



DEADLY REFLECTIONS ON **CHEMICAL WARFARE** IN WORLD WAR I LEGACY

COL. JEFFREY P. LEE
George C. Marshall Center



British troops advance through a cloud of poison gas during the Battle of Loos in September 1915. An estimated 89,000 Soldiers died from the effects of battlefield gas during World War I.

AGENCE FRANCE-PRESSE

A World War I veteran once remarked in his wartime journal about witnessing horse cavalry armed with lances. For those unfamiliar with the lance, it is a 2-meter-long pole weapon tipped with a sharpened blade more associated with medieval warfare than the 20th century battlefields of France.

THE VETERAN WROTE:

I have just been watching a ... Cavalry Division go by, riding at a trot. A long and endless line of men going by four at a time. I wonder when these European nations will find out that Lancers, like bustles, are things of the past. I thought that went out with the [American] Civil War. ... My Dad, who was a lancer in the [American] Civil War, could tell them something about lances. How, for instance, they are continually getting entangled with the horses feet or caught in the branches of a tree ... [and his unit quickly abandoned the lance out of impracticality]. They are picturesque, but so are the catapults of the ancient Greeks.¹

The utility, effectiveness, doctrinal use and integration of the lance into early 20th century tactics, specifically WWI, foreshadow the near universal philosophy concerning chemical weapons today. Chemical weapons, for almost all countries, are no longer produced, prescribed for use in military doctrine, nor tested or trained with. They have gone the way of the lance, as a historical throwback for all but a few states that are suspected to have stockpiles or clandestine experimental programs. These states may view them as the “poor man’s weapon of mass destruction.”²

Admittedly, in comparison, lances were often seen as popular and “noble” weapons, many times sporting pennants and used in sport for jousting, whereas modern chemical weapons more closely resembled the use of burning pitch or scalding oil. Chemical weapons also have an abhorrent reputation among most societies. Chemical weapons are being destroyed at an ever increasing pace, primarily through incineration, rather than the unfortunate practice after both world wars of dumping large quantities of these munitions directly

into the oceans.³

This destruction comes despite the fact that chemical weapons had their most widespread and notorious use during WWI, and most recent use during the Iran-Iraq wars of the 1980s. There are no known armies today that officially prescribe the use of chemical weapons, and even if they were secretly authorized for limited use, armies cannot train with these weapons as part of modern integrated warfare, nor test them openly for fear of discovery and condemnation.

The pristine military cemeteries in France, such as at the Meuse-Argonne and St. Mihiel, and the verdant wheat fields surrounding them, do not adequately reflect the tragedy or horrors of The Great War from some nine decades ago, especially the horrors of chemical warfare. Nor do these battlefields even hint at the difficult attempts to eliminate this category of weapons since their widespread use, by both the Central and Allied Powers during this war.

Although the history of chemical warfare nine decades ago is interesting, a legitimate question is regarding the relevance of gas or chemical warfare today for all states. WWI marked the first widespread use of gas or chemical warfare in modern times. The Germans conducted the first large-scale attack, using chemical weapons at Ypres in April 1915. The British followed suit in September of that same year. An estimated 89,000 Soldiers from all nations died from gas exposure, and an additional 1.24 million suffered as nonfatal casualties.⁴ This represents only 2 to 4 percent of the total war casualties out of the staggering figure of more than 9.7 million Soldiers and Sailors who died during the conflict.⁵

It could have been worse. Rapid advances in personal protection and chemical agent detection in the last two years of the war lessened chemical weapons' potential impact. Tactical challenges employing gas, particularly the weather, also reduced chemical weapons' impact. Even using gas against your opponent necessitated extensive precautions to prevent gas from drifting back on one's own forces.⁶

Although the losses and casualties caused by chemical weapons were horrific, it is not widely known that they would have been far worse without expedient measures undertaken during the war. Chemical warfare beleaguered all units, large and small, friend and enemy. A telling example is the case of a company of engineers with the U.S. 1st Infantry Division. Using an American veteran's personal diary of his exploits with Echo Company, 1st Engineers (today the 1st Engineer Battalion, 1st Infantry Division), and using a book long out of print, *A History of the First Engineers*, one can trace many of the tumultuous events of the years 1917 to 1919 for a small but typical group of Americans, as well as apply the same lessons to Soldiers of many nations in the conflict.⁷ These references suggest that despite the mutual fear of chemical attacks, "gas" was used frequently, albeit with difficulty, by both sides in an attempt to break the stalemate of trench warfare.⁸ There are numerous excellent books on this topic, noteworthy examples being: *The Poisonous Cloud: Chemical Warfare in the First World War* by Ludwig Fritz Haber and *Gas and Flame in Modern Warfare* by Maj. S. J. M. Auld.⁹

The experience of the 1st Engineers is representative of many units during WWI. The unit suffered 817 casualties, including 88 killed in action. More than a third of the casualties were "Gassed In Action," or "G.I.A."¹⁰ The nonfatal injuries from gas exposure were certainly debilitating, and casualties were evacuated to field hospitals in the rear to recuperate, if such evacuations were possible.¹¹ The 1st Engineers saw extensive service during WWI all the way until November 11, 1918, when the Armistice was signed. Chemical warfare certainly had an impact on operations, but advances in mask design and training by 1918 provided a modicum of protection for these Soldiers as evidenced in personal accounts.¹² An excerpt from this veteran's diary concerning training prior to battle sums the incessant preparation to protect against gas attack:

One of the things drummed into our minds by our French and

British instructors was Gas. In fact so much so, that we all had the impression — one whiff — and you were dead. This mental attitude has become most annoying. One of the duties of the sentries is to give the alarm in case of gas attack. This is done by winding overgrown Klaxon horns and banging on empty brass shell cases. Some of these dugouts and bombproofs are a trifle high in odor on account of their former occupants, so added to our other discomforts is the questionable pleasure of being awakened several times every night

by some green sentry smelling somebody's feet and turning in a gas alarm. We then sit up for several hours with our masks on until somebody gets courage enough to take a sniff, our noses half pinched off by the nose clips of our masks. This had become such a nightly occurrence we finally reached the stage where we woke up, took a sniff and went back to sleep again.¹³

Despite the passage of time, it is important to draw lessons from this relatively small unit, its casualties and current policies with regard to chemical weapons. Developments in protection against chemical weapons today include modern suits and gas masks such as the Joint Service Lightweight Integrated Suit Technology designed to protect up to 24 hours against all known chemical — and biological — agents. In the area of training, even though the experiences highlighted by

the 1st Engineers do mock over-preparation, Soldiers knew how to don their gear and react to an alarm, even if that alarm was false. This training prepared them to conduct military operations despite fear of gas attack.

Today, many nations have militaries capable of operating in a contaminated environment. This aptitude is primarily due to countermeasures adopted during Cold War experimentation with some of the most deadly chemical weapons known. For example, the U.S. Army Chemical Biological Radiological and Nuclear (CBRN) School and the NATO Joint CBRN Defence Centre of Excellence in Vyskov, Czech Republic, are symbolic of the concerted efforts to counter the entire range of CBRN threats and build upon lessons painfully learned nearly a century ago. For example, the Defence Centre hosts a multinational NATO military body sponsored by the Czech Republic, Germany, Greece, Italy, Romania, Slovakia, Slovenia and the United Kingdom,



A worker puts on a protective suit in 2008 at a chemical weapons incinerator in the U.S. that destroyed chemical munitions produced during the Cold War.

THE ASSOCIATED PRESS

while offering recognized expertise and experience for the benefit of the Alliance. Defense and protection have helped render obsolete the use of chemical weapons. Ironically, even though chemical weapons reached their peak of virulence during the superpower rivalry of the Cold War, nonstate actors using these weapons are now the main potential threat.

Protection and training alone cannot fully address the danger posed by chemical weapons. In WWI, despite rigorous training, the 1st Engineers still suffered a third of their casualties from chemical warfare. Even with the state-of-the-art protective gear available in 1918, chemical warfare still had a dramatic impact on the overall effectiveness and capability of this unit to sustain operations.¹⁴ Dealing with these casualties and sending replacements created huge medical and logistical burdens.¹⁵ A defining lesson from the American experience in World War I is that, ultimately, the U.S. and most of the rest of the world would change doctrine and policy toward the production and use of chemical weapons.

American and international policy evolved over time from a chemical weapon “no first use” policy adopted by signatories of the 1925 Geneva Protocol, to renunciation of the weapons and then agreement for their destruction.¹⁶ Even with the end of WWI and the perceived public outcry against such weapons, countries around the globe built huge stockpiles of chemical weapons. The temptation, regardless of justification, to use chemical weapons has been wrestled with by our senior military and political figures throughout history.

Even the well-admired Gen. George. C. Marshall considered resorting to chemical warfare against the Japanese during the last stages of WWII.¹⁷ U.S. chemical weapons were stockpiled in large quantities in Europe until 1990. Even greater stockpiles of chemical weapons, including the most toxic types such as VX, Sarin and Soman, were housed in places such as Kizner and Shuchye in the Russian Federation. These stockpiles are now being destroyed. The deadly legacy of chemical weapons still haunts us today. Only by eliminating this class of weapon among states has the world become safer.

Great progress toward elimination is evidenced by the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, or CWC. Nearly 190 nations have signed the CWC. Six states (Albania, India, Iraq, Libya, the Russian Federation and the United States) have pledged the destruction of some declared 71,194 metric tons of chemical weapons, including 8.67 million munitions. The largest declared stockpiles are found in Russia and the United States and appear to be on track for verifiable destruction by 2017. It took some 80 years before WWI’s deadly legacy was truly confronted by almost all nations. There are a handful of nations that are not yet signatories to the CWC.¹⁸

Nonsignatories are outlying states such as North Korea and Syria that have yet to understand that these weapons are truly the lance of the last century. They have little practi-

cal military application today except among nonstate actors that ascribe to few if any international laws and conventions. Today, there remains a genuine concern about nonstate actors or terrorists using chemical weapons, but states themselves are well on their way to eliminating them.¹⁹ The lessons of 1918 force us to address the chemical weapons threat with a dual approach: protection and elimination.

The young American Soldier’s WWI recollections, and the battlefield experiences of his engineer unit, are emblematic of the pragmatic and determined effort to protect our Soldiers, and now our sovereignty, from chemical weapons use by any other nation. It also remains a tangible goal for almost all states to eliminate the threat of such chemical weapons almost 100 years after our first large-scale experiences with them. Nation states are almost universally committed to the renunciation of these weapons and their destruction, but there will always be a need for protection against potential future use, perhaps by terrorists. And we cannot be as unprepared as those first Soldiers in 1915. □

¹Pvt. Russell M. Lee, *Unofficial Recollections*, personal diary of his experiences during World War I, 1917-1919, E Co, 1st Engineers (unpublished original source).

²A term often cited in reference to biological and chemical weapons such as by Reves, Daniel, in *The Ethics of Chemical and Biological Weapons*, retrieved October 1, 2010, from <http://www.scu.edu/ethics/publications/submitted/reves/weaponry.html>

³Defense Ammunition Center, U.S. Army Technical Center for Explosives Safety, *Munitions At Sea*, 2008, 1-11.

⁴Michael Duffy, *Weapons of War — Poison Gas*, August 22, 2009, retrieved October 25, 2009, from <http://www.firstworldwar.com/weaponry/gas.htm>

⁵*Ibid.* The British were the first to take retaliatory action using chlorine gas on September 24, 1915.

⁶Maj. S. J. M. Auld, *Gas and Flame in Modern Warfare* (New York, BiblioLife reprint of 1918 original, 2009), 21-22.

⁷*History of the 1st U. S. Engineers 1st U. S. Division*, Library of Congress Control No. 55053914 (published/created: Coblenz, Germany, 1919).

⁸Tim Cook, *No Place to Run, The Canadian Corps and Gas Warfare in the First World War* (Ottawa, University of British Columbia Press, 2000), 3-6.

⁹Ludwig Fritz Haber, *The Poisonous Cloud: Chemical Warfare in the First World War* (Oxford, Oxford University Press, 1986), and Maj. S. J. M. Auld, *Gas and Flame in Modern Warfare* (New York, BiblioLife reprint of 1918 original, 2009).

¹⁰*History of the 1st U. S. Engineers 1st U. S. Division*, Library of Congress Control No. 55053914 (published/created: Coblenz, 1919), 162-172. A listing of all 1st Engineers who served in WWI, their hometown and especially if wounded, killed or gassed is found here.

¹¹*Outlines of Histories of Divisions, U. S. Army, 1917-1919*, prepared by the Historical Section, the Army War College (on file, Historical Section, the Army War College). *Report of Medical Department activities, 1st Division*, prepared under the direction of division surgeon (also on file, Historical Division, Surgeon General’s Office, undated but covers the period 1917-1919).

¹²Maj. S. J. M. Auld, *Gas and Flame in Modern Warfare* (New York, BiblioLife reprint of 1918 original, 2009), 26-42.

¹³Pvt. Russell M. Lee, *Unofficial Recollections*, personal diary of his experiences during World War I, 1917-1919, E Co, 1st Engineers (unpublished original source).

¹⁴Maj. (P) Charles E. Heller, U.S. Army Reserve, *Chemical Warfare in World War I: The American Experience, 1917 – 1918* (Fort Leavenworth, Kansas, Combat Studies Institute, U.S. Army Command and General Staff College, September 1984), Chapter 5.

¹⁵Brief Histories of Combat Divisions, the 1st Division, (1) Outlines of Histories of Divisions, U. S. Army, 1917-1919, prepared by the Historical Section, the Army War College (on file, Historical Section, the Army War College).

¹⁶John Ellis van Courtland Moon, U.S. Chemical Warfare Policy in World War II: A Captive of Coalition Policy?, *The Journal of Military History*, Vol. 60, No. 3, July 1996, 495-511. Biological Weapons Control and Warfare Elimination Act of 1991, Public Law 102-138, 22 USC 5601.

¹⁷G.C. Marshall, *Marshall Memorandum for Admiral Leahy, June 21, 1945* (GCMRL/G. C. Marshall Papers [Pentagon Office, selected]), and #5-169 *Memorandum for General Hull dated July 3, 1945* (Washington, D.C.), retrieved from <http://www.marshallfoundation.org>

¹⁸Organization for the Prohibition of Chemical Weapons, *Draft Report of the OPCW on the Implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction in 2008, Fourteenth Session* (The Hague, Netherlands, July 16, 2009).

¹⁹Sen. Susan M. Collins, Opening Statement of *World at Risk: A Report from the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism* (Washington, D.C., Committee on Homeland Security and Governmental Affairs, December 11, 2008), 1-6.