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Offensive Use of Chemical Technologies by US Special Operations Forces in the Global War on Terrorism

The Nonlethal Option

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We have enclosed the most recent Maxwell Paper published by the Air War College. This study by Commander George N. T. Whitbred, IV, USN, *Offensive Use of Chemical Technologies by US Special Operations Forces in the Global War on Terrorism: The Nonlethal Option,* examines technical and legal considerations involving the use of nonlethal chemical agents in riot control, law enforcement and combat.

Specifically CDR Whitbred provides background information on both antipersonnel and antimaterial nonlethal technologies, their application within the special operations forces (SOF) counterterrorist arena, and their utility during armed conflict, combat search and rescue, and hostage rescue. The author makes detailed comparisons of advantages and disadvantages of different nonlethal technologies and offers recommendations for adjustments in the US position on the Chemical Weapons Convention (CWC).

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GEORGE N. T. WHITBRED IV
Commander, USN

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Foreword

The possible use of nonlethal chemical technologies in counterterrorist operations is drawing much attention in the ongoing global war on terrorism. The examination of their use comes at a time when the United Nations Chemical Weapons Convention prohibits their application in any type of armed conflict. International law governing the use of new developments in antipersonnel and antimaterial nonlethal chemical technologies has recently been the subject of intense public debate, resulting in congressional hearings questioning the ratification enforcement protocols to the Chemical Weapons Convention.

Although the exercise of nonlethal chemical technologies is not prohibited in domestic law enforcement applications, US special operations counterterrorist forces encounter situations where military combat and law enforcement tactics, techniques, and procedures amalgamate into an overarching methodology. The Afghanistan and Iraq wars sparked controversy as to the possible application of nonlethal riot control and calmative-type agents against insurgents who are entrenched physically within the geographical commons.

The decision to apply nonlethal technologies requires an understanding of their overall effects, both tactically and strategically. This paper provides background information on both antipersonnel and antimaterial nonlethal chemical technologies; their applications within the special operations forces (SOF) counterterrorist environment; and their operational applications during armed conflict, combat search and rescue, and hostage rescue. Comparisons of technologies are made, their differences highlighted, and recommendations for use offered. While it may appear that nonlethal chemical technologies are new, their path to development has been navigated with forethought and discretion.

A fresh look at nonlethal chemical technologies yields valuable insights for emerging twenty-first century unconventional approaches to global counterterrorist operations. The author identifies specific recommendations that could extend the legal range of options for SOF. Some uses are intuitive, such as SOF units supporting law enforcement counterterrorist operations. Others address the new de-

velopments in pharmaceutical agents used extensively by international counterterrorist forces. Finally, Commander Whitbred is clearly on mark when he concludes that the Chemical Weapons Convention must be reviewed in light of the new developments in nonlethal chemical technologies, both in the context of conventional armed conflict and unconventional counterterrorist operations. While analyzing strategic impacts, this study calls for fundamental change to be considered.

As with all Maxwell Papers, this research is provided in the spirit of academic freedom, open debate, and serious consideration of the issues. We encourage your responses.

ROBERT J. ELDER, JR.
Lieutenant General, USAF
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About the Author

CDR George N. T. Whitbred IV is a naval special operations officer specializing in explosive ordnance disposal (EOD) and underwater clearance operations. Prior to his assignment to Maxwell AFB, Alabama, he was the maritime homeland defense special operations staff officer, US Fleet Forces Command, Norfolk, Virginia. He has served in numerous expeditionary assignments including Carrier Strike Group EOD officer for commander, Carrier Group Eight and Expeditionary Strike Group EOD officer for commander, Amphibious Squadron Six. He served in the US Marine Corps Atlantic Fleet Antiterrorist Security Company and in the US Sixth Fleet as the EOD staff officer for Operation Joint Endeavor. Commander Whitbred commanded an EOD mobile unit, Naval Air Station, Whidbey Island, Washington. He is presently assigned as commanding officer, Naval Weapons Station, Indian Island, Washington. Commander Whitbred is a 2006 graduate of the Air War College at Maxwell AFB.

Introduction

The unresting progress of mankind causes continual change in the weapons; and with that must come a continual change in the manner of fighting.

—Rear Adm Alfred Thayer Mahan
The Influence of Sea Power upon History, 1890

Throughout history the success of special operations forces (SOF) has relied on a combination of highly trained and exceptionally skilled operators, unique and specialized equipment, and unconventional methods of warfare not common to standard military forces. This combination has proved to be highly successful against unprepared adversaries who countered SOF methods of warfare with conventional means. Today's SOF face a developed enemy—the modern terrorist—an adversary in contrast to the terrorists of the Cold War where political motivations traditionally targeted the local battlefields of government officials, soldiers, and law enforcement. Operating within a global network of asymmetric and unconventional domains, modern terrorists use a religious banner to advance a focused ideology and to justify violent attacks. This ideological advancement neither follows constructs of conventional warfare nor is bound by accepted conventions, protocols, or rules of engagement. Anyone, anywhere, anytime is a target. Maneuverability within this domain is by way of advanced technology through nontraditional approaches and use of commonly accessible information. Computers and wireless communication provide the vehicles of approach for the modern terrorist, and global information networks provide the common areas for planning, recruiting, development and proliferation of weapons of mass destruction (WMD), finance operations, and manipulation of worldwide unconventional attacks. This linkage of advanced technology and radical ideology creates a new type of warfare that levels the global battlefields in which SOF must tackle these modern extremists.

On 11 September 2001 America was introduced to the modern terrorist on a devastating scale. Americans saw the wanton destruction and the targeting of innocents in

a way never before imagined. This heinous act caused the US government to revisit its strategy on combating terrorism. In October 2001 Pres. George W. Bush announced to the American people, "The attack took place on American soil, but it was an attack on the heart and soul of the civilized world. And the world has to come together to fight a new and different war, the first and we hope the only one, of the twenty-first century."[1] Shortly after this speech, the United States and its allies began forming strategies that would bring the war to the terrorists on multiple fronts and in multiple ways. President Bush declared a new class and strategy of warfare that focused on the diplomatic, economic, informational, military, and traditional law enforcement strategies and tactics of counterterrorism. This strategy evolved into the global war on terrorism (GWOT). The GWOT strategy initiated a series of governmental reforms aimed at focusing greater attention on defeating terrorist networks in close conjunction with partner nations through intelligence sharing, staging rights, special operations (SO), and law enforcement exchanges. These reforms and initiatives continue to be debated among government leaders today.

While the nature of warfare remains relatively invariable, its techniques and environment constantly change. Over the course of the last four years, GWOT initiatives dominated the political arenas of the world; however, to what extent have they upheld the evolving methods and techniques used in counterterrorism? Is enough lateral flexibility provided for the United States and its partner nations to conduct effective counterterrorist operations using unconventional methods? Are the legal dimensions of the existing conventions and treaties too conventional and outdated for counterterrorism operations? Most importantly, are the counterterrorist operators, specifically SOF, empowered with the unconventional means necessary to defeat global terrorism? Examining these questions through a specific capability focuses the research and provides a thorough analysis of the subject.

This paper examines the applicability of the 1925 Geneva Protocol and the 1993 Chemical Weapons Convention (CWC) to the unconventional counterterrorist in the arena of the GWOT operations of today. The 1925 protocol restricts the use of nonlethal chemical warfare (CW),

while the CWC augments this protocol (which, for instance, makes no provision for production, storage, or transfer) to include verification measures. The argument herein develops a case that supports the offensive use of nonlethal CW technologies as a viable expansion to the existing capabilities of SOF counterterrorist operations.

Chemical Warfare—A Glance into the Past

Military commanders of the past, envisioning weapons able to swiftly stop enemy advancement, have searched for weapons of last resort. At the beginning of the twentieth century, battlefields were comprised of lineal divides where armies would mass frontal attacks of unstoppable momentum. Efforts to counter these attacks led to the development of trenches, barriers, and emplacements which eventually became insurmountable, resulting in prolonged battles. On 22 April 1915 near Ypres, Belgium, in a desperate attempt to develop a breakthrough, Germany opened the valves of 6,000 cylinders of compressed chlorine gas.[2] With favorable winds, a brown cloud enveloped the French and British positions. The French and British troops, never expecting the use of poisonous gas, were completely unprotected.[3] The unopposed German infantry advanced behind the cloud; then, as dusk fell, they dug themselves in.[4] The next day the Germans created a 9-kilometer gap in the French and British lines, inflicted 7,000 casualties, and captured 1,600 Allied prisoners.[5] From this point, both the Germans and the Allies realized a new dimension of warfare had entered the battlefield with tactical effects and strategic significance.

Necessity introduced CW to the battlefields of World War I (WWI). As German military commanders realized the methods and techniques of warfare had to change in order to meet the battlefield environment, CW became their method of choice. Adaptable to almost any tactical situation and superior to explosives and bullets, CW became known, on both sides, as an unconventional means of achieving battlefield superiority. Whereas Germany envisioned CW as a method for countering trench warfare, Allied powers viewed it as a defensive measure that slowed the massive German army. In the end, CW enabled military commanders to un-

conventionally attack or defend fixed fighting positions on a symmetric battlefield.

Developments from World War I to Vietnam

Although CW had been used prior to 1914, it was not until WWI that developments in science and technology made its use significant on the battlefield.[6] By the end of WWI, research and development (R&D) of CW resulted in classifying chemical agents into two broad categories—casualty agents and harassing agents.[7] Casualty agents, as the name implies, are defined as chemical agents that cause severe injury or death.[8] Germany's industrial base capitalized on the development of casualty agents and became the leading producer of both lethal and nonlethal chemical agents. By 1917 Germany produced numerous amounts of casualty agents that were successfully used against Allied troops.

Harassing agents, commonly referred to today as nonlethal agents, are defined as chemical agents that produce a temporary disablement on an individual.[9] While casualty agents were designed to incapacitate and kill, harassing agents were designed to force the enemy to wear chemical protective equipment. This disrupted his ability to fight effectively. The effects of harassing agents on the battlefield were of minor importance during WWI.[10] In August of 1914, early attempts by the French to use tear gas on German positions garnered little success due to the agent's nonpersistent nature and transitory effects on individuals.[11] Consequently, the continued development of harassing agents, in comparison to the lethal types of chemical agents, became limited.

Military doctrine evolved as new technologies were introduced into the battlefield environment. The introduction of the tank and combat aircraft forced CW into a diminished role.[12] Troops no longer fixed in trench positions made difficult targets for these slow-acting, area-effect weapons.[13] As a result, the unconventional methods of CW could no longer meet the evolutionary demands of military methods and techniques. CW development would not catch up with military tactics for another two decades.[14]

After World War I, CW development and manufacturing did not reach any significance until the years immediately

preceding World War II (WWII). Restricting the use of asphyxiating gases as a method of warfare, the 1925 Geneva Protocol was an early measure of success in attempts to abolish chemical weapons. However, this treaty was only a partial triumph since it failed to address the stockpiling of chemical weapons for defensive measures. After 1942 stockpiles of chemical weapons began to increase throughout the war to levels that exceeded the stockpiles of WWI.[15] The very threat of chemical war and the large chemical stockpiles, produced up to and throughout WWII, became viewed as an effective deterrent. Military leaders realized that using CW in a first strike scenario would only bring retaliatory measures of the same magnitude or worse. Stockpiles remained unused and were mostly destroyed after the war ended.[16]

Between 1945 and 1955, improvements in technology resulted in the development of new forms of lethal and nonlethal agents. Nerve agents, incapacitating agents, and herbicides became of interest to militaries throughout the world due to their persistency and quick effect on the battlefield. Because of their impact on humans and potential to cause unnecessary suffering, these chemicals were prohibited under the 1925 Geneva Protocol, just as the earlier chemical agents had been. The offensive uses of both lethal and nonlethal chemical agents remained legally restricted to those countries that ratified the 1925 Protocol.[17] In contrast, the United States, a nonratifying country of the 1925 Protocol, viewed nonlethal chemical agents as a legal, offensive warfare capability. New forms of tear gas, or riot control agents (RCA), developed primarily for law enforcement began to see increased usage in the 1960s during the Vietnam War. Initially, these chemical compounds served as harassing agents for crowd control, but as the war developed their use evolved into a much broader application.

From November 1965 to January 1970, approximately 13.7 million pounds of RCAs were used in Vietnam in the following types of operations: attacking occupied positions, defending positions, clearing tunnels, breaking contact with the enemy, defending against ambush, and rescuing downed Airmen.[18] Intricate trails through dense jungle provided avenues for insurgents from the North to penetrate deep into South Vietnam. In an effort to counter the in-

surgency, powdered RCAs were dusted onto a trail so that anyone passing across it stirred the agents up into an irritating cloud.[19] Complex tunnel systems and underground fortifications used to conceal guerrilla operations from the air often proved fatal to US infantrymen attempting to gain access.[20] RCAs confirmed their effectiveness in countering enemy defenses by engulfing these barriers with an irritant cloud, making it impossible for occupants to remain inside.

CW was developed out of innovation and necessity. From the trenches of WWI to the jungles of Southeast Asia, CW technologies provided military leaders the capability to effectively counter both conventional and unconventional methods of warfare using unconventional techniques.

Chemical Agents and Their Effects

The ability to differentiate between lethal and nonlethal chemical agents is essential for several reasons. First, by understanding their basic differences, one is able to realize their designed intent. Second, while both lethal and nonlethal chemical agents have similar effects, their consequences are vastly dissimilar. Third, nonlethal chemical agents expand the capabilities of military commanders to shape the courses of action within the battlefield environment. Because of the potential utility of nonlethal agents, these are addressed in the most detail.

Lethal Chemical Agents

The definition of a lethal chemical agent implies a direct toxic effect on man, animal, or plant.[21] The effects produced may be short-lived or permanent, depending on the amount of exposure. The fundamental intent of employing lethal chemical agents is to achieve irreversible injury on personnel, ranging from extreme skin irritation to paralysis, asphyxia, and death. Lethal chemical agents fall into the categories of blister agents, blood and choking agents, and nerve agents.[22]

Blister agents are primarily used for area denial because they are persistent in most environments. The onset of their effects is slow in comparison to the other agents. The

painful wound, combined with the appalling visual effect of vesication, increases the level of fear and promotes hysteria among personnel.[23] Blister agent effects can also be considered a useful deterrent because of their psychological impacts.[24]

Blood and choking agents are most effective as antipersonnel weaponry; their nonpersistent properties stop the immediate advancement of troops by direct dispersion, usually in the form of aerosols applied directly on personnel. They can also be used in an offensive mode to disrupt a defender's fighting position as the immediate effect of blood and choking agents is to disrupt the ability to fight. This is accomplished when the agent inhibits the normal transfer of oxygen from the blood to the body tissues, causing death within minutes.[25] Choking agents utilize the same principles, except they attack the lining of the lungs. This results in dryland drowning, wherein the damaged lung membranes allow fluid to enter, precluding the transfer of oxygen to the bloodstream.[26] Although blood agents are quick acting, they are only effective if delivered in large quantities.[27]

Nerve agents are the most common chemical agents in the world.[28] While there are many variations of chemical nerve agents, they all perform the same way.[29] By blocking the balance between the sympathetic and parasympathetic nervous systems, which together form the autonomic nervous system, they cause the nervous system to be continually stimulated.[30] The effect of this stimulation causes uncontrolled convulsions, eventually leading to death.

Nerve agents became attractive for several reasons. Their widespread toxicity and ease of employment make dispersion more effective.[31] Smaller doses of agent became more lethal, and delivery options increased. For example, artillery-type ordnance was plentiful and easier to employ compared to aircraft bombs. The time of lethality is another factor for widespread use of nerve agents. The period required for a nerve agent to cause death is between one and 10 minutes, unlike previous chemical agents, such as blister agents, which took between four and 24 hours for effects (death) to occur.[32] The rapidity with which nerve agents are absorbed also makes them harder to defend against since chemicals absorbed through the skin result in symptoms within an hour.[33] Because nerve agents have viscosity

characteristics similar to that of fuel oil, they are easier to disperse as an aerosol. Additionally, nerve agents have an environmental temperature range of effectiveness between -50 to 2000 degrees Celsius, meaning they can be used effectively throughout the world.[34] The use of nerve agent, as with the other lethal chemical agents, is intended for area denial and antipersonnel effects. The difference between lethal chemical agents is intent and effectiveness.

Nonlethal Chemical Agents

Nonlethal chemical agents are a subset of capabilities that fall under the broader heading of nonlethal weapons (NLW). The term *nonlethal* has many definitions. A *Naval Law Review* article defines it as "the intent of the user 'neither to kill nor to harm permanently.'"[35] A nonlethal weapon, as defined by Department of Defense Directive 3000.3, *Policy for Nonlethal Weapons*, 9 July 1996, is one that is "explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment."[36] This directive further characterizes NLW as having either relatively reversible effects on personnel or materiel, and/or as affecting objects differently within their area of influence.[37] NLW can cause serious injury or death if not used properly. Consequently, Department of Defense (DOD) policy advocates that they are to be used in a complementary fashion with existing lethal weapons systems.[38]

Nonlethal chemical agents have existed as long as lethal chemical agents. Tear gas and other forms of irritants developed during WWI became available on the battlefield but were never deemed useful to military commanders. Military leaders opted not to use nonlethal chemical agents (commonly referred to as harassing agents) because the agents did not achieve the desired effects on the battlefield.[39]

Antipersonnel and antimaterial are the two main categories of nonlethal chemical agents. Antipersonnel chemical agents consist of two subsets—chemical agents that rely on toxic effects to humans and those that do not.[40] Antimaterial chemical agents are those that are not intended for use against humans.[41] According to the US Army National

Ground Intelligence Center, nonlethal chemical agents that depend on the toxic effects to humans are incapacitating chemicals. These chemicals consist of RCAs, vomiting agents, psychochemicals, calmatives, and malodorants.[42]

Since WWI nonlethal chemical technologies have become increasingly important because of their ability to disable an opponent.[43] Today, nonlethal chemical agents have evolved in the continuum of incapacitating agents to antimaterial agents. Mostly common to law enforcement applications, nonlethal chemicals are intended to rapidly disable an opponent or equipment but have only temporary effects. For this reason, the application of nonlethal chemical agents has become an appealing capability of the twenty-first century military.

RCAs—used extensively in peacekeeping, public disturbances, area denial, dynamic building clearing, and hostage rescue/barricade situations—produce eye and nose irritation, lacrimation (tearing), itching, and burning sensations.[44] When exposed to an RCA, personnel remain helpless until removed from the area. Recovery time is minimal and without long-term injury.[45]

Vomiting agents contain the same characteristic as RCAs, except they produce tightness in the chest, nausea, and vomiting.[46] Vomiting agents are used extensively throughout foreign militaries because their symptoms make it difficult to wear a protective mask, thus exposing individuals to the effects of other agents.[47]

Psychochemicals and calmatives are agents that affect the central nervous system. The term *psychochemical* refers to the effects of a psychotropic action that will incapacitate without causing harm.[48] In the early 1950s, the US Army became interested in pyschochemicals because of their effect on the human mind. In 1962 it developed an incapacitating agent code-named BZ.[49] Having similar effects to the drug LSD, BZ research was discontinued because of the unpredictable nature of its effects on humans.[50] Calmative agents are commonly defined as pharmaceutical drugs.[51] These drugs usually consist of an opiate-based chemical which depresses or inhibits the function of the central nervous system thereby producing a sedative-hypnotic state.[52] Calmatives have recently caught the attention of the world because of their application in the October 2002 Moscow

theater hostage crisis, where Russian special forces used the analgesic fentanyl to subdue occupying Chechen terrorists and their hostages. The difficulty of delivering calmatives, as witnessed in this incident, is determining the correct dose to achieve incapacitation or unconsciousness without causing death.

Malodorants are chemical compounds that produce an odor that is unbearable to the sense of smell. Commonly referred to as "stink bombs," their effect on the olfactory nerves causes personnel to leave the particular area.[53] Military interest in malodorants is due to their potential to control crowds, clear facilities, and deny areas.[54] Because of their recent development, toxicological assessments of malodorants have not been completed. The Non-lethal Technology and Academic Research Symposium in late 2001 outlined some possible health effects on the sinus and nasal passages that can be caused by odorous chemicals used as components in malodorant mixtures.[55]

The second subset of nonlethal antipersonnel agents (those not relying on toxic effects to humans) are chemicals employed in such a way that they affect neither the physiological nor central nervous systems in the human body.[56] These include adhesive agents which are quick-setting polymer foams. Otherwise known as sticky foams, these agents immobilize personnel by sticking them to their surroundings.[57] Once immobilized, special solvents dissolve the foam to remove the personnel from entrapment. If misused, adhesive polymer foams could cause serious injury or death. Chemical marking agents used to identify personnel, either through conventional dyes or infrared chemicals for covert markings, are some examples of antipersonnel chemicals which do not have toxic effects.

The key issue with these types of chemical technologies is with their employment. Since these agents are used directly against personnel to incapacitate or cause some other effect, they have the potential of causing harm. As a result, strict controls are placed on their intended use and desired effects. As with all lethal and nonlethal weapon systems, extensive training is required prior to their operational employment.

The last category of nonlethal chemical agents, antimaterial (those not intended for use against humans), pursues a

wider variety of targets such as metals, tires, fuels, engines, lubricants, tubing and seals, and other system components.[58] Their possible applications are unlimited because many of these chemical agents may be exempt from the CWC, which means restrictions on their usage would not apply. Additionally, they are common in industrial uses, an application which makes R&D a cost benefit. Some of these chemical agents include combustion modifiers which alter the combustion process in an engine without changing the characteristics of the mechanical or electrical systems.[59] Rigid foam, commonly used in construction, can be applied as a rapidly expanding barricade to isolate an area or control an evacuation or escape. Other agents include super caustics, an enhanced blend of caustic with other additives, stored in binary form, that can be combined and applied against weapons, tires, roads, optical systems, and even shoes.[60] Liquid metal embrittlement (LME) can severely weaken metals by chemically breaking down their molecular structures, thereby reducing equipment effectiveness.[61] An example of this application is its use against aircraft and vehicles, in which the primary surfaces become brittle and break apart.

A wide variety of chemical options exist, and grasping the differences between lethal and nonlethal chemicals is necessary to understand their designed intent, application, and effect on the battlefield.

Operational Case Studies—A Reality Check

The following investigates the mission intent and then the effects achieved in three events in which nonlethal chemical agents were used in SO missions. The first objective of reviewing these case studies is to provide associated implications when using nonlethal chemical weapons in two types of settings—guerilla warfare/insurgency and counterterrorism. The second is to acknowledge the impacts imposed by the existing treaties when these actions took place.

Chemical agents, both lethal and nonlethal, have historically been used to counter many types of threats. Since CW is easily defended against with protective equipment, it eventually came to serve only as a disrupting or delaying tactic used against conventional threats from combat forces.

Significant battlefield effects could not be achieved. As the face of warfare changed over time, more and more asymmetric situations began to develop. The use of chemicals in combination with unconventional warfare (UW) tactics became popular. Operations involving SOF and nonlethal chemical agents, such as RCAs, officially began in Vietnam. An example of this is the deployment of RCAs in the Seven Mountains area of the Mekong Delta. Special Forces Team A-421 deployed powdered orthochlorobenzalmalononitrile (CS), a tear-agent-like chemical, along the Ho Chi Minh Trail to prevent use of the area by the Vietcong.[62]

Vietnam: Operation Tailwind

The first military disclosure of the use of nonlethal chemical agents in Vietnam ignited an international uproar.[63] Nations from around the world issued notes of complaint to the United States for its use of CS in Southeast Asia. Members of the House of Representatives sent letters to Pres. Lyndon B. Johnson protesting the use of RCAs.[64] Editorials in the *New York Times* published in 1965 highlighted the counterproductive nature of CS and its inconsistency with the moral views of the United States, stating that "this is something that no Asian, Communist or not, will forget. . . . Gas is a wretched means to achieve the most valid ends."[65]

Extensive use of RCAs in Vietnam prior to 1965 became popular against guerilla fighters who were using elaborate tunnel systems to move supplies and escape aerial bombardment. US troops sealed the tunnel entrances and filled the tunnels with CS gas to flush out enemy forces. This method was so successful that other conventional military applications of RCA, particularly CS, soon followed. Reliance on CS gas for military operations developed to such an extent that the total procurement cost for RCA rose from $2.4 million in 1963 to $80.5 million in 1965.[66] In 1966 after several civilian fatalities resulted from the improper use of CS, and with mounting political pressure on the Johnson administration, military operations involving the use of all types of gases were unofficially suspended.[67]

Operation Tailwind commenced on 11 September 1970. Two US Marine Corps CH-53 helicopters, escorted by three AH-1G Cobra gunships, carried into Laos a team

of 16 American soldiers from the Military Advisory Command Studies and Observation Group and a special commando unit consisting of Montagnard troops.[68] Their objective was to provide reconnaissance, intelligence collection, and diversion for a larger operation to the north.[69] During the four-day mission, the SOF unit came under enemy attack almost every day. Despite the 56th Special Operations Wing's (SOW) continuous air support to and coverage of the unit, increasing enemy pressure created an immediate requirement to extract the SOF team.[70] On the 14th of September A-1 Skyraider aircraft from the 56th SOW, as well as 11 CH-3 helicopters from the 21st Special Operations Squadron, evacuated the SOF unit using CS to suppress enemy fire. Equipped with CBU-30s (cluster bomb units) containing 66 pounds of CS-1, the A-1 Skyraiders dropped their munitions on key enemy positions downwind of the intended landing zone.[71] This tactic gave the helicopters enough time to safely pull out the entire team of SOF personnel without any losses.[72]

The Air Force's and Army's employment of RCAs in Vietnam created extreme controversy. By the time Operation Tailwind occurred, Robert S. McNamara, Secretary of Defense, issued key authorization for use of CS in Laos for combat search and rescue (CSAR) and recovery/extraction operations only.[73] The US ambassador to Laos held the authority to use CS in that country and controlled its use on a case-by-case basis.[74]

In this situation, it is clear that the intent and effects were the same. Both achieved the safe extraction of the SOF team while suppressing enemy fire. Implications still existed with the use of RCAs in that region. At the time the United States had not yet ratified the 1925 Geneva Protocol banning the use of poisonous gases during war and took the position that, since RCA did not fall into the category of poison gas, no international protocols were being broken. This stance continued to raise questions among other countries throughout the war. By 1970 the use of RCAs became so closely monitored that their applications began to appear only in unconventional operations, causing the controversy to fade. Operation Tailwind is an example of a successful mission in which military commanders, given the lateral

flexibility and combined with the right intent, utilized unconventional methods and techniques to save lives.

Waco, Texas: Attack on the Davidians

During the spring of 1993, a botched attempt by agents from the Bureau of Alcohol, Tobacco, and Firearms to seize the Branch Davidian ranch near Waco resulted in a 51-day standoff between the Federal Bureau of Investigation's (FBI) elite hostage rescue teams (HRT) and 100 well-armed militant followers of David Koresh.[75] On 19 April, in an attempt to drive out the occupants, the RCA CS was employed. In the early morning hours, the FBI's HRT attempted to deploy CS gas directly into the building. However, because there was no entry point to the interior, most of the CS agent blew downwind, thereby negating its effectiveness.[76] The FBI's second attempt involved a more drastic measure which entailed breaching the exterior of the building and injecting the CS. This attempt was successful; however, when incendiary munitions were fired into the structure, the CS gas ignited and created a massive fire.[77] As a result, 82 lives were lost inside the structure, many of which were small children.

Illustrated in this situation is that the intent and the effects of using CS were not the same. Although the stated intent was a nonlethal intervention, these effects could not be achieved. First, the winds were never favorable for the CS to take effect. Second, the majority of RCAs are flammable, and in this scenario, CS combined with incendiary munitions created a tremendous fire. Finally, intelligence supports claims that most of the occupants, all of whom had some form of militia-type training, had protective masks to counter CS attacks.[78] The FBI's hostage rescue team failed in their planning for the use of RCAs. Unlike Operation Tailwind, where mission intent and desired effects-based operations were clear, the HRT never understood their mission intent or effects, resulting not only in the loss of lives but also in the loss of trust by the American people in federal agency law enforcement SO. The tragic events at Waco exemplify that unconventional methods and techniques must be used intelligently to achieve the intended effects.

Dubrovka Theater, Moscow

On the evening of Wednesday, 23 October 2002, 41 armed Chechen nationalists seized the Moscow cultural center during the performance of *Nord-Ost*.[79] Approximately 900 attendees and actors were held hostage while the insurgents placed improvised explosive devices throughout the theater. Female terrorists strapped explosive suicide devices to their bodies and positioned themselves among the hostages as a deterrent against any rescue attempt. Fifty-seven hours into the standoff, the hostage takers had only one demand: "Pull Russian troops from Chechnya."[80] In reply, Russian officials made only one offer: release the hostages unharmed, and the Chechen perpetrators would be allowed to live.[81] On the third day, in the early morning hours of 26 October, Russia's elite counterterrorist force, the Federal Security Service (Russian translation *Federal'naia sluzhba bezopasnosti* [FSB], referred to hereafter as FSB) Al'fa, pumped fentanyl, a nonlethal incapacitating agent, into the theater to subdue the occupying Chechen terrorists and their hostages in preparation for a dynamic assault.[82] In the aftermath of the assault, 128 of the 900 hostages died. All 41 Chechen terrorists received fatal gunshots to the head, and the FSB commando unit reported no fatalities. The Moscow public health department announced that many of the hostages suffocated as a direct result of the fentanyl. Of the 128 hostages reported killed, only one was shot by the terrorists—the others died due to the effects of the aerosol.[83] Immediately following the attack, Russian military and police forces placed the suffocating victims on the sidewalk while waiting for medical personnel to arrive on-scene. Doctors at the hospitals were never informed of the chemical agent used and could not properly diagnose any of the victims. Finally, four days after the raid, with increasing domestic and international pressure, Russian health minister Yuri Shevchenko established that the aerosol agent was a form of a fentanyl anesthetic that was used extensively for anesthesia and analgesia.[84]

While the Russian government claimed this incursion was a complete success because of its use of a nonlethal chemical agent, fentanyl, this analysis instead reveals it as a failure with respect to the intent and effects of using this

analgesic agent. Irregardless of the large numbers of hostages involved in this situation, FSB Al'fa's intent of using a nonlethal agent was less focused on their rescue and more so on killing the Chechen terrorists. This vendetta stemmed from past encounters when Chechen fighters defeated the elite unit in hostage-taking scenarios, causing the Russian government great embarrassment. Chechen guerilla leaders began to exploit the FSB's shortcomings with refined tactics. Russian SOF had to reestablish their reputation because allegations of organized crime links, contract killings, and political assassinations forced the disestablishment of some FSB units.[85] Part of the Al'fa unit was initially dissolved, but it was later built back up specifically to target Chechen terrorism.[86]

The combination of having an unsuccessful record against Chechen hostage takers and the pressure to reestablish their counterterrorism reputation slanted the Al'fa group's intent within their course of action. Their intent of using a calmative agent inside the Dubrovka theater was to incapacitate and then kill the Chechen terrorists, verified by the amount of fentanyl agent used in the raid. Urine and blood samples from several of the German hostages examined by a German toxicology professor showed an extremely high concentration of anesthetics.[87] Loss of consciousness from fentanyl occurs at the lowest effective dose—for 50 percent of a given population, around .011 milligram (mg) per kilogram (kg) of body weight.[88] The lethal dose of fentanyl for 50 percent of a given population occurs at 3.1 mg per kg of body weight.[89] Although there are no facts available showing how much fentanyl was used in the raid, it is safe to assume that a high concentration was required to effectively render everyone unconscious.[90] Additionally, the FSB Al'fa had no prior training in administering calmative agents in this type of environment, implying that hostage safety was not a high priority.

The aftermath of the hostage crisis drew attention across the globe. Accused of releasing a lethal chemical agent against the terrorists, Russian president Vladimir Putin felt the international pressures to admit this atrocity. However, rather than admitting fault, he instead viewed this as one of the most successful hostage rescue missions ever completed.[91] When accused of violating the CWC, Putin took a hard stance and argued that because fentanyl is considered a pharmaceutical

drug, its use was not in violation of the CWC. The negative publicity generated from the aftermath and the initial secrecy of this incident fueled the adverse publicity. Unlike the tragedy that occurred in Waco, Texas, where nonlethal intervention was the intent, resulting effects of using this unconventional method (fentanyl) killed 50 times more of FSB Al'fa's own people than did the hostage takers.

The Legal Dimensions of Chemical Warfare

> *The Chemical Weapons Convention prohibits the use of riot control agents as a method of warfare, reaffirms the prohibition in international law on the use of herbicides as a method of warfare, and provides for the possibility for protection against and assistance in the event of use or threat of use of chemical weapons against a State Party. The Administration is reviewing the impact of the Convention's prohibition on the use of riot control agents as a method of warfare on Executive Order No. 11850, which specifies the current policy of the United States with regard to the use of riot control agents in war.*
>
> —Pres. William J. Clinton
> The White House, 23 November 1993

The CW casualties of WWI will be fixed in the minds of policy makers, military leaders, and antiwar advocates for a very long time. While both the military and civilians would generally place the use of CW into the category of "evil," international treaties prevent their development. Most policy makers agree that any chemical used against personnel that may cause unnecessary suffering should be restricted from warfare, but there are nonlethal chemical technologies that do not produce injury. Therefore, it is pertinent to examine the legal dimensions of their usage in relation to the CWC and synthesize these findings with today's GWOT counterterrorist applications.

Chemical Weapons Convention of 1993

The CWC became the first post–Cold War international arms control treaty banning possession and use of chemi-

cal weapons. It was ratified in 1997 by the United States, symbolizing its increased emphasis on efforts for post–Cold War arms reductions with Russia and its nonproliferation agenda throughout the world.[92] The process began in April of 1984 at the Conference of Disarmament in Geneva.[93] Recognizing that nonstate actors could much more easily acquire chemical weapons than nuclear weapons, the United States decided to take the lead in abolishing them. Vice President George H. W. Bush presented to the conference a draft treaty that became the basis for negotiations and, ultimately, the foundation of the CWC.[94] Negotiations on the CWC were completed at the Conference of Disarmament in September of 1992, and the convention was opened for signature in Paris on 13 January 1993.[95] The convention entered into force for the United States on 29 April 1997, following lengthy ratification proceedings by the US Senate.[96] This was largely due to the decision-making processes between Washington and Moscow over the implementation of treaty commitments and concerns for the preservation of Executive Order (EO) 11850, Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents, which allowed for restricted use of RCAs in war.

Although the CWC is the latest convention restricting the use of chemical weapons, it is not the first. CW restrictions have been attempted through the years and have always become the issue of an irrelative policy, unable to maintain pace with changing environments. While attempts to control CW began with the 1899 Hague Conference, international chemical agreements have always lost their authority.

This synopsis of key international treaties and protocols of CW reveals several explanations for why they are difficult to enforce. First, the methods and techniques of warfare always evolve in complexity as different forms of warfare emerge onto the battlefield. By the start of WWI, several treaties existed in which nations agreed to prohibit the use of chemical agents. After the war moved towards a stalemate of trench warfare, restraints provided by these CW treaties became irrelevant. Secondly, new technological developments in both lethal and nonlethal chemical agents evolved from the chemical industries. These developments produced new chemical technologies that became more effective, essentially creating treaties that did not apply. The

third and final reason is the symmetry of ever-changing threats within the battlefield environment. To counter these threats, countries relied on unconventional applications of lethal and nonlethal forms of CW to effectively stop symmetric and asymmetric threats.

In 1899 the Hague Conference met to decide on how to establish peace through the convention of "disarmament and pacific settlement of disputes."[97] Although the conference never reached an agreement on disarmament, it did agree on certain conventions pertaining to international disputes and the rules of war.[98] One of the agreements was the prohibition of the use of poisonous gas. In this declaration, the conference concurred that poisonous gas was inhumane and prohibited its use in war. However, the United States did not support the declaration because it failed to adequately define "inhumane" acts.[99]

After WWI other international treaties, signed in an attempt to restrict the methods of warfare, failed. Many of these treaties never went into effect because countries did not consent to ratify. Introduced in 1925, the Geneva Protocol recognized the efforts of the previous treaties by declaring that the "use in war of asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices has been justly condemned by the general opinion of the civilized world."[100] Additionally, the treaty attempted to make this a lasting effect by stating that this "prohibition shall be universally accepted as part of International Law, binding alike the conscious and the practice of nations."[101] However, the prohibition did not restrict the research, development, and stockpiling of these weapons. The United States recognized this and did not initially ratify the protocol. One reason for its hesitation was that by the start of WWII, the United States clearly realized CW had become an effective deterrent against the threat of adversaries who possessed the same capabilities.[102] In other words, possessing a retaliatory capability was threat enough to keep these weapons out of war. Since the protocol was ineffective against stockpiling, it made no sense for the United States to sign on. Instead, it viewed the continued research, development, and stockpiling of chemical weapons as the best control. The United States also recognized the potential in technological development of both lethal and nonlethal chemical

agents.[103] Nerve agents, RCAs, and chemical herbicides became available, offering greater capabilities on the battlefield against various forms of threats. This was the case in the 1960s when the United States, not restricted under the 1925 Geneva Protocol, decided to use RCAs and chemical defoliants in Vietnam. Although drawing controversy and adverse world opinion, military leaders realized the importance of the nonlethal chemical agents in guerrilla/insurgency types of UW.

In November 1969 Pres. Richard M. Nixon announced that the United States had decided to join the 1925 Geneva Protocol.[104] The United States did not ratify the 1925 Geneva Protocol until 1975, after settling disagreements about the protocol's application to RCAs and herbicides. As the succeeding Ford administration recognized the importance of RCAs and herbicides in asymmetric types of environments, it strived to protect their use. However, strict conditions that would first have to be met before RCAs or herbicides could be used in war were outlined, and then only by presidential authorization.[105] This authorization became EO 11850.[106] Pursuant to this EO, the administration reserved the right to use herbicides to control vegetation within armed US bases or installations. The administration also reserved the right to use RCAs to control rioting POWs, to reduce or avoid civilian casualties, to aid in the rescue of isolated personnel (e.g., downed pilots), or to protect convoys in rear echelon areas from civil disturbances, paramilitary organizations, and terrorists.[107] Executive Order 11850 also provides the United States with a limited unconventional (nonlethal) method to counter the perceived threats of that time.

The 1925 Geneva Protocol served as an important precedent that began talks on a broader CWC. In 1984, in an effort to improve superpower relations, the Conference on Disarmament agreed that efforts should get underway to start a chemical weapons ban.[108] The United States and Soviet Union began promising Geneva delegates that the leadership of the superpowers would exert their influence to prohibit chemical weapons. Until this time, talks were well underway between the United States and the Soviets on nuclear arms control. It became evident that the two world superpowers began to focus on unconventional arms

reduction. In 1992, after long and painstaking negotiations, the Conference on Disarmament agreed to the text of the CWC.[109] The convention became the first disarmament agreement negotiated within a multilateral framework that provided for the elimination of an entire category of WMD.[110] Unlike the nuclear weapons conventions, the CWC prohibits all development, production, acquisition, stockpiling, transfer, and use of chemical weapons. It levies the requirement for "each State Party to destroy chemical weapons and chemical weapons production facilities it possesses, as well as any chemical weapons it may have abandoned on the territory of another State Party."[111] The verification provisions of the CWC affect not only the military but also the civilian chemical industry worldwide through certain restrictions and obligations regarding the production, processing, and consumption of chemicals that are considered relevant to the objectives of the convention.[112]

One area drawing strong argument against the CWC is the prohibition of nonlethal chemical agents, specifically RCAs, used as a method of warfare. The CWC does not regard toxic chemicals and their precursors as chemical weapons if their *intent* is not prohibited under the CWC.[113] That is, RCAs are not considered a chemical weapon within the definition of Article 2 of the CWC if their intended use is not a method of warfare.[114] RCAs used as a method of warfare are prohibited under Article 1 of the CWC.[115] RCAs or any other toxic chemical used in national law enforcement, including domestic riot control, are not prohibited under the CWC.[116] The question remains, What are the military applications for RCAs? The CWC defines RCAs as "any chemical not listed in a Schedule which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure."[117] Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3110.07B, *Nuclear, Biological, and Chemical Defense: Riot Control Agent; and Herbicides* (U), 16 February 2001, clearly outlines the policy regarding the use of RCAs in war, peacetime military operations, and operations other than war (OOTW). The policy of RCAs in war continues to support the 8 April 1975 EO 11850. During war, use of RCAs outside a war zone is authorized as prescribed for peacetime.[118] CJCSI 3110.07B states that

in peacetime military operations and in OOTW, the United States is not restricted by the CWC in its use of RCAs, including against combatants who are party to a conflict in any of the following cases:

1. The conduct of peacetime military operations within an area of ongoing armed conflict when the United States is not a party to the conflict.

2. Consensual peacekeeping operations when the use of force is authorized by the receiving state, including operations pursuant to Chapter IV of the United Nations Charter.

3. Peacekeeping operations when force is authorized under Chapter VII of the United Nations Charter.[119]

While nearly all treaties and conventions have some irrelevancies to today's applications, the CWC is outdated with respect to the use of nonlethal RCAs as a method of warfare in the GWOT. As stated earlier, the GWOT is a combination of conventional and unconventional methods of warfare to counter an unconventional asymmetric threat. It is clear from the review of both the 1925 Geneva Protocol and the 1993 CWC that both were developed to restrict the uses of CW within specific threat environments. For example, the 1925 Geneva Protocol based its foundation on the events of WWI. Overlooking the fact that countries could still produce and stockpile these weapons, the protocol became ineffective leading into WWII. The United States, Germany, Russia, Japan, England, and France continued to develop and stockpile large quantities of chemical weapons throughout the 1930s despite the protocol's conditions. When the United States announced in 1969 that it had decided to join the 1925 Geneva Protocol, President Nixon wanted to show the Soviet Union that the United States was serious about arms control—which then equated to Strategic Arms Limitation Talks.[120] While the United States eventually signed the treaty on 26 March 1975, the environment under which the protocol was intended became irrelevant. This became apparent on 8 April 1975, when the United States issued EO 11850 to renounce first use of RCAs in war except in defensive military modes to save lives.[121]

This retrospect of the CWC supports its irrelevancy to the GWOT in the following three areas:

1. The warfare environment of the 1980s was conducive to symmetric threats. The CWC focused on establishing bilateral arms control while overlooking unconventional and asymmetric threats of nonstate actors and terrorist networks.

2. The use of RCAs in national settings versus international settings became inconsistent with respect to enforcement. For instance, if a country deploys RCAs against terrorists as a law enforcement action, the country is in compliance with the CWC. If the country deploys RCAs against terrorists as an unconventional method of warfare, it is subject to the prohibition of Article 1 of the CWC. This holds true for the GWOT. If the country is conducting a GWOT combined federal law enforcement/paramilitary counterterrorism operation in conjunction with another country on its sovereign territory, nonlethal chemical technologies can be used without prohibition from the CWC.

3. The usefulness of nonlethal chemical agents is highly favorable to technological change, and treaties tend to lag behind evolving applications. This is exemplified in the Russian FSB Al'fa team's use of fentanyl as an incapacitant to conduct rescue and dynamic entry against Chechen terrorists inside the Dubrovka theater. Normally considered a pharmaceutical drug without treaty restrictions, fentanyl was utilized by the FSB Al'fa with the intent of incapacitating, thus creating another area of uncertainty within the confines of the CWC.

In essence, the CWC has no teeth. Countries will always obtain ways to meet their intent through necessity. In today's GWOT, necessity may require the use of unconventional methods and techniques of warfare such as nonlethal chemical technologies to counter a terrorist action.

Fighting the Global War on Terror

Since 9/11 the DOD's strategy for counterterrorism operations has undergone major developments.[122] United States Special Operations Command, designated the DOD's

executive agent for the GWOT, has developed highly successful strategies in counterterrorism operations worldwide. SOF units, both US and coalition, have destroyed remnants of Taliban and Al-Qaeda organizations in Afghanistan and Pakistan. Elements of SOF and the interagency have formed units to conduct tracking of high value targets like Osama bin Laden and Saddam Hussein.[123] New equipment, such as enhanced night vision and communications, developed specifically for counterterrorism operations, has empowered SOF with greater capabilities on the battlefield. Interoperations with federal law enforcement SO have proven effective in achieving dual supporting relationships in capturing terrorists. Has the strategy looked at the full range of options? Or is the strategy restricted by traditional bounds governing conventional forces? The answer to both of these questions is no.

Potential strategies within the GWOT for the offensive use of nonlethal chemical technologies in counterterrorism operations show that opportunities exist through viable avenues. One of these avenues is the design of the *National Strategy for Combating Terrorism* and its applications to law enforcement. Another is the definition of *war* under existing international law versus the definitions of *conflict*. The latest technological developments and applications of nonlethal chemical agents are a final avenue for their offensive use in counterterrorism operations.

National Strategy for Combating Terrorism: The Potential

The *National Strategy for Combating Terrorism*, published in February 2003, provides possible opportunities for the use of nonlethal chemical technologies in counterterrorism operations. After describing the United States' approach to defeating terrorism, its strategic intent is to stop terrorist attacks by using every instrument of national power on four fronts—defeat, deny, diminish, and defend (4D strategy).[124] The following discussion will focus on the first tenet of the 4D strategy—defeat.

In the context of the national strategy, the United States will use its resources to "defeat terrorists and their organizations." This goal calls for the direct use of economic,

financial, information, military, law enforcement, intelligence, and diplomatic power.[125] These instruments of power, specifically the latter four, are the most common approaches when conducting counterterrorist operations.[126] Used unilaterally these tactics offer little effectiveness; when combined, however, their effects in supporting relationships demonstrate added value. Successful counterterrorist operations of today are a seamless composite of SOF and interagency forces. This is illustrated in Presidential Decision Directive (PDD) 39, *U.S. Policy on Counterterrorism*, along with classified concept plans (CONPLAN) that delineate supporting relationships between SOF and the interagencies.[127] This authority codifies counterterrorist measures for coordinated federal responses to terrorist threats or acts. The 2003 overseas arrest of top Al-Qaeda leader Khalid Shaik Mohammed in Pakistan clearly demonstrates this relationship between the Department of Justice (DOJ), Department of State (DOS), DOD, and the Central Intelligence Agency (CIA). This particular counterterrorist action, determined to be a law enforcement mission, placed DOJ as the lead federal agency, while the DOS, the CIA, and the DOD provided supporting roles in tactical operations and host country liaisons. If the United States continues to pursue overseas terrorists under federal law enforcement jurisdiction, then Article 2, paragraph 9(d) of the CWC, which states that "purposes not prohibited under this convention: law enforcement including domestic riot control purposes," applies.[128] Specifically, if the methods used to conduct counterterrorist operations do not relate to methods of warfare, then law enforcement applications of nonlethal chemical technologies, with SOF in support, would not be in violation of Article 1, paragraph 1(b) of the CWC, which prohibits the use of any chemical as a method of warfare.[129] Essentially, the definition of counterterrorist operations changes, but the intended effects remain the same. This reinforces the fact that the CWC is not relevant with respect to today's GWOT counterterrorist operations.

The "Nonwar" Definition

The meaning of the term *war* has evolved from Carl von Clausewitz's definition as "an act of force to compel our en-

emy to do our will."[130] War has advanced into subcategories of unconventional conflicts where volatile, uncertain, complex, and ambiguous influences shape the battlefields of tomorrow. This nonwar atmosphere is typically a SOF environment where less than optimal use of force often necessitates mission completion. Today, the DOD has developed new terms to fit the battlefields of the future. These terms include *peacekeeping, military operations other than war* (MOOTW), and *OOTW*. The argument among critics is about how the DOD defines war. Pentagon planners argue in favor of these terms because they do not fit the offensive international war definition and, therefore, are not bound by the restrictions of international law.[131] These terms would label our actions in Mogadishu as MOOTW or OOTW, allowing options to military commanders that normally do not exist under the title of war. Thus, counterterrorist operations not relating to warfare would allow SOF the use of RCAs under the purview of CJCSI 3110.07B.[132]

The Technology Breakthrough

Nonlethal chemicals can serve a variety of purposes, depending on the desired effects. Identifying an optimum nonlethal chemical depends upon the situation of the crisis requiring intervention. Equally important, nonlethal chemical technologies have an effect that may cause a strategic impact on the way a war is being fought. With the new developments in technologies, many nonlethal chemicals achieve similar effects without the strategic consequences. For example, chemical irritants such as CS or pepper spray, traditionally used in situations requiring crowd control, may be replaced by new developments in calmative agents.[133] New adhesives (sticky foams) may be used to stop foot-traffic access to protected locations.[134] Infrared dye markers may be used for clandestine tracking of individuals.[135] Metal embrittlement, polymer agents, and super caustics may be used against equipment and materials for area denial.[136] Malodorants may be used to clear structures or tunnels in lieu of CS. As with all advanced technology, nonlethal chemicals have provided the added flexibility needed to operate on the unconventional battlefield.

The GWOT provides an avenue for SOF to capitalize on the offensive use of nonlethal chemical technologies, but the political burden associated with the term *chemical* often precludes their use.

The Strategic Implications

> *The gravest danger to freedom lies at the crossroads of radicalism and technology. When the spread of chemical and biological and nuclear weapons, along with ballistic missile technology—when that occurs, even weak states and small groups could attain a catastrophic power to strike great nations. Our enemies have declared this very intention, and have been caught seeking these terrible weapons. They want the capability to blackmail us, or to harm us, or to harm our friends—and we will oppose them with all our power.*
>
> —Pres. George W. Bush
> West Point, New York, 1 June 2002

Before moving closer to making nonlethal chemical technologies a more significant option for SOF counterterrorist operations, a continuous assessment of the implications is required at the strategic levels. There are no simple solutions to the operational use of nonlethal chemicals. Many restrictions prohibit their use from the operational realities of warfare. The highly political nature alone suggests that there are many skeptics who question the military's use of these nonlethal technologies. This analysis does not advocate that nonlethal chemical technologies should be the only means used in counterterrorist operations, but offers that nonlethal chemical options exist to enhance the overall effectiveness of these types of operations.

This section assesses the potential advantages and disadvantages of nonlethal chemical technologies and their applications within a strategic context. Although nonlethal chemical technologies are designed to be employed at the tactical level, the results of their effects can and will most likely become strategic in nature. Political and military leaders must understand both the tactical and strategic effects before applying this method of UW. It is important for

senior leaders to understand the uses of these weapons in order to make informed decisions.

The first strategic advantage is nonlethal chemical technology's ability to provide senior leaders with more options in the application of force.[137] Joint Vision 2020 illustrates that the development of full spectrum dominance in which military operations are "persuasive in peace, decisive in war, [and] preeminent in any form of conflict" requires a wide range of capabilities.[138] The application of nonlethal chemical technologies greatly enhances these capabilities and provides the greatest contribution to counterterrorist operations. Nonlethal chemical technologies provide SOF with a myriad of options, allowing commanders transitional options that before were only to detect and destroy.[139] Figure 1 shows the lethal transition, while figure 2 shows the nonlethal transition. Nonlethal chemical technologies contribute three additional options for SOF commanders: deny, delay, and defeat.[140]

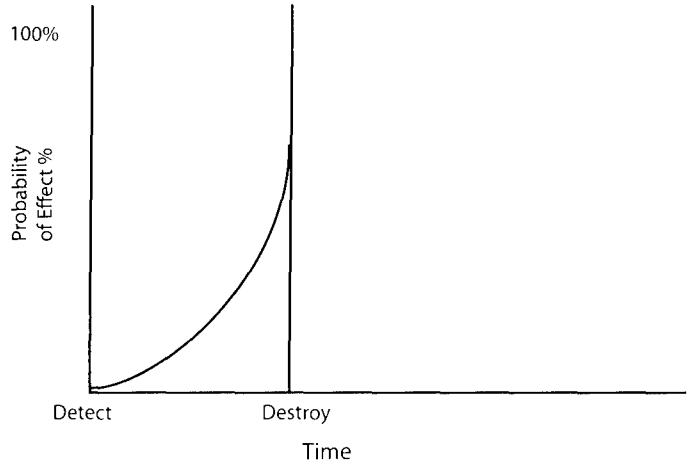

Figure 1. Lethal Transition

A second strategic advantage to using nonlethal chemical agents in an unconventional counterterrorist environment is deterrence. Experts argue that terrorism cannot be deterred, and attempts at deterrence add motivation to an ideological belief. Many of these ideological beliefs involve suicide while committing terrorist acts.[141] If terrorists die in the act, either

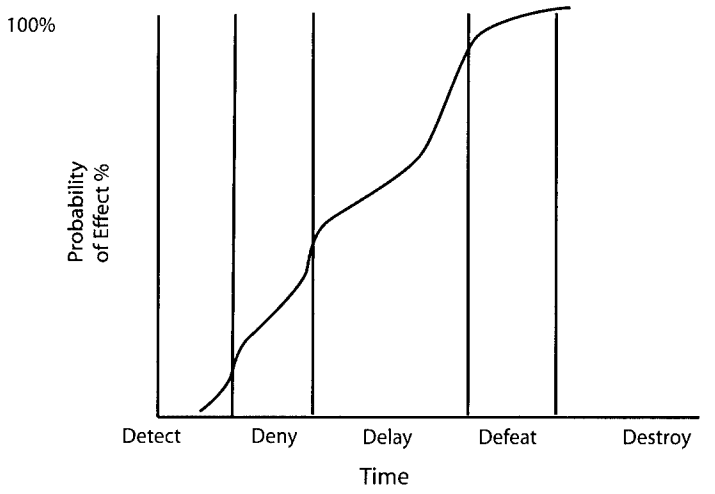

Figure 2. Nonlethal Transition

from the result of suicide or in direct confrontation with the military or law enforcement, the results of their actions become viewed as martyrdom by their followers. This reinforces the ideology. Conversely, if the terrorist fails (e.g., is captured, tried, and sentenced to prison), then the ideological motivation begins to lose effect.[142] In some cases, counterterrorist operations make capturing specific terrorists a concern in order to prevent the reinforcement of the ideology. Inconsistencies and radical behavior exhibited by some terrorists may become an impossible task. This is where nonlethal chemical applications benefit the counterterrorist forces. Nonlethal chemical technologies, such as calmatives, sticky foams, or even RCAs, offer the flexibility to effectively capture terrorists. The option to capture instead of kill will not only change terrorists' techniques, but will also deter their methods, thus creating flaws in the ideology.

The third strategic advantage that nonlethal chemical technologies offer is reduced collateral damage. Terrorists capitalize on the advantages of collateral damage resulting from counterterrorist actions. Destruction of homes, buildings, schools, and religious buildings resulting from lethal effects adds incentive to a terrorist's recruiting campaign with the local population. Many times counterterrorist operations result in the loss of innocent lives, either

through hostage situations or simply because the terrorists purposely place themselves within crowds to maintain anonymity. Nonlethal chemical technologies can lessen collateral damage by creating effects that enable counterterrorist forces to discriminate terrorists from civilians. Covert dyes, infrared markings, and malodorants are a few examples that would assist in this discrimination of terrorists. RCAs, irritants, or malodorants could effectively drive terrorists from religious buildings, for example, by forcing or channeling them into an area for capture.

The final strategic advantage is that nonlethal chemical weapons close the gap between war and peace. As mentioned previously, SOF often find themselves in areas where the environment is at the low end of the spectrum of conflict. This typically results in a combination of military and federal agency types of counterterrorist operations. Nonlethal chemical agents offer the ability to minimize death and destruction.[143] They enable counterterrorist forces the ability to capture intelligence and materiel that might have been destroyed with conventional capabilities.[144]

The use of nonlethal chemical agents presents many challenges and concerns when their strategic effects may cause long-term consequences. There are also four strategic disadvantages of using nonlethal chemical technologies.

The first strategic disadvantage, and perhaps the most damaging, is world perception. In 1953 Peking Radio announced that two US aircraft dropped bombs filled with "poison gas of an asphyxiating type" on North Korean positions near the Han River.[145] In reality the United States did not report any use of chemical weapons during the conflict. In 1965, although the United States only used RCAs in Vietnam to clear tunnel systems and herbicides to defoliate dense jungles, Hanoi Radio accused the United States of dropping "lethal asphyxiating gases" on North Vietnamese forces.[146] In 1998 CNN claimed that the United States used nerve agent on American deserters in Vietnam during Operation Tailwind.[147] The report later proved to be false.

Today's world is driven by the media and the Internet. Unfortunately, the world's perception of the United States is shaped by the media. This spin on perception that these information services produce often influences actions. With current world opinion constantly condemning the US gov-

ernment over its actions, the use of nonlethal chemical technologies against terrorists would only add to the negative effect. Media propaganda has the potential to reinforce terrorist ideologies around the world, widen the gap in foreign relations, and politically humiliate the United States.

The second disadvantage of using nonlethal chemical technologies is violation of the CWC. Since the United States—along with some 150 other countries, including the United Kingdom—ratified the CWC treaty and pledged to uphold it, breaking with the treaty would undermine its effectiveness. Combined with negative world perception, this would divide the United States and its closest coalition partners in the GWOT, particularly the United Kingdom, which already publicly opposes the use of nonlethal chemical technologies.[148] The loss of key coalition partners would reduce the overall effectiveness of the United States' *National Strategy for Combating Terrorism.*

A third strategic disadvantage is that the availability of nonlethal chemicals might present unrealistic expectations.[149] Senior leaders may make strategic decisions based on the expectation that nonlethal chemical technologies can produce effects that in reality are impossible to achieve. Consequently, their decisions may result in unintended death and political fallout. For example, in Waco, Texas, the FBI's hostage rescue team intended to drive out the Branch Davidians knowing the wind conditions were unfavorable and that the Davidians possibly had masks to counter the effects of CS. The FBI's leadership continued to use CS with unrealistic expectations which resulted in catastrophe.

The fourth strategic disadvantage of using nonlethal chemical technologies is that it may encourage countries to develop their own lethal chemical weapons.[150] This would be a direct result of the second strategic disadvantage—the United States breaking with the CWC treaty. As a consequence, chemical technologies would present an available warfare temptation to the militaries of many nonstate actors. The risk of proliferation of these lethal chemical agents to other nonstate actors or terrorists would most likely increase.

The use of nonlethal chemicals in counterterrorist operations presents new challenges and complex issues. These issues cover diverse topics such as psychology, policy, ethics, law, and technology. Many of the challenges will continu-

ally evolve, directly affecting the decisions of senior leaders. As the United States recognizes that UW and asymmetric threats will likely dominate the strategy of war in the future, military leaders must cautiously approach nonlethal chemical options, recognizing that solutions will not come easily.

Conclusions and Recommendations

It is by devising new weapons, and above all by scientific leadership, that we shall best cope with the enemy's superior strength.

—Winston S. Churchill
3 September 1940

The success of SOF counterterrorism operations will continue to rely on the combination of highly trained and exceptionally skilled operators, specialized procedures, and the use of unconventional methods of warfare to defeat terrorists. As recent events have shown, today's terrorists continue to adapt to the methods and strategies of counterterrorism operations. This adaptation poses an ever-increasing threat to the United States, its allies, and its friends in defeating terrorism. Countering such actions will require the integration of conventional and unconventional approaches, including lethal and nonlethal applications. As a result, opposing terrorists' efforts to reduce counterterror capabilities requires the development of new tactics, methods, and technologies within SOF and the interagencies. These developments can present additional options for decision makers. This paper analyzed options supporting the use of nonlethal chemical technologies in counterterrorist operations.

The application of nonlethal chemical technologies offers viable options in today's counterterrorist environment. Although looked upon by many as brutal and inhumane, nonlethal chemical agents have proven successful in area denial, counterinsurgency, hostage rescue, and CSAR. Advances in technology have not only overcome the drawbacks of nonlethal chemical agents, both in antipersonnel and antimaterial applications, but have also evolved, offering new dimensions in the methods of UW.

Restrictions imposed by the CWC on nonlethal chemical agents are too limiting in nature for unconventional

SOF operations in today's GWOT. The CWC was created as an arms control measure but evolved into a chemical technology watchdog for the world. All chemicals, including nonlethal, became restricted. However, loopholes in law enforcement applications of nonlethal chemicals still allow for the use of RCAs. New developments of nonlethal incapacitants, which would normally fall under pharmaceuticals, continue to erode the validity of the CWC. Restrictions placed on nonlethal chemical applications by the CWC require amendment.

The GWOT strategy, defined by the National Strategy for Combating Terrorism, PDDs, and CONPLANs, clearly delineates counterterrorist tactics that the United States will support in its efforts to defeat terrorism. Combined military, diplomatic, and law enforcement planning will enable senior leaders new avenues of approach in the application and effects of nonlethal chemical technologies in counterterrorist operations. Senior leaders continue to be reluctant to use chemical technologies for fear of violating the CWC.

Although typically used in tactical applications, the effects of nonlethal chemical agents in warfare will always have strategic implications. Continuous reassessments of these implications must be conducted at the highest levels. As with any application of warfare, the use of nonlethal chemical technologies will have advantages and disadvantages. It is crucial that senior political leaders carefully analyze each advantage and disadvantage in their decision-making processes.

While their absolute effectiveness in counterterrorist operations is not known, the enormous potential of the application of nonlethal chemical technologies makes their investigation worthwhile. The DOD should team with interagency partners to research nonlethal chemical technology applications within the counterterrorist environment. Senior leadership within the US government should consider the following recommendations, in priority:

1. Revise EO 11850 to allow for the offensive application of nonlethal chemical technologies in counterterrorist operations. The advantage of a revision, by virtue of the authority vested in the president of the United States, would allow for the offensive use of nonlethal

chemicals as first-use weapons against terrorists under US law. As with the current EO, the authorization for their use would be prohibited in war unless such use has presidential approval.

2. Submit amendments to Article 2, paragraph 9, of the CWC that would propose changes to the use of RCAs in warfare. Specifically, amend the article to allow the application of nonlethal chemical technologies as a method of warfare against terrorists and their actions. This would alleviate the law enforcement loophole and ambiguous definitions posed by the United States to circumvent the CWC.

3. Continue investing in R&D of nonlethal chemical technologies. Both antipersonnel and antimaterial agents offer new applications that do not fall within the traditional restrictions of the CWC. Calmative agents, sticky foams, and malodorants continue to provide new effects that would benefit SOF counterterrorist applications.

4. Limit the use and application of nonlethal chemical technology to highly trained, specialized SOF units. For reasons discussed earlier, some chemical agents, such as calmatives, fall within the pharmaceutical realm of nonlethal chemicals, therefore requiring operators with specialized training to apply these agents correctly.

The GWOT has changed the world's understanding of counterterrorism. The United States and its allies continue to wage an effective counterterrorism campaign, but the use of new technologies in nonlethal chemical agents continues to be avoided. It is time for the US government to make the necessary investments to add nonlethal chemical technologies to its counterterrorist operations.

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Abbreviations

CIA	Central Intelligence Agency
CJCSI	Chairman of the Joint Chiefs of Staff instruction
CONPLAN	concept plan
CS	orthochlorobenzalmalononitrile
CSAR	combat search and rescue
CW	chemical warfare
CWC	Chemical Weapons Convention
DOD	Department of Defense
DOJ	Department of Justice
DOS	Department of State
EO	executive order
FBI	Federal Bureau of Investigation
FSB	Federal'naia sluzhba bezopasnosti (Federal Security Service)
GWOT	global war on terrorism
HRT	hostage rescue team
LME	liquid metal embrittlement
MOOTW	military operations other than war
NLW	nonlethal weapons
OOTW	operations other than war
PDD	Presidential decision directive
R&D	research and development
RCA	riot control agent
SO	special operations
SOF	special operations forces
SOW	special operations wing
UW	unconventional warfare
WMD	weapons of mass destruction
WWI	World War I
WWII	World War II

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