The U.S. Army Chemical Corps: Past, Present, and Future

By Admin

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Today, newspapers and news desks use the words "weapons of mass destruction," anthrax, smallpox, and nerve agents at least weekly, if not daily. Developing defenses against these unconventional weapons has been the mission of the U.S. Army Chemical Corps since its inception in 1917 as the American Expeditionary Force's Gas Services. Yet, the path from the European fields of World War I to the Middle East deserts today has not been a straight or easy one. The Department of the Army has questioned the need for a Chemical Corps several times, despite the constant and growing proliferation of nation states and terrorist groups that appear intent on arming themselves with these weapons.

This article is not intended to address the broader history of chemical and biological (CB) warfare, the doctrine, tactics, or equipment developed to defend military forces from CB warfare agents, or the particular controversies that seem to crop up surrounding this poorly understood topic. Instead, this article will outline why the U.S. Army developed a Chemical Corps, what triumphs and failures the Chemical Corps has endured, and some interesting facts about the Chemical Corps leadership. Finally, the article will answer the ultimate question: Why today a Chemical Corps?

Modern chemical warfare can be viewed as being born in World War I, with the German Army's successful use of chlorine gas on the fields of Ypres, Belgium, in April 1915. While the Germans, British and French lobbed chemical rounds at each other in the successive years of the war, the U.S. Army remained completely unprepared for this new weapon system up to the American Expeditionary Force's arrival in France in the summer of 1917. GEN John J. Pershing appointed his chief engineer, Lieutenant Colonel Amos Fries, to form a Gas Service to train and equip his forces and to develop an offensive capability using British and French equipment. Back in the States, the War Department created the Chemical Warfare Service in June 1918 to organize the development of offensive munitions and defensive equipment (gas alarms and gas masks, primarily). MG William Sibert, the architect of the Panama Canal and former commander of the 1st Division, became the first chief chemical officer of the Chemical Warfare Service. The Army built four chemical warfare agent production plants on the grounds of Edgewood Arsenal in Maryland to produce chlorine, chloropicrin, phosgene, and mustard agent, producing more than 1,600 tons of agent by the end of the war. None of it, however, made it overseas prior to the end of the conflict. By the end of the war, the Chemical Warfare Service would include 1,680 officers and 20,518 enlisted personnel. Its insignia, designed in 1917, was a pair of crossed chemical retorts with a benzene ring in the center denoting its laboratory roots.

The First Gas Regiment, formerly the 30th Engineer Regiment (Gas and Flame), would use British Stokes mortars and Livens projectors, and French artillery batteries, to employ thermite, high explosives, and chemical rounds during operations in Europe. Many U.S. commanders were reluctant to use chemical weapons, not having any experience in the highly weather-reliant weapon system and fearing German retaliation against their use. Regardless, the German gas attacks occurred, and eventually American forces responded in kind. Nearly one third of American casualties were gas-related, numbering about 70,000 in all, of which about one in sixty gas cases was a fatality. GEN Pershing noted "whether or not gas will be employed in future wars is a matter of conjecture, but the effect is so deadly to the unprepared that we can never afford to neglect the question." While most military commanders would agree with that sentiment, their actions belied this wisdom.

Congress made the Chemical Warfare Service a permanent part of the Army in 1920, with duties to continue "the investigation, development, manufacture or procurement and supply of all smoke and incendiary materials, all toxic gases, and all gas defense appliances…" This endorsement was against the recommendations of Secretary of War Newton Baker and Army Chief of Staff Payton March, both advocates of eliminating the Army's new chemical warfare capability. Amos Fries was promoted to major general and took over the Chemical Warfare Service in 1920. The interwar years were lean times for the Chemical Warfare Service. Indeed, the entire U.S. Army had been drawn down, and the Chemical Warfare Service worked closely with commercial chemical industries and the agricultural sector so that its personnel could maintain their skills. Still, its numbers dropped to less than 500 military and 1,000 civilian personnel.

The Geneva Convention of 1925 attempted to limit first use of chemical weapons, but allowed nations that were attacked with chemicals the right of retaliation. The U.S. Senate refused to ratify the treaty, voicing the concern that the nation needed an ability to protect itself through the development of an offensive capability. Between 1930 and 1941, the Chemical Warfare Service focused on refining its production of chemical warfare agents and developing better delivery systems. This included adding rifling to the Stokes mortar and creating the Army's 4.2-inch mortar for the delivery of chemical warfare agents, smoke, and high explosives. Gas bombs were developed to take advantage of the creation of bomber forces, predicted by many to be the decisive combat arm of the next war. In 1934, the Chemical Warfare Service received approval for its distinctive unit insignia, a green dragon breathing flames, and its motto–*Elementis Regamus Proelium*–"Let Us Rule the Battle by Means of the Elements."
While the Chemical Warfare Service had been modernizing its offensive and defensive capabilities, the U.S. Army remained unprepared for a conflict featuring chemical or biological warfare agents. More focused on developing modern armor, artillery, and airborne tactics, the Army leadership had ignored the Italian use of mustard agent in

Ethiopia and the Japanese use of CB weapons in China. When formal war was declared in December 1941, the United States faced enemies on opposite sides of the world, both with CB weapons capabilities. President Franklin D. Roosevelt announced a "retaliation in kind" policy in June 1942, but in reality, this was a hollow threat–the U.S. Army had virtually no chemical weapons stockpiles and absolutely no biological warfare capability. The result of this declaration was the rapid investment in military infrastructure, notably numerous chemical ammunition plants, testing grounds, and defensive equipment production plants. The Army established Pine Bluff Arsenal, Arkanas; Rocky Mountain Arsenal, Colorado; Dugway Proving Ground, Utah; Plum Island, New York; Camp Detrick, Maryland; Camp Sibert, Alabama; and Camp Beale, California, among other CB warfare installations. By the end of the war, the Army had manufactured and shipped more than 146,000 tons of chemical warfare agents overseas for potential retaliation against German or Japanese use. Limited stocks of anthrax were created at Camp Detrick and sent to the United Kingdom prior to D-Day as a stand-by retaliatory capability.

More than 400 chemical battalions and companies were created during the war, numbering more than 60,000 military personnel at the peak of enlistment. American troops deployed with gas masks, impregnated suits, and information cards detailing the signs and symptoms of gas poisoning. Decontamination units landed right behind the infantry on the invasion beaches, prepared to clean the beachfronts for the troops if the Germans used chemical weapons to counterattack.

Indeed, the Germans had stockpiled more than a quarter million tons of chemical agents, including thousands of tons of nerve agents. While chemical mortar battalions were prepared to use chemical weapons, they were employed more as infantry commanders' hip-pocket artillery support. Chemical smoke generator companies also supported combat river crossings and port survivability with large area smoke missions.

While the military had developed plans to employ chemical weapons as an aspect of the invasion of Japan, the use of atomic weapons against Hiroshima and Nagasaki concluded the conflict without their use. The question of why CB weapons were not used in World War II is always one of great complexity. Some would believe that it was a question of the morality of CB weapons, but the discussions of military leaders such as Winston Churchill do not reflect that aspect. Rather, it may be that the warring nations were reluctant to employ CB weapons due to the desire to avoid the trench warfare and stalemate of the Great War. Certainly the major combatant nations invested in CB weapons and defensive material, just in case the other side started using them first. The discovery of nerve agents in Germany was undoubtedly a factor following the war in Congress's decision to maintain the Chemical Warfare Service (again, against the suggestions of the War Department, already moving to develop its atomic force). On 2 August 1946, Congress codified the Chemical Corps as an official branch within the Army.

Both the United States and the Soviet Union began an intensive research and development effort into CB weapons, beginning with the new nerve agents tabun, sarin, and soman. It would take years to develop these agents into weapon systems and to develop defensive measures against this new class of agent. The Korean War initiated concerns that U.S. forces in Korea and Japan might face CB weapons supplied by the Soviets. These concerns caused a new wave of investment into the development of CB weapons stockpiles and defensive training, along with the activation of a new training center and school at Fort McClellan, Alabama. Again, while there was no CB warfare initiated during the Korean War, the Chemical Corps supported the Army's combat operations. The 2d Chemical Battalion supported tactical combat operations with smoke obscuration and high explosives mortar support. The Chemical Corps built upon its development of incendiary munitions during World War II to support the use of napalm on the peninsula. The 4.2-inch chemical mortar would become so beloved by the infantry that they took control of the weapon system and the chemical mortar units in 1952.

Following the end of the Korean War, the Army initiated a revitalized effort to develop CB weapons for all of its weapon systems and maintain a robust tactical offensive capability. The Air Force, Navy and Marine Corps also expressed interest in developing CB weapons for their own platforms. Increasing concerns about the Soviet CB warfare capability and a desire to avoid nuclear warfare resulted in the development of a joint test center at Dugway Proving Ground and numerous open air tests of CB agents and simulants to better understand their potential effects on future battlefields. One of the largest open-air project was Project 112, which included Project Shipboard Hazard and Defense (SHAD). These tests, conducted between 1963 and 1969, were designed to better understand the nature of CB weapons and how to develop better defenses against them. The high casualty count of the Korean War had also initiated the development of incapacitants, riot control agents, and herbicides, to develop tools that could accelerate the capitulation of the enemy without massive casualties.

In Vietnam, the Chemical Corps continued its support of combat operations through the employment of incendiary munitions, herbicides, riot control agents, and other efforts. The heavy use of herbicides and riot control agents would bring a storm of criticism upon the Army, with some critics suggesting the United States was violating the Geneva Protocol with the use of these chemical agents. While herbicides and riot control agents may be chemical in nature, they had not been (nor are they now) considered chemical warfare agents. Nonetheless, the storm of controversy resulted in a presidential executive order that prevented the employment of riot control agents by military forces without presidential approval.

A number of events occurred in the late 1960s that would result in the near-death of the Chemical Corps. The furor over the use of napalm, riot control agents, and herbicides in

Vietnam continued to draw public debate against the Chemical Corps. In March 1968, the Army was accused of causing the incapacitation more than 4,000 sheep near Dugway Proving Ground as a result of a VX-spray open air trial. While the evidence was inconclusive, the Army agreed to settle the case and pay off the ranchers. Operation CHASE (Cut Holes and Sink 'Em), a program to dispose of conventional and chemical munitions 250 miles out at sea, came to light, causing consternation that chemical agents would wash up onto the shore or that the ocean environment would be harmed.

In 1969, the United Nations issued a report calling for the elimination of CB weapons stockpiles worldwide. In the same month that the report was released, twenty-three U.S. soldiers in Okinawa were hospitalized due to exposure to low levels of nerve agent. This incident was the first public acknowledgement that the United States had chemical weapons stockpiles overseas. President Richard Nixon renounced the use of biological weapons and reaffirmed the U.S. policy of "no first use" of chemical weapons in November 1969, based upon the results of a National Security Council study executed that year. Congress significantly increased its interest in military CB weapons and passed a public law severely restricting open air CB agent training and testing.

These background issues had considerably raised the heat on the Chemical Corps, but no one was prepared for what happened next. In the summer of 1972, President Nixon announced the nomination of GEN Creighton Abrams as the next Chief of Staff of the Army. That same summer, GEN Abrams and a group of officers examined the difficult issue of reforming the post-Vietnam Army, which included the reduction of the Army's strength by a third. On the same day that he was sworn into office (16 October 1972), the new Chief of Staff fired off a memorandum to the Deputy Chief of Staff for Personnel to chair an ad hoc study group with the purpose of developing options to consolidate the Chemical Corps into other branches of the Army, with a deadline of 30 November 1972. The group's final recommendations included reducing the Chemical Corps as a special weapons department under the Ordnance Corps, moving the smoke and flame mission to the Engineers, and the protective clothing mission to the Quartermaster Corps. The Chief of Staff accepted these recommendations on 15 December, and Secretary of the Army Robert F. Froehlke agreed. The announcement to disestablish the Chemical Corps came on 11 January 1973.

This came as a huge shock to the rank and file of the Chemical Corps. When a colonel at Rocky Mountain Arsenal asked why this had happened, Abrams responded that the combat arms were the ones that had to live and die on the battlefield, and it was their responsibility–not some technician's responsibility–to make sure they had a defensive capability against CB warfare agents. The Chemical Corps had become too technical, focused on laboratory and proving ground work, and were not seen as true combat support forces as the engineer and aviation units had become. The decision to disestablish the Chemical Corps had to go to Congress for final deliberation, as Congress had established

the Chemical Corps in 1946 as a permanent part of the Army. Fortunately, Congress chose not to act immediately.

GEN Abrams died in office in 1974, and the results of the Arab-Israeli war on 1973 had come to show an increased interest on the part of the Soviet Union to develop defensive CB warfare equipment. As the United States had practically renounced its interest in this area, the concern was that the Soviet Union was planning to maintain that offensive and defensive capability for use in Europe. Secretary of the Army Martin Hoffman withdrew the earlier recommendation to disestablish the Chemical Corps, and Chief of Staff GEN Bernard Rodgers authorized the resumption of commissioning officers in the Chemical Corps in October 1976. It was not until 1980 that the Army ChemicalSchool reopened at Fort McClellan and the research and development efforts at Edgewood Arsenal were back into full swing.

The 1980s was a renaissance era for the Chemical Corps, seeing a significant jump in the activation of chemical companies and detachments, development of new doctrine and training, and development and production of new protective masks, protective clothing, chemical detectors, collective protection equipment, and decontamination systems. Biological detection was still considered too tough of a nut to crack, but efforts were ongoing. These efforts paid off when, in August 1990, Iraq invaded Kuwait and President George H.W. Bush called for U.S. forces to respond. While the focus of the military had always been on the Soviet Union, here was an adversary with a proven chemical warfare capability and a suspected biological warfare capability.

In August 1990, there were few chemical defense specialists, extreme shortfalls of critical equipment, and few trained troops present in the Presian Gulf region. Because of a fortuitous six months of preparation, the coalition forces were able to field a trained and prepared force that was prepared for a CB contaminated battlefield. The expected attacks never came, although many false alarms kept soldiers' nerves on edge. More than 4,000 chemical defense specialists were in Saudi Arabia, Kuwait, and Iraq, with new capabilities such as biological sampling systems, stand-off chemical agent detection, and new NBC reconnaissance vehicles. This depth of expertise is a primary reason why the Defense Department could say that U.S. forces had not been exposed to any offensive CB attacks from the Iraqi forces during the conflict. While there were chemical munitions blown up at the Khamisiyah depot in early March 1991, it is highly unlikely that any soldiers received dosages of nerve agents that would cause any ill effects. Several current medical studies have also stated the total lack of any evidence to connect Gulf War illnesses to any CB agent exposure.

The lack of CB warfare during the Persian Gulf conflict caused perhaps more questions than provided answers. One fault noted by Congress was the lack of uniform CB defense

equipment across the force, a fault that had caused considerable grief in the first few months of the crisis. In 1994, Congress passed a law that forced all the services to combine their efforts into a single budget line that would be overseen by the Office of the Secretary of Defense and run by the Army as the DOD Executive Agent. This executive agent role had actually existed since 1975, but granted no authority to force a standard set of equipment onto the other services. The result of this action has significantly improved the services' CB defense capabilities by creating common detectors, warning and reporting software, protective ensembles, medical consumables, decontaminants, and collective protection equipment. There are few if any examples of such a successful joint program within the Defense Department.

The results of the joint CB defense program were most visible during Operation Noble Eagle and Operation Iraqi Freedom. U.S. Central Command had a wide assortment of military specialists and new CB defense capabilities to protect their forces against potential CB agents, including new protective clothing and masks, new chemical detectors, and a state-of-the-art biological detection capability. While the decontamination systems and collective protection equipment remained less than adequate, overall the force had a much greater capability than it had ten years previously. It should not need to be stated that everyone expected Saddam Hussein to direct the use of CB weapons in a "last-gasp" regime survival effort, yet once again, no CB weapons were used. This may have been in part due to the coalition's total domination over the battle space that prevented any delivery systems from employing CB warfare agents.

So here the Army is today, having avoided any CB warfare conflicts for more than 80 years– why then do we need a Chemical Corps? While Russia has promised to eliminate its CB weapons stockpiles, the threat of CB warfare continues to proliferate with smaller nations. Despite the existence of treaties holding nations to not use these weapons, our forces will continue to require a strong counter proliferation capability, which includes the capability to defend against the use of CB warfare agents. History has shown repeatedly that it is those countries without a defensive capability that are often attacked with CB weapons. The use of CB weapons is not a question of morality; nations use these weapons because they can significantly reduce the length of a conflict against their neighbors or even cause major powers to hesitate in any planned interventions. In this age of increasing deployments and engagement in non-nuclear conflicts, the threat of CB warfare will continue.

The recent concern over terrorist possession of CB warfare agents, to include toxic industrial chemicals, has resulted in a DOD-wide installation preparedness program with the intent of hardening U.S. military installations and facilities against chemical, biological, radiological, and nuclear (CBRN) hazards. Traditionally anti-terrorism efforts have focused on conventional threats. DOD installations and facilities are now increasing their focus on less

probable, but high consequence incidents that involve CBRN hazards. The Chemical Corps, as the DOD executive agent for CB defense, is leading in the development of specialized doctrine, training, and equipment to address this unconventional threat that is now appearing in a domestic, peacetime environment.

Similarly, homeland security concerns have driven home the need to develop an executable strategy to protect civilians and critical infrastructure against these same potential terrorist CBRN hazards. While the Department of Homeland Security and the Department of Health and Human Services may have the lead, they lack the subject-matter experts to appropriately address these threats. In both the military and civil anti-terrorism scenarios, CBRN hazards are not the most likely threat, but their unexpected use will have high consequences.