



The Chemical Corps in Action: Meeting the Challenges of the Contemporary Operational Environment

By First Lieutenant John T. Russell

After the attacks of 11 September 2001 and the insurgency in Iraq, the Chemical Corps had to adapt to the rapidly changing threats, hazards, and challenges posed by contemporary warfare. The legacy force of the Chemical Corps prepared for large-scale chemical and biological warfare during the Persian Gulf War in 1991. While well-prepared for chemical and biological attacks by a large army of uniformed enemy, the legacy force needs to be transformed into a more adaptable, more deployable, and more independent force in order to support the Army's response to both conventional warfare and small-scale terrorist attacks. Brigadier General Stanley H. Lillie's vision for the Chemical Corps is for "the Army to have the capability to operate and function completely unhindered by a threatened or real CBRN environment. This ability will allow the combatant commander to deploy and use his forces at 100 percent efficiency. To achieve this level of proficiency, we must provide our fighting forces the training, equipment, and expertise they require."¹ In order to achieve this vision, the Chemical Corps must develop new equipment, training, and battlefield information systems to prepare for chemical, biological, radiological, and nuclear (CBRN) attacks in the contemporary operational environment.

In this new environment, the front lines of the Cold War and the Persian Gulf War no longer exist. Terrorists pick the time and place of attack, blending in with the local populace to avoid detection before the attack and to evade pursuit afterwards. All Soldiers are targets, especially lightly armed and armored combat support and combat service support units. New chemical Soldiers must learn practical deployment skills,

Warrior Ethos, and problem-solving abilities to best advise their commanders on both industrial hazards and small-scale terrorist CBRN attacks. Lessons learned from the hunt for weapons of mass destruction (WMD) in Iraq point toward the need for a more adaptable and informed chemical staff and integrated chemical companies and technical escort units. In order to leverage these lessons learned, the Chemical Corps must develop new equipment, advanced training, and battlefield information systems to research CBRN and industrial hazards and decide how to respond to them.

In October 2003, 1st Battalion, 32d Infantry Regiment (1-32), 10th Mountain Division (Light Infantry) assumed the responsibility to guard a power plant and munitions factory. During their initial patrol of the munitions factory, Soldiers of 1-32 Infantry discovered a large vat filled with green, scum-covered water that had rusting barrels floating



Rusting barrels floating in fetid water at a munitions factory

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on the surface. There, they also found a room filled with mortar shells and open tops lying on the ground. The Soldiers noted a vapor forming off the nearby mortar shells and observed that the shells were filled with a black resin. The Soldiers became immediately suspicious and requested chemical support.

As there was not a chemical unit available, the battalion chemical officer gathered the nuclear, biological, and chemical (NBC) NCOs from the line companies and conducted a chemical and radiological reconnaissance. The chemical Soldiers found negative results in the pool, on the barrels, and on the mortars. These are all good tests for specific CBRN agents. However, the negative results could not be used to identify the substances. The team was unable to determine if the mysterious barrels represented a hazard to Soldiers and the local populace or if they would be useful to enemy insurgents in attacks against coalition forces.

The lack of ability to identify these substances meant that the chemical staff could not provide the commander with enough hard information to determine priorities for the site. Was it more important to secure the site twenty four hours a day, seven days a week, or was it more important to conduct route clearance patrols? Could the site possibly provide hazardous materials to the enemy at this one of many questionable sites, or was it more important to secure the roads? The issue came down to how the commander wanted to use his limited combat

power to best bring the fight to the enemy—and he should have had expert advice from the chemical staff to aid that assessment. Lacking any quantitative information, the chemical staff fell back on common sense and recommended to the commander that Soldiers should avoid that part of the munitions factory to avoid potential vapor hazards and that the thousands of live shells stored at the factory were probably more of a threat than the unfinished pieces.

The staff followed up with a request for Fox reconnaissance vehicle support. Unfortunately, no technical escort units were available to conduct a more detailed analysis of the munitions factory. A Fox reconnaissance team eventually checked for WMD, which also returned a negative result. The Fox team returned a second time after the Fox systems had been upgraded, and it was determined that the material in the shells was phosphorous, used for incendiary mortar rounds. The common sense approach turned out to be the right answer after all.

Although the Fox support was great when it arrived, the chemical Soldiers needed more information faster than the recon units could provide it. The Soldiers did not have the equipment, the training, or the information references to properly assess an industrial hazard. No one at the company, battalion, or brigade levels knew what to look for at the munitions plant. Theater-specific information, like how to tell the difference between a chemical artillery

shell and a conventional artillery shell, was not available. Further, no one knew the specific details of how to tell the difference between a normal Iraqi munitions factory and a factory that produced chemical weapons. A quick reference sheet on munitions and on industrial sites would have gone a long way to assist the Soldiers in assessing industrial sites for potential hazards. Chemical staff and company NBC NCOs need the ability to perform quick assessments of industrial hazards when outside support is not available. Without any organic industrial equipment, training, or reference information, the chemical Soldiers could not provide reliable information to the commanders, who need the right answer at the right time, within hours instead of weeks.



A power plant



The legacy force of the Chemical Corps retained following the Persian Gulf War focused on providing large units, divisions, and brigades with the ability to operate in NBC-contaminated environments and the ability to decontaminate Soldiers and equipment. During the Persian Gulf War, the Chemical Corps prepared the Army to defend against missile and artillery attacks with biological and chemical weapons. The Army fielded Fox reconnaissance vehicles, XM21 remote-sensing, chemical-agent alarms (RSCAALs), and chemical-agent monitors (CAMs) to assist in the detection of nerve and blister agents.² The Army geared itself for large-scale chemical warfare. However, the contemporary operational environment of today's armed forces poses new challenges. Terrorist attacks may target industrial sites or, in the worst possible circumstances, use WMD to produce mass casualties.

Equipment must be changed to meet the new challenges posed by a post-11 September 2001 world and the contemporary operational environment. Today's Chemical Corps needs to develop portable field tools for chemical staffs and chemical units to provide reconnaissance support capable of identifying a full spectrum of hazards. Threats during the Cold War were generally known and well understood. The Army and the Chemical Corps developed equipment and capabilities to meet the specific challenges posed by the former Soviet Union. However, the uncertain battlefields of the contemporary operational environment require a more diagnostic approach. Industrial sites often are contaminated with toxic industrial chemicals (TICs) and toxic industrial materials (TIMs). In particular, industrial centers in third world countries may be vital to the surrounding community and yet still pose significant health risks to Soldiers.

Additionally, industrial sites may need to be assessed as potential terrorist targets. For example, a chlorine or ammonia factory would pose a significant hazard to Soldiers if tanks of chlorine or ammonia were damaged by a terrorist attack. Chemical Soldiers need the equipment and training to assess these hazards, and chemical units



Train yard at a power plant

need the capability to respond to them. Equipment needs to be portable, durable, and functional in any contaminated environment. The Chemical Corps should try to change unit modified tables of organization and equipment (MTOEs) and emulate local fire departments, which often have better protective gear and more adaptable, commercially available equipment.

However, the Chemical Corps needs more than just new equipment to meet the challenges on today's battlefield. To meet the Chief of Chemical's vision for "highly qualified Soldiers who are also flexible enough to adapt to any situation in any operational environment," training needs to focus on warrior tasks, hazardous materials handling, and theater-specific details of NBC weapons. Chemical Soldiers need to be flexible thinkers with a can-do attitude and warrior focus. They have a unique specialty in the Army, and they must provide both chemical expertise and warfighter prowess. According to Field Manual (FM) 7-1, "All leaders must focus training on warfighting skills, and make that training the priority."³ Emphasis in training must be on marksmanship, battle drills, and accomplishing unit missions while operating in a field environment. Training must challenge Soldiers to think on their feet and adapt to hostile situations.

Several strategies are available to achieve the dual goals of warfighter prowess and military occupational specialty (MOS) proficiency. Institutional training at the



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Chemical School needs to teach baseline knowledge of hazardous-materials handling and industrial-site analysis to Soldiers. Institutional training should also teach Soldiers the fundamentals of NBC warfare, starting at the factory and ending with the chemical shell. Soldiers need to know what an NBC manufacturing facility looks like, the methods of weaponizing agents, the foreign methods of marking NBC weapons, and the difference between a conventional artillery shell and a chemical artillery shell. WMD are the specialty of the Chemical Corps, and Soldiers need a practical, hands-on approach to become subject matter experts for their units and to have the confidence to safely handle WMD in a real situation.

Outside the schoolhouse, chemical units and staff should maximize field time to build tactical skills, MOS proficiency, and Warrior Ethos at the same time. Field training exercises provide an increasingly important opportunity to leave the mental security of a familiar training environment and take on the challenge of confidently performing missions in uncertain terrain and austere conditions. Training needs to incorporate tactical discipline with MOS proficiency—from the convoy to the decontamination line. Exercises involving military operations in urban terrain provide great opportunities to combine tactical training and response to NBC, TIC, and TIM hazards. Field exercises prepare Soldiers for war and help them to develop Warrior Ethos. According to FM 7-1, “The Warrior Ethos forms the foundation for the American Soldier’s spirit and total commitment to victory, in peace and war, always exemplifying ethical behavior and Army values.” Warrior Ethos require Soldiers to be self-sufficient and ruggedly independent. The collective security of the unit is the individual responsibility of the Soldier, and every Soldier must be ready to do his or her part. FM 7-1 directs that “Soldiers put the mission first, refuse to accept defeat, never quit, and never leave behind a fellow American.” The practical application of skills learned in a field training environment will make Soldiers and leaders confident in their abilities to perform wartime missions.

Army transformation focuses on changing to a more integrated, lighter, and more-deployable force with agility and great combat power. Part of the growth of Army transformation will be the spread of battlefield systems that will allow greater communication and greater operational independence within the commander’s intent. The Chemical Corps needs systems to allow the

decentralization of information down to the lowest levels. Chemical Soldiers need to be able to request, research, and receive information to best provide timely advice to the combatant commander. To this end, the Chemical Corps needs to be able to work together with civilian agencies like the Federal Emergency Management Agency (FEMA) and the Environmental Protection Agency (EPA) to quickly identify battlefield hazards, assess risks to Soldiers, and provide timely recommendations. Chemical Soldiers need theater-specific intelligence to inform commanders. A network of resources should be available to inform a chemical Soldier. A stateside team based at the Chemical School that could answer questions for deployed chemical staff or provide points of contact for experts in other agencies would provide an outstanding reference asset to the Chemical Corps. Fundamentally, the chemical Soldier needs all the research and support assets that a modern fire department has. Response techniques and procedures can be used from the civilian perspective to develop tactics, techniques, and procedures for chemical companies. Information will be the commodity of the future for the Chemical Corps.

The intersection of Warrior Ethos, Army transformation, nonstandard missions for chemical staff and units, and the Chemical Corps vision are a nexus for highly trained, combat-ready Soldiers; diagnostic equipment that provides up-to-the-minute analysis; and information systems to process data and provide guidance for appropriate response. The Chemical Corps must develop new equipment, training, and battlefield information systems to meet the threats posed by terrorism and WMD in the contemporary operational environment. With the right tools and the right training, chemical Soldiers will be ready for any situation and operational environment, proud to serve their country as a mission-essential branch of the United States Army. 🇺🇸

References

¹Stanley H. Lillie, Chief of Chemical, “The Chemical Corps Vision,” <<http://www.wood.army.mil/usacmls/usacmlsflash/flashindex.html>>, access date unknown.

²Albert J. Mauroni, *Chemical-Biological Defense*, Praeger Publishers, 30 August 1999.

³FM 7-1, *Battle Focused Training*, 15 September 2003.

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