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U.S. ARMY TRAINING IN THE TACTICAL EMPLOYMENT OF CHEMICAL WEAPONS: A FLAW IN OUR CHEMICAL DETERRENCE?

A Monograph

by

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While those measures served to prevent chemical use in World War II, events since then force us to reevaluate our retaliatory capability and its deterrence value. Increased use of chemical agents by the Soviet Union and its client states, and the development of chemical weapon programs in other third world nations, points to an ever increasing future risk that the US's "retaliation in kind" policy will be challenged.

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ABSTRACT

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By Major Charles A Peddy, USA, 51 pages.

Chemical weapons were introduced in World War I by the Germans in 1916, during the battle of Ypres. The military's appreciation for the effectiveness of this weapon of mass destruction has continually conflicted with society's horror of its cruel effects. As a compromise, many nations agreed not to employ them in future wars, with the reservation that they would retain a retaliatory capability that would deter an adversary's impulse to introduce chemicals into the battle.

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Meanwhile the US Army has neglected the training of its officers and units in the tactical employment of chemical weapons to the point that it seriously undermines the credibility of the deterrence value of our chemical weapons policy.

This paper concludes that the lack of training prevents the US Army from realizing that it is prepared to fight with an obsolete chemical doctrine, and recommends actions that will update its chemical warfighting capability and thereby enhance the deterrence effect of our chemical weapons policy.

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I- INTRODUCTION

> "Why have the German's not used [gas]? They have not used it because it does not pay them. The greatest temptation ever offered to them was the beaches of Normandy. This they could have drenched with gas greatly to the hindrance of our troops. That they thought about it is certain and that they prepared against our use is also certain. But the only reason they have not used it against us is that they fear the retaliation"
>
> Winston Churchill[1]

History has shown that when a new weapon is introduced to the battlefield, it remains until it is no longer effective. Nations have never been successful in removing effective weapons from the battlefield as long as one still sees an advantage to their use. Modern chemical warfare was introduced to the 20th century by the Germans in 1916 as they attempted to break the static defenses of the allies. The allies acknowledged its effectiveness by retaliating in kind. By war's end, all sides were pushing their chemical industries to develop more lethal chemical agents that could be used before being countered by the the other side.

The horrible impact that gas warfare had made on the soldiers and populace led to international efforts to ban toxic chemical weapons. Most notable was the 1925 Geneva Convention . Its effectiveness was limited because many nations, including the United States and the Soviet Union, reserved the right to maintain stockpiles as a deterrence against first use by other parties. Since the convention was signed, almost every decade in the 20th century has seen the offensive use of chemical weapons.

In World War II all sides admitted to having prepared to employ chemical weapons but claimed their stockpiles were for retaliatory purposes only. After WW II, the US maintained a large chemical stockpile but de-emphasized the use of chemicals as it shifted its focus to the nuclear operations in future war.

During the Vietnam conflict the US did not use toxic chemical weapons but did continue research and development into both chemical and biological agents. It did use what it considered two forms of non-toxic chemicals, riot control agents to force guerillas out of bunker complexes and herbicide to defoliate the jungle to remove guerilla sanctuaries. With anti-military sentiment at its peak, and a backlash growing against US use of chemical defoliant and riot control gas in Vietnam, an incident prompted President Nixon to shut down all further chemical and biological testing, effectively crippling the United State's chemical warfare program. His action was triggered by the public outcry to a chemical accident in 1969 at the Ogden Proving Grounds in Utah, when an F-4 aircraft carrying VX agent accidently released part of its load outside the test area, killing over 6,000 sheep.[2]

This retrenchment ended after the 1973 Yom Kippur war when an analysis of captured Soviet-made Egyptian and Syrian equipment showed that the Soviets had vigorously improved their chemical program instead of following the unilateral effort by the United States to decrease the employment of chemicals in war. This prompted the US to reevaluate its policy, with the result that it reenergized its chemical program. The new chemical policy was stated in terms dealing with arms control. The primary objective was to eliminate the threat

of chemical weapons, but to achieve that goal it was essential for the US to have an effective chemical defensive posture and a credible retaliatory capability. By 1980 the Army Chemical branch school was reopened at Ft. McClellan after being closed in 1972. Moreover, the branch's size had doubled from its 1975 strength to 4,000. By 1986, the chemical branch had an active duty strength of 9,000. Even today, the aging chemical stockpile is slowly being modernized with safer binary munitions replacing old shells on a one for one basis.[3]

Our current national chemical policy emphasizes retaliation and stresses that the offensive capability should be considered for its deterrence value only:

> 1) First and foremost, deter the use of nuclear weapons and chemical agents.
>
> 2) If this fails, to terminate the conflict at the lowest level of intensity possible, and on terms acceptable to the United States and its allies.
>
> 3) The National Command Authority must authorize use of chemical and nuclear weapons. The objective of using chemical and nuclear weapons is to convince the enemy that its objectives cannot be achieved without unacceptable losses (deterrence). US chemical use will be retaliatory only, based on a policy of no first use.[4]

Our current keystone manual, FM 100-5 Operations, fully supports that policy. Several times it mentions that the battlefield may involve the use of chemical weapons, and US units must be prepared to do more than simply defend themselves in a "dirty" environment, "...because the United States reserves the right to retaliate if enemies use chemical weapons any unit must be prepared to conduct offensive chemical operations. Such preparations act as a deterrent to enemy use of chemicals"[5]. The consensus appears to be that a good

defensive posture is not deterrent enough, that if there is no risk to using chemical warfare the Soviets will consider it. If there is a perceived risk because of our retaliatory potential, the Soviets might not consider first use.

For our chemical offensive capability to have a credible deterrent value, we must convince our adversaries that we have the means, the training, and the willingness to use our chemical weapons. The capability in the form of our chemical stockpile is admittedly weak. The stockpile is filled with aged, leaking munitions, many so old that their delivery systems no longer exist. There are still several thousand artillery shells available, however, and to the pessimistic Soviets the large chemical industrial base in the US looms as a potential source of chemical munitions.

The US demonstrated its willingness to employ chemical weapons in World War I and we were openly prepared to employ them in World War II. Our current manuals discuss the possibility of employing chemical weapons so that our enemies can conceive of us using chemical weapons if we felt it necessary.

The only factor that degrades the credibility of our offensive ability is our training in the employment of chemical weapons. Our corps are responsible for planning, controlling and coordinating chemical weapons until allocation release has been authorized, but detailed planning and coordination is done at division level[5]. Brigade and battalion Commanders, S-3s, and fire support coordinators (FSCOORD), must be sufficiently knowledgeable of chemical fires to plan for their use and integrate them into their scheme of maneuver[7]. The decision to use chemical weapons has obvious political

ramifications. However, the employment of chemical weapons is a tactical matter. Our tactical commanders are expected to integrate fire and maneuver with concurrent chemical strikes.[8] Additionally, the only delivery systems we now have are the 155mm and 8" artillery systems so we are concerned with our tactical expertise in the employment of these weapons. If our enemies do not believe that we know how to use our chemical weapons effectively our deterrent value will suffer.

The following sections will show historically how a credible "retaliation only" policy deterred the use of chemical weapons in battle, and that commanders and staffs, trained and familiar with the use of chemical weapons enhanced that credibility. Examples will cite how the lack of credible chemical deterrence has led the Soviets or their client states to use chemical weapons. A European scenario will show why there is a real need for the US to have a credible retaliatory capability. Finally, an examination of current manuals, school curriculums and experiences at the National Training Center (NTC) will determine if our officers are being adequately trained to employ chemical weapons.

II- AN HISTORICAL CASE FOR A RETALIATORY POLICY

> "...it may be several weeks or even months before I shall ask you to drench Germany with poison gas, and if we do it, let us do it one hundred per cent. In the meanwhile, I want the matter studied in cold blood by sensible people and not by that particular set of psalm singing uniformed defeatists which one runs across now here now there."
> Winston Churchill to his Chiefs of Staff, 1944 [1]

World War II is significant because it serves as an example of a conflict that had the belligerents preparing and planning to use an effective weapon, yet refraining from employing it. Both sides considered the concept of employing chemical weapons important enough to divert precious civilian labor and other war resources to its research, development, manufacture and storage. This chapter will show that all sides were prepared to employ chemicals when they considered it advantageous but held back, not for moral reasons, but out of fear of retaliation.

While most nations had chemical stockpiles on the eve of World War II, only Germany had the advantage of a new class of chemical called nerve agent. Accidently discovered by Dr. Gerhard Schrader in 1936, the nerve agent Sarin led to the later discovery of an even more lethal agent, code named Tabun[2]. The German military clearly understood the value of this potent poison and two years later, in 1940, they built a pilot plant that was producing 3,000 tons of nerve agent a year by 1942. By 1944 Germany had stockpiled 2,000 tons of nerve agent in artillery shells and another 10,000 tons stored in bombs.[3]

Japan is unique of all the World War II belligerents in that there is documented evidence that she actually employed chemical weapons in combat against an enemy force. Beginning in 1939, the Chinese documented over 1,000 separate Japanese chemical attacks against both Chinese military

forces and civilian population centers[4]. The nationalist government of China continually charged the Japanese invaders with bombing cities and spraying Chinese troop formations with mustard and phosgene. Against the unprotected Chinese the chemical agents became weapons of mass destruction, instilling terror in the civilian populace and greatly reducing the military effectiveness of those targeted military units.

When the Allied military leaders contemplated potential chemical use by the Axis powers they had to consider that Italy had been the last Western nation to employ chemicals in combat when it invaded Ethiopia. In 1935 and 1936 Italy had shipped 700 tons of mustard agent to be employed by its Air Force against the Ethiopians. First using the agent in bombs, the Italians in 1936, switched to the more effective method of spraying the unprotected natives from multiple aircraft so as to envelop a column of natives in a fog of mustard mist. The unprotected and lightly clothed natives suffered tremendous casualties to include large numbers of women and children who had travelled through previously contaminated areas. Almost 1/3 of the total Ethiopian casualties were attributed to Italian chemical weapons[5]. On the eve of World War II British intelligence believed that the Italians had the capability to produce up to 25 tons of mustard agent a day[6]. If nothing else, it indicated Italy had at least a potent capability to produce chemicals and a demonstrated willingness to use them, if only against a primitive enemy who had no hope of retaliation or protection.

The Allies themselves may have had less advanced toxic chemicals than Germany, but their combined industrial might allowed them to make up for quality with a greater quantity of agents and a superior delivery means in the form of the strategic bomber.

England began the war with almost no chemical stockpile. Under Prime Minister Churchill's insistent prodding, England's stockpile had increased from one day's supply to over 20,000 tons by 1942 [7]. By the second week of June 1940, England's forces had managed to scrape together enough of a chemical stockpile to plan for the 12th Royal Air Force to use gas bombs and spray against the feared German amphibious assault force on the British beaches[8].

The United States placed an effort in its chemical production comparable to its overall industrial war effort. By 1943 the US had an 8 month supply of air deliverable chemical weapons in the form of bombs and spray units, and had a 4 month supply of ground employed chemicals[9]. The following year as part of its Overlord preparation, the European Theater of Operations had stockpiled enough chemical munitions to last for over 45 days of full scale use. Those stockpiles followed the advancing armies in every theater of the war in Europe. One example is the sad case of the USS John Harvey, docked at port in Bari, Italy. Sunk during a German air raid, it spilled its secret cargo of mustard agent into the waters of the bay. The explosions of the burning ship sent mustard agent in a vapor form throughout the town causing hundreds of civilian casualties. The sailors who escaped the ship by swimming through the contaminated waters suffered burns from the blister agent and had to be treated by inexperienced doctors who were intentionally left in the dark regarding the cause of their victims' suffering[10].

By 1945, the United States had built 13 chemical manufacturing plants employing thousands of scarce civilian workers. The plant at Pine Bluff, Arkansas, alone required 10,000 workers. The Chemical Warfare Service numbered over 20,000 soldiers serving in both the Army and Air Corps, and

had over 1,000 working in its research and development department. By the end of the war the United States had amassed a stockpile of over 135,000 tons[11].

Between WW I and WW II the US Army's chemical doctrine and unit structure continued to evolve. By the late 1930s the Chemical Warfare Service was fully integrated at every command level, providing both the expertise and the means to transport, stock and employ chemical agents. At the heart of the service was the chemical battalion with its 96 organic 4.2" mortars. A theater of operations asset, it was normally attached to a division[12]. The battalion provided both gas, smoke, incendiaries and high explosive (HE) fires depending on the situation. The 1938 doctrine called for one of the four mortar platoons to be dedicated to chemical fires only, but by the beginning of the war the basic loads of all platoons were filled with smoke and HE[13]. The battalion commander was the expert on the employment of his mortars. He worked with the division chemical officer to integrate chemical fires with the general scheme of maneuver. He was also responsible for drawing the chemical rounds when needed. To help him the Chemical Warfare Service had a complete supply infrastructure whose sole function was the transporting, warehousing, and disbursing of chemical munitions and protective gear. The chemical munitions were delivered to chemical units at the ports and were then stored in special chemical ammunition supply points. The chemical battalion had its own transportation assets dedicated to picking up the chemical rounds and delivering them to the mortar companies[14].

The Air Corps had its complement of chemical units as well. Their organization called for two specialized units, one that handled the chemical bombs and spray units and the other dedicated to the defensive decontamination mission[15].

Along with the chemical battalion commander, the division commander could also rely on recent Command and General Staff School graduates for advice on the employment of chemical weapons. Chemicals were not a popular weapon but their employment was routinely considered in planning. It was, after all, another tool in the military tool box and staff officers were expected to be familiar with the characteristics of the various chemical agents and the techniques of their employment. To that end the school published two different reference manuals, Chemical Warfare Reference Data, and the Tactical Employment of Chemical Agents (tentative). These textbooks helped the student plan his chemical fires based on the situation, provided the tables that determined the number of rounds needed based on weapons system selected, and suggested the types of agents to employ for maximum effects. It provided an example of the chemical annex which allowed the student to incorporate all forms of chemical fires into the field order as operations orders were called then[16].

The Army took advantage of the large scale maneuvers held in several southern states in 1941 to test its chemical doctrine. The 2nd Army in Arkansas, for example, encouraged the offensive use of simulated chemical agents against opposing unit command posts. Based on their experience operating in the swampy terrain, 2nd Army developed aircraft spraying techniques that were effective against road bound units[17]. By the time the United States went to war, its staffs and chemical units were confident

that should they encounter gas on the battlefield, they were ready to respond in kind.

That gas would be encountered on the World War II battlefield was a foregone conclusion. After all, both Japan and Italy had employed it recently, and everyone had used chemicals in the previous war. The difference now was that the Allies and Germany both publicly stated that they would not employ chemicals first; that they would respond in retaliation only. Although cloaked in the trappings of moral sanctity, all nations rattled their chemical sabers at each other, and, as Winston Churchill's remarks show, the morality of chemical use took a back seat to military pragmatism and fear of retaliation:

> "It is absurd to consider morality on this topic [poison gas] when everybody used it in the last war without a word of complaint from the moralists or the Church. On the other hand, in the last war the bombing of open cities was regarded as forbidden. Now everybody does it as a matter of course. It is simply a question of fashion changing as she does between long and short skirts for women."[18]

The Allies several times showed the willingness to use chemical weapons if sufficiently provoked. On 10 May 1941, Churchill publicly warned Germany that he would use bombers to drop chemical bombs should Germany begin using chemicals on the eastern front. Even President Roosevelt, who personally abhorred using chemicals, felt compelled to threaten Japan on 6 June 1943 with "retaliation in kind" if the chemical attacks against the Chinese continued[19]. When the Germans began launching the V-1 bombs against England, Churchill wanted to respond by using his large English bomber fleet to "drench the cities of the Ruhr and many other cities in Germany in such a way that most of the population would be requiring constant medical attention."[20]. His military staff dissuaded him

by explaining that it would be impractical to maintain the needed lethal dose for all the targets he wanted hit, that the Germans had a sizable chemical stockpile of their own, and that they would probably retaliate by replacing the V-1 warheads with chemical warheads and cause even greater problems for English cities[21].

The US military made it clear that they were legally correct in employing agents when required. As their Rules of Land Warfare, Field Manual FM 27-10, spelled out, the US was not legally bound by the protocol of the Geneva Convention prohibiting first use of chemicals even though she was a signatory to it, because Congress had never ratified the Convention[22]. General Eisenhower sent a veiled threat to the Germans when he used the unfortunate episode of the USS John Harvey to acknowledge what until then had been kept secret: that the allies were keeping stockpiles of chemicals in all theaters of the war and were ever ready to retaliate with them should the Germans use them first[23]. The threat worked. The greatest fear the allies had was that the Germans would use chemicals against the landing forces on the beaches of Normandy. At the Nuernberg trials held at the end of the war, Goering stated that the Germans didn't employ gas on the Normandy beaches because they feared the effects allied chemical retaliation would have on their mostly horse drawn military transportation system[24].

As Germany began to suffer reverses in France and on the eastern front, Hitler, who initially had been against the use of gas because of his experience in World War I, began to discuss it more openly. By then it was too late. Most of Germany's chemical arsenal was in the form of bombs and she no longer had the bombers to deliver the bombs. His military advisors

were also concerned by the Allies' incredible ability to retaliate. As Albert Speer, one of Hitler's closest advisors, recalled:

> "All sensible Army people turned gas warfare down as being utterly insane, since, in view of America's superiority in the air, it would not be long before it would bring down the most terrible catastrophe upon German cities."[25]

Other indicators, while accidental, prompted the Germans to believe the US was ready and willing to employ chemical weapons. German intelligence cited the sudden and complete censure in print of previously mentioned chemical compounds the Germans used to make nerve agents. The US was keeping a close hold on information on these chemical ingredients but it was to hide the development of the pesticide DDT, not nerve agent[26]. During the Battle of the Bulge the US was so sure that the Germans were about to employ chemicals in a last ditch, desperate effort, that chemical protective masks were rushed forward. When these fell into German hands, it convinced the Germans that the US was getting ready to respond to their attack with chemicals[27]

Interestingly, the US actually did consider using chemicals against the Japanese in the Pacific. The tremendous casualties the US had suffered digging out the tenacious defenders from their island caves led many to advocate the use of gas to minimize US casualties. The Lethbridge report, approved by the Combined Chiefs of Staff and Admiral Chester Nimitz, recommended "soaking" the island of Iwo Jima with chemicals prior to an amphibious assault. President Roosevelt disapproved the recommendation and the US suffered over 20,000 casualties taking the island[28]. When the invasion of Japan was being planned, chemical weapons had already been made obsolete by another weapon of mass destruction, the atomic bomb.

III- POST WORLD WAR II CHEMICAL USE

> "Victims realize they had been exposed to chemical attack only when they become faint and dizzy. Subsequently, they begin to vomit blood and bleed from the eyes, nose and mouth. Death occurs within a short time."
> Mujahadeen account of Soviet Chemical attack[1]

Since the end of World War II there have been several occasions where one nation used chemical agents against another. The frequency of these attacks has increased over the last few years. Two common factors in these events are, one, that the nation using the chemical weapons has either been a client state of the Soviet Union or the Soviet Union itself. Second, the nation attacked has had no capability either to protect itself or to retaliate with chemicals of its own.

The first documented instance of a Soviet client state involved in the employment of chemical weapons was Egypt's support of the Republican faction during the Yemeni civil war in the 1960s. War correspondents and Red Cross representatives reported that the Soviet armed-and Egyptian supported-faction had used chemical weapons against the royalists and civilians. Eyewitnesses reported the victims showed symptoms associated with exposure to mustard and nerve agents. The British government, with its interests in Aden felt the reports reliable enough that in 1967, then Prime Minister Harold Wilson, addressed the House of Commons on the subject of chemical use in the area[2].

In 1982, the State Department published a report documenting the recent chemical attacks that had been previously reported in newspaper accounts. Because of the nature of the events, the remoteness of the areas in which the attacks took place and the transitory nature of the chemicals employed, it took several years before the State Department felt it had the

requisite proof to charge Vietnam, Laos and the Soviet Union with the use of toxic chemicals in violation of the Geneva Protocol of 1925.

The evidence brought to the State Department showed conclusively that the Vietnamese used aircraft to deliver chemicals through bombs and rockets against Kampuchean guerillas and indigenous H'Mong tribesmen that were resisting Vietnam's attempts to dominate them[3]. Villagers reported that an aircraft would fly over them, dropping bombs or firing rockets. Where the weapons impacted there would usually appear yellow colored clouds that slowly dissipated. The villagers and their farm animals then immediately experienced nausea, vomiting and profuse bleeding. Many died; those that survived took months to recover[4].

Laotian defectors reported that their Air Force was conducting chemical attacks against local tribes who were attempting to resist efforts by the government to centralize control over them. One of the defectors, a pilot, reported that he had seen rockets loaded on his aircraft with modified, loose fitting warheads. He reported that his attacks resulted in red and yellow clouds over the impact area, and that the warheads did not explode the same way his normal warheads did[5].

The evidence provided to the State Department showed a clear, direct link to the Soviet Union. The Laotian pilot reported that Soviet technicians supervised the transportation, storage and loading of chemical agents[6]. More conclusive was the type of agent used. Contaminated leaf samples from one of the villages that had been attacked, as well as contaminated water samples from the well of another site showed that the agent was a synthetic derivative of a mycotoxin, a potent poison produced by molds[7]. This class of agent, while not unknown in the West, was also not an agent western nations worked with or possessed. It was known,

however, that the Soviets were quite familiar with the toxins through the agricultural research they had been conducting since the 1930s.[8]

The Soviet Union had a more open, direct role in the use of chemical weapons in Afghanistan. Afghani refugees streaming into Pakistan reported attacks by Soviet helicopters and jets against villages and bands of Mujahadeen. From the symptoms reported by witnesses and survivors, it appeared the Soviets used a variety of agents ranging from incapacitants to nerve agents to mycotoxins[9]. Unverified witness statements reported that the Soviets used a poison so toxic and fast acting that victims were found at their weapons, showing no signs that they were even aware they were dying[10]. Why the Soviets used chemicals was a matter of speculation by the State Department. It would appear that the Soviets used chemicals as a weapon of mass destruction to spread terror in the population forcing them to flee their homes and causing the Mujahadeen to lose their base of support. From eyewitness accounts by Afghan Army defectors, the Soviets took advantage of the attacks to develop their field data base on the effects of the agents. Soviets wearing full protective garments were reported conducting field autopsies on dead villagers to determine the effects the agents had on their victims[11].

In the recent Iran-Iraq war, the United Nations has documented the Iraqi use of chemical agents against Iranian forces and Khurdish villagers in border towns. Iraq, which is armed by the Soviets, appears to have used both mustard and nerve agents against the Iranians and villagers, causing hundreds of casualties among the unprotected victims[12]. The knowledge that Iraq had the capability to continue with additional chemical attacks with no fear of retaliation may have prompted Iran to seek a cease fire earlier than expected[13].

SECTION IV- THE NATO SCENARIO

> "If we are forced to operate encumbered by protective systems while the enemy is alloved to operate unencumbered in a clean environment, chemical weapons can offer him the same high casualty rate, even if no one is killed."[1]

In the last section we saw how the Soviet Union and its client states were willing to employ chemical agents against third world states who had no retaliatory capability. The question that comes to mind is whether the Soviet Union would employ chemical agents in a high intensity war against NATO forces. This chapter will answer that question by reviewing Soviet chemical history, discussing how it views chemical weapons within the overall scope of its military doctrine, and determining whether or not the Soviet Union would enjoy any advantages to employing chemicals first.

Since 62% of all the gas casualties suffered in World War I were Russian[2], the Soviet Union well understands the devastating effect chemical agents can have on unprotected troops. The Soviet Union's combat experience with chemical weapons did not end with the conclusion of World War I. In its own civil war, the White Russians employed British gas shells and the Red faction was reputed to have used its own chemical artillery shells[3].

The Soviet Union signed the Geneva Convention banning first use of chemical weapons in 1928, but reserved the right to retaliate in kind and would not consider itself bound to the treaty should its enemy not have ratified the Convention[4]. Signing the treaty didn't mean that the Soviet Union had renounced further research and development into the offensive use of chemical weapons, it simply meant that such efforts would be cloaked in greater secrecy. The same year it signed the Convention, it entered into a joint, highly secret collaboration with the Germans to work with mustard agent. Project Tomka, as it came to be called, was to continue in a remote

area of the Soviet Union for a period of five years[5]. By the beginning of World War II, the Soviet Union had amassed a stockpile of chemical weapons but was afraid to employ them initially against the invading Germans for fear of German retaliation[6]. Later in the war, the Soviet Union's successes with its rapid operational form of warfare precluded the use of chemicals.

With the end of World War II and the beginnings of the Cold War, the Soviet Union continued to build its stockpile of chemical weapons. In the final weeks of the war, the Soviet army captured large stockpiles of German chemical agents as well as production factories and procedures for producing nerve agent. The plants and stockpiles taken back to the Soviet Union formed the backbone of the post war Soviet chemical program[7]. One reason for the continued buildup was its historical fascination with the potential effects of chemicals but another, more pragmatic, reason was that the large stockpile was a cheap response to the US nuclear domination of the 1950s[8]. The Soviets appeared to have increased their interest in chemical warfare in the late 1960s and early 1970s; that same period of time when the US unilaterally halted their chemical program[9].

Current Soviet doctrine considers chemical weapons as just another form of conventional munition and has thoroughly integrated the use of chemicals into their overall military operations. Unlike the United States, the Soviet Union's offensive delivery capability covers the spectrum from tactical through operational level. Their indirect fire delivery systems range from the short range mortars found at battalion level to their long range Scud and Frog missiles that can fire from one nation to another. Their multiple launcher rocket systems such as the BM21 and BM27 have chemical warheads allowing them to saturate a large area

quickly with a lethal dose of nonpersistent agent, an ability the US currently does not have[10]. Because all of their indirect fire systems have the capability of firing chemical munitions it will be extremely difficult for NATO to determine which systems will be dedicated to chemical fires. Compounding this problem is the Soviet Union's doctrine that so fully integrates chemical use that 1/3 of the artillery shells carried by artillery units are filled with chemical agents[11]. Every Soviet artillery unit is a potential chemical delivery system because of its weapons' technical capability and its basic load mix.

The Soviet army is the world's best equipped and trained chemical fighting force[12]. All Soviet vehicles are equipped with an overpressure system that protects the crew in a chemical or nuclear contaminated environment. The Soviet army has the largest chemical organization and it is fully integrated into the regular forces as well, beginning with the chemical defense company at the regimental level[13]. The regimental chemical defense company's chemical reconnaissance platoon is equipped with a specially designed vehicle that allows the crew to perform its duties without leaving the vehicle, a feature the US army is planning but has not fielded as yet[14].

While well equipped, it is the level of their chemical training which enhances their chemical threat. The Soviet Chemical Defensive Academy at Shikhangy teaches and develops chemical offensive warfare techniques as well as defensive warfare[15]. Soviet units are known to train with diluted live chemical agents to build up the confidence and experience level of their troops. Some elite units have remained for several hours in contaminated areas[16]. Contrast that with the United States' current level of training with live agents. Currently the only troops training with live

agents are the Chemical Branch officers and NCOs attending branch schools at Ft. McClellan, Alabama. Their experience is a highly structured, artificial affair. The students enter a building where their protective gear is tested several times to insure their safety. They then enter small rooms under the supervision of instructors where they decontaminate a piece of equipment which has been contaminated with a small amount of agent. At all times the student is aware of the redundant safety measures protecting him. Even so, the event appears to be stressful[17].

The Soviets have several advantages inherent in their training. One is the formal schooling in the offensive use of chemicals and another is the wide variety of chemicals the Soviets stock. Within their estimated stockpile of 50,000 tons are 17 different chemical agents. The US, the only NATO nation with any sort of chemical stockpile, works mainly with two agents; GB, a nonpersistent nerve agent and VX, a thickened, persistent nerve agent[18]. Another advantage the Soviets have is their actual combat tested chemical doctrine. They have field tested their agents and employment techniques, and know what to expect when they employ them.

Thus the Soviet army is a well equipped and highly trained chemical force and, under the proper circumstances, will not hesitate to employ chemicals if it perceives an advantage to their use. The question remains whether or not the Soviet Union would consider employing chemicals in an attack against NATO forces. The fact is that Soviet chemical troops train with different agents than those employed by their potential enemies. That lends credence to the idea that they plan to employ those chemicals offensively and must be prepared to work with them. Given that the Soviets are both trained and prepared to employ chemicals as a normal

product of their military doctrine, there are several cogent military and political reasons for them to consider first use of chemical weapons.

The first military reason involves the terrain the invading Soviet forces must traverse. German towns have grown and expanded at such a rate that the once wide open spaces of the north German plain no longer exist. Soviet forces would encounter at least three major urban areas every 20 kilometers[19]. These urban centers are potential defensive strongpoints that would greatly slow down the rapid tempo the Soviets deem necessary to be successful in their attack. Soviet planners face a dilemma when they consider how to deal with urban sprawl. To bypass one urban center would require traversing another, and to neutralize one would drain precious resources from the main effort. World War II experience taught the Soviets that the combat power required to reduce strongpoints rubbles towns, increasing their defensive potential and destroying the infrastructure of the countries they were planning to occupy[20].

One solution is the massive use of chemical weapons. Chemical weapons have the positive characteristic of killing defenders while minimizing the rubbling of the urban centers. The terroristic effect of chemical casualties on the civilian population could be considered advantageous if it serves to break the will of the defenders. Mass casualties will undoubtedly help to overwhelm the NATO medical support structure, further degrading NATO's ability to effectively defend itself[21]. Soviet chemical fires could isolate those urban areas they wish to bypass and permit concentration on those urban centers they feel they must attack. They can then return to the bypassed urban centers at a later time when the effect of the chemical fires has greatly weakened the defenders. The added effect of a standing infrastructure undamaged by conventional high explosive fires

will help the Soviets with the post war reconstruction efforts in newly occupied territories[22].

Another incentive to Soviet first use of chemical weapons are the extraordinary NATO vulnerabilities to them. The largest NATO reinforcements, and much of the eplacement equipment and supplies come from the United States. Arriving soldiers must draw their prepositioned equipment and the large resupply items arriving by ship have to be unloaded at the ports thus presenting lucrative chemical targets. Chemical fires will cause casualties and contaminate the equipment sites, greatly slowing down reinforcing efforts. Ports present a higher value target because NATO depends on a large civilian labor pool to offload ships. This labor force is untrained and unprotected against chemical fires. Long range chemical fires at the onset of the invasion would cause mass casualties among the labor force and greatly degrade the NATO resupply effort[23].

The NATO military forces themselves are highly susceptible to chemical fires. While most forces can respond with adequate defensive measures, a successful chemical defense is still very resource intensive and hampers military activity. The Combined Arms in a Nuclear/Chemical Environment (CANE) Phase I test conducted in 1987 at Fort Hood, Texas, illustrated how disruptive working in a chemical environment would be to a unit. Significantly, it took small units twice as long and required twice as many soldiers to accomplish the same task in a chemical environment. Command and control was greatly affected, with radio transmissions doubling in frequency and length in an attempt to overcome the effects of working in an otherwise successful mission oriented protective posture (MOPP)[24].

The 1985 Kroesen study suggests that even if the front line combat units were not targeted,they would soon feel the detrimental effects of the Soviet chemical fires in the rear areas. For example, an artillery unit, itself untouched by chemical fires, could face the dilemma of accepting ammunition which had been contaminated in the rear area. If it did not accept the ammunition, it would soon run out of its basic load and be combat ineffective. If it accepted the contaminated artillery shells, the defensive measures it would be required to take to protect itself would degrade it to the point that in a few days it would be combat ineffective through the exhaustion of working in chemical protective gear[25].

Along with the advantages of using chemical weapons, the pragmatic Soviets will have to consider the additional risks involved as well. Of primary concern would be NATO's response to Soviet chemical fires. NATO's chemical retaliatory threat is extremely weak. Only the United States and France have measurable stockpiles and France's stockpile is very small[26]. The US stockpile is old but is slowly being modernized. Assuming the US has adequate means, the Soviets must still measure the US army's ability to effectively employ its chemical weapons.

A greater fear the Soviets have is that NATO will compensate for its weak chemical retaliatory capability with the threat of nuclear response. Since 1976, the Soviets have modified their conceptual use of chemical fires from a broad spectrum, high volume approach to a more limited, selective use on high value targets such as NATO command and control centers, POMCUS sites and ports. The intent is to increase the surprise and shock of the initial attack to preclude the political authorities from escalating to a nuclear response[27].

The Soviet Union's concern for the political risks can best be viewed through an historical perspective. Actions in Hungary, Czechoslovakia, and Afghanistan show the Soviets willing to risk world censure to achieve internal objectives. Although there are certainly added political risks inherent in employing chemical weapons, they are insignificant compared to the risks of invading NATO in the first place[28]. Even the legal question of violating the Geneva Convention signed in 1928 is moot. The Convention provides a loophole whereby a nation is not prohibited from first use of chemicals if its enemy or the enemy's allies are not signatories of the protocol. Several members of NATO as well as the Warsaw Pact have not signed the protocol allowing both sides to engage in chemical use[29].

The only practical restraint to Soviet chemical use is deterrence. Since the Soviets believe they can use chemicals without inviting a nuclear response, chemical warfare hampers their efforts only where it slows down their operational tempo. If the Soviets are the only ones using chemical weapons, they can selectively target those areas that would force NATO to operate in a chemically restricted defense posture while they were free to move about unimpeded. The only way chemical warfare will slow down the Soviets is if NATO responds with effective chemical fires , forcing Soviet units to operate in a degraded chemical defensive posture. The United States is the only NATO member with the means to carry out those chemical fires. The real Soviet concern is whether the US Army is trained to employ its limited chemical arsenal effectively.

SECTION V-HOW WELL TRAINED ARE WE?

In the previous section we saw that the Soviet Union had the capability and demonstrated the willingness to employ chemical weapons should they perceive an advantage to their use. When Soviet planners consider the possibilities of chemical retaliation and its detrimental effects on their operations, only the United States Army currently has the realistic means of providing that retaliation. This section details US doctrine and the offensive use of chemical weapons. The planning and execution of chemical fires will be analyzed, as will a doctrinally correct fire support annex to a division operations order used at the Army's National Training Center to illustrate how our doctrinal application reflects a lack of education and training.

US doctrine calls for the commander, operations officer and fire support coordinator (FSCOORD) at every level from brigade to corps to be responsible for planning, integrating and executing chemical fires[1]. Since the only means available to the US Army are the 155mm and 203mm artillery systems, responsibility for the actual employment of chemical munitions has been delegated to the field artillery. To them, "planning for the use of chemical weapons is done within the fire support system according to the same principles and procedures used for other means of fire support"[2]. In other words, chemical shells should be considered as just another big bullet.

The commander gives his staff his guidance, detailing the effects he wants chemical fires to achieve and what chemicals will be incorporated into his scheme of maneuver. The operations officer insures the FSCOORD understands the scheme of maneuver and incorporates fires to enhance the

unit's operations. The chemical officer's function is to assist and advise the FSCOORD in the preparation of those fires[3].

The chemical officer at Corps level prepares the corps chemical plan under the supervision of the corps FSCOORD. He considers the number and type of chemical munitions and delivery systems and allocates those weapons based on the corps commander's guidance. The division chemical officer works with the division fire support element (FSE) to perform a similar, although more detailed planning function. The division, realistically, is the lowest level that can provide detailed planning for chemical fires because it is the lowest level equipped with a chemical planning staff. Our doctrine, however, requires brigade staffs to plan and nominate chemical targets that will be incorporated into the division's artillery chemical fires plan[4].

Planners expecting a great deal of expert advice on the employment of chemical fires will be disappointed by the austere chemical staffs provided to tactical units. The corps chemical officer is most likely the corps chemical battalion commander. The corps Nuclear, Biological and Chemical (NBC) center is manned by 5 officers and 8 enlisted soldiers who provide 24 hour staffing. This staff is responsible for collecting, collating, evaluating and disseminating NBC reports and data within the corps area, as well as assisting the corps FSE with planning chemical fires[5]. The situation does not improve at the division level . The heavy division has a chemical staff of 13, with 8 dedicated to manning the NBC center with 24 hour staffing. Their main function is to coordinate the actions of the reconnaissance and decontamination platoons of the division chemical company, as well as collating, collecting and disseminating NBC reports throughout the division. They are a small enough staff that they are

easily overwhelmed with the added coordination involved with integrating additional assets that the corps may provide the division. Doctrinally, when the corps allocates additional units to the division it must also plan to send a Headquarters Detachment to augment the division chemical staff[6]. The chemical staffs at the brigade and battalion have purely defensive functions. The brigade chemical officer and NCO monitor the brigade's chemical training in peacetime and assist and advise the commander regarding placement of attached chemical decontamination units to support the scheme of maneuver. The battalion's chemical staff consists of a lieutenant and NCO at battalion headquarters, and a chemical specialist in each company to assist commanders with monitoring unit chemical defense team and equipment proficiency[7]. Our doctrine expects battalion and brigade commanders and staffs to be familiar with the employment of chemicals and to be able to plan and nominate targets to division. Chemical officers at that level are not trained to advise their commanders on chemical weapon employment. Their technical advice deals with the characteristics of chemical agents and their effects on troops because that impacts on their defensive mission. The skills required to conduct a chemical target value analysis that recommends which targets to hit with what munitions from what delivery systems are extremely complex and require special schooling--schooling the chemical branch school is not tasked to provide[8].

The highly complex chemical target value analysis process involves making critical subjective value decisions. Some of the more obvious factors to consider are meteorological data and the physical aspects of the terrain at the target. Wind direction and speed impact on the dispersion of the chemical, as does the time of day when the agent is employed.

Vegetation and soil types determine how long an agent will persist and how concentrated the vapor hazard will be[9]. The enemy situation has to be known, not only in terms of what he could be planning to do, but more specifically the size, shape and orientation of the enemy target, so as to maximize the effects of the chemical fires. On the friendly side, the planner must know what type and quantity of munition is available, who has it, and what delivery means will give the particular effect desired. The planner has to consider what impact the chemical fires will have on current and planned operations as well as potential constraints on branches and sequels. Finally, the planner must determine the relative worth of the proposed target in terms of the possible risk to friendly troops, future operations, and logistical effort required for the chemical fires, against the expected damage to the enemy[10]. Currently the only formal schooling that provides such training to officers is the Nuclear, Chemical Target Analysis Course, (NCTAC), taught to select officers at Fort Sill, Oklahoma[11].

Our doctrine expects our commanders, operations officers and fire support coordinators to be familiar with the effects of chemical fires and their integration with maneuver. Their chemical staffs are trained only to advise on defensive measures, so there surely must be some portion of an officer's formal schooling dedicated to employing chemical weapons. Unfortunately, that is not the case. The Command and General Staff Officers Course (CGSOC), the last opportunity for the army to offer its future brigade, division and corps staff officer with a common tactical base, has a required tactics course for resident students regardless of branch affiliation. The course, Combat Operations, requires the student to study 187 hours of integrated warfighting techniques at the corps and

division level[12]. Only 6 hours address chemical warfare, all devoted to discussion of the effects on friendly operations, and the defensive actions to be taken, should the Soviets employ chemicals[13]. As it is a subject matter to be worked into the lesson, the actual amount of chemical warfare incorporated into the course is left up to the instructor. Many groups do not discuss it at all. Even the School of Advanced Military Studies (SAMS), a school dedicated to the study of both the tactical and operational level of war, does not incorporate chemical employment in its tactics instruction. In a recent exercise the students portrayed the staff of the hypothetical X Corps in a European scenario. The Fourth Army Group operations order the staff received omitted the chemical annex and the chemical fires portion of the fire support annex. Consequently, when the board players representing the Soviet forces hit the corps area with chemical strikes, there was no way the corps staff could plan retaliatory measures. The subject of retaliatory fires was discussed for a few moments, considered "too hard to do", and the matter was dropped[14].

Our doctrine calls for Army officers to be proficient with chemical retaliatory fires, an acknowledged complex task, as a means of enhancing our chemical deterrence. Yet, that is not what officers are being taught and it is certainly not what they are practicing in the field. One merely has to recall the number of times he has trained in the planning and execution of chemical fires to appreciate how little training goes on in this field. Even our institutional evaluation process for training battalion and brigade staffs such as the National Training Center disregards this area. In a system where those events that are evaluated are the events that we train on, the NTC only evaluates how well units respond to chemical attacks, not how well they plan and execute them.

During a recent visit to the NTC, Major Charles Zimmerman, an observer/controller for over 18 months, reported that he had yet to see chemical fires included in any brigade operations order even though the division operations order given the brigade staff for their planning purposes instructs them to plan and nominate chemical targets[15]. The division fire support annex detailing the requirements for the brigade's chemical target nominations, while doctrinally correct, illuminates the problem areas we face due to our lack of training in this area.

The division operation order (OPORD) is for an attack in zone, with the evaluated brigade receiving priorities of fire. The division OPORD's chemical appendix to the fire support annex follows the doctrinal example in FM 6-20 (The appendix has been reprinted as appendix A for this paper). Paragraph c.(1)(b) tells the division's brigades they may plan and nominate chemical targets. Those targets would have to be approved by the division commander, once he received expenditure authority from the corps commander. Criteria for target selection is delineated in later paragraphs. The division commander dictates what chemical agents may be employed and that casualty effects will be 30% (preferred), with at least 15% casualties as a minimum. The brigade must nominate chemical targets at least 18 hours prior to desired time on target and the target description must include the radius of the target[16].

Although they are doctrinally correct, these requirements hamstring the brigade commander's freedom to employ chemical weapons. Unfortunately, it is a doctrine which has not evolved very far from its World War I roots. If the division commander must approve all chemical artillery fires before they can be employed, how responsive can they be? One of the many advantages of artillery is that it is responsive to the commander's needs.

Attacks are fluid in nature, requiring responsive fires when needed, and cannot await the time consuming approval process. Our current doctrine says that the brigade's deep battle begins 12 hours out[17]. Yet the division expects the brigade commander in the attack to not only know where the chemical fires must be placed 18 hours from now, he must also know the dimensions of that target. Additionally, he is told that his chemical fires must achieve a certain amount of casualties to be considered successful. Commanders realize they can no longer expect fire support systems to produce casualty rates on demand. Commanders expect their artillery and air force assets to delay, disrupt and disorganize the enemy. Destruction to any degree is an obvious benefit, but one that cannot be decreed. Why, then, should the commander expect to be able to dictate casualty rates for his chemical fires if he doesn't expect it from other fire support systems?

The casualty effect and size of the proposed target are requirements based on tables the chemical fires planner used to achieve effects desired in World War I, but which are out of place on the modern battlefield. The tables the chemical planner uses to determine the amount of chemical agent to be delivered to the target are found in FM 3-10B. Those tables are predicated on the chemical agent and the delivery system to be used. Other factors the planner considers are the casualties to be produced by the chemical agent and the training status of the enemy. The planner enters the table by knowing the radius of the target, then includes all the above factors to determine how many chemical rounds must be delivered in a given period of time to achieve the desired casualties[18].

Those tables are based on data gathered, for the most part, from World War I when chemical barrages were planned as regularly as conventional artillery fires. In that static form of warfare, it was important to achieve a desired casualty rate to allow friendly troops a better chance to penetrate enemy defenses. The number of rounds required to achieve the desired casualties was not a critical factor because the tactics of that period allowed for the tremendous buildup of artillery rounds to support the planned offensive. Chemical fires require tremendous numbers of artillery shells to achieve significant number of enemy kills. An unclassified source calculated that to achieve 20%-40% casualties against a company-sized target, (the only modern unit that would fit within a 500 meter radius area), would require 1080 155mm GB filled artillery shells delivered on the target area within 15 seconds[19]. Such a requirement would not have seemed out of the ordinary in World War I. In the March 1918 German offensive, the Germans fired 20,000 rounds into one village alone within a 15 hour period[20]. The US Army can't fulfill that mission in today's lethal battlefield . According to the NTC's division operations order, the total division allocation of GB (a nonpersistent nerve agent) is almost half of what would be required to be fired on just that company-sized target. More to the point, a division structured with an organic artillery brigade of three 155mm battalions and one 8" battalion is incapable of firing that many rounds that quickly, even if it had the chemical rounds![21]

Training at the NTC prepares units for high intensity combat, yet how could that institution possibly produce a document so unrealistic in its implementation? Has this point been raised before? The answer may be that we are not trained to employ chemical weapons, and therefore have no way of knowing if what our doctrine tells us is right or not.

SECTION VI- THE CONCLUSION

> "...The US chemical weapons policy is to deter, defend, and retaliate. The order here is very significant. To be effective and credible, all three elements must be in balance, like the three legs of a stool. With the retaliatory leg virtually nonexistent, the deterrence leg is short."
>
> MG John G. Appel [1]

The problems associated with our lack of training in the employment of chemical fires run far deeper than just the actual delivery of chemical munitions to the target. Lack of training has also left us unprepared to employ chemical weapons in other ways as well. One of the manuals issued CGSOC students lists 55 separate staff functions related to the employment of chemical fires[2]. Among those tasks are the integration of chemical fires with the scheme of maneuver. Other tasks deal with the supply, storage and transportation of chemical weapons.

To avoid friendly casualties in the integration of chemical fires with maneuver, we have created a complex series of reports that inform all units of enemy strikes and upcoming friendly chemical strikes. The report process, however, doesn't allow for a means of confirming that friendly units have received the NBC 3 Strikewarn message because it doesn't require a reply[3]. One reason it requires approval from higher levels to use chemical fires are the constraints they can place on the subsequent movement of adjacent friendly units. In our schooling, staffs are allowed to plan the use of artillery delivered scatterable mines whose terrain limiting potential capability exceeds that of nonpersistent GB. Yet their employment is not constrained by requiring permission to fire the mission from higher commanders as is the case with chemical fires.

A host of problems arise once approval has been given by the national command authority to allocate chemical rounds to units. The chemical artillery round may be just another bullet to those who fire it, but it is a different matter to those who have to store and deliver it. Field Manual 3-20, Technical Escort Operations, details a litany of restrictive regulations required when chemical agents are shipped. The regulations obviously make sense as they apply to peacetime safety and environmental considerations, but the circular makes no distinction between combat and peacetime conditions. Some of the requirements would place too great an administrative burden to make tactical sense. Among them are armed escorts, trained and equipped to decontaminate whatever agents they are carrying. Escorts must travel in vehicles with the cargo inspected and sealed, on routes that have been requested and cleared ahead of time[4]. Delivering nerve agents (the only agents we employ) by air is even more restrictive. Should we have to follow these regulations under combat conditions, it would prevent using helicopters to deliver chemical rounds as we now use them for conventional artillery rounds.

Storage of the chemical rounds poses another problem. Security measures for storing chemical rounds in peacetime are far more stringent than those required for conventional rounds. If those procedures continue under combat conditions, special ammunition storage points (ASP) will be required with the additional staffing that entails. Our doctrine called for specially trained chemical units to store, transport and employ our chemical weapons in World War II. Under our current doctrine, conventional units assume this additional duty and they have not trained for it.

Chemical weapons are just one of many tools in our tool box. Just as we would fault a craftsman for not knowing how to use the tools of his trade, we should fault military professionals who are not knowledgeable in the use of this tool. There are several actions the Army can take to correct this deficiency.

The first step is to recognize that the spectre of chemical warfare is here to stay. The chemical threshold has been breached too many times in the recent past to serve as an effective barrier to future use. As a recent Time magazine article said, "the international community will have to face up to the reality that the taboo on the use of chemical weapons has been weakened if not destroyed"[5]. Even if the Soviet Union should refrain from using chemical warfare in its future endeavors there are many Third World nations just now waking up to its potential. CIA Director William H. Webster recently disclosed that Libya is building the largest chemical weapons plant the agency has ever seen, and that 20 other nations were developing chemical weapons[6]. Once we acknowledge that chemical weapons are here to stay, we must then recognize our responsibility to be proficient in all aspects of this form of warfare. Training in the offensive use of chemical weapons should not undercut our nation's stated desire to banish future chemical warfare any more than improving our capability to fight in a conventional manner undercuts our nation's desire for future peace.

The second step is to integrate the full spectrum of chemical warfare into our formal education system. There is no reason why a chemical officer should attend a field artillery school to learn to employ the weapons at which he is supposed to be an expert. Combat

arms officers are required to have a working understanding of the employment of combat support assets such as attack helicopters and field artillery. Why allow them to defer to a "technical expert" on the fundamentals of employing chemical weapons to make up for their lack of knowledge? All officer advanced courses should incorporate the employment of chemical weapons in their tactics instruction. Such instruction should be reinforced in the Command and General Staff Officers Course, thus insuring that all officers assigned to brigade, division and corps staffs have a working knowledge and appreciation for the offensive use of chemical weapons.

New doctrinal concepts should be introduced to bring us closer to the realities of modern combat. The CANE report, mentioned earlier, showed just how having to work in a chemical environment disrupts the command and control of tactical units and degrades their ability to perform their missions. Rather than overwhelm our current capabilities to suit the requirements of an outdated chemical doctrine, we can shape our doctrine to meet our capabilities. Instead of firing massive numbers of chemical shells to achieve lethal total dose concentrations, we merely need to intersperse chemical shells within conventional artillery fires. The number of gas shells should be just enough to activate the enemy's chemical alarms, forcing his soldiers into their chemical protective gear, and thereby greatly degrading their ability to conduct war[7]. Should the enemy choose not to increase his defensive posture, he risks casualties above what would otherwise be expected. This measured sprinkling of chemical rounds is within our capabilities to execute, yet the added

complexities it forces on the enemy greatly enhances the effects of our conventional fires.

The only way we will be able to execute this modified form of chemical fires effectively is to require units to incorporate chemical fires in their tactical training. Units at the NTC should be evaluated on their ability to plan and deliver chemical fires as well as their ability to defend against chemical attacks. The initial rotations to the NTC were so evaluated before the process was administratively deleted by the control cell at the NTC as too hard to control[8]. Division CPXs should include the storing and transporting of chemical munitions to develop workable operating procedures. Artillery units should be evaluated on their ability to plan, coordinate and deliver chemical fires.

A determination must be made whether to dedicate one unit to fire all chemical rounds or distribute the chemical rounds to all firing units. Consolidating chemical rounds in one unit obviously limits the flexibility of artillery fires, but until binary rounds are all fielded, we still have to work with old rounds that have a reputation for leaking around the fuze wells[9]. Consolidation would limit the number of crews working with old shells who might have to operate in an increased MOPP status. One other advantage is that fewer units would then be involved with picking up and transporting chemical rounds from their storage sites.

Critics who would say that these measures unnecessarily complicate the "real" training that must occur, or that these ideas belong in the "too hard to do" drawer, must surely realize that, in combat, chemical operations do not magically become easier or more simple in their

interaction with conventional operations. Only extensive, realistic training will make these complex operations more effective.

The dilemma that accompanies the use of chemical weapons is its political ramifications. Considered a liability by many, the political aspect of this subject can be used to our advantage against our greatest threat, the Soviet Union. The Soviets have always taken a serious interest in our chemical program. When the United States halted its chemical program, the Soviets responded by creating the most rapid expansion to date of their chemical warfare capability[10]. When the United States began to implement its chemical warfare modernization program to improve its offensive capability, the Soviets responded by pushing for a treaty banning chemical weapons[11]. The message is clear. A purely defensive policy is not as effective a deterrent as one that offers a credible retaliation capability. Merely stating that we will retaliate does not give us the capability to do so. It is obvious that our lack of training further degrades the limited credibility of our retaliation policy. By once again schooling our officers in chemical weapons and training our units to employ those weapons properly, we are sending a clear message to our enemies. We would prefer not to use chemical weapons, but should we have to respond, we can do so effectively.

To those who would argue that our renewed emphasis on offensive chemical employment sends our allies the wrong message, I would respond that it was an allied officer who started me on this project. Last year during a corps level exercise, a group of US officers sat at a table wargaming the possible outcomes involved in their planned course of action. At some point in our deliberations we realized we

had committed all of our assets but would still be unable to delay or disrupt an approaching Soviet force. An allied officer watching us finally came over and suggested hitting that force with chemicals to slow it down. In the scenario, the Soviet force had used chemicals several days previously, so, politically it was feasible. Whether or not chemical use would have been effective is really not the point. By the look on our faces, it was painfully obvious that using chemical weapons had never entered our minds. That an allied officer should have to remind US officers about a capability for which they were once respected world wide should never happen again.

Appendix A: ANNEX D (FIRE SUPPORT) TO OPLAN 88-14

Note* Only that portion of the annex dealing with chemical fires is copied below.

3. EXECUTION

a. (omitted)
b. (omitted)
c. Chemical Support:

(1) General:

(a) Priority of support to 3d Brigade initially.

(b) Toxic chemicals may be planned. Release for use will be transmitted per SOP for approval by division commander on release by Corps commander.

(2) PCL:

	155mm		203mm	
	GB	VX	GB	VX
3-3 FA	83	41		
5-18 FA*	83	41		
1-41 FA	83	41		
1-42 FA	83	41		
1-640 FA	83	41		
2-640 FA			40	10
3-640 FA			40	10
4-640 FA			40	10

* When DS to 1st Brigade.

(3) Miscellaneous:
(a) Casualty Effects:
1. GB: Employ for immediate casualties.

2. VX: Employ for delayed casualties and contamination.

3. Fractional Casualties:
a Preferred fractional casualty achievement is target destruction (30 percent casualties).

b Minimal acceptable fractional casualty achievement for target engagement is target neutralization (15 percent casualties).

(b) Nominations will be made to Division G3 NLT 18 hours prior to desired time on target.

(c) All nominations will include:

1. Type of target.
2. Size of target (radius in meters).
3. Time on target.
4. Expected casualties.

ENDNOTES

Section I

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16 Annex D, fire Support, to OPORD 88-14.

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21 Our heavy divisions have artillery brigades made up with 3x155mm Bns and one 8" battalion. At 24 tubes per battalion that is 96 tubes in the division capable of firing chemical shells. To fire 1,080 shells within 15 seconds requires each tube to fire over 11 shells at the rate of one per second. The rate of fire for each system is too slow for that.

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7. From interview with LTC Maupin, who suggested this technique to me as being far more efficient than attempting a total dose artillery barrage, yet is as effective in terms of degrading the target unit's ability to function.

8. Interview with Captain Baltazar, survivability assessment point of contact at the Center for Army Lessons Learned (CAL). The NTC stopped allowing Blue (US) forces to employ chemical fires because it was too difficult to administratively plot the down wind hazard areas and then assess OPFOR casualties within those areas.

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