

**STRATEGY
RESEARCH
PROJECT**

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**U. S. POLICY AND THE UNCERTAIN STATE OF MILITARY
USAGE OF RIOT CONTROL AGENTS**

BY

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ABSTRACT

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The U.S. military's international role includes the prospect of a continuing variety of operations other than war. Recent history tells us that to be considered successful such operations must not only meet political objectives, but must also unfailingly protect friendly forces while minimizing casualties among all parties. This paper examines the immediate and future requirement for effective non-lethal weapons, particularly chemical riot control agents (RCA), to deal with the full scope of peacekeeping requirements. It also states the need for resolution of the current uncertainty regarding U.S. RCA policy and the necessity for RCA doctrine and training to address the challenges of operations within the world's growing number of urban areas.

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U.S. POLICY AND THE UNCERTAIN STATE OF MILITARY USAGE

OF RIOT CONTROL AGENTS

Scenario

The peacekeepers were busy. They had disarmed a command-detonated mine at a key intersection and had discovered the theft of a confiscated weapons cache of rocket propelled grenades (RPGs) and automatic weapons. The radio net was busy, with isolated UN checkpoints reporting growing numbers of agitated civilians.

The recent elections in Freedonia were supposed to put an end to the three way civil war, but instead had inflamed passions on all sides. UN troops were caught in the middle and exposed to varying degrees of hostility at lightly garrisoned checkpoints throughout the countryside and in the regional capital city of Urbana.

Urbana had itself become increasingly tense as tens of thousands of refugees fled the barren and unsafe countryside for what they perceived to be better conditions in the city. In reality, the resulting shanty towns and strain on already-damaged municipal services had turned Urbana into a nightmare for UN and relief agency personnel. The ancient city of thick-walled buildings and narrow winding streets was never designed for modern military traffic. Still partially rubble and choked with debris from fighting, it now remained in perpetual gridlock, resulting in a handful of helicopters becoming the only effective transportation for key UN personnel.

As UN ground relief columns slowly began moving, they reported hostile crowds of both armed and unarmed civilians, sporadic rifle fire, vehicle barricades, and women and children lying in the roads as human obstacles. An outpost manned by a squad of newly-arrived third world soldiers soon reported it was surrounded by an angry mob of hundreds of men, women, and children, some of whom were carrying weapons.

A UN observation helicopter dispatched to the scene dodged an RPG arcing in from a rooftop but was hit and driven back by small arms fire from somewhere within the densely-packed crowd.

On the ground, the UN squad approached to within thirty feet of the crowd to use their recently-issued pepper spray, but two soldiers were quickly injured by flying debris. The mob seemed emboldened by this success and charged a wire barricade, using plywood and raincoats for shields. The peacekeepers quickly sought the refuge of a nearby building and, after observing the standard rules of engagement of verbal warning followed by shots in the air, opened fire.

Arriving moments later, a hastily-summoned pair of attack helicopters were helpless, their cannon and rockets of little use against a crowd which was now clearly intent upon capturing or harming the UN personnel, generating "civilian casualties" and capturing the international media spotlight. Machine gunning or rocketing hundreds of unarmed civilians already in close contact was not an option.

Orbiting overhead at 10,000 feet, an AC-130 Spectre gunship watched through its onboard high-resolution TV cameras and targeting systems. As the mob stormed the building, the crew saw the terrified peacekeepers retreat again. To the pilot monitoring the radio traffic it was clear that time was running out for the frantic squad, now on the rooftop. Despite their calls for assistance, ground relief would not be available for at least an hour. No quick answer was forthcoming from UN command.

With moments left before a grisly scene repeated itself, the gunship commander announced to the UN authorities that he would take responsibility for what he was about to do. Seconds later, the Spectre's 105mm cannon barked and the last of the U.S. Army's Vietnam-era CS¹ tear gas howitzer rounds began to land around the besieged building. Each airburst triggered a minute-long concentrated stream of tear gas from four dispersed submunitions, which soon broke up the crowd. The peacekeepers suffered four wounded, six civilians were wounded from the squad's warning rounds, and an unknown number of civilians received injuries as the mob panicked and fled from the billowing clouds of gas.

The next morning, Freedonian politicians, international journalists and a coalition of peace activists, concerned scientists, civil liberties groups, and Amnesty International began calls for war crimes trials of the gunship crew for violation of the recently-ratified Chemical Weapons Convention. Their protests, quickly broadcast worldwide on CNN, alleged the illegal use of tear gas "as a method of warfare" against women and children in violation of international law. Minority party politicians in several NATO countries accused the United States of "inhumane conduct of gas warfare" in violation of treaty obligations. And rogue nations took the opportunity to equate U.S. use of riot control agent with the use of all chemical gases, thus reaffirming their own possession of outlawed nerve agent chemical munitions. As the international incident unfolded, the AC-130 crew was grounded pending the outcome of a high-level DOD investigation.

Background

While this scenario portrays a worst case set of assumptions, the setting and circumstances illustrated in the scenario represent conditions encountered during recent and ongoing peace operations involving U.S. forces in Somalia and Bosnia. The issues represented -- mission accomplishment without casualties, absolute avoidance of collateral damage and casualties wherever possible, and a peacekeepers' need to influence without direct lethal confrontation in violation of political ends -- have been the subject of discussion at levels ranging from light infantry peacekeeping platoons to national command authority. Among the challenges presented are the following, which are the focus of this paper:

The immediate and future requirement for effective non-lethal weapons, particularly chemical Riot Control Agents (RCA), to deal with the full scope of peacekeeping requirements.

The need for resolution of RCA policy in order to provide peace operators greater latitude in dealing with the full spectrum of peace operations.

The necessity for RCA doctrine and training to address the challenges of peacekeeping within the world's growing number of urban areas, which are increasingly the political, cultural, and economic centers of nations in turmoil.

To properly address these issues, this paper will present a definition of non-lethal weapons and riot control agents; a

discussion of their history and usage, particularly the role of CS "tear gas" in Vietnam; a review of the historic and current states of play in international RCA policy; a discussion of doctrinal and training issues concerning RCA and urban engagements; and recommendations for future usage of RCA in peacekeeping.

One View: Non-Lethals And Their Benefits

Non-lethal weapons (NLW) are not new. History is rich with examples of ancient armies burning a tar-like substance known as pitch and lighting smoke pots filled with pepper and hot oil. In more modern times, the United States employed both tear gas and chemical defoliant spray in the jungles of Southeast Asia. The historic military use of NLW has been to **enhance** the effectiveness of lethal weapons, whether charging a smoky battlement or clearing fields of fire in dense vegetation. In modern usage, however, non-lethal weapons include law enforcement equipment designed to control individuals and crowds and **reduce** the requirement for lethal weapons entirely.²

The Department of Defense has broadly defined the range of NLW available as "Weapons that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damaged to property and the environment."³

Advances in non-lethal technology have come at a moment when, having won the Cold War, the Department of Defense has seen

what appears to be a merging of military and law enforcement functions. Preparedness for major war scenarios and high-tech conflict competes with a growing number of long-term international peace operations with their attendant needs for NLW.

The benefits of NLW make them particularly attractive in this new "full spectrum" environment, where military personnel may adjust their role from peace keeping to peace enforcement and back again within a matter of hours. Among the advantages cited in a recent Harvard study⁴:

- International support for intervention and the subsequent use of force by peacekeepers is more morally defensible when set on the higher plane of non-lethality. Stopping the barbarism of others is easier when a peacekeeping force does not itself have to engage in overtly destructive behavior.⁵
- The information war is won more easily when media are limited in their ability to report expected gore and carnage and must instead content themselves with such scenes as non-lethal sticky foam barriers holding demonstrators at bay.⁶ The absence of compelling visual images to radically alter national policy may result in more stable policy decisions.
- The traditional U.S. preoccupation with collateral damage and rules of engagement is greatly simplified by the employment of weapons that do not destroy infrastructure. The ability to leave things standing while winning the peace means more rapid

restoration of civil order and no requirement for the U.S. government to pick up the bill for reconstruction.⁷

- Non-lethal force results in fewer casualties and less anti-American sentiment than is normally the case when traditionally destructive conventional munitions are used.⁸ Particularly in an urban setting, munitions must be capable of "precision plus" or risk the arousal of a population through a casualty incident. The ability to engage non-lethally is a very desirable capability in an environment where opponents will likely not wear uniforms and will attempt to draw fire from within a crowd.
- Finally, properly employed NLW may reduce exposure of friendly forces to close contact with opponents with the resulting possibility of casualties. They also reduce the risk of fratricide as coalition forces work together, often for the first time, with less-than-perfect communications and coordination procedures.⁹

The growing potential of NLW, especially RCA, for a role in United States policy was made clear by President Clinton in his June 1994 letter to the Senate concerning the Chemical Weapons Convention (CWC). In requesting the advice and consent of the Senate to ratification of the CWC, he specifically directed the Secretary of Defense "to accelerate efforts to field non-chemical, non-lethal alternatives to RCAs for use in situations where combatants and noncombatants are intermingled."¹⁰

With the 1996 publication of Department of Defense Directive Number 3000.3, "Policy for Non-Lethal Weapons," DOD formalized responsibility for the development and employment of NLW. The Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict was given policy oversight for their development and employment.¹¹

NLW efforts are generally oriented toward either antimateriel or antipersonnel applications. Current NLW antipersonnel initiatives include a variety of technologies, including superslick lubricants designed to reduce traction, supersticky foam designed to slow movement, disorienting strobe lights, acoustic beam weapons, mechanical entanglements, and special uses of microwaves.¹²

Many of these technologies are still in study and operational deployment times vary from already in use, such as sticky foam in Somalia, to projected deployment in several years. Others face an uncertain future in the political and policy arena. In the era of worldwide landmine bans, is it reasonable to expect that microwave-induced fever weapons are politically feasible?

An Opposing View: The Problems With Non-Lethals

While the notion of non-lethal weapons seems too good to be true to many, there are those who assert there is much wrong with the entire concept of NLW. Among the arguments advanced in support of that view are the following:

Fundamentally, there is no such thing as a truly non-lethal weapon because those items generally considered non-lethal can under certain conditions cause death. Examples include a police baton causing a fatal concussion, rubber bullets killing when striking protestors in the head, riot control gases leading to deaths due to asphyxiation or improper restraint during custody, and improperly used sticky foam suffocating a noncombatant. And like lethal weapons, NLW can cross the line between personnel and materiel damage. The much-publicized Gulf War use of carbon fibers to attack power generation (antimateriel) led to the loss of electricity in hospitals, sewage treatment facilities, and other key nodes which reportedly resulted in the deaths of hundreds or thousands of civilians (antipersonnel).

Additionally, some assert the very nature of NLW increases the probability of conflict because their level of political acceptability is higher. The American desire to "do something" coupled with the notion that intervention is casualty-free could have serious consequences. One analyst termed the "fantasy of near-bloodless use of force" the most dangerous legacy to emerge from the conflict in the Gulf.¹³ Lower employment costs of NLW in terms of repairs or reparations resulting from physical damage to personnel, materiel, or infrastructure may result in a higher tolerance for their use. For some writers, the example of the cop who hesitates to draw his sidearm but who is quick to use his Mace finds parallels in national policy as well.¹⁴

Operationally, the availability of NLW may lead to a policy of incremental escalation in which a strike by non-lethal means becomes the expected, or politically required, first step in any situation. Commanders will lose operational surprise in the subsequent use of lethal force and national policy will face intense scrutiny in those instances in which lethal force is used first, regardless of justification by military authorities.¹⁵

Intelligence requirements for the use of NLW will require a greater degree of precision, from the targeting of a specific subsystem instead of destruction of a complete facility, to the difficulties in battle damage assessment when there are no visible signs of damage. As one study alluded, can a commander assume that enemy tanks which have been hit by a non-lethal means have been rendered inoperable, or are they just waiting until the technologically superior U.S. armor comes within easy shooting distance of their inferior main gun sight?¹⁶

Proper employment of NLW comes at a cost in man-hours, equipment and organization, as Marines deploying to Somalia learned when they began their trainup.¹⁷ Contingency forces already pressed for time during the deployment process must set aside precious hours or days to learn the tactics, techniques, and procedures for yet additional weapons systems, non-lethal ones. In a resource-constrained environment, both the personnel and logistics costs of transporting and using non-lethal as opposed to lethal weapons may be too high. On the limited number

of airframes or vehicles available, the requirement to haul non-lethal weapons systems or munitions may call for hard decisions. A policy requirement for first strikes by NLW may leave an arriving force without the lethal means to respond overwhelmingly or convincingly early in a conflict.¹⁸

Besides the obvious dangers of NLW use against our troops, there is the real possibility that an opponent may regard some forms of NLW as an asymmetric attack that requires an unconventional lethal response in the form of chemical, biological, nuclear, or terrorist attack. An opponent's inability to respond non-lethally may guarantee a lethal response and escalation well beyond our initial intent.¹⁹

The conviction among many that NLW will be used by the military to enhance the effect of lethal weapons even when not required to achieve tactical success has historic roots and is very much alive today. The traditional tendency to use any tool that works may have grown stronger in a climate in which friendly casualties are unacceptable and any legal means to avoid them is considered justified. An author's recommendation in a recent military journal to "...stress how these weapons will be force multipliers and how they can work independently or in concert with conventional weapons" is translated on the world wide web as "zap'em and move in for the kill."²⁰

The various arguments against NLW receive added impetus when discussing the use of gases. There is an inherent initial

difficulty in differentiating one form of gas from another; indeed, once gas is introduced, all smoke from any source must be considered a potential threat. Additionally, once the battlefield is prepared for non-lethal gas warfare through the addition of masks and other protective gear, what is to prevent the introduction of more lethal gas? Toward this end, vigorous opposition has emerged against NLW gases because their introduction on the battlefield as an "accepted" gas nonetheless constitutes gas warfare and may be sufficient to cause combatants to cross a psychological threshold against gas warfare of all types.²¹ At a time when lethal gases are easily manufactured by any nation willing to risk world opinion, a total prohibition on all gas use is a long-standing and powerfully compelling argument to many involved in the policy debate.

Riot Control Agents

For the purposes of the 1973 Chemical Weapons Convention, riot control agent means "any chemical...which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure."²²

The working principles of this modern definition would have been readily understood by the Paris police of 1912, who adopted the chemical irritant ethylbromacetate to break up crowds of street criminals.²³ When World War One broke out, some soldiers reportedly brought police tear gas cartridges to the front.

While Germany and France both employed thousands of artillery-fired tear gas shells in 1914, their use was quickly forgotten after the devastating 1915 German chlorine gas attack at Ypres introduced a new lethal era in gas warfare.²⁴

Two agents developed during the war came into use in law enforcement in the 1920s in response to violent labor unrest and other civil disturbances. Chloroacetophenone (CN) became known as "tear gas" due to its effects on tear glands and Diphenylaminechloroarsine (DM) earned a reputation as a sickening agent due to its ability to induce severe vomiting. By World War Two, both were in use around the world in controlling mass violence.

In 1928, American scientists Carson and Stoughton of Middlebury College, Connecticut discovered orthochlorobenzalmalononitrile, nicknamed CS after the initials of its discoverers. CS earned a patent in England in 1956 following assessments that found it more effective than CN and less dangerous than DM, which the United Nations had already outlawed due to its severe effects. Best known today as tear gas, CS is actually not a gas, but most often takes the form of extremely finely ground particles of one micron (1/25,000 inch) of active chemical agent released into the air by vaporizing, blast, liquid/aerosol, or fogging.²⁵ Since its initial use on Cyprus by the British in 1961, CS has remained the standard riot control agent worldwide.²⁶

The U.S. Army and CS

The Army Chemical Corps declared CS its standard RCA on 30 June 1959 and simultaneously standardized four CS munitions: a smoke style hand grenade, an explosive "baseball" grenade, a CS disperser, and CS capsules for training. When further micronized and mixed with silica gel to produce a uniform fill for grenades CS was redesignated CS1.²⁷

When the commander of the Army's Chemical-Biological-Radiological Agency visited Vietnam in 1962, he concluded that CS, originally developed for riot control, might be helpful in protecting the new air assault units as they landed and exited their helicopters. The Army conducted a full-scale test named "Operation Water Bucket" at Fort Campbell, Kentucky in June 1963 to evaluate CS in five tactical situations: ambush of a foot patrol, ambush of a vehicle convoy, attack by a rifle company against a hostile assembly area, helicopter-borne attack on village, and enemy attack on a small outpost.²⁸

The test resulted in an affirmation of the effectiveness of CS gas, but also revealed the existing CS munitions were "totally inadequate for tactical operations."²⁹ Work proceeded on more than a dozen munitions designed expressly for CS, from rifle grenades to high-speed aircraft delivery systems designed to dispense 85 pounds of CS in a swath 70 meters wide by 1300 meters long. In 1965, as the new inventory was being readied for test

in "Water Bucket II", political authorities authorized its use in Vietnam. All subsequent field testing took place in Vietnam.³⁰

RCA immediately found use in combat. Dropped from fabricated grenade dispensers aboard helicopters, gas flushed enemy personnel from prepared defensive and ambush positions, suppressed enemy anti-aircraft fire, reduced casualties during village searches for elusive guerillas, and cleared entire helicopter landing zones in favorable weather conditions.³¹

U.S. forces employed RCA against fortified bunkers as an enhancement to lethal weapons in order to force the enemy into the open where he could be engaged more easily by air, artillery, and infantry fire. However, it also served to limit lethal effects on noncombatants when used to clear villages of civilians before an artillery preparation.³²

As the volume of RCA use grew, so did the methods of its employment. Thickened CS1 soon found a role as a terrain denial agent, where its lingering effects closed off trails and perimeters of friendly positions to infiltrators. The ultimate use of CS1 as an area denial weapon began in 1966, when thirty 55 gallon drums, each containing eighty pounds of agent, were loaded into CH-47 Chinook helicopters and dumped out at treetop level to create a large barrier zone.³³ By January 1967 the Army modified CS1 by adding liquid silicone, making it an effective weatherproof denial munition for extended use in enemy tunnels. With its active agent dyed green for camouflage, the 1967 version

of the aerial CS2 dispenser, released from a helicopter moving at typical speeds and at a typical release height of 1500 feet, could contaminate a strip 1400 by 120 feet for a ten-day period.³⁴

By 1967, CS munitions were in use by infantry and aviation, as well as the majority of the artillery's major indirect fire weapons systems: the World War One era 4.2 inch chemical mortar, the 105mm howitzer, and the 155mm howitzer.³⁵ Manufacturers produced over 3000 tons of CS agent during the years 1966-1969 alone. In assessing the role of RCA in Vietnam, Edgewood Arsenal found that demand consistently outran the supply available to the troops in the field, evaluation test stocks were quickly consumed, available stocks of standardized munitions were carefully rationed, and field expedient RCA systems were routinely employed in the absence of an approved munition.³⁶

Domestically, the Vietnam era was marked by routine use of RCA in dealing with campus protests and other crowd control scenarios. Worldwide usage was high throughout the turbulent 1970s and CS use is routine today. Reduced stocks of CS weapons remain in Army inventories, with their successful employment noted as recently as the Somalia operation.³⁷

The RCA Policy Debate: Seventy Years of Uncertainty

The Geneva Gas Protocol of 1925, in attempting to deal with the horrors of the Great War's gas attacks, prohibited wartime use of "asphyxiating, poisonous, and other gases."³⁸ The United States Senate, mindful of deterrence, refused to ratify the

Protocol.³⁹ A 1930 survey of League of Nations Commission members indicated that Britain, Canada, China, France, the USSR and several other nations agreed the Protocol's language prohibited wartime use of "other gases," a term intended to include RCA. The U.S. delegate did not agree, pointing out that gas used by peacetime law enforcement authorities might in war be "more clearly humane than the use of weapons to which (nations) were formerly obliged to resort."⁴⁰

The League Disarmament Conference unanimously proposed in 1932 that all gases, including tear gas, be banned from warfare. The U.S. agreed to this movement, part of an attempt at a comprehensive disarmament treaty, with the understanding that it did not apply to the use of RCA for domestic police purposes. The failure of the League and the advent of World War Two brought disarmament efforts to an end. Large amounts of lethal and non-lethal agents were manufactured by both sides for use during World War Two, but were not employed due to mutual fear of retaliation.⁴¹ Among the reasons cited for Germany's non-use were the failure of the U.S. to ratify the Geneva Gas Protocol and public proclamations from Roosevelt and Churchill confirming an in-kind response to gas attacks. Additionally, the censoring of U.S. chemical publications in order to protect the specifics of DDT technology had the unanticipated effect of convincing the Germans that U.S. nerve gas production was underway and advancing.⁴²

The first major application of RCA in combat since World War One came in Vietnam. That use of CS in 1965 reopened the policy debate that has continued until this day.

At first U.S. policy was to use CS only when its employment would be more humane than the use of more lethal weapons. For example, on March 24, 1965, following the first newspaper reports of U.S. use of nonlethal gas in Vietnam, Secretary of State Dean Rusk made the following statement: "We do not expect that gas will be used in ordinary military operations...The anticipation is, of course, that these weapons will be used only in those situations involving riot control or situations analogous to riot control." For five months following Rusk's statement the use of harassing agents in Vietnam ceased completely.⁴³

The ban was broken under circumstances that showed RCA use in its most positive light. On September 5-7, 1965 a Marine battalion under the control of the Army's Task Force ALFA, the forerunner of Field Force, Vietnam, faced a tactical dilemma. During a Marine sweep of a Viet Cong operating base honeycombed with tunnels, the local guerillas had gone underground, taking many local peasants with them as human shields. Not having received word of the CS ban, the unit employed the gas in the tunnels, flushing out seventeen guerillas, as well as more than 200 unharmed women, children, and old men.⁴⁴

The story broke with Communist propaganda broadcasts on 8 September claiming "U.S. Marines imprudently used toxic gas, killing or seriously affecting many civilians." Both the Russian TASS news organization and the New China News Agency echoed the charges.⁴⁵ General William C. Westmoreland and the headquarters

in Saigon were surprised by the news and an investigation was begun.

After hearing the facts, the Task Force ALFA commander, Major General "Swede" Larson, agreed with the decision of his battalion commander. He also stated that using tear gas was the most humane way to handle the tactical situation and that he had not received any restrictions on its use.⁴⁶ While there was a policy debate, this classic use of a non-lethal munition was clearly positive in its result, as reflected in a New York Times editorial of 11 September.

If the government prohibits the use of tear gas it will thereby order to certain death or injury more Americans and Vietnamese than the absolute necessities of war demand. Nonlethal riot-control gases can be far more humane and will cause far less casualties than many of the weapons now being used in Vietnam.⁴⁷

By the end of the month, Washington granted General Westmoreland's request to use RCA in tunnel-clearing operations. One month later, General Westmoreland personally told the Marine battalion commander who had initially authorized CS use that his unit's successful employment of non-lethal gas resulted in world opinion being changed to permit their use.⁴⁸

World opinion was not without questions, however, and only a year later the U.S. Representative to the United Nations was forced to state that the Protocol did not address "the use in combat against an enemy, for humanitarian purposes, of agents that Governments around the world commonly use to control riots by their own people."⁴⁹

The utility of CS led to its growing use in many tactical situations, however, not just those involving noncombatants or humanitarian purposes. Writing in the May 1970 issue of Scientific American, one author clearly pointed out this inconsistency.

Soldiers encountered many situations in which it could be used to inflict casualties on the enemy and otherwise perform their mission while reducing their own losses. One of the major uses of CS in Vietnam is to flush enemy soldiers out of bunkers preceding high explosive fire or infantry assault... It has nonetheless been a popular weapon...One indicator is the yearly record of Army procurement of CS for Southeast Asia, which rose from 253,000 pounds in fiscal year 1965 to 6,063,000 pounds in 1969...As long as lethal weapons are employed in war, if nonlethal chemicals are introduced it must be expected that they will come to be employed not by themselves but rather in coordination with the weapons already in service, in order to increase the overall effectiveness of military operations. Certainly this has been so in the case of the agent CS.⁵⁰

While the Soviet Bloc was initially the primary objector to the U.S. view, by 1969 the expanded use of CS (and defoliants) in Vietnam led to an 80 to 3 vote, with 36 abstentions, of a UN affirmation that the Protocol prohibits the use in war of all chemical agents affecting men, animals, or plants. The three negative votes were cast by Portugal, which was fighting a guerilla war in Africa; Australia, which was also a combatant in Vietnam; and the U.S.⁵¹

Following Vietnam, Cold War initiatives to strengthen international prohibitions against the possible use of ever-expanding stockpiles of lethal chemical weapons finally led to

the 1975 U.S. ratification of the Geneva Gas Protocol. The U.S. continued to maintain that the Protocol applied only to lethal and incapacitating chemical agents and not to RCA, a position which prolonged international disagreement.

To address this issue, in conjunction with Protocol ratification on April 8, 1975, President Ford signed Executive Order 11850, "Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents". This order stated that the Secretary of Defense "shall take all necessary measures to ensure that the use by the Armed Forces of the United States of any riot control agents...in war is prohibited unless such use has presidential approval, in advance."⁵² Four conditions allowing use in "defensive military modes to save lives" included:

riot control of areas under direct U.S. control such as POW camps, reduction of civilian casualties by use of RCAs where civilians are used to mask or screen attacks, use in rescue missions of downed aircrews in isolated areas, and use in rear echelon areas outside the zone of immediate combat to protect convoys from civil disturbances, terrorists, and paramilitary organizations.⁵³

This Executive Order (EO) became the cornerstone policy document for all RCA usage by the U.S. Under its authority the use of RCA was approved for Operation JUST CAUSE in Panama in 1989, although no use was reported.

In 1991 President Bush declared his intent to foreswear the use of chemical weapons for any reason, including retaliation, against any state, upon ratification of the Chemical Weapons Convention (CWC). This was the capstone of his successful

campaign for the CWC, which had begun in 1984.⁵⁴ In order to put the historical disagreement regarding RCA to rest, his administration agreed on the general prohibition against RCA "as a method of warfare". This move blocked more specific allied language and kept RCAs from being categorized with other chemical agents or being specifically classified and thus prohibited as a class of chemicals by themselves.

When newly-elected President Clinton forwarded the CWC to the Senate for its advice and consent in November 1993, however, the impact of the long-standing concern of our international partners was apparent in his more restrictive view:

"...according to the current international understanding, the CWC's prohibition on the use of RCAs as a "method of warfare" also precludes the use of RCAs even for humanitarian purposes in situations where combatants and noncombatants are intermingled, such as the rescue of downed air crew, passengers, and escaping prisoners and situations where civilians are being used to mask or screen attacks." ⁵⁵

This position was at odds with EO 11850 and was viewed by Senate Foreign Relations Committee Chairman Senator Helms as "unacceptable."⁵⁶ The so-called "downed pilot" clause and a host of other concerns kept the treaty up in the air until the Spring of 1997, when negotiations took place in order to ensure ratification. The final ratification, signed by President Clinton and forwarded to Congress on 25 April 1997 contained 28 conditions.⁵⁷ Condition 26 applied to RCA use:

"The United States is not restricted by the Convention in its use of riot control agents, including the use

against combatants who are parties to a conflict, in any of the following cases: (i) the conduct of peacetime military operations within an area of ongoing armed conflict when the United States is not a party to the conflict (such as recent use of the United States Armed Forces in Somalia, Bosnia, and Rwanda); (ii) consensual peacekeeping operations when the use of force is authorized by the receiving state, including operations pursuant to Chapter VI of the United Nations Charter; and (iii) peacekeeping operations when force is authorized by the Security Council under Chapter VII of the United Nations Charter...⁵⁸"

President Clinton provided an amplifying statement of certification in which he made the distinction between peacetime and wartime uses of RCA.

"...I have certified that the United States is not restricted by the Convention in its use of riot control agents in various peacetime and peacekeeping operations. These are situations in which the United States is not engaged in a use of force of a scope, duration and intensity that would trigger the laws of war with respect to U.S. forces."⁵⁹

This would appear to have resolved the issue, but it did not. Because EO 11850, the guiding policy for RCA use by US forces, required specific advance Presidential approval, and because the President in his November 1993 memorandum expressed his opinion that RCA should not be used in the situations originally described in EO 11850, policy planners were caught in a "Catch 22." In order to use RCA, the President must approve them, but since he expressed no condition under which he would approve their use, they should not be used. His decision not to rewrite the executive order was taken as further evidence of his position.

Among those who have worked in the Pentagon, this is known as "dynamic ambiguity," the art of having a policy statement mean different things to different audiences. For those working in the field, however, the result was that soldiers deployed in tough peacekeeping situations overseas faced denial of the same equipment that their National Guard brethren used during civil disturbances back home. On more than one occasion in recent history, the choice was face harm or use deadly force.

Until August 1997 confrontations between U.S. peacekeepers in Bosnia and Serb-backed armed civilian demonstrators, regular U.S. combat forces on peacekeeping duty in Bosnia were without RCA.⁶⁰ In summing up his year of Bosnia experience to a recent urban warfare conference, one former peacekeeping battalion commander put it bluntly, "Our only nonlethals were jet noise, rotor wash, boredom, and the butt stroke. And we used all four."⁶¹

Non-Chemical Pepper Spray: A Good Gas?

The adoption of RCA for individual police officer use took the form of a spray product named MACE in 1965. In popular use until 1984, MACE utilized 1920 vintage CN gas, weaker than CS, but legendary in its ability to cross-contaminate the arresting officer, police vehicles, and custody rooms.⁶²

The search for alternatives led to the discovery of oleoresin capsicum, a naturally occurring oily resin found in the cayenne pepper. Known as pepper spray or OC, it is different from CS,

CN, and other RCA because it is not the product of chemical manufacture and is therefore held by many to be outside the regime of the Chemical Weapons Convention.⁶³

From a police point of view, its organic effects make it more effective against animals (having no tear ducts, animals are unaffected by CS), as well as intoxicated, drugged, or mentally incapacitated subjects.⁶⁴ Applied in a concentrated stream, it does not contaminate others and allows an officer to handle the suspect more easily.

It is deemed practical for nearly any law enforcement agency, requiring only four to eight hours of initial training for officers and an initial cost of less than \$25 or less per canister.⁶⁵

OC has found use as a shark repellent, and also in formulas ranging from one per cent active ingredient in postmen's anti-dog spray to five per cent in police use to ten per cent as anti-bear spray.⁶⁶ Marines effectively employed individual aerosol projectors of civilian OC pepper spray during the withdrawal from Somalia.⁶⁷

OC's unique qualities make it an obvious choice for those who wish to see traditional chemical RCA usage deleted from peacekeeping and non-lethal scenarios. A number of authorities, however, disagree.

The International Association of Chiefs of Police assessed OC as "not designed or effective for general area contamination or

for clearing enclosed spaces but rather is intended for direct application in officer-to-suspect encounters."⁶⁸

One survey of over forty different OC products found that pepper spray induces an initial release of adrenaline in the targeted person. As a result, over half of a test group of 200 people gained strength during the initial seconds after exposure.⁶⁹ There is at least one recorded instance in which a police officer was beaten to death after using almost an entire can of OC spray on his attacker.⁷⁰

Marine experience in Somalia expressed the difference between RCA (CS) and OC spray in placement of each agent in the Rules of Engagement graduated response. OC followed the initial use of hands-on physical force, but was allowed even before the use of batons. CS, meanwhile, was used after stingballs, flashbang grenades, and batons, and just prior to engagement by lethal 12 gauge shotguns and 40mm grenade launchers loaded with non-lethal beanbags and pellets.⁷¹ In practice, OC became a tool for individual or localized use while CS became the answer to more serious challenges.

Yet OC has drawn some of the same criticism usually reserved for CS. Recent headlines include ACLU claims of 26 deaths linked to pepper spray,⁷² police use of pepper spray being called "tantamount to torture" by Amnesty International,⁷³ and calls from college researchers to ban use of OC until its active ingredient's potential for inducing heart stoppages can be

researched.⁷⁴ And these claims still do not address the fundamental issue, that of nontraditional NLW "gas" uses against personnel by peacekeepers. The difference between OC and CS aerosol fog may be apparent to those in the crowd, but it may not be to the world media or to those who wish to make NLW a policy or asymmetric warfare issue.

Gas in the City: Lessons Learned in Vietnam

The notional peacekeepers in Urbana do not have to reach far back into history to find practical uses for CS in the urban fight. In their first combat in urban terrain since the Korean War, U.S. Marines faced a determined enemy in the Vietnamese city of Hue during the Tet offensive of 1968. Viet Cong and North Vietnamese troops infiltrated this provincial capital and staged a deliberate defense of the ancient walled city.⁷⁵

One Marine officer observed that the older city known as the Citadel featured "row after row of single-story, thick-walled masonry houses jammed close together and occasionally separated by alleyways or narrow streets." The city offered "hundreds of naturally camouflaged, mutually supporting, fortified positions." The ancient palace, a cultural treasure off limits to Marine fire, "provided the enemy a haven from which he could deliver small arms, rocket and mortar fire."⁷⁶

Marines also had to deal with the local population, which contained civilians and combatants in various forms of dress including disguises as hospital patients and a nun, properly

adorned in a habit.⁷⁷ Homeless civilians in large numbers complicated the Marines' plans, as hundreds were moved to the rear while under deliberate mortar and rifle fire from the enemy.⁷⁸ The desire to limit noncombatant casualties was soon tempered by the discovery that unknown numbers of civilians were forced to remain in the combat zone to build defensive positions for enemy forces.⁷⁹

Fighting house to house throughout the city, the Marines soon employed antitank weapons, recoilless rifles, tanks, artillery and air strikes. When conventional munitions failed to dislodge enemy soldiers who continually found new fighting positions in the rubble, the Marines called in CS and found it effective. During the next two weeks of combat, U.S. forces employed CS in the following forms: grenades, 4.2 inch mortar rounds, multiple-tubed gas cartridge launchers known as the E8, and even aerial bombs dropped from Phantom jet aircraft.⁸⁰

During the fight to retake the fortified Citadel, the 4.2 inch mortar shells proved very effective. The rounds penetrated the tile roofs of the building, whose thick walls had resisted conventional munitions, and "concentrated the full power of the round in the building rather than relying on the infiltration of the CS gas from outside" with significantly demoralizing effects on the enemy.⁸¹

Marines also used CS in the direct fire role. Charged with taking the heavily-defended provincial capitol building, Marines

faced a completely canalized attack across an open street and nearly fifty meters of open courtyard, all exposed to heavy enemy fire. Using E8 launchers, smoke, and supporting arms, the unit fought its way into the building where it used CS grenades to assist in a room by room clearing action.⁸²

Despite the Marines' best efforts, casualties were high among the civilian population and among Marine units, where some outfits reported total casualty rates of 80 percent.⁸³ Damage to the city was estimated to be over 80 percent of the city's structures damaged or destroyed and over 116,000 people of a population of 140,000 homeless.⁸⁴ While it is unlikely that an opponent of current peacekeeping efforts will stand ground with the force or ferocity of the Vietnamese, the lessons learned in Hue should stay fresh in our minds as we patrol other, similar provincial capitols today.

Nothing New: The Need For Standoff Non-Lethal Weapons

While tactical non-lethal programs are normally focused on the short-range encounter, recent history provides us all the bloody background we need to envision a requirement for standoff NLW.

The Army's early Vietnam-era development of CS cluster munitions designed to envelop a target in a cloud of gas upon release from helicopters and low-speed aircraft resulted in their combat fielding in 1966. By 1968, however, an Army Concept Team in Vietnam was already reporting that "more sophisticated enemy

weaponry was increasing the vulnerability of aircraft and might eventually make over-the-target munitions impractical."⁸⁵

Enemy capabilities had defined the need for an aerial standoff weapon. Development of a 2.75 inch fixed fin aerial rocket (FFAR) with a CS payload instead of the standard high explosive warhead had begun in 1966 with a projected type classification in 1971. The Army moved to expedite it into the field by 1969 in response to operational requirements.⁸⁶

Ground troops faced similar problems, taking friendly casualties from lethal weapons while trying to get into the short ranges needed to employ non-lethal CS, particularly in urban combat. The E8 launcher, whose canisters could generate a CS cloud 30 meters wide by 175 meters deep, required setup in the target's proximity. Its utility was further limited by its size, a bulky 33.8 pounds, which prompted some infantry units to deem it too heavy for mobile field use.⁸⁷ By 1968, the Army had begun development of a shoulder-fired CS rocket with an eye towards employing a non-lethal version of the man-portable XM191 four-barrel rocket system.⁸⁸ The development of both helicopter and shoulder-fired rockets to carry a non-lethal payload from a standoff distance is a testament to their utility.

Somalia reminded us of that generic utility, and reinforced the fact that the ubiquitous, lethal RPG -- still strikingly similar to its predecessor, the vintage-1944 German Panzerfaust -- and its cousins must be a significant planning factor in a peace

operation. Simply put, any system short of an M-1 tank, lethal or non-lethal, which requires sustained exposure within a range of 800 meters to be effective can be countered by individuals with a modicum of training, a clear field of view and a few seconds of uninterrupted concentration.

Somali irregulars demonstrated the effect of the RPG as an equalizer in peace operations during the well-publicized Mogadishu raid of 3-4 October 1993. When they knocked down two helicopters in flight with RPGs, they precipitated a high-intensity ground fight that resulted in total casualties of over 1000. Anecdotal evidence from urban combat in Grozny, Chechnya indicates that RPGs were an insurgent weapon of choice, volley fired at anything that moved, resulting in heavy Russian losses of personnel and equipment.

In light of these hard realities, hypothetical NLW scenarios which offer visions of advanced technology acoustic beams fired from stationary vehicles and RCA sprayed from swooping unmanned aerial vehicles seem less than credible. These notional engagements do not address the fact that predictions call for most future peace ops to involve urban areas and most urban areas by definition will put proposed NLW technology within 800 meters of the intended target.

A survey of technologies under consideration for military operations in urban combat and non-lethal employment in general details much in the way of short-range antipersonnel NLW, but

little in the way of standoff munitions. In short, we are back to the year 1966 and once again taking lethal fire in order to use non-lethal weapons.

The Fix: Back to the Future

At the time of the Mogadishu fight the 105mm CS rounds mentioned in the initial peacekeeping scenario were sitting in bunkers at Pine Bluff, Arkansas, awaiting destruction. Records indicate that none of the M629 rounds, with their standoff range of over 11 kilometers, had even been requested for issue since 1986.⁸⁹ And the expertise to use them was available, since an AC-130 crew had successfully used a deployed gunship's 105mm gun to precisely blow a ten foot ingress hole in the wall of Aideed's compound for assaulting peacekeepers just five months earlier.⁹⁰

Monday morning quarterbacking is an inherently dangerous proposition in the soldiering business. Still, one can't help but wonder what the results would have been had a gunship, circling at a safe standoff distance, launched multiple sustained CS barrages in support of the first helicopter shot down on 3 October. And that use, to shield the recovery of downed aircrew, would have been in accordance with the original intent of Executive Order 11850.

The 105mm rounds are all gone now, scrapped like the mortar and 155mm CS ammunition before them. Yet, indirect fire munitions, particularly mortar rounds designed for the new 120mm mortar, would provide a capability that does not currently exist

in U.S. NLW inventories. Particularly in urban operations, they have a number of advantages:

- Critically, they avoid the need to directly confront RPG and direct fire weapon threats. Their range allows them to be positioned outside a confrontation zone, yet still give a peacekeeping commander influence within minutes. Helicopters that could not risk a close-contact situation in the city could transport indirect fire systems safely around the urban area to favorable firing positions.
- Indirect fire systems are actually easier to support logistically than direct fire systems, which must be transported by hand or in vulnerable vehicles along questionable lines of supply in the city. And infantry soldiers forward in harm's way do not have to decide between carrying a lethal or a non-lethal weapon, water or food.
- NLW rounds are interchangeable with lethal, smoke, and illuminating rounds, giving peacekeepers a full spectrum of capability from the same platform. Unlike other CS systems, there is no requirement for a ground or helicopter delivery vehicle. No separate equipment other than the ammunition itself is needed.
- Training is the same as for other rounds. Fuses may well be interchangeable with other munitions and ballistic gunnery solutions are similar to current smoke rounds

(wind consideration, etc.). No new procedures are required for successful employment.

- Traditional fire support means are available 24 hours per day, regardless of weather or flying conditions that might ground or blind a UAV or other platform. Given typical communications problems in an urban area, commanders may wish to designate scarce aerial assets as communications, platforms, which would ensure fire support when needed.
- CS delivered by indirect fire has unique capabilities, as the attack on the Citadel in Hue demonstrated. Snipers and anti-aircraft weapons on the roof of an apartment building filled with combatants and noncombatants could be cleared by lethal airbursts, then CS rounds delivered into the building could separate combatants from noncombatants and assist in resolving a noncombatant situation. An ability to coerce with conventional fire support was demonstrated in Panama, where interference by Panamanian Defense Forces in treaty movement exercises led to the firing of indirect illumination or smoke rounds as a precursor to lethal delivery. In every case, PDF forces withdrew or ceased their offensive behavior.⁹¹
- Rules of engagement are more easily communicated and monitored within a fire support cell, which normally has multiple radios and automatic access to command and control decisions. Decisions on when to use lethal and

non-lethal means would be under positive control at the firing unit location.

- Coordination is inherently difficult in an urban scenario, but the presence of multinational forces further complicates the challenge. Compared to the exacting requirements of lethal munitions coordination, NLW delivered through conventional fire support means -- with its inherent use of generally standardized targeting procedures -- give an extra margin of safety in coalition operations.
- The cost of "dumb" CS rounds for these systems is low compared to munitions being used to take their place. The publicized use of high-dollar anti-armor weapons delivered by helicopter gunship against a clan leader meeting in a downtown Somalia building is just one example of a possible scenario in which volleys of CS gas might have been a valid non-lethal alternative. This scenario specifically lends merit to the notion of reviving the CS 2.75-inch FFAR helicopter rocket.

CONCLUSION

Any recommendation to resolve a complex problem relies upon assumptions. Assumptions influencing the use of NLW, especially RCA gas, are the following:

In this era of landmine bans and CNN, any military use of force will be subject to consistent scrutiny by media, interest

groups, international partners, non-governmental organizations, and our own public. The introduction of high-tech NLW will not guarantee political acceptability. And political will, domestic and international, remains the malleable center of gravity for peace operations.

The dislocations typically caused by violent conflict and general civil disorder will compound the problems already evident from the increasing urbanization of the world's population. U.S. forces will likely face peace operations under unfavorable tactical conditions in cities.

Those opposing peace will attempt to use the unique circumstances of urban warfare to negate U.S. technological advantage, impose unacceptable infrastructure damage and casualty rates upon both peacekeeping forces and noncombatants, and use those outcomes to fight an information war to attack domestic and international will.

RECOMMENDATIONS

Against that backdrop, the United States must begin now to address the issue of riot control agents as a non-lethal weapon of choice for the immediate future. Until the development of equally effective, universally accepted (at least for domestic law enforcement), and easily adapted technologies appear, military CS should be selectively reborn as a tactical solution to certain peacekeeping missions.

Resolution of CS policy should begin with a statement from the highest levels of government. In accordance with our understanding of international treaty obligations, the U.S. reserves the right to use non-lethal weapons, including RCA gas, in any situation short of declared war and that such use is an expected condition of U.S. participation in peace operations.

We should state our complete understanding of international concerns regarding the overuse of CS gas in Vietnam, which went well beyond its intended humanitarian purpose. However, the maturation of U.S. armed force into the peace operations role and recent history dictate the reintroduction of this law enforcement product.

This clarification of policy will allow those developing tomorrow's technologies to fully utilize today the one NLW in general use worldwide for domestic enforcement of law and order. It will also address head-on those concerned about the blurring of chemical warfare treaty obligations.

The lessons and equipment from the Vietnam era should be dusted off and relooked. Munitions remaining from earlier stocks should be measured against today's standards and upgraded and modified as required. Limited production of key munitions should be undertaken and appropriate training and issue conducted. Production of the limited quantities required could be undertaken, if necessary, under the auspices of the Chemical Weapons Convention inspection regime.

Meaningful training and development of rules of engagement for NLW, particularly in the urban scenario, should be undertaken. We should move quickly to ensure that our forces are provided with the full spectrum of weapons needed and the low-level operator guidance to use them tomorrow morning in a city like the notional Urbana.

History agrees with this assessment. In reviewing the impact of the Battle of Hue, where he had led the attack on the provincial capital as a young Marine captain twenty-five years ago, now-LTG (Retired) Ron Christmas stated "Hue was the turning point of the War. It was the Gettysburg."⁹²

Nonetheless, by the end of the Vietnam War, U.S. forces had wide experience in the operational use of CS in everything from hand grenades to howitzers, in settings ranging from tunnels to cities. Resurrecting the lessons learned and adapting earlier munitions for current use would provide a timely, cost-effective, and adaptable weapon for service as a tool in today's peace operations kitbag. **10,427 words**

ENDNOTES

¹ Mace Security International Training Division, Tactical Chemical Weapons Instructor Course Manual (Bennington, VT: Mace Security International, 1997), 11-15.

² Colonel John L. Barry et al., Nonlethal Military Means: New Leverage for a New Era (Boston: Harvard University, 1994), 8.

³ Department of Defense, DOD Directive 3000.3 SUBJECT: Policy for Non-Lethal Weapons (Washington, D.C.: U.S. Department of Defense, July 9, 1996), 1.

⁴ Barry, 18-21.

⁵ Ibid.

⁶ Ibid., 20.

⁷ Ibid., 20.

⁸ Ibid., 19.

⁹ Ibid., 20.

¹⁰ President William J. Clinton, "Review of the Chemical Weapons Convention," memorandum to the Senate, Washington, D.C., 23 June 1994.

¹¹ DOD Directive 3000.3, 3.

¹² Steven Aftergood, "The Soft-Kill Fallacy," The Bulletin of Atomic Scientists volume 50, no. 5 (September 1994): 43.

¹³ Barry, 13.

¹⁴ Doc Hambone, "Killing Me Softly, Non-Lethal Weapons," May 15 1996; available from <http://www.io.com/~hambone/files/dream2.html>; Internet; accessed 24 January 1998.

¹⁵ Barry, 14.

¹⁶ Ibid.

¹⁷ Col. Frederick M. Lorenz, "'Less-Lethal' Force in Operation UNITED SHIELD," Marine Corps Gazette volume 79, no. 9 (September 1995): 70-72, 75.

¹⁸ Barry, 14.

¹⁹ Barry, 15.

²⁰ Hambone, *ibid.*

²¹ Matthew S. Meselson, "Chemical and Biological Weapons," Scientific American volume 222, no. 5 (May 1970): 25.

²² "Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons And on Their Destruction" (Chemical Weapons Convention, or CWC), 25 April, 1997.

²³ "Chemical Agents," International Association of Chiefs of Police (IACP) Training Key # 488 (1993): 1.

²⁴ Meselson, 20.

²⁵ Mace Security International Training Division, 11-15.

- ²⁶ Ibid., 3-7.
- ²⁷ Sherman L. Davis, Riot Control Weapons for the Vietnam War: Historical Monograph AMC 56M (Edgewood Arsenal, Maryland: U.S. Army Munitions Command, 1970), 3.
- ²⁸ Ibid., 4.
- ²⁹ Ibid., 5.
- ³⁰ Ibid., 5-7.
- ³¹ Ibid., 11.
- ³² Ibid., 14-15.
- ³³ Ibid., 17.
- ³⁴ Ibid., 16-17.
- ³⁵ Ibid., 32-35.
- ³⁶ Ibid., 40.
- ³⁷ Lorenz, 73.
- ³⁸ Captain J. P. Winthrop, Head, National Security Law Branch, International and Operational Law Division, National Security Law Branch, Department of the Navy Office of the Judge Advocate General, "Preliminary Review of Proposed Chemical-Based Weapons," memorandum for Ms. Susan Levine, Joint Nonlethal Weapons Coordination Cell, Washington, D.C., 30 November 1997.
- ³⁹ Sherman McCall M.D., "A Higher Form of Killing", Proceedings volume 121/2/1, no. 4 (February 1995): 44.
- ⁴⁰ Meselson, 24.
- ⁴¹ Ibid.
- ⁴² McCall, 42-43.
- ⁴³ Aftergood, 21.
- ⁴⁴ Jack Shulimson et al., U.S. Marines in Vietnam: The Landing and The Buildup, 1965 (Washington, D.C.: U.S. Marine Corps, 1991), 91.
- ⁴⁵ Ibid.
- ⁴⁶ Ibid.
- ⁴⁷ Ibid.
- ⁴⁸ Ibid.
- ⁴⁹ Ibid.
- ⁵⁰ Meselson, 22.
- ⁵¹ Ibid.
- ⁵² President Gerald R. Ford, Executive Order 11850, The White House, 8 April 1975.
- ⁵³ Ibid.
- ⁵⁴ Secretary of Defense William S. Cohen, Annual Report to the President and Congress, April 1997, 49.
- ⁵⁵ President William J. Clinton, "Review of the Chemical Weapons Convention," memorandum to the Senate, Washington, D.C., 23 June 1994.

⁵⁶ "Helms Vows to Force Changes in Chemical Weapons Treaty," Defense and Foreign Policy, March 15, 1997, 658.

⁵⁷ President William J. Clinton, "Certification in Accordance with Resolution for Advice and Consent of the Senate," memorandum to the Congress of the United States, Washington, D.C., 25 April 1997.

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ LTC Elmer J. Mason, Commander Task Force 2-2 Infantry, Bosnia, Mar-Jun 1997, interview by author, 13 Oct 1997, Carlisle Barracks, PA.

⁶¹ LTC Tony Cuccolo, Commander Task Force 3-5 Cavalry, Bosnia, Dec 95-Dec 96, interview by author, 24 February 1998, Carlisle Barracks, PA.

⁶² IACP, 1.

⁶³ Ibid.

⁶⁴ Ibid., 2.

⁶⁵ John C. Hunter, "Focus on Use of Force", FBI Law Enforcement Bulletin, May 1994, 1.

⁶⁶ Ibid., 2.

⁶⁷ Lorenz, 71,75.

⁶⁸ IACP, 2.

⁶⁹ Christine Tatum and Thomas Whittle, "Defensive Weapon Do's and Don'ts," Security Management (March 1995): 2.

⁷⁰ Ibid.

⁷¹ Lorenz, 73.

⁷² American Civil Liberties Union, "ACLU of Southern California Report Reveals Pepper Spray Linked to 26 Deaths; Urges Research, Guidelines and Defeat of AB 830," 18 June 1995; available from <http://www.aclu.org/news/n061985.html>; Internet; accessed 24 January 1998.

⁷³ Amnesty International, "USA: Police Use of pepper spray - tantamount to torture," 4 November 1997; available from <http://www.peppersprayvictims.org/amnesty.html>; Internet; accessed 24 January 1998.

⁷⁴ Jim Herron Zamora, "Ex-UCSF researchers urge ban on cops' pepper spray", San Francisco Examiner, 7 November 1997, sec. 1A, p. 17.

⁷⁵ Jack Shulimson et al., U.S. Marines in Vietnam: The Defining Year, 1968 (Washington, D.C.: U.S. Marine Corps, 1997), 216.

⁷⁶ Shulimson, 201.

⁷⁷ Major Ron Christmas, "A Company Commander Remembers the Battle for Hue," Marine Corps Gazette volume 61, no. 2 (February 1977): 23.

⁷⁸ Ibid., 25.

⁷⁹ Russell W. Glen, Combat in Hell: A Consideration of Constrained Urban Warfare (Santa Monica, Ca.: RAND, 1996), 39.

⁸⁰ Eric Hammel, Fire in the Streets: The Battle for Hue (Chicago: Contemporary Books, 1991) 41-43.

⁸¹ Shulimson, U.S. Marines in Vietnam: The Defining Year, 1968, 203.

⁸² Christmas, 24.

⁸³ Shulimson, U.S. Marines in Vietnam: The Defining Year, 1968, 213.

⁸⁴ Ibid., 216.

⁸⁵ Davis, 15.

⁸⁶ Ibid., 36-37.

⁸⁷ Ibid., 24.

⁸⁸ Ibid., 37.

⁸⁹ Ms. Sandy Phillips, Inventory Management Specialist for 105mm Ammunition, Rock Island Arsenal, telephone interview by author, 8 October 1997.

⁹⁰ Captain William J. Taylor, "AC-130 Employment During Military Operations in Urban Terrain," The Air Land Sea Bulletin, Issue No. 97-3 (December 1997): 7.

⁹¹ Department of the Army, Peace Operations, Field Manual 100-23 (Washington, D.C.: U.S. Department of the Army, 30 December, 1994), 8.

⁹² Glen, 5.

BIBLIOGRAPHY

- Aftergood, Steven. "The Soft-Kill Fallacy." The Bulletin of Atomic Scientists volume 50, no. 5 (September 1994): 40-45.
- American Civil Liberties Union. "ACLU of Southern California Report Reveals Pepper Spray Linked to 26 Deaths; Urges Research, Guidelines and Defeat of AB 830." 18 June 1995. Available from <<http://www.aclu.org/news/n061985.html>>. Internet. Accessed 24 January 1998.
- Amnesty International. "USA: Police Use of pepper spray - tantamount to torture." 4 November 1997. Available from <<http://www.peppersprayvictims.org/amnesty.html>>. Internet. Accessed 24 January 1998.
- Barry, Colonel John L. et al. Nonlethal Military Means: New Leverage for a New Era. Boston: Harvard University, 1994.
- Christmas, Major Ron. "A Company Commander Remembers the Battle for Hue." Marine Corps Gazette volume 61, no. 2 (February 1977): 18-26.
- Clinton, William J., President. "Review of the Chemical Weapons Convention." Memorandum to the Senate. Washington, D.C., 23 June 1994.
- Clinton, William J., President. "Certification in Accordance with Resolution for Advice and Consent of the Senate." Memorandum to the Congress of the United States. Washington, D.C., 25 April 1997.
- Cohen, William S., Secretary of Defense. Annual Report to the President and Congress. Washington, D.C.: U.S. Department of Defense, April 1997.
- "Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons And on Their Destruction" (Chemical Weapons Convention, or CWC), 25 April, 1997.
- Cuccolo, LTC Tony, Commander Task Force 3-5 Cavalry, Bosnia, Dec 95-Dec 96. Interview by author, 24 February 1998, Carlisle Barracks, PA.
- Davis, Sherman L. Riot Control Weapons for the Vietnam War: Historical Monograph AMC 56M. Edgewood Arsenal, Maryland: U.S. Army Munitions Command, 1970.

"Helms Vows to Force Changes in Chemical Weapons Treaty." Defense and Foreign Policy, 15 March 1997, 658.

Ford, President Gerald R. Executive Order 11850. The White House, 8 April 1975.

Glen, Russell W. Combat in Hell: A Consideration of Constrained Urban Warfare. Santa Monica, Ca.: RAND, 1996.

Hambone, Doc. "Killing Me Softly, Non-Lethal Weapons." 15 May 1996. Available from <<http://www.io.com/~hambone/files/dream2.html>>. Internet. Accessed 24 January 1998.

Hammel, Eric. Fire in the Streets: The Battle for Hue. Chicago: Contemporary Books, 1991.

Hunter, John C. "Focus on Use of Force." FBI Law Enforcement Bulletin (May 1994): 24-26.

"Chemical Agents," International Association of Chiefs of Police Training Key #488 (1993): 1-5.

Lorenz, Col. Frederick M. "'Less-Lethal' Force in Operation UNITED SHIELD." Marine Corps Gazette volume 79, no. 9 (September 1995): 68-76.

Mace Security International Training Division. Tactical Chemical Weapons Instructor Course Manual. Bennington, VT: Mace Security International, 1997.

Mason, LTC Elmer J., Commander Task Force 2-2 Infantry, Bosnia, Mar-Jun 1997. Interview by author, 13 Oct 1997, Carlisle Barracks, PA.

McCall, Sherman, M.D. "A Higher Form of Killing", Proceedings volume 121/2/1 no. 4 (February 1995): 40-45.

Meselson, Matthew S. "Chemical and Biological Weapons." Scientific American volume 222, no. 5 (May 1970): 15-25.

Phillips, Sandy, Inventory Management Specialist for 105mm Ammunition, Rock Island Arsenal, Illinois. Telephone interview by author, 8 October 1997.

Shulimson, Jack et al. U.S. Marines in Vietnam: The Landing and the Buildup, 1965. Washington, D.C.: U.S. Marine Corps, 1991.

Shulimson, Jack et al. U.S. Marines in Vietnam: The Defining Year, 1968. Washington, D.C.: U.S. Marine Corps, 1997.

Tatum, Christine and Thomas Whittle. "Defensive Weapon Do's and Don'ts." Security Management (March 1995): 27-31.

Taylor, Captain William J. "AC-130 Employment During Military Operations in Urban Terrain." The Air Land Sea Bulletin 97-3, (December 1997): 4-7.

U.S. Department of the Army. Peace Operations. Field Manual 100-23. Washington, D.C.: U.S. Department of the Army, 30 December 1994.

U.S. Department of Defense. Policy for Non-Lethal Weapons. DOD Directive 3000.3. Washington, D.C.: U.S. Department of Defense, 9 July 1996).

Winthrop, Captain J. P. Head, National Security Law Branch, International and Operational Law Division, U.S. Department of the Navy Office of the Judge Advocate General.
"Preliminary Review of Proposed Chemical-Based Weapons."
Memorandum for Ms. Susan Levine, Joint Nonlethal Weapons Coordination Cell. Washington, D.C., 30 November 1997.

Zamora, Jim Herron. "Ex-UCSF researchers urge ban on cops' pepper spray." San Francisco Examiner, 7 November 1997, sec. 1A, p. 17.