth recommendation is to ratify the CWC, yet withhold depositing the instrument of ratification until USG CWC issues are resolved through OPCW. A fifth recommendation is to resolve issues with Russia regarding the MOU and implementation of the BDA. A sixth recommendation is to improve NBC defensive monitoring, detection, protection, and decontamination technology to safeguard US soldiers. A seventh recommendation is to incorporate the private commercial chemical (industrial) sector into the USG decision making process. A final recommendation is to continue to employ the elements of diplomatic, informational, and economic policy internationally regarding nonproliferation.

The significance of these recommendations are numerous. However, the most advantageous of them are outlined below. The US maintains a retaliatory capability--a combat multiplier. A like-with-like capability has and will continue to be an effective deterrent.

Until the current stockpile is destroyed or replaced the USG still has an "effective" deterrent which should be updated from unitary munitions to the binary program. This deterrent conceivably eliminates a disadvantage to the USG (if smart munitions technology is employed) to at minimum "level" the battlefield. The binary program would replace aging chemical unitary munitions with newer and safer munitions. Binary munitions are relatively nontoxic until the chemical compounds are mixed while in flight. This allows for safe transport from the US to the region of conflict and reduces the risk hazard associated with storage. Further, as the US military downsizes binary munitions can serve as an tactical obstacle and destroyer, though weather dependent, which can last longer than FASCAM; therefore it can block the enemy indefinitely. When employed binary munitions will cause limited damage to facilities which is inconceivable with conventional munitions. Finally, with binary munitions as a deterrent the USG has a "bargaining chip" within arms control negotiations to influence international arms control decisions-a key element for those nations which have stated that they oppose and will not sign the CWC.

ENDNOTES

Chapter 3

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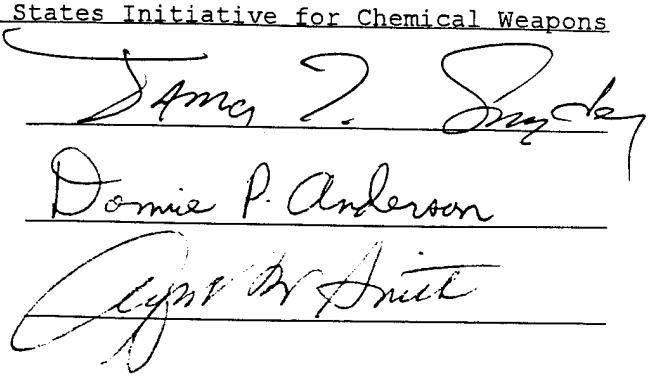

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