

ARMY



CHEMICAL

The Professional Bulletin of the Chemical Corps

Winter 2008

REVIEW

DRAGON SOLDIERS SUPPORT FULL-SPECTRUM OPERATIONS



HEADQUARTERS, DEPARTMENT OF THE ARMY
Approved for public release; distribution is unlimited.
PB 3-08-2

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Front cover: U.S. Army photograph by Sergeant Andrew D. Pendracki

Back cover: Photograph taken during the USACBRNS change of command and change of responsibility, 28 June 2008

Army Chemical Review (ACR) (ISSN 0899-7047) is prepared biannually by the U.S. Army Chemical, Biological, Radiological, and Nuclear School and the Maneuver Support Center Directorate of Training, Fort Leonard Wood, Missouri. *ACR* presents professional information about Chemical Corps functions related to chemical, biological, radiological, and nuclear (CBRN); smoke; flame field expedients; and reconnaissance in combat support. The objectives of *ACR* are to inform, motivate, increase knowledge, improve performance, and provide a forum for the exchange of ideas. This publication presents professional information, but the views expressed herein are those of the authors, not the Department of Defense or its elements. The content does not necessarily reflect the official U.S. Army position and does not change or supersede any information in other U.S. Army publications. The use of news items constitutes neither affirmation of their accuracy nor product endorsement.

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PERSONAL SUBSCRIPTIONS are available through the Superintendent of Documents, PO Box 371954, Pittsburgh, Pennsylvania 15250-7954.

UNIT SUBSCRIPTIONS are available by e-mailing <leon.mdtaocr@conus.army.mil>. Please include the complete mailing address (including unit name, street address, and building number) and the number of copies per issue.

POSTMASTER: Send unit address changes to Army Chemical Review, 464 MANSCEN Loop, Building 3201, Suite 2661, Fort Leonard Wood, Missouri 65473-8926.

By Order of the Secretary of the Army:

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THE PROFESSIONAL BULLETIN OF THE CHEMICAL CORPS
Headquarters, Department of the Army

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Chief of Chemical



Colonel (P) Leslie C. Smith

The *Army Chemical Review* is dedicated to all Dragon Soldiers and friends of the Chemical Corps and Regiment. In June 2008, we celebrated the 90th anniversary of the Chemical Corps and Regimental Week. Many thanks to those who played a part in the Chemical, Biological, Radiological, and Nuclear (CBRN) Conference. A special thanks to Brigadier General Thomas Spoehr and Regimental Command Sergeant Major Patrick Alston for charting a successful course for the Regiment, to the Chemical Corps Regimental Association for sponsoring many of our events and for what they do for Dragon Soldiers each day, and to the National Defense Industrial Association for hosting the conference. All events were a resounding success! (See page 24.)

This issue of *Army Chemical Review* will focus on our efforts to support the Nation and Army in the era of persistent conflict. All Army leaders have stated that we will continue to be in an era of persistent conflict for the foreseeable future. As I developed this introduction, Russia had just invaded Georgia, there were no apparent CBRN incidents during the 2008 Beijing Olympics, and two hurricanes had reached the U.S. mainland in the past two months. In this era of persistent conflict and engagement, we have many questions to ask as a community: (1) What will our roles be as Chemical Soldiers, leaders, and civilians? (2) How do we ensure relevance in combating weapons of mass destruction (WMD) and chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) operations

across the eight military mission areas? (See page 5.) (3) What is the best way to maintain hazmat proficiency at each post, camp, base, or station where we have Soldiers, Sailors, Airmen, or Marines? (4) How do we integrate explosive ordnance, Functional Area 52 (nuclear counterproliferation), and CBRN communities into a better package for the Nation? (5) How do we leverage our integration into the maneuver support community (maneuver enhancement brigades) to ensure that correct capabilities are developed for the Nation? (6) How do we gain visibility on the readiness of deploying units to assist in their preparation for upcoming missions (in the continental United States [CONUS] and outside the continental United States [OCONUS])? Our ninety-year history is replete with questions like these, and I am confident that our team will answer all of them in the coming months.

All Army leaders have stated that we will continue to be in an era of persistent conflict in the foreseeable future.

From recent visits to units at Fort Lewis (Washington), Fort Bragg (North Carolina), Fort Polk (Louisiana), Fort Stewart (Georgia), and Aberdeen Proving Ground (Maryland); our civil support teams; CBRNE enhanced-response task forces; deployed units; and command headquarters in Atlanta (Georgia), District of Columbia, and other strategic locations, it was evident that our Soldiers and Civilians are making a difference. From setting the standard for training the force on CBRN hazards and mitigation to convoy, route clearance, and site exploitation missions OCONUS and to training the next concept of operations for our force, you have made a difference and will continue to make a difference. Our Nation needs your service and is grateful for what you do each day.

When Regimental Command Sergeant Major Lopez and I visit your location, we want your ideas on how to take the Corps and Army to the next level. Please use the Chemical Knowledge Network (CKN) at <https://www.us.army.mil/suite/portal.do?sp=409522> to access lessons learned and to share good ideas with each other. Our long-term goal is to develop a monthly “blog” topic that the CBRNE/combating WMD community can chew on and use to capture good ideas. We must—as the Chief of Staff of the Army, General George W. Casey, Jr., states—get rid of our “silos” (the new term for stovepipes) and look for efficient and effective ways that we can provide support to our Nation.

As the 25th Chief of Chemical, I dedicate my efforts to ensuring that Dragon Soldiers, the units they support, our Corps, and our Nation have the relevant and ready CBRN support needed to execute operations across the spectrum of conflict—from full-spectrum operations to stability, civil support, and homeland defense operations. Our Nation and her most precious resource—her sons and daughters—deserve nothing less. We are proud to serve with you!

**ELEMENTIS, REGAMUS, PROELIUM
CHEMICAL CORPS: CAPABLE NOW!**

Regimental Command Sergeant Major

Greetings to all Dragon Soldiers!

I'm honored and humbled to serve our Warriors, families, retirees, and civilians as the 11th Regimental Command Sergeant Major of our great Corps. My wife Tanya and I are happy to serve the Corps and Fort Leonard Wood. Since our arrival, we have hit the ground running and have already had many great opportunities to see Dragon Soldiers training here and abroad.

My travels started immediately after assuming responsibility. I've seen Dragon Soldiers at Fort Hood (Texas), Edgewood (Maryland), and Fort Polk (Louisiana). I'm very impressed by the state-of-the-art equipment our chemical, biological, radiological, and nuclear (CBRN) units use to perform their mission and even more impressed by how proficient our Warriors are at operating the equipment. Operations in support of future rotational unit deployments from the Joint Readiness Training Center at Fort Polk are great testaments to the hard work of our leaders and Soldiers.

Local visits have provided me with the opportunity to get acquainted with the 3d Chemical Brigade. I've seen NCOs training Soldiers to become Warriors in the Master Fox Scout (L1); Biological Integrated Detection System (L4); Nuclear, Biological, and Chemical Reconnaissance (L5); and Advanced Individual Training courses. I've seen great leaders transforming civilians into trained Soldiers. I've seen how they conduct tactical training base (forward-operating base), civilians-on-the-battlefield, and entrance control point operations. Leadership focus remains on training Soldiers to fight and win in combat. The leaders have done an outstanding job of preparing young Soldiers for their next assignments.

During the past two months, I've attended numerous briefings on various issues that directly impact and influence how our Corps operates now and how it will operate in the future—most notably, briefings presented by Command Sergeant Major George Nieves, U.S. Army North, on his agency's unique mission of conducting homeland defense, civil support operations, and theater security cooperation activities to protect Americans. Briefings from Command Sergeant Major James Barkley (Retired)—the former command sergeant major of the U.S. Army Soldier and Biological Chemical Command and the 8th Regimental Command Sergeant Major of the Chemical Corps—were also very informative. I came away with a much better understanding of homeland defense and civil support operations concentrated on the chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) consequence management response force (CCMRF) mission.

The flow of information from our senior CBRN leaders to our most junior Soldiers is crucial to our success.

I'll continue to devote many hours working with our sister services to open the door for joint training. As a team, we must open lines of communication from our school to the force, including retired and civilian partners who train Warriors. I expect all departments in our school to open communications with trainers across the CBRN spectrum, ensuring that we train to the same standard within our Active Army and Reserve and National Guard Components.

The flow of information from our senior CBRN leaders to our most junior Soldiers is crucial to our success. The commandant has sent information to the Corps—specifically to commanders. We will continue to disseminate information through leadership channels and the Army Knowledge Online at <http://www.us.army.mil> and Chemical Knowledge Network (CKN) at [https://www.us.army.mil/suite/portal.do?\\$p=409522](https://www.us.army.mil/suite/portal.do?$p=409522).

I will take this opportunity to pass on information regarding the new CBRN patch. Not all CBRN Warriors will wear this patch. Commanders of operational units dealing with civil support teams, CBRNE-enhanced response force packages, CCMRFs, Chemical reconnaissance teams, and CBRNE teams will authorize specific operators (such as those with U.S. Army North homeland defense or civil support) to wear the new patch. Therefore, few CBRN Warriors will actually wear the patch. Command sergeants major will continue to educate the Army and Chemical Corps about this new patch. (*See page 4.*)

In the next few months, many changes will take place within the senior NCO leadership at the command sergeant major level. I challenge our leaders to make the transition as easy as possible on our Warriors. In the future, the NCO Corps must continue to focus on coaching, teaching, and mentoring young officers and NCOs. Invest in the Chemical Corps. Take care of our Families, Retirees, Civilians, and Warriors.



**Command Sergeant Major
Ted A. Lopez**

Change From “GAS” Brassard to “CBRN” Insignia

On 11 August 2008, the U.S. Army Assistant Chief of Staff for Personnel (G-1) authorized a change from the “GAS” brassard to the “CBRN” insignia.

The GAS brassard wear policy, outlined in Army Regulation (AR) 670-1, paragraph 28-29b(6), will be changed to read: “Chemical, biological, radiological, and nuclear (CBRN) insignia: The subdued CBRN insignia is worn with utility uniforms by [Career Management Field] 74/Branch 74 personnel engaged in CBRN operations, domestic and in the field, when authorized by the local commander. The CBRN insignia is described as a rectangular-shaped, foliage green, embroidered hook-and-loop insignia consisting of four black letters, ‘CBRN.’ When authorized for wear, the CBRN insignia is worn attached to the left sleeve of the [Army combat uniform] coat shoulder pocket flap.”¹

The U.S. Army Chemical, Biological, Radiological, and Nuclear School point of contact for uniform wear policy is Sergeant Major Gwendolyn Evans:

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Reference:

¹Department of the Army (DA) message, “Request Change to AR 670-1 for Wear of the Chemical, Biological, Radiological, and Nuclear (CBRN) Insignia,” 11 August 2008.



New CBRN insignia

Letter to the Editor

I would like to relate how much I appreciate the insight and excellence that *Army Chemical Review* provides.

Since 9/11, the access to chemical, biological, radiological, and nuclear (CBRN) information has been severely limited. Unfortunately, much of that information is necessary to enable the professional corps of military personnel, contractors, and citizens to understand CBRN matters and defend our Country.

Let me give you an example. I am an engineer and a retired officer who works for a company that is building CBRN detectors. As you can imagine, my training and experience in the CBRN field is limited—certainly below that of a Chemical Corps person. I routinely conduct business with scientific, engineering, and military professionals across the CBRN community.

First, I have done some real scrambling to understand the biology, physics, and medical aspects of CBRN. And if that weren't enough, there has been almost no place to research applications and the concept of operations and no way to find out how CBRN agents have been or might be used offensively or defensively. The information disappeared from literature post-9/11; and the people who have CBRN knowledge are, understandably, closemouthed.

There's a real problem here. We are going to be in the CBRN world for a long, long time; and there are many players who are not Chemical Corps-trained. While technical staffs are extraordinarily smart and are trained in their respective disciplines, they often have little or no understanding of where the threat is from, how the threat is expressed, or what the effects of CBRN releases are. Some do their homework and professional reading to attain the information, but many do not. In my opinion, this gap, this shortfall, is a big problem in professional preparation and execution.

I have found the articles in *Army Chemical Review* to be remarkably informative and important. It is my job to build systems—systems that will be used by Soldiers in the field to detect CBRN agents. Your articles about CBRN events from World War I, World War II, and Korea have been remarkably illuminating! I have learned how Soldiers see the world, the “CBRN world.” And that's the bottom line, indeed. The systems I build must enable Soldiers to do the job they're trained to do.

Again, I want to say thank you for the great job you're doing with this publication. Keep up the good work!

—Robert Meffert, Lieutenant Colonel, U.S. Air Force (Retired)

CBRNE CO TMs in Support of WMD-E Operations

By Lieutenant Colonel Pete Lofy



The concept of chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) company teams (CO TMs) involves the combination and task organization of technical escort (TE) and explosive ordnance disposal (EOD) units with decontamination platoons to create a highly effective force for supporting weapons of mass destruction elimination (WMD-E) operations. This concept was put to the test during a 48th Chemical Brigade field training exercise (FTX) and during the Chemical Corps Regimental Week in June 2008.

A Modular Army

As our Army transforms to modular formations, based mainly on the combined arms formations of brigade combat teams (BCTs), CBRNE units must also adapt to support the warfighter. The concept of CO TMs (combined arms formations) is not new; commanders use combined arms to increase the effects of combat power through complementary and reinforcing capabilities.¹ Maneuver units have organized CO TMs for years, combining armor and mechanized infantry platoons to create “heavy” CO TMs. Chemical battalions have also been task-organizing chemical, biological, radiological, and nuclear (CBRN) assets into CO TMs for some time. These ad hoc “force packages” were built for specific mission sets, and they supported units training at combined arms training centers and those deployed in combat. Some of the newly transformed CBRN combat support companies are products of this thinking, combining CBRN reconnaissance and decontamination platoons to produce multifunctional CO TM “packages” designed to support BCTs, mainly in a Cold War battle. However, our current operating environment requires more flexible formations that are capable of countering a spectrum of CBRNE threats. Adapting CBRNE structures and capabilities to the modular force will ensure that CBRNE forces are available alongside warfighters in the future.

WMD-E Operations

Operational-level WMD-E doctrine for joint task force (TF) elimination operations has been established in Field Manual (Interim) (FMI) 3-90.10; however, WMD-E has yet

to be clarified in tactical doctrine. The eight military mission areas, which are described in the “National Military Strategy to Combat Weapons of Mass Destruction” and further detailed in FMI 3-90.10, consist of—

- Security cooperation and partner activities.
- Threat reduction cooperation.
- Interdiction operations.
- Offensive operations.
- Elimination operations.
- Active defense.
- Passive defense.
- Weapons of mass destruction (WMD) consequence management.

CBRNE forces are manned and equipped to provide direct support and execution of elimination operations (including the tactical tasks of isolation, exploitation, destruction, monitoring, and redirection), passive defense, and consequence management. With regard to elimination operations, CBRNE forces generally support isolation, exploitation, and destruction—leaving monitoring and redirection to contracted support or other U.S. governmental agencies.² The ability of CBRNE forces to conduct destruction operations is limited to the small-scale destruction of chemical munitions. TE units carry out these missions daily in the United States and in support of deployed operations.

This article focuses on the remaining two tactical tasks— isolation and exploitation. FMI 3-90.10 describes isolation as “. . . the overall encirclement of the [adversary’s] WMD program.” Some argue with the exact wording of this definition, but it provides a starting point. Presumptive identification, which is a subtask of isolation, is carried out by CBRNE forces. These CBRNE forces could be organic to the maneuver force (such as the CBRN reconnaissance platoon of the BCT), or they could be task-organized, specialized forces (such as TE or mobile analytical laboratories). Presumptive identification gives the combatant commander an initial indication of whether or not WMD material is located at the site; it is only the initial step in verifying whether WMD actually exists.

According to FMI 3-90.10, “The intent of exploitation is to gain an understanding of an adversary’s WMD programs and capabilities to attribute and connect to the adversary’s network, which may determine future targets; collect evidence of a WMD program; and provide protection from immediate WMD threats, if required.”³ Again, some may argue with this description; but it also serves as a starting point. This brief discussion of WMD-E operations provides a backdrop for developing the structure of and equipping and training CBRNE CO TMs. The structure, capabilities, and missions of these teams can now be detailed; and we can see how they fit into WMD-E.

Evolution of CBRNE CO TMs

About one month before the 48th Chemical Brigade was activated, the skeleton brigade staff, augmented with subject matter experts and communications equipment from the 20th Support Command (CBRNE), participated in a major command post exercise (CPX) that involved WMD-E operations. We realized that, given the limited number of TE units, we would need to leverage the numbers and capabilities of Soldiers in conventional CBRN units to accomplish WMD-E on a broad scale. This exercise was the first opportunity to put the theoretical construction of the CBRNE CO TM into practice—at least in the world of simulation. The thought and planning that went into the development of these teams was energy well-spent.

During this exercise, the list of possible WMD or sensitive sites was long. The mission of TF 48 (the 48th Chemical Brigade task-organized with appropriate combat support and combat service support units), battalion TFs, and CBRNE CO TMs was to control WMD by conducting WMD-E operations at these sites. The mission was accomplished by task-organizing available assets to form CBRNE CO TMs based on the WMD sites assigned to them. Because no two sites were the same, neither were any two CBRNE CO TMs the same. While some sites lent themselves to chemical or biological storage or



A CBRN CO TM prepares for missions during the 48th Chemical Brigade FTX.

production, others were “stockpile heavy” sites, requiring more manpower for elimination. Some sites were very large in scale and scope, requiring the complementary technical expertise of TE and EOD units and the reconnaissance capability of Soldiers in a decontamination platoon. The CBRNE CO TMs planned and executed the following missions and tasks:

- CBRN reconnaissance, decontamination, and monitoring.
- Elimination.
- Disablement (limited).
- On-site analysis of WMD (CBRNE) materials.
- Munitions assessment.
- Render-safe procedures.
- Initial hazards mitigation and packaging.
- TE.

Regardless of the site type or desired end state, there were four basic components of the CBRNE CO TMs—company headquarters (TE, EOD, or conventional CBRN) for command and control and limited sustainment; chemical, biological, radiological, nuclear, and high-yield explosives response team (CRT); EOD team (three EOD Soldiers); and a “specialized” decontamination platoon. (See chart on facing page.) These decontamination platoons were outfitted with and trained on the equipment set contained in hazard response platoons currently serving in Iraq. For the purpose of this article, these specialized decontamination platoons will be referred to as chemical, biological, radiological, and nuclear protection, exploitation, and decontamination (CPED) platoons.

The TE and EOD units were equipped with highly technical, commercial, off-the-shelf equipment; and the CPED platoons were outfitted with a set of equipment similar to the Joint CBRN Dismounted Reconnaissance System, allowing the detection and identification of an array of toxic industrial materials and chemical and biological warfare agents. This equipment also allowed the performance of some exploitation tasks, including presumptive identification, sampling, and packaging of WMD



A CBRNE CO TM from the 22d Chemical Battalion trains at the First Lieutenant Joseph Terry CBRN WMD Response Training Facility.

and hazmat. CBRNE CO TMs varied in size from five or six Soldiers (who might be airlifted to conduct an assessment or quick “snatch and grab” at a site) to as many as one hundred Soldiers with augmentation from mechanized smoke and armored reconnaissance platoons (for security purposes).

The basic concept of the CBRNE CO TM was refined; and teams were provided with structure, capability, and a mission during this exercise. These CO TMs were task-organized into a combined arms team from TE, EOD, and conventional CBRN units to expand the WMD-E capabilities of the TE CRT. “Combined arms is achieved through organizational design and temporary reorganization (tailored and task-organized forces).”⁴

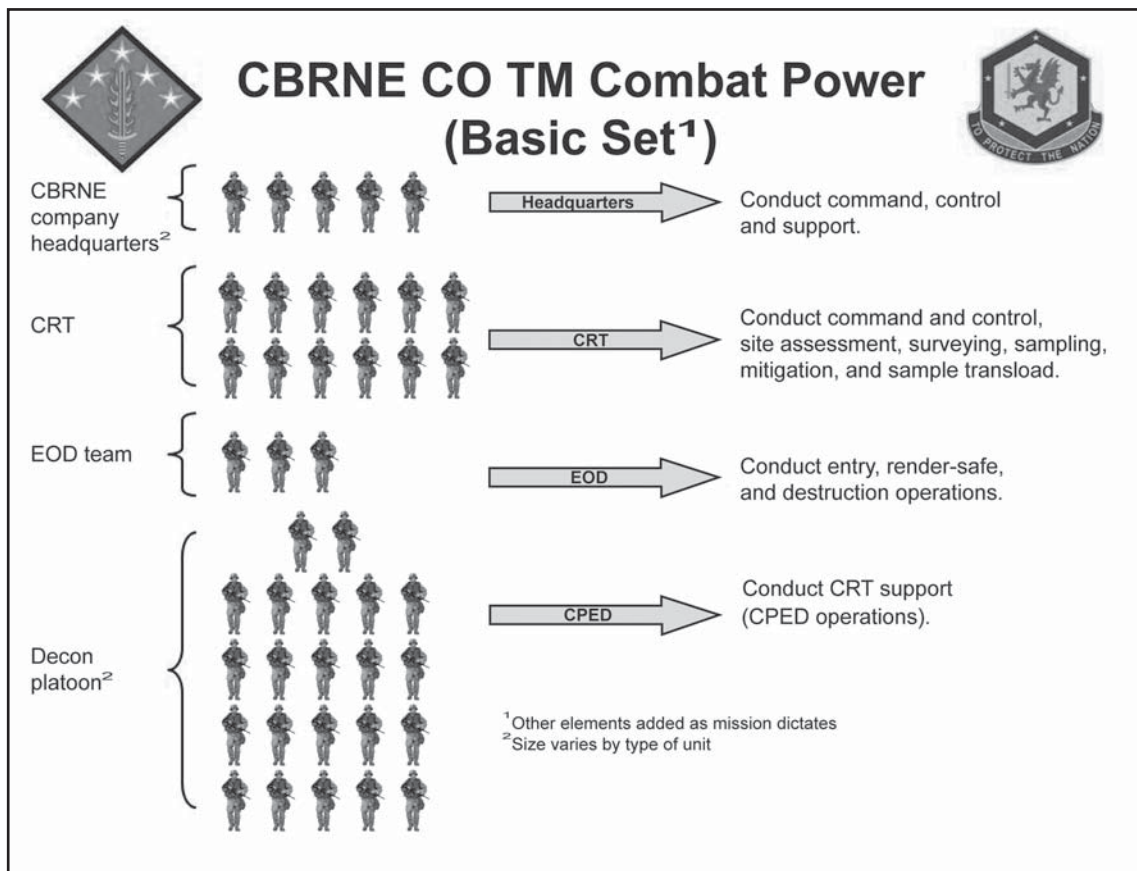
Concept to Reality

To put the theory into practice, Operation Spartan Agoge Focus I was designed to validate the CBRNE CO TM concept and develop battalion and company level WMD-E tactics, techniques, and procedures for the CBRNE CO TM, CBRNE battalion TF, and brigade. This was done under field conditions and in simulation. For the FTX portion, the 48th Chemical Brigade enlisted the support of the 2d Chemical Battalion. This battalion was transformed into a CBRNE battalion TF (TF 2) by augmentation with a TE company headquarters and CRTs from the 110th Chemical Battalion; a decontamination platoon from the 59th Chemical Company; and a cast of observers,

controllers, and others from all over the United States. TF 2 used many battalion assets to task-organize the attachments into three CBRNE CO TMs. Simultaneously, in the Battle Simulation Center at Fort Hood, battalion TF commanders built and executed simulated missions that were also valuable for furthering the concept of building and employing CBRNE CO TMs.

The scenarios used in the FTX and CPX involved various types of WMD sites (chemical, homemade explosives, biological laboratories, munitions stockpiles)—all of which were developed using lessons learned from recent military and homeland defense operations. The scenarios built for the FTX provided CBRNE CO TMs with realistic training in difficult settings such as tunnel and urban complexes.

As expected, the initial integration of CBRNE CO TMs proved to be somewhat of a challenge, as the different functional units of the team worked to determine how they fit into the newly formed organization. This challenge was overcome by the CBRNE CO TM commanders, who built units that had never been organized and utilized in this manner. In addition, there was no doctrinal basis for forming, equipping, or using these teams. After the initial challenges were overcome, the CBRNE CO TMs performed well and numerous lessons were captured during after-action reviews that occurred during and following the exercise.



CBRNE CO TM Structure

Future of CO TMs

Just weeks after the brigade FTX, the concept of CBRNE CO TMs was again tested—this time during Chemical Corps Regimental Week at Fort Leonard Wood, Missouri. The purpose of this event was to conduct a capabilities exercise (CAPEX), which would further develop tactics, techniques, and procedures and provide senior leaders with a firsthand look at the utility and capabilities of the CBRNE CO TM. The CAPEX was led by a CBRNE CO TM commander and a CRT from the 22d Chemical Battalion. The CPED platoon was from the 59th Chemical Company and had recently graduated from the CBRN Dismounted Reconnaissance Course and participated in the brigade FTX. No additional EOD team members (other than those from the CRT) were used. The 2d Chemical Battalion operations and training officer (S3) designed the challenging scenarios for the CAPEX. Again, the CO TM faced situations that were based on recently acquired intelligence.

Military and civilian visitors from the United States and foreign organizations witnessed the CAPEX, which was conducted in the First Lieutenant Joseph Terry CBRN WMD Response Training Facility and the Chemical Defense Training Facility. Both facilities provided demanding, realistic scenarios for the CO TMs, and the Chemical Defense Training Facility allowed teams to train in the presence of toxic chemical warfare agents. Again, lessons were captured and the CBRNE CO TM concept matured.

CBRNE CO TMs will train during the 48th Chemical Brigade FTX at Fort Hood in September 2008, where they will once again prove their capabilities in support of WMD-E operations.

Are CO TMs the future of CBRNE structure for WMD-E? Can this concept be applied to other CBRN formations and missions? Are the Chemical and EOD communities and their respective schools ready to support this new structure with doctrine, organization, training, leader development, materiel, personnel, and facilities? Will the CBRNE community adapt to support the warfighter in the contemporary operating environment? These questions cannot be answered here, but the success of this concept should change the way we think about CBRNE force structure and employment and make us realize that we must either evolve as our environment changes or expect to fall behind.

Acknowledgment: I would like to thank Lieutenant Colonel Mark Lee, Colonel Phil Visser, and Lieutenant Colonel Mike Dutchuk for their contributions to this article.

Endnotes:

¹FM 3-0, *Operations*, 27 February 2008.

²FMI 3-90.10, *Chemical, Biological, Radiological, Nuclear, and High Yield Explosives Operational Headquarters*, 24 January 2008.

³Ibid.

⁴FM 3-0.

References:

“National Military Strategy to Combat Weapons of Mass Destruction,” Chairman of the Joint Chiefs of Staff, 13 February 2006.

Lieutenant Colonel Pete Lofy is the S3 of the 48th Chemical Brigade. He holds a bachelor's degree in chemistry from the University of Wisconsin-Platteville and a master's degree in physical and analytical chemistry from the University of Utah.

New Developmental Counseling Course Available Online

The U.S. Army Combined Arms Center—Center for Army Leadership (CAL), Fort Leavenworth, Kansas, recently released a new online Developmental Counseling Course for all Army leaders. The course, which consists of about eleven hours of instruction, contains three modules—Types of Developmental Counseling, Leaders as Counselors, and The Counseling Process.

Field Manual (FM) 6-22, the Army's newest leadership doctrine, states that “Counseling is one of the most important leadership development responsibilities for Army leaders.” The Developmental Counseling Course is one way leaders can hone their counseling skills to prepare for greater responsibility. Since the course is online, Army leaders can work through it at a time and place convenient to them.

“There are two important reasons to improve counseling skills,” says Sergeant Major Joel Jacobs, CAL. “Counseling is one of the most important ways to develop subordinates. The second reason is that counseling helps the leader and Soldier to come to a common understanding about the mission and how it needs to be accomplished.”

Links to the Developmental Counseling Course and FM 6-22 are available on the Combined Arms Center Web site at <<http://usacac.army.mil/cac2/digitalpublications.asp>> or the CAL Army Knowledge Online (AKO) Web site at <<http://www.us.army.mil/suite/page/376783>>.

To learn more about the Developmental Counseling Course, contact Dr. Jon Fallesen, CAL, at (913) 758-3160.

Reference:

FM 6-22, *Army Leadership*, 12 October 2006.



Level A Toxic Training— A New Milestone for DOD's Only Toxic-Training Facility

By Lieutenant Colonel Daniel S. Murray (Retired)

In the Cold War, Americans lived under the threat of weapons of mass destruction, but believed that deterrents made those weapons a last resort. What has changed in the 21st century is that, in the hands of terrorists, weapons of mass destruction would be a first resort—the preferred means to further their ideology of suicide and random murder. These terrible weapons are becoming easier to acquire, build, hide, and transport. Armed with a single vial of a biological agent or a single nuclear weapon, small groups of fanatics, or failing states, could gain the power to threaten great nations, threaten the world peace.

America, and the entire civilized world, will face this threat for decades to come. We must confront the danger with open eyes and unbending purpose. I have made clear to all the policy of this nation: America will not permit terrorists and dangerous regimes to threaten us with the world's most deadly weapons.

—President George W. Bush¹

The threats faced by America have changed dramatically over the past decade. On 11 September 2001, Americans saw how they could be directly and personally affected by terrorism. No longer do the borders of the United States represent security from acts of terrorism. And no one is more aware of that than our uniformed military personnel and U.S. Department of Defense (DOD) civilian leadership who have been combating and are continuing to combat this destructive and ever-changing threat.

Terrorists wreak havoc and mass destruction with simplicity and relative ease. Perhaps most frightening is the potential for terrorists to acquire, manufacture, and employ deadly chemicals or toxic industrial materials through unconventional means and to use them against unwitting and unprotected populations at home and abroad, including the combat zones of Iraq and Afghanistan.

The chemical, biological, radiological, and nuclear (CBRN) specialists of the U.S. Army Chemical Corps (along with their counterparts in the Air Force, Navy, and Marine Corps) are primarily responsible for meeting the challenges presented by this unpredictable and potentially devastating threat.

To prepare to meet the threat of terrorism, the Chemical Corps pledged to provide a Corps and an Army capable of protecting our Nation by seamlessly operating with military and civilian partners to counter the entire range of CBRN threats and effects, while simultaneously conducting operations from civil support to war.² This is the vision behind the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) mission to train joint and international service members, develop leaders, support training in units, develop multiservice and Army doctrine, build the future CBRN force,

and function as the joint combat developer for the CBRN Defense Program.

Since late 2007, all USACBRNS professional military education (PME) course programs of instruction have been updated so that training includes hazmat certification at the technician level, with advanced individual training currently instructed at the awareness level. This initiative institutionalized the training needed to employ the toxic industrial chemical protection and detection equipment that is already in use by Soldiers in the field.

The inclusion of this certification in the programs of instruction resulted in renewed efforts to pursue the development of a Level A toxic-training capability at the Chemical Defense Training Facility (CDTF), which had been stalled by costs exceeding \$1 million. When the USACBRNS opened the First Lieutenant Joseph Terry CBRN Weapons of Mass Destruction (WMD) Response Training Facility, Level A training resources were leveraged to reduce much of the overhead costs that had defeated this initiative in the past.

Beginning in July 2007, the CDTF staff, led by Captain Rebecca Resendes, embarked on the mission of developing and implementing a Level A toxic-training program before the end of Fiscal Year 2008. Nearly simultaneously, Lieutenant Colonel Trey Johnson III, commander of the 93d Civil Support Team (CST), contacted the CDTF and volunteered to partner in the endeavor. The focus was on the development of a cost-effective capability that would support the USACBRNS PME and also serve the training needs of deployable members and units of the joint force and Army National Guard WMD CSTs to conduct full-spectrum, toxic-agent training with realistic, challenging scenarios relative to the homeland defense and War on Terrorism mission sets using Level A personal protective equipment (PPE).

The development of this training capability required a great deal of coordination. It was necessary to ensure that the CDTF Level A toxic-training plan conformed to Occupational Safety and Health Administration requirements. In addition,



A member of the 93d CST employs an Improved Chemical-Agent Monitor and MultiRAE gas meter during site characterization of a clandestine laboratory in a lethal nerve agent environment at the CDTF.

the appropriate PPE needed to be obtained. Since the CDTF did not own any Level A PPE, Lieutenant Colonel Johnson and Lieutenant Colonel Ken Kirkorian, the director of the USACBRNS Incident Response Training Detachment, provided a sufficient quantity of suits, air tanks and harnesses, breathing apparatuses, and radio headsets to outfit a seven-man CBRN response team.

The next step was to overcome two very critical hurdles—obtaining approval from the Department of the Army (DA) Safety Office to use a Level A protective ensemble in CDTF toxic training and developing internal doffing procedures designed to prevent critical unit equipment items worn inside the Level A ensemble from exposure to nerve agents so that those items could be released from the CDTF. Equipment that enters the CDTF toxic-training area must remain under CDTF control. When the equipment is no longer needed, it must be incinerated at a temperature of 1,000°F.

By early 2008, these two hurdles had been overcome and the development of a scenario tailored to 93d CST training objectives was underway. The pilot exercise called for the retooling of one of the CDTF clandestine laboratory bays, which included the introduction of a sophisticated, near-operational organophosphate distillation device and associated laboratory equipment.

The 93d CST training scenario focused on the exploitation of a suspected clandestine WMD production facility located within an abandoned warehouse complex at a continental United States location. The task was to execute survey entry operations in a toxic environment, and the objective was the characterization of site contamination through sampling. While the CDTF currently employs the nerve agents VX and sarin, the biological agent *Bacillus globigii*, and the radioactive isotope Cesium-137 (for a dirty-bomb scenario) in support of sensitive-site exploitation training scenarios, the exercise scenario for the 93d CST focused exclusively on the clandestine production of VX.

On 8 July 2008, Lieutenant Colonel Johnson and his staff from the 93d CST set up an external command and control cell adjacent to an “abandoned warehouse” (the CDTF), while the CBRN survey team, led by Captain Mike Rosner, underwent preentry medical screening and donned Level A PPE. The team was outfitted with a combination of commercial, off-the-shelf protective and detection equipment and standard Army tactical equipment.

The exercise began at 0400 with alert notification and deployment to the target location. The 93d CST executed three team entries. The first involved a site survey and characterization, which supported the refinement of the unit’s sampling and analytical scene processing plan. This was followed by the entry of two sample collection teams. Final mission preparation and medical screening was completed in advance of the first entry, which occurred at 0900. Subsequent entries were executed, and all sampling operations were complete at about 1400. The entry teams underwent decontamination and doffing in a clean area that was notionally downrange of the target site.




A member of the 93d CST collects a sample of the nerve agent VX from the components of a homemade distillation device at the CDTF.

This pilot exercise established the foundation for Level A toxic training at the USACBRNS CDTF. “We wanted to do this type of mission, validate the CDTF, and open it up to Level A—the highest level of protective gear. The success of this exercise is expected to open the door for CSTs nationally to conduct training of their survey teams here,” said Lieutenant Colonel Johnson.

The primary near-term USACBRNS objective is to integrate Level A toxic training into CBRN PME courses. This integration is expected to occur in mid-Fiscal Year 2009, but the date depends on the receipt of an organic set of Level A

equipment. In the meantime, collective training for CSTs and deployable CBRN defense units can be planned and coordinated in much the same way as the pilot exercise for the 93d CST.

This new USACBRNS capability has postured the CDTF to become the premier toxic-agent CBRN training venue in the world. It supports USACBRNS institutional training objectives and offers a modular unit, collective-training focus; full scope, multiagency collective CBRN operations; and realistic, threat-based training scenarios with unit-tailored training objectives that include chemical warfare agent and toxic industrial materials hazards.

With the expectation that our Nation will face the threat of terrorism and the use of WMD for years to come, our military and civilian leaders must continue to look for new and innovative ways to train our forces. The development of hazmat technician certification within the PME courses and Level A toxic-training opportunities at the CDTF is indicative of the USACBRNS commitment to this endeavor. 




Endnotes:


¹Remarks by President George W. Bush on Weapons of Mass Destruction Proliferation, 11 February 2004.

²“Chief of Chemical,” *Army Chemical Review*, January–June 2007.

Lieutenant Colonel Murray (Retired) served as a Chemical officer for more than twenty-one years and has been the CDTF director since 2004. He holds a master’s degree in military art and science for the strategic defense of ports of debarkation from the Army Command and General Staff College.

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CAL Army Knowledge Online (AKO)
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CAL Public Web Site
<<http://usacac/cac2/cal/index.asp>>

Contact us: <leav-web-cal@conus.army.mil>



Operation Dragon's Den

By Lieutenant Colonel Vasili Karatzas and Sergeant First Class Alejandro Ibarra

While conducting a dismounted patrol in an industrial district of Fallujah, Iraq, on 15 June 2007, 3d Battalion, 2d Brigade, 1st Iraqi Army Division (the 3-2-1 Iraqi Army [IA]), and their military transition team discovered several thousand five-gallon containers of nitric acid—an extremely corrosive, toxic industrial chemical associated with bomb making. The actions that transpired over the next thirty days comprised the largest hazmat remediation mission ever undertaken during Operation Iraqi Freedom.

Discovery and Reconnaissance

The chemical, biological, radiological, and nuclear (CBRN) and staff engineer (C7) environmental cells were perplexed by the magnitude of the discovery. Because previous caches had only yielded as many as 600 containers, this was a very significant find. The Multinational Force–West (MNF-W) wanted the cache removed; so following an initial reconnaissance of the site, the CBRN and C7 environmental cells developed a solution for the final disposition of the nitric acid. In the meantime, local IA patrols kept an eye on the cache until it could be moved.

On 18 June, environmental representatives from the Multinational Force–Iraq (MNF-I) and the Multinational Corps–Iraq (MNC-I) (accompanied by MNF-W environmental and IA security personnel) conducted the first site reconnaissance. The nitric acid had been discovered in a courtyard that was flanked by abandoned courtyards on two sides and a flour factory to the southwest. There was a row of garages and machine shops along the street to the north. Within the courtyard, there were two large stockpiles of nitric acid—the larger pile (along the northeast wall) consisted of about 6,000 containers, and the smaller one (along the north wall) consisted of about 2,000 containers. Both stockpiles were covered with a crude framework of corrugated metal, which was just enough to keep off the sun and rain. In places, the containers had been stacked eight-high. Some of the containers were crushed or tipped, and the leaking nitric acid was reacting with debris in the courtyard. A metal cabinet that had come in contact with the acid was dissolving. The odor was overwhelming. Other mechanical and industrial debris littered the courtyard, making working conditions a challenge.

Complications

On 21 June, MNF-W reported that the cache of nitric acid was on fire. Although nitric acid itself is not combustible, it increases the combustibility of other substances. The nitric acid had apparently reacted with something to generate a large amount of fumes. Iraqi fire department personnel responded and fought the fire. When it became clear that water would not stop the chemical reaction, fire department personnel requested firefighting foam from the military fire department at Camp Fallujah. The Marines responded with the requested foam (along with sand, dump trucks, and bulldozers) and assisted Iraqi firefighters in controlling the chemical reaction.

It took several hours to gain control of the situation. MNC-I CBRN personnel contacted personnel at the Defense Threat Reduction Agency Operations Center, providing them with the information necessary to arrive at a detailed downwind hazard prediction. As a safeguard, MNC-I advised MNF-W to keep all nonessential personnel indoors and to initiate air monitoring. For the next six hours, Dräger tubes were used to monitor the air quality. To secure the nitric acid, Iraqi and Marine firefighters built a four-foot-tall sand berm around a heavily damaged area.

On 27 June, the nitric acid began fuming again. This prompted a second response by the Iraqi fire department and MNF-W Marines. A second reconnaissance team, consisting of personnel from MNF-I and 1st Platoon, 329th Chemical Company (Reconnaissance), was dispatched to the site. The larger stockpile was completely melted together, while the smaller one—though still intact—was sitting in a puddle of acid that was six inches deep.

Plans and Preparation for Operation Dragon's Den

For the larger stockpile, plans were made to remove the overhead cover, place a rubber liner over the stockpile, and raise and reinforce the surrounding berms. Plans were also made to use caustic soda to neutralize the large puddles of acid and remove the undamaged nitric acid before it posed an

active threat to the local population. A fifty-person CBRN team comprised of personnel from the 1st Platoon, 329th Chemical Company, II Marine Expeditionary Force (MEF), and the Multinational Division–Center was formed. It was augmented by three environmental specialists from MNC-I and MNF-I. The IA and II MEF were to provide security; and Regimental Combat Team 6, II MEF, was to provide logistical support.

Cordons were to be established at several key locations. After an explosive ordnance disposal team had swept the site, CBRN and logistics teams were to occupy it on a daily basis. A staging area was to be established, overpack materials and pallets were to be brought in, nitric acid containers and pallets were to be packed, and the packs and pallets were to be loaded onto trucks for removal. A second team of CBRN and environmental personnel was to receive the nitric acid at Camp Fallujah, where it was to be processed for turn-in to the hazmat yard.

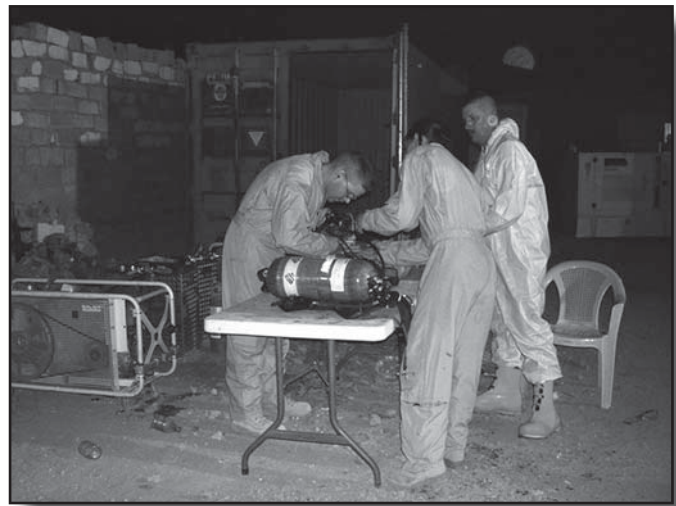
All participating CBRN teams arrived in Fallujah two days before the mission was to be executed. During that time, they integrated and developed standard techniques to be used during the mission. In addition, two operation order briefings were held.

Safety would be one of the keys to a successful mission. Baseline vital signs of all team members would be checked before they entered and after they exited the toxic area. The wear and function of gear would be checked by a full-time safety officer before team members were allowed to enter the contaminated area. A buddy system would be employed; at no time would anyone be allowed to be alone in the toxic area. While downrange, the safety officer and the officer in charge (OIC), noncommissioned officer in charge (NCOIC), or operations NCOIC would continuously monitor team members. Corrections would be made as personnel worked. Anyone who committed a safety violation or premature alarm activation would immediately be removed and refitted. Upon exiting the contaminated area, team members would be decontaminated and medically checked. They would drop off their equipment for refitting, and their tanks would be refilled. Team members would be allowed to rest for about an hour before reentry.

Execution of Operation Dragon's Den

The operation command system closely resembled the National Incident Management System Incident Command System. The CBRN officer served as the on-scene commander. A representative from the security element and the logistics chief were colocated with the on-scene commander. The overall security operation was conducted from a joint security station. This command structure allowed for rapid decision making and problem solving.

The first night of the operation was the longest. The cordon was established, the explosive ordnance disposal team swept the site and staging area, and the logistics and CBRN teams occupied the area. Twenty-seven vehicles transported the personnel and equipment needed to conduct the mission.



A Soldier exiting the hot area drops off his self-contained breathing apparatus for refitting and refilling.

The site and staging area needed to be prepared before work could begin. Bulldozers were used to remove debris from the target and staging areas and to knock out a section of a wall, allowing access from the staging area to the site.

The II MEF provided outstanding logistics support throughout the operation. Items supplied included—

- Bucket loaders, used to remove debris.
- All-terrain forklifts, which provided material-handling capabilities.
- Caustic soda, used to counteract the pH of the nitric acid in the shuffle pits.
- Caustic soda and sand, used to remediate puddles of nitric acid that formed during the movement of the containers.
- Portable lights, which allowed for nighttime visibility.
- A thirty-kilowatt generator, which provided power.
- A toxic industrial chemical protection and detection equipment (TICPDE) shower system, used for decontamination.
- Decontamination water, provided by a seven-ton truck with two 600-gallon containers.
- Two M17A3 lightweight decontamination systems, available in case they were needed.
- A medical container express manned by three Navy medical corpsmen, which served as a triage and treatment facility.
- A refrigerated container express, which contained all Class I items (food and water).

An environmental team conducted quality control checks on the packing and loading operations, ensuring that the hazmat was safe for transportation. Another environmental specialist received the hazmat and supervised marking, labeling, and turn-in to the hazmat yard. Containers that had been damaged



Decontamination shower used by personnel exiting the hot area

during transportation were repacked by a TICPDE team and a decontamination element. The decontamination team at the hazmat yard also decontaminated transport vehicles and loaded replacement overpack containers on returning trucks.

The operation continued for three consecutive nights. Each night, the mission began with an in-depth convoy briefing in the motor pool. The convoy then headed to the staging area. The route and site clearance teams were dispatched, the site was occupied by 2200 hours, and operations were conducted throughout the night. Operations ceased at approximately 0800 hours daily, coinciding with curfews and ending just before the collapse of the outer cordon. Back at Camp Fallujah, the mornings were spent resetting and preparing equipment for the next mission that evening. Operational summaries were completed and submitted to higher headquarters, and the OIC briefed the MNF-W chief of operations on the progress of the mission.

The operation was not without incident. During the first night, two CBRN Marines sustained acid burns. The first occurred when one of the Marine's overboots was cut on some rocks. The Marine continued working until the acid penetrated the boot, causing the burn. This prompted the safety noncommissioned officer to inspect overboots after each use. The second casualty occurred when a Marine brushed a nitric acid container against the zippered area of his Level B suit. The acid penetrated the zipper, causing a burn to the groin area. In response, the length of the Level B zippers—between the legs and up the back—was taped to prevent similar incidents.

Both Marines were evacuated and returned to limited duty the following day. Other team members suffered minor burns that were flushed with cool water, but did not require evacuation.

On the third night, a sudden shift in wind direction created a dangerous situation. Two teams were exiting the site through the decontamination line, and a third team was on the ready line. The wind swirled, changing direction from the south-southeast to almost due north, right at the staging area. The cloud of nitric acid fumes was clearly visible in the work lights. Workers were ordered to evacuate the site. Personnel had less than ten seconds to react. Air tank refill systems were moved, and several sets of self-contained breathing apparatuses were retrieved for key personnel. The OIC and members of the ready team entered the hazard area and placed caustic soda and sand on puddles of fuming nitric acid. With the situation under control and a favorable wind shift, the staging area was reoccupied. Two personnel were evacuated for nitric acid inhalation; both were treated and released back to duty the next morning.

After surveying the site, the OIC decided that overpack operations should cease and that limited remediation operations should be conducted. About seventy containers of nitric acid remained in the smaller pile because they were deemed too dangerous to retrieve. Some of these containers were broken, creating a puddle that was about twenty feet long, twenty feet wide, and six inches deep. Bucket loaders were used to push fine sand into the area. After the puddle was filled, a six-foot berm was built against the remaining seventy containers. The existing berm on the large, fire-damaged pile was extended and raised from four to six feet. Six acetylene tanks were removed. However, the collapsed overhead cover on the large pile could not be removed without the risk of damaging the berm.

Close-out operations continued throughout the night. The command and control element and one TICPDE team remained on-site to assist engineers. Nonessential personnel were sent to the joint security station and Camp Fallujah. About thirty minutes before departing from the site, friendly units received



Overpack containers ready to be filled



CBRN personnel pack nonleaking containers of nitric acid on pallets for movement to Camp Fallujah.

fire from an unknown enemy. The Iraqi forces providing security returned fire. The site was closed off with T-wall barriers and concertina wire.

Summary

The scope and scale of Operation Dragon's Den surprised many personnel, including those who participated in the mission. In all, more than 260 toxic entries were made by

44 personnel over the 3 nights, with 4 minor injuries; and 143 ninety-five-gallon overpacks and 43 pallets of nitric acid were transported to Camp Fallujah for turn-in to the hazmat yard. Removing the nitric acid prevented it from being used in homemade explosives.

Keys to the successful mission included the attention to safety, integration of environmental specialists, and can-do attitude of CBRN Soldiers and Marines. Many lessons learned were documented; and tactics, techniques, and procedures were refined. Doctrine and training must be refined to include these types of large-scale hazmat and environmental-remediation missions.

At the time this article was written, Lieutenant Colonel Karatzas was serving as the chief of MNC-I, CBRN Operations, and as the mission commander for Operation Dragon's Den. He is currently serving as the deputy director, Directorate of Training and Leader Development, U.S. Army Chemical, Biological, Radiological, and Nuclear School, Fort Leonard Wood, Missouri.

At the time this article was written, Sergeant First Class Ibarra was serving as the operations and training officer (S3) NCOIC for the 303d Military Intelligence Battalion and as the operations NCOIC for Operation Dragon's Den. He is currently serving as a training developer in the Capabilities Development and Integration Directorate, U.S. Army Maneuver Support Center, Fort Leonard Wood.

2009 NOMINATIONS FOR THE HALL OF FAME AND DISTINGUISHED MEMBER OF THE CORPS HONORS

Nominations are being accepted for the 2009 Chemical Corps Regimental Association (CCRA) Hall of Fame and Distinguished Member of the Corps honors.

- **Hall of Fame.** This award is extended to Chemical personnel (living or deceased) who have spent their professional careers serving the Chemical Corps or have performed a significant act of heroism. Their service to the Corps must be extraordinary.
- **Distinguished Member of the Corps.** This award is extended to living members who served the Corps in their professional lives and continue to serve it in their personal lives. Active Army military and current federal civilian personnel are not eligible for the program. The nominations are limited to personnel who have been retired for at least two years.

For nomination criteria and submission requirements, see <http://www.chemical-corps.org/honors.htm>. Nomination packets should be sent to:

Commandant
U.S. Army Chemical, Biological, Radiological, and
Nuclear School
Regimental Historian
ATTN: ATSN-CM-H
Fort Leonard Wood, MO 65473-8926

All packets must arrive before **5 May 2009**. For more information, call (573) 563-7339 or e-mail david.chuber@us.army.mil or christy.lindberg@us.army.mil.



Former Brigade Commander Becomes USACBRNS Commandant

By Ms. Allison Choike

The U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) bid its commandant farewell in a change-of-command ceremony held at Fort Leonard Wood, Missouri, on 28 June 2008.

"It is [an] honor and a personal privilege to participate in this ceremony," said Major General William McCoy, commanding general of the U.S. Army Maneuver Support Center and Fort Leonard Wood.

During the ceremony, Brigadier General Thomas Spoehr handed command to Colonel Leslie Smith, a leader who is no stranger to Fort Leonard Wood. Colonel Smith, who commanded the 3d Chemical Brigade from 2005 to 2007, said he was happy to be back on the post. "I am humbled and awed to serve at Fort Leonard Wood again," he said.

Colonel Smith said that he was grateful for the high standards set by Brigadier General Spoehr and the USACBRNS and that he looks forward to continuing to meet those standards. "You have taken our Army and Corps to a higher level in defense of our Nation. Thank you for establishing those high standards," he said.

Spoehr said that it was a joy serving as the commandant of the USACBRNS and that he knows Smith is the right person to continue to carry on the Chemical esprit de corps. "He is the perfect officer to take over. I know he will take good care of our Regiment," Spoehr said.

Major General McCoy agreed. "[Colonel Smith] is a thoroughly talented replacement. He is no stranger to Fort Leonard Wood, and I have no doubt that he will continue to take the CBRN School to new heights and continue to lead our Nation's most precious resources," he said.

Smith thanked all the Soldiers for continuing to work hard and volunteering to give back to the Nation. "I promise to work hard to accomplish all of our missions," he added.

Smith is returning to the installation after serving as the Assistant Chief of Staff for Operations and Plans (G-3), 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives), Edgewood, Maryland.

Smith has been stationed in various locations around the world, including Korea. He earned a bachelor's degree in accounting from Georgia Southern University, Statesboro, Georgia; a master's degree in public administration from Central Michigan University; and a master's degree in national strategy and policy from the National Defense University. Smith has also earned numerous awards and decorations, including the Legion of Merit, the Defense Meritorious Service Medal, and the Meritorious Service Medal with three oak-leaf clusters. 🇺🇸

Ms. Choike is a staff writer for the Fort Leonard Wood Guidon.



Colonel Leslie C. Smith, USACBRNS Commandant

TEACHING MILITARY CHEMISTRY TO FUTURE LEADERS AT WEST POINT

By Major Andrew Novitske

On today's battlefield, Soldiers are faced with an ever-increasing array of potentially lethal chemicals. There is always the possibility that an Iraqi chemical round may find its way into the hands of an insurgent and be used in an improvised explosive device.

However, the threat may not be a chemical weapon at all; it may just be a plain, old industrial chemical.

When in Iraq, my unit encountered a farmer who used benzene to clean engine parts. If this farmer had known about the carcinogenic properties of benzene, he may have used another solvent to shine the parts and make them grime-free. In addition, my unit in Iraq was tasked to decontaminate part of a fertilizer plant that had been abandoned, but the machines were still on and making a portion of the product. In one area of the plant, there was a pool of standing solution that needed to be neutralized and cleaned up. These examples show that, now more than ever, a basic understanding of chemistry is critical. Young leaders are in a constantly evolving operational environment where they need to be skilled in chemistry to make sound and timely analytical decisions.

As part of the core curriculum at the U.S. Military Academy (USMA), West Point, New York, each cadet must take at least one year of general chemistry from the Department of Chemistry and Life Science. The department's mission is to "develop in cadets: a firm foundation in physical science, investigative techniques, and problem-solving skills essential to their understanding and awareness of the relationships between science and society." One way the department accomplishes this mission is through an event called the Military Chemistry

(MILCHEM) Lecture. The objective of the MILCHEM Lecture is to fuse what cadets have learned in the classroom with what is happening with real military units in current operational environments around the world.

The lecture is held in early December, during the week just before the Army-Navy football game. It is meant to be a fun and exciting time that gets the cadets fired up for the game and teaches them about relevant, real-world applications of chemistry. Many demonstrations use Navy paraphernalia as cannon fodder. For example, the combustive properties of nitrocellulose (also known as gun cotton) are demonstrated by cutting a piece shaped like a goat (the U.S. Navy mascot) and



A member of the 1st CST explains how chemical detection equipment works.

setting it ablaze. The MILCHEM Lecture also gets the cadets out of the classroom and into an environment where they can hear other department instructors talk about the aspects of chemistry that appeal to them. A wide range of topics such as chemical detection, armor-piercing munitions, the science of reactive materials, liquid state body armor, hemostasis, and the science behind WoundStat¹ were explored during the last MILCHEM Lecture.

Because of my affiliation with the Chemical Corps, the chemical detection portion of the lecture was near and dear to my heart. That portion was developed by Captain Nathaniel Watson (a field artillery officer), Dr. Cynthia Woodbridge (a physical chemist), and me. I was pleased to have the opportunity to show the plebe cadets that the chemistry they used throughout the semester was linked closely with what the Chemical Corps does on the battlefield every day.

During the chemical detection segment, we identified various types of detection equipment and corresponding platforms used by the Army and discussed the types of substances that could be detected by each piece of equipment. For tactical operations, we described the Stryker Nuclear, Biological, and Chemical Reconnaissance Vehicle (NBCRV); for domestic operations, we described the Mobile Analytical Laboratory System (MALS), which is used by our Nation's civil support teams (CSTs). Then, Chemical Soldiers from the 2d CST, Massachusetts, staged a typical detection and monitoring mission. They entered the lecture hall wearing protective gear, while a narrator detailed every move and discussed the




Soldiers from the 2d CST show cadets the proper techniques to identify chemical agents on the battlefield.



NBCRV and MALS vehicles on display in front of Bartlett Hall, West Point, New York

chemical principles that were taking place inside the different pieces of equipment. For example, the concept of different types of ultraviolet radiation used to excite molecules in the photoionization detector was discussed. Animated slides showed radiation striking a molecule inside the machine, exciting the molecule and forcing it to eject an electron. The electrons were then monitored to help determine if certain types of radiation were present.

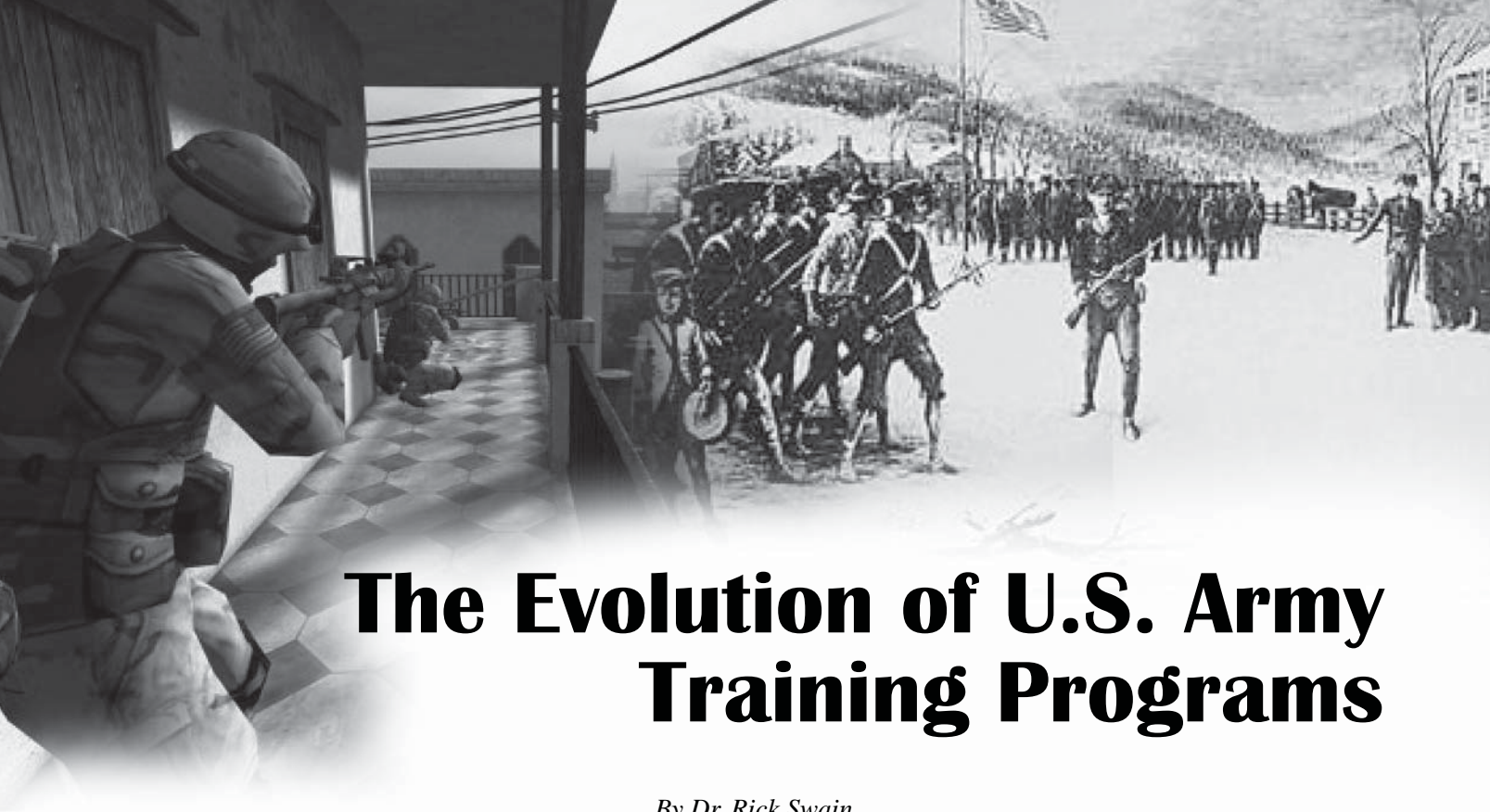
At the end of the lecture, cadets had the opportunity to get a close look at the equipment. An actual Stryker NBCRV from the U.S. Army Tank-Automotive and Armaments Command and a MALS were staged outside the lecture hall for cadets to explore. The 1st CST, New York, also set up static displays of chemical detection equipment, and cadets were able to see the equipment and get some hands-on experience with it.

The effort put forth by the staff and faculty of USMA; the U.S. Army Tank-Automotive and Armaments Command; 1st CST; 2d CST; Joint Project Manager–Nuclear, Biological, and Chemical; and U.S. Army Chemical, Biological, Radiological, and Nuclear School ensured that the MILCHEM Lecture was an educational and enjoyable learning event for the cadets. 

Endnote:

¹WoundStat is a hemostatic agent produced by TraumaCure, Inc. The Department of Defense recommends that all service members carry WoundStat for life-threatening bleeding.

Major Novitske is the course director for Advanced General Chemistry at USMA. He holds a bachelor's degree in biology and a master's degree in organic chemistry from the University of Minnesota.



The Evolution of U.S. Army Training Programs

By Dr. Rick Swain

The 233-year evolution of Army training programs began back when a weak band of patriots was freezing in the fields and woods of Valley Forge, Pennsylvania. Over the years, various training programs have transformed what was once a group of disorganized volunteers into the most powerful army in the world.

Success on the battlefield depends on getting the right thing done at the right time during every mission. Will future technological advances be used to enhance the job performance of chemical, biological, radiological, and nuclear (CBRN) Soldiers? Can the training programs that are envisioned over the next decade provide professional CBRN Soldiers with the knowledge, skills, and abilities required to protect the Nation from the threat of weapons of mass destruction?

The theoretical educational paradigms of behaviorism, cognitivism, and constructivism can be used to explain how individuals think and learn. Changes in these educational paradigms bring the promise of better-trained, more capable Soldiers and leaders.

Behavioral Paradigm

Behaviorism focuses on the repetition of a new behavioral pattern until that pattern becomes automatic.¹ Ivan Petrovich Pavlov was the first to study the behavioral paradigm in a scientific way. In his now-famous experiment, Pavlov explained the known phenomenon of a conditioned response by observing a dog's reaction to stimuli associated with food.

His findings were a wonderful addition to what was known about the behavioral paradigm—namely, that impressions made through repetition can be placed into memory. These are the same impressions that Aristotle wrote about in *On Memory and Reminiscence*.²

Historically, the U.S. Army has used the behavioral paradigm for training—starting in the winter of 1777, when General Frederick William Baron von Steuben began shaping the band of Patriots into a formidable force at Valley Forge. General von Steuben's focus was on Soldier training. The first training program involved drill in the Manual of Arms and marching in formation.³ In full military dress uniform, von Steuben yelled and swore at the inadequately clothed Soldiers in German and French—which they did not understand. But, it was clear that von Steuben cared for the Soldiers. And his humor and eclectic personality greatly enhanced his mystique.

Von Steuben introduced a system of progressive training, which began with a “model company” comprised of 100 chosen men. Once those men were trained, they successively branched outward into each brigade. Company commanders were responsible for training new Soldiers. General von Steuben's approach was similar to today's concept of “crawl, walk, run.”

The early idea that a trained action becomes an unconscious response through repetition and drill is a key element that has continued to the present.⁴ Battle drill was a close-order drill, and speed of firing could only be obtained by drilling men

in the handling of firearms until the motions of loading and firing became mechanical. As is the case today, instruction was conducted by the best sergeants.

The idea of enforcing values in the Army originated with the first manual on drill, written by General von Steuben in 1778. The value codified by von Steuben was respect. He noted that the first objective of a U.S. officer should be to treat his men “with every possible kindness and humanity.”⁵

Solving an urgent need to train shipyard workers during World War I, Charles R. Allen adapted Johann Herbart’s five-step process. He called it the “show, tell, do, and check” method of job instruction.⁶ The ability to quickly and effectively train personnel became imperative for national survival during World War II, and job instruction training (or “train the trainer”) programs were instigated. The behavioral paradigm continued during the Vietnam War. Training was typically short and intense; noncommissioned officer (NCO) academies produced what was called “shake and bake” NCOs. After the Vietnam War, the U.S. Army Training and Doctrine Command (TRADOC) was established to address lessons learned. General William E. DePuy, the first commanding general of TRADOC, addressed training problems discovered during the Korean and Vietnam Wars. His suggestions included testing Soldiers on what they needed to know and adopting an indirect approach to tactical operations.⁷

There were three components to the overall Army training strategy—resident training, unit testing, and individual testing. As a result of increasingly lean budgets following the Vietnam War, TRADOC leaders determined that much of the individual training would need to be conducted in units. Training developers began to develop and field several programs designed to take the training to the Soldier—for example, mission rehearsal exercises and a new literature program including Soldiers’ manuals and training extension courses. Mission training plans (1974–2005), skill qualification tests (SQTs) (1973–1993), and skill development tests (1993–1995) were used to test on-the-job performance of Soldiers. SQTs provided the Army with statistical feedback on how well Soldiers were trained and on their technical proficiency. The idea of awarding incentive pay to those who passed tests was a great concept that needed organizational attention—not elimination. Currently, there is no mechanism for collecting data that determines whether or not the Army has a trained and ready force.

Cognitive Paradigm

While many believe that the cognitive paradigm is entirely different from behaviorism, cognitivists actually build on the concepts of the behavioral paradigm. “Cognitive theorists recognize that much learning involves associations established through contiguity and repetition. They also acknowledge the importance of reinforcement, although they stress its role in providing feedback about the correctness of responses over its role as a motivator.”⁸ The acceptance of the behavioral paradigm by most cognitivists allowed knowledge to be added to the

theory of learning. The cognitive ideas of schema, long- and short-term memory, and sensory register gained acceptance. When a battle of thought in psychology and education erupted between the two camps, the constructive paradigm emerged, adding another dimension to the controversy.

Constructive Paradigm

The constructive paradigm expanded on the cognitive theory, adding the theory that individuals literally construct their own meaning from an educational experience. Constructivists believe that there is a cultural context to the construction of knowledge and that each student’s construction is different from that of all other students. The idea of teachers as coaches, mentors, and facilitators emerged from this paradigm. These techniques are currently used in CBRN training.

Future Army Training

Training and discipline go together like bread and butter. And they are intrinsically linked to the military. Military training and discipline have been around since before the time of the Spartans. The history of military training is replete with cases of training by example and perfect discipline—even if it meant death or injury. Throughout history, the best-trained and best-disciplined armies with the best technology have proven victorious in battle.

As previously described, the behavioral paradigm has historically been used in Army training. Some actions that a Soldier must take to survive in a combat environment involve immediate and automatic behavioral responses. Those skills must be drilled and practiced until they become an unconscious response to the stimulus. For example, when faced with a CBRN attack, Soldiers must react with a conditioned response such as donning protective masks and CBRN equipment. The engagement of threats with a primary weapon system is another example of an action that requires an unconscious response. However, many Army trainers and educators are unaware that the Army uses a behavioral paradigm for training because they do not realize that other paradigms exist.

The idea that all Army training and education should follow the behavioral paradigm is ludicrous. One theory does not fit all situations. However, the idea that all Army training should be changed from a behavioral- or performance-based paradigm to a cognitive- or constructive-based paradigm is just as ludicrous. Changes to the traditional behavioral training paradigm of the Army will require changes to generally accepted societal assumptions. The analysis and proper combination of educational paradigms will result in appropriate training and education experiences for Soldiers. The challenge is to determine the educational theory appropriate for teaching different tasks.

Unfortunately, failure is sometimes needed to bring about change. The rote training regimes of the past are beginning to lose their gleam of total success. The realization that other methods can and do work is beginning to affect Army training.

The political dimension of using the appropriate theoretical basis for Army training and education is becoming acceptable, largely because Soldiers entering the military have been educated in schools and institutions using a different theoretical paradigm. The use and teaching of Bloom's Taxonomy⁹ in military schools is a great step toward understanding the theoretical basis for educating Soldiers. One of the most prominent examples of change in the use of educational paradigms in the Army involves critical-thinking training—an initiative implementing cognitive and constructive paradigms to train new Stryker brigades at Fort Lewis, Washington.

In addition, the general citizenry has been acclimated to military forces through the newest video games. Although the objective of commercial video games is to provide fun, they can serve as military cultural assimilation tools. Games that involve strategy and tactics indoctrinate players to the military way of thinking, while also providing them with a knowledge of military history. These games ease the assimilation of the general population into the military culture. A citizenry trained in higher thinking skills with a shared, military-based culture is reminiscent of the Spartans of ancient Greece.


Video game technology also provides future Soldiers with defense skills that are valuable for years to come. The weapon systems of today are similar to video games that were popular in the 1970s. For example, the Patriot operator's screen can be likened to the Missile Defender game and the operation of M1A2 Abrams tanks and M2 Bradley fighting vehicles is similar to the Tank Destroyer games. Likewise, the video game technology that is so prevalent today (\$16.9 billion of "edutainment" software sold in 2003¹⁰) is providing future Soldiers with skills that will have a positive effect on our defense capability for the next twenty years. The skills required to remotely control a shooting game are the same skills needed to remotely pilot an unmanned aerial vehicle. The video game technology of today is the basis for future weapon systems; so as our sons and daughters play games in the arcade, they are actually practicing the weapon skills that our Nation needs.

Given the interconnection of edutainment software to the weapon systems envisioned for the future, you might ask, "Which came first?" It probably doesn't matter; all great societies have had a martial ethos that resulted in the creation of the greatest military force on the planet.

For the Army's part—it is producing current, state-of-the-art, interactive multimedia instruction. Army simulations and training devices place the Soldier in realistic situations, requiring them to make decisions that exercise critical thinking skills.

Conclusion

The stagnant behavioral paradigm traditionally used in Army training has not meant death for Soldiers; rather, it has resulted in good training for the past 233 years. However, as the threats to our Nation continue to evolve, the need for the

construction of meaning will increase. The requirement for critically thinking Soldiers should push the Army to adopt other educational paradigms. The idea that the Army *must* change is really not true. The idea that the Army *should* change to better train our Soldiers is true. 

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⁹Bloom's Taxonomy is a hierarchical means of classifying educational learning objectives into three domains—affektive, psychomotor, and cognitive. The belief is that educators should focus on all three of these domains to create a more holistic form of education.

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Utility Men: Dragon Soldiers on Point With the Army Medical Department in Iraq

By Lieutenant Colonel Vince B. Holman

A common goal of the U.S. Army Chemical Corps and the U.S. Army Medical Department is to protect the force. The Chemical Corps provides the Army with the ability to fight chemical, biological, radiological, and nuclear (CBRN) threats; while the Army Medical Department strives to conserve the fighting strength through combat health service support. Chemical Corps and Army Medical Department Soldiers and units have participated in every stage of Operations Iraqi Freedom and Enduring Freedom, conducting a variety of missions while demonstrating unmatched dedication and adaptability. An example of the critical linkage of the two entities can be seen in Dragon Soldier “utility men” (officer and enlisted) walking on point with a task force from the 62d Medical Brigade (TF62 MED)—the Army’s only deployed medical task force.

The Operation Iraqi Freedom Medical Task Force provides quality health service support in the Iraqi theater of operations. Two combat support hospitals and one Air Force hospital provide Level III care from seven geographically dispersed locations, and two multifunctional medical battalions provide the full spectrum of joint health service support (combat health logistics, dental services, evacuation, forward surgical resuscitation, hospitalization, optometry services, veterinary services, and treatment). In addition, one combat support hospital provides Level I through V medical care for detainees and one multifunctional medical battalion with an area support medical company provides medical support for Theater Internment Facility Reconciliation Center operations. Task force personnel anticipate providing force health protection support to an at-risk population of more than 450,000 U.S. Soldiers, sailors, airmen, and marines; contractors; coalition partners; and Iraqi security forces. The task force also provides technical supervision of medical assets and conducts nested medical operations, including cooperative medical engagements, across the entire Multinational Corps–Iraq battlespace to improve the health care system of Iraq.

Two Dragon Soldiers—Captain Nicole Von Benken (TF62 MED CBRN officer, security manager, and intelligence officer [S2]) and Staff Sergeant Fredrick Bryant (TF62 MED Battle Cell noncommissioned officer [NCO] in charge)—are key players who, when called upon, are capable of serving in any capacity within the medical task force headquarters. Proven experts in

managing chaos, these individuals have been instrumental in the success of TF62 MED.

CBRN

Although the CBRN threat within the theater has remained relatively benign, the two Dragon Soldiers tirelessly work with the headquarters Force Health Protection Section to quickly analyze information and provide guidance for mitigating potential CBRN threats as they emerge, ensuring the protection of patients and the force. The combined expertise of Captain Von Benken and Staff Sergeant Bryant has bolstered the preparedness of theater hospitals to handle emergency CBRN casualties. The comprehensive CBRN Casualty Plan and periodic simulations of CBRN casualty decontamination ensure that personnel remain proficient in the decontamination and movement of CBRN casualties.

Security

In many organizations, Military Occupational Specialty 74 Soldiers work in the headquarters S2/Deputy Chief of Staff for Intelligence (G-2) or operations and training officer (S3)/Assistant Chief of Staff for Operations and Plans (G-3) sections. The medical task force is no exception. Dragon Soldiers bring a myriad of security operations experience to the headquarters and to the task force as a whole.

Captain Von Benken provides command guidance for personnel and physical security, antiterrorism (AT), and force protection (FP). She also supervises two senior NCOs in the performance of their duties as security and AT/FP staff NCOs. Her oversight of TF62 MED vulnerability assessments has spurred FP improvements at every subordinate unit location, improving lifesaving capabilities of Level III medical treatment facilities.

Intelligence

The *Task Force 62 Medical Intelligence Preparation of the Operational Environment (MIPOE)* document, which was researched and published by Captain Von Benken and TF62 MED force health protection subject matter experts, is the most comprehensive document of its type in the history of Operation Iraqi Freedom. The template for the MIPOE was constructed

according to Field Manual (FM) 4-02, Appendix B; and the document has become the gold standard for medical intelligence products within the Iraqi theater of operations. It contains comprehensive instructions regarding medical intelligence preparation of the operational environment, such as—

- Define the operational environment.
 - Identify significant characteristics of the environment.
 - Identify the limits of the command area of operations.
 - Establish the limits of the area of interest.
 - Identify the level of detail required and the time available to conduct MIPOE.
 - Evaluate existing information and intelligence of medical significance, and identify intelligence gaps.
 - Collect information required to fill gaps.
- Describe the operational environment effects.
 - Geography.
 - Political and socioeconomic situation.
 - Threat forces capabilities and effects.
 - Infrastructure.
 - Medical infrastructure.
 - Analysis of services provided by nongovernment and international organizations.
- Integrate the threat, and consolidate information.
 - Friendly and enemy courses of action.
 - Geographic-related threat issues.
 - Additional elements of medical information and intelligence.

The MIPOE, which continues to be the “playbook” by which the medical task force conducts mission analysis and the military decision-making process, was submitted to the Defense Intelligence Agency, Armed Forces Medical Intelligence Center.

Chemical Soldiers are natural analysts of the operational environment. Captain Von Benken and her section have provided timely, accurate, and relevant intelligence analysis of the operational environment to task force commanders and staff. They synchronize, coordinate, and integrate operational intelligence information across the task force. They support the medical task force deliberate planning effort with requisite intelligence data and serve as the TF62 MED battle staff subject matter experts.

Battle Command

The knowledge and experience of a Dragon Soldier is also beneficial in exercising command and control warfighting functions and systems. Staff Sergeant Bryant was instrumental in assisting the TF62 MED Battle Cell with the execution of battle drills during sixty-five rocket and mortar attacks and fourteen mass casualty situations. Additionally, his timely

review and publication of more than 500 orders have ensured that commanders of the task force and direct reporting units have had the ability to make informed decisions, delegate authority, and synchronize the task force toward mission accomplishment and success. Staff Sergeant Bryant’s technical automation expertise greatly enhances the flow and exchange of information between his section and subordinate units, further promoting his ability to manage arenas not normally in his scope of practice.

Lessons Learned


Based on experience, it was determined that Chemical Corps personnel assigned to a medical task force should complete the following:

- Antiterrorism Level II Training.
- Security Manager Course.
- Battle Staff NCO Course.
- Armed Forces Medical Intelligence Course.
- Middle East Orientation Course.
- Dynamics of International Terrorism Course.
- Responsible Officer Course.
- 70H Plans, Operations, Intelligence, Security, and Training Course or Joint Medical Operations Course.

In addition, Chemical Corps personnel should be proficient with the following software:

- Jail Population Analysis System.
- Command Post of the Future.
- FalconView.
- Fusion.
- Ventrilo.
- ImageWare Systems.
- Internet relay chat programs.
- Microsoft Office products.

Summary

The Dragon Soldier is a valued utility man and an asset to the medical task force. Dragon Soldiers and Army Medical Department Soldiers serving together in forward-deployed medical units collectively protect the force and assist the Army in fighting CBRN threats. All team members develop doctrine for medical task force emplacement across a counterinsurgency operational environment. Chemical Corps officers and NCOs assigned to TF62 MED are critical to mission success. 

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Regimental Week 2008

By Sergeant Major Gwendolyn Evans

The U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) celebrated its 90th anniversary during Regimental Week, which was held at Fort Leonard Wood, Missouri, 23–27 June 2008. Included among the many activities of the week were the Dragon's Peak Competition, Green Dragon Ball, and Regimental Review.

Dragon's Peak Competition

“Dragon's Peak separates who is really operating at the top of their game,” said Brigadier General Thomas Spoehr, former commandant of USACBRNS. “This is the premier competition.”

The competition began on Friday, 20 June, when twenty-seven Soldiers and noncommissioned officers (NCOs) competed in an Army physical fitness test. This was followed by M4 and M249 weapon qualifications; a daytime land navigation course; and a written exam on chemical, biological, radiological, and nuclear material. The day ended with a nighttime land navigation course, which lasted until 0100 Saturday.

At 0530, Saturday, the competitors participated in a twelve-mile ruck march, followed by lanes designed to test basic Soldier skills and Chemical Corps-specific tasks. Participants were evaluated on their ability to administer first aid, disassemble and reassemble an M249 squad automatic weapon, and conduct

a patrol. The participants then completed a physical endurance confidence course.

The final event of the competition, the convening of a board to determine the Soldier of the Year and NCO of the Year, took place on Sunday morning. Specialist Robert Hocog and Sergeant Matthew Matosic—both of the 75th Ranger Regiment, Fort Benning, Georgia—were named Soldier of the Year and NCO of the Year, respectively. Specialist Hocog and Sergeant Matosic each received a Command Sergeant Major George L. Murray Leadership Award trophy and other prizes at the Green Dragon Ball.



Green Dragon Ball

The Green Dragon Ball was held 27 June. The guest speaker was Sergeant Major of the Army Kenneth O. Preston, who spoke about his Army career and how the Army has grown. "I look back at the Army we were in 1975 and in the last thirty-three years—to have watched the all-volunteer force grow from what we were in 1975 to what we are today—there is no comparison," Preston said.

Other activities included the presentation of Command Sergeant Major George L. Murray Leadership Awards and prizes to the Dragon's Peak Competition winners and the recognition of Sibert Award winners, which represent the best company level Active Army, National Guard, and Army Reserve units in the Chemical Corps. The Sibert Award winners for 2008 were—

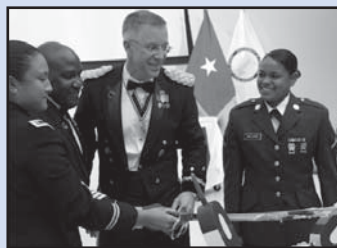
- **Active Army:** Company B, 110th Chemical Battalion (Technical Escort), Fort Lewis, Washington.
- **National Guard:** 637th Chemical Company (Heavy), Ohio Army National Guard, Middletown, Ohio.
- **Army Reserve:** 130th Chemical Company (Biological Integrated Detection System), Bethlehem, Pennsylvania.


Regimental Review

The USACBRNS commandant was bid farewell in a change-of-command ceremony held at the Davidson Fitness Center on 28 June. During the ceremony, Brigadier General Thomas Spoehr handed command of USACBRNS to Colonel Leslie Smith. Colonel Smith commanded the 3d Chemical Brigade, Fort Leonard Wood, from 2005 to 2007. He returns to the installation from his position as Assistant Chief of Staff for Operations and Plans (G-3), 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives), Edgewood, Maryland.

Regimental Command Sergeant Major Patrick Z. Alston was also bid farewell in a change-of-responsibility ceremony held during the Regimental Review. Command Sergeant Major Ted Lopez is the new Chemical Corps Regimental command sergeant major. Regimental Command Sergeant Major Lopez was last stationed at the Army War College, Carlisle Barracks, Pennsylvania. ☹☹

Sergeant Major Evans is the personnel pronponency sergeant major for USACBRNS and the Chemical Corps. She holds an associate's degree in supervisory leadership from Hawaii Pacific University and is pursuing a bachelor's degree in management.





The Fox Leads the Way at Fort Leonard Wood

By Ms. Christy Lindberg

In 2005, the Engineer, Military Police, and Chemical Corps emplaced vehicles emblematic of their missions and histories in a prominent display near Sverdrup Gate (commonly referred to as the “main gate”) at the U.S. Army Maneuver Support Center, Fort Leonard Wood, Missouri.

The vehicle chosen to represent the Chemical Corps was the M4A1 POA-CWS-H5 Sherman Flame Tank. This tank, which was modified with a flamethrower that augmented the 75-millimeter main gun, was introduced at the closing stages of World War II to clear enemy caves and pillbox machine gun emplacements in the Pacific Theater. Although the tanks were developed and manufactured by the Chemical Warfare Service, they were not fielded before the Japanese surrender and the conclusion of the war. The vehicles did, however, see service five years later in Korea, where they were operated by U.S. Marine Corps armor detachments. Although the M4A1 is an important historical artifact, the thousands of Soldiers and civilians passing through the main gate daily did not readily recognize it as a symbol of the Chemical Corps; the flame tank was not considered representative of the Corps’ 21st-century mission.

The M93A1 Fox Nuclear, Biological, and Chemical (NBC) Reconnaissance System was a more appropriate selection. Tough and reliable, yet with full terrain mobility, the Fox uses integrated sampling systems to detect, mark, and report contaminated areas of the battlefield. The role of the Fox and its crew is integral to the Chemical Corps mission to “protect the force.” The functionality of the Fox also proved to be the biggest obstacle in selecting it for display. Nearly all Fox NBC Reconnaissance Systems in the Chemical Corps fleet are still in service and too valuable to current operations to be retired simply for a museum exhibit.

However, a vehicle with an impressive record of service in training, in the field, and in combat became available—an M93A1 Fox with the bumper identifier “D-31,” from Aberdeen Proving Ground, Maryland. This “traveling laboratory” has fulfilled its original mission and has also been adapted for other uses. Built for the German army in March 1983, D-31 was first assigned to a Bundeswehr chemical unit. In 1990, the vehicle was recalled to its place of manufacture, Thyssen Henschel in Kassel, Germany; reconfigured; and modified with U.S. components and English-language decals. D-31 was one of sixty vehicles that the German government donated to the U.S. Army as a contribution to Operation Desert Storm. At first, D-31 was placed in floating stock (where vital equipment and supplies are packed aboard cargo ships for immediate maritime shipment) with the 490th Chemical Battalion in Kuwait. At the end of hostilities, the 490th signed D-31 over to the 165th Heavy Supply Company. In time, it was sent to Fort McClellan, Alabama, where it remained in pre-positioned stock until its first use—as a training vehicle for Dragon Soldiers at the U.S. Army Chemical School (USACMLS). In 1999, after being upgraded with new reconnaissance equipment and other modifications, D-31 moved with the rest of the USACMLS equipment and personnel to its new home at Fort Leonard Wood, Missouri.

Shortly after, D-31 was moved to Fort Lewis, Washington, where it was fielded for the first time. It was attached as an NBC reconnaissance vehicle for the newly formed Stryker brigade combat team. It was in this capacity that D-31 was deployed overseas in support of Operation Iraqi Freedom in November 2003.

D-31 was attached to 3d Platoon, D Troop, 1-14th Squadron (Stryker Cavalry), 3d Brigade (Stryker Brigade Combat Team), 2d Infantry Division. Without the true “Chemical” mission for which it was built and for which the crew had trained, D-31 performed



The M93A1 Fox D-31 prior to restoration

other duties, including convoy escort missions. During the early morning hours of 29 May 2004, D-31 was struck while serving as the lead vehicle in a three-vehicle convoy traveling from the forward operating base at Tal Afar to Mosul. The damage was so severe that the removal of D-31 from the area was prohibitive. There were four Soldiers in the vehicle—three received moderate injuries, and one was seriously wounded. The solid construction of the vehicle and the quick reaction of the driver helped prevent further devastation. The crews of other convoy vehicles provided immediate security and skilled combat lifesaving support. These efforts ensured the rapid evacuation of the D-31 crew to nearby medical facilities. All four Soldiers recovered from their wounds and returned to active duty.

Later, an M88A2 Hercules recovery vehicle and an M1070 Heavy Equipment and Truck and Transport (also known as a “lowboy trailer”) were dispatched to the site to recover D-31 and return it to the forward operating base.


The battle-damaged D-31 was returned to the United States. It remained out of service at Anniston Army Depot, Alabama, until a new use was found.

Battle-worn and training-tested, D-31 was resurrected and shipped to Aberdeen Proving Ground in 2006. For the next year, it was used in yet another capacity for which it was not originally intended. The D-31 served as a platform for ballistic testing that provided insight into new methods for protecting Fox crews and preventing battlefield casualties.

Following its role in ballistic testing, several key individuals at the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS) (formerly USACMLS) arranged for D-31 to be returned to Fort Leonard Wood. After much planning and hard work, including the concerted efforts of the 58th Transportation Battalion Motor Pool and the Directorate

of Logistics, Fort Leonard Wood, D-31 was transformed from a battle-damaged, bullet-scarred, stripped-down, rusty, test range hulk to—in the words of a former USACBRNS commandant, Brigadier General Thomas Spoehr—the “best-looking Fox I have ever seen in my life.”

On 12 June 2008, D-31 was officially dedicated in its final role—as the symbol representing the Chemical Corps at the main gate of Fort Leonard Wood. Speaking on the service history of D-31, Brigadier General Spoehr said, “She is a trained Soldier. She was a part of the German army, survived multiple . . . attacks and small-arms fire, and protected her crew members. Although it is only a piece of metal, it really represents the fabric of our Corps, and I am so grateful to have it here.”

D-31 reflects the proud lineage of its service, but it also represents all M93A1 Fox NBC reconnaissance vehicles and those men and women who have served and continue to serve on Fox crews. It stands as a highly visible and dramatic tribute to the service of past and future Dragon Soldiers. 

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The Inside Story of Commanding in the U.S. Army Recruiting Command

By Lieutenant Colonel Toimu (Troy) Reeves II

In early February 2005, I was notified that I would be promoted to the rank of lieutenant colonel on 1 March, so I was not surprised when I started receiving e-mails congratulating me on my promotion. That's why—when I received a congratulatory e-mail from Lieutenant Colonel Beatrice Evans in mid-February—I responded by thanking her and stating that I was looking forward to the promotion. She replied, "I guess you have not been notified yet that you were selected for battalion command." At that point, I rushed to get online and found my name listed as a primary candidate for battalion command in the U.S. Army Recruiting Command (USAREC).

At the time, all other Chemical officers selected for command positions were assigned to Chemical, depot, or garrison commands. I was the only one slotted for USAREC. Prior to the assignment selection, I was a major who commanded 450 troops at Fort Huachuca, Arizona. As a captain, I had commanded the 181st Chemical Company, Fort Hood, Texas, and as a lieutenant, I was a smoke platoon leader at the National Training Center, Fort Irwin, California. I never imagined that if I were selected to be a battalion commander, I would end up in Army recruiting!

I called a few friends who had served with USAREC, and all of them said, "Decline it" or "Don't do it." But, when I told my wife that I did not like what I was hearing about USAREC and that I was considering declining the command, she laughed and reminded me that I had never and would never retreat from a challenging job or an "impossible" mission. "So, let's go and take command," she said. I knew then that I was going to be a USAREC battalion commander.

Before taking command in May 2006, I spent much of my spare time studying and learning about the USAREC mission and the goals of the Houston Recruiting Battalion where I was to be stationed. By the time I assumed command, I knew that the battalion was transforming to include more than 300 personnel comprising the battalion headquarters (222 recruiters, plus others serving as commanders and civilian and contractor staff), 7 companies, and 48 recruiting stations. The battalion recruits more than 4,000 Soldiers from a 40,000-square-mile area of southeast Texas each year. On any given day, there are 800 to 1,200 Soldiers waiting to enter basic training.

I also learned that the annual mission is divided into twelve months, with a "recruiting month" starting in the middle of one month and ending in the middle of the next month. Regardless of when the mission is accomplished during the recruiting month (even if it is accomplished on the last day of the current recruiting month), the count immediately begins at zero on the

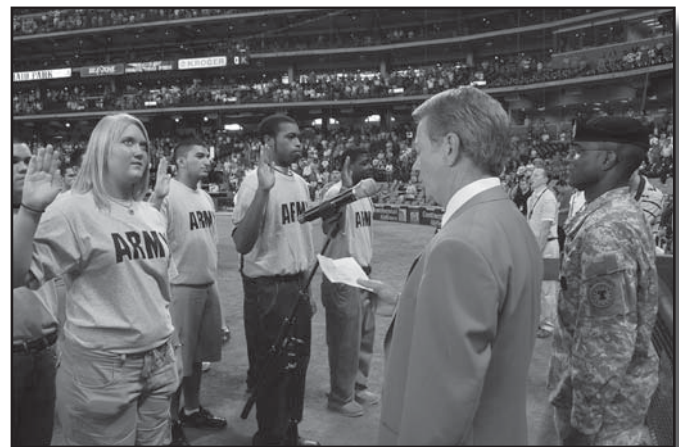
first day of the next recruiting month. And, due to the unending need for qualified Soldiers in our Army, the cycle never ends.

The facts I learned made recruiting seem "easy" before I assumed command. However, the task would prove to be difficult once I actually owned the recruiting guidon for southeast Texas.

After taking command, I learned that each recruiter needed to locate and talk to nearly one hundred prospects to gain one enlistment. I also learned that only three of every ten individuals who want to enlist will qualify physically, medically, mentally, and morally. I learned that to achieve the yearly goal, each recruiter needed to enlist an average of two recruits during the twenty to twenty-five days available for recruiting each month; and I learned that the command often surpasses the goal.

Most recruiters are stationed in communities that do not have a military installation; consequently, recruiters must learn to live and work in nonmilitary environments. The only information that many of the citizens of these communities have about the Army is derived from what they see on television. Therefore, recruiters must become skilled in telling the Army story and their own story so that the community may better understand the importance and nobility of their members who come forward to enlist as Soldiers. Recruiters must educate area citizens about the life of a Soldier so that they understand there are many facets not shown on the news.

We, as recruiters, are charged with informing members of the community about the various educational programs offered by the Army. One of the many excellent programs that



Recruits take the oath of enlistment at the Astros' baseball park in Houston, Texas, just before a game.

I endorse is the March 2 Success Program, which is offered at area high schools as a way to help raise student scores on state-mandated, scholastic-aptitude testing. It is our job to let the community know that the Army offers this free program, with no commitment to enter the Army. Of course, if desired, the program can also be used to help raise scores on military aptitude tests.

In this position, I have learned that it takes a special type of leader to motivate the community and a special type of recruiter to locate the best candidates to become Soldiers. Because not everyone is interested in or suitable for military service, a recruiter must become accustomed to rejection. But, recruiters also get to encounter those wonderful volunteers who make it through the enlistment process to become Soldiers and future leaders of their communities.

As a recruiter, you learn that retired military members, chief executive officers, businessmen, and citizens want to be a part of your recruiting efforts. That means you need to push yourself, put in many extra hours, get out of your office, and find them. They can tell their stories to others—many of whom have had military service and also want to help. This multiplies the recruiting force so that it is not just the recruiters out there trying to locate the best individuals to enlist in our Army; the leaders of our community also have a vested interest. You learn that if you do not enlist Soldiers and keep our Army strong, our way of life and the future of our Nation will be threatened. You learn that recruiting is on the front line of the War on Terrorism. And you learn that working on weekends and holidays is sometimes a small price to pay.

In October 2008, I passed the colors for the Houston Recruiting Battalion to Lieutenant Colonel Michael Bottiglieri. I am now the chief of staff for the 2d Recruiting Brigade of Alabama. However, I am so grateful that I accepted the arduous, challenging, and extremely gratifying responsibility of commander of the Houston Recruiting Battalion. There are so many memories of this vast community in southeastern Texas that I will cherish forever. I will never forget the hundreds of

contacts I've made with general officers and other military service members, chief executive officers, businessmen, prominent citizens, school administrators, and sports team owners in my community. In their own way, each of them became part of our recruiting efforts. I will never forget the many thank you notes that I received from parents of Soldiers who enlisted, extending their appreciation for transforming their kids into productive Soldiers and citizens. I cherish the many e-mails I have received from Soldiers, thanking USAREC for setting them on the right path and giving them hope for the future.

I will never forget the many times an anonymous customer at a restaurant paid for my meal because I was a Soldier in uniform. I will never forget the card that contained \$300 worth of restaurant coupons that was left on my car, along with a note that said, "Thanks for being an American Soldier and keeping us safe." It was signed, "Your neighbor."

I will never forget the role of USAREC Soldiers in ensuring that our Army—our total volunteer Army—is a ready and relevant force. We must keep our ranks filled with quality Soldiers so that we can continue to live in the strongest and best nation on Earth.

A recruiting assignment is definitely not an easy assignment. And as commander, I was required to serve as a role model to the Soldiers under my command and to future Soldiers who would soon begin their military journey. But, after twenty-eight months of command, I must admit that it was the most rewarding experience of my nineteen years in the Army. If you love interacting with the next generation, their parents, and the community and you want to try something totally different that will test and challenge you every day, the Army recruiting mission is for you. It was, and is, for me. It is a mission where only the best need apply.

HOOAH!!



Lieutenant Colonel Reeves was the commander of the Houston Recruiting Battalion from May 2006 to October 2008.

Honoring Our Fallen Dragon Soldier



Sergeant Jaime Gonzalez Jr.

Hometown:
Austin, Texas

Unit:
436th Chemical Company
Texas Army National Guard
Laredo, Texas

Killed:
3 August 2008

This casualty list from the ongoing War on Terrorism was current as of the publication date.

464th Chemical Brigade: The Final Chapter

By Sergeant First Class Mary Nist



An inactivation ceremony for the 464th Chemical Brigade was conducted on 29 March 2008 at the Holiday Inn Downtown, Johnstown, Pennsylvania. Colonel Gregory Ritch, commander of the 464th, led the official party, with Colonel Mark Smith, Deputy Commander for Readiness, 99th Regional Readiness Command (RRC), Coraopolis, Pennsylvania, following. Colonel Robert Walk, former Deputy Assistant Commandant for the U.S. Army Reserve, U.S. Army Chemical, Biological, Radiological, and Nuclear School, Fort Leonard Wood, Missouri, and Command Sergeant Major Donald B. Riggs, command sergeant major of the 464th, completed the official party. All former Johnstown commanders attended the ceremony, including retired Major General Leonard Hoch—the only general officer to have commanded the unit. Retired Command Sergeant Major George Davis represented the former command sergeants major.

The ceremony was followed by a reunion dinner, where many former brigade members met to reminisce of past times. Before dinner was served, an explanation of the “Missing Man Table”¹ was read; and after a moment of silence, 89-year-old, World War II veteran Walter “Pete” McClelland played a moving rendition of *Taps*.

The motto of the 464th Chemical Brigade was “We Serve in Silence,” which connotes the silent, but deadly force of chemical weapons and the silent, dirty, thankless—yet lifesaving—job that Chemical Soldiers perform with the utmost expertise, dignity, and honor.

Prior to the inactivation, the mission of the 464th Chemical Brigade was to provide command and control of two to six Chemical battalions and other assigned or attached separate companies at the corps level. The brigade provided staff planning and coordination for combat, combat support, and combat service support operations for all assigned and attached units. The 464th also allocated units and resources in support of chemical, biological, radiological, and nuclear reconnaissance; decontamination; biological detection; and smoke operations. In addition, the brigade conducted civilian decontamination in response to domestic chemical, biological, radiological, and nuclear incidents.

The lineage of the 464th can be traced back to 20 October 1953, when it was originally constituted as the 464th Chemical Group and assigned to the First U.S. Army. The unit was

activated on 1 December 1953 in New York, New York, and continued operations until its inactivation on 31 January 1968. On 22 February 1972, the 464th Chemical Group was assigned to the Third U.S. Army and reactivated in Orlando, Florida. On 1 October 1983, the 464th was relieved from assignment to the Third U.S. Army and reassigned to the Second U.S. Army. On 16 June 1987, it was reassigned to the First U.S. Army and relocated from Orlando to Johnstown, Pennsylvania. On 16 September 1987, the 464th Chemical Group was reorganized and redesignated as Headquarters and Headquarters Company, 464th Chemical Brigade.

While in Johnstown, the brigade commanded a wide variety of battalions and units, including the 336th Military Police Battalion; 128th and 383d Military Intelligence Battalions; 392d Signal Battalion; 444th Personnel Services Battalion; 463d, 365th, and 458th Engineer Battalions; 485th Chemical Battalion; and Army Reserve Unit Consequence Management. Prior to the Army Reserve transformation on 1 October 2007, the brigade was composed of the 365th and 458th Engineer Battalions and the 485th Chemical Battalion.

Annual Training and Exercise Support

Throughout its history, the 464th Chemical Brigade was an important part of many training exercises around the world. The brigade supported several higher headquarters (V Corps, I Corps, 19th Theater Support Command, and 89th RRC)



The casing of the colors



A subordinate unit conducts WMD training.

in a variety of exercises during its tenure in Pennsylvania, including Central Fortress; Caravan Guard; Return of Forces to Germany (REFORGER); Cascade Peak; Cascade Mist; Cascade Lightning; Cascade Steel; Yama Sakura; Ulchi Focus Lens; Urgent Victory; Alamo; Reception, Staging, and Onward Integration; and River Warrior.

In 1979, the 464th Chemical Brigade (Orlando) trained two Chemical battalions and seven Chemical smoke generation companies (which, at the time, represented one-third of the Army Reserve smoke-generating strength) during annual training at Fort A.P. Hill, Virginia. Three of the units trained—the 485th Chemical Battalion and the 130th and 355th Chemical Companies—later became some of the first units commanded by the brigade when it was transferred to Johnstown.

In addition to the exercises previously mentioned, the brigade was selected as the exercise director for the Rio Grande series of exercises for Fiscal Years (FYs) 1998, 1999, 2001, and 2002. The Rio Grande exercises, which were sponsored by the U.S. Army Reserve Command, were Chemical exercises that made use of a contemporary opposing force scenario. Rio Grande 1998 was conducted at Camp Rapid, South Dakota, with two battalions. The exercise, which was held in conjunction with Golden Coyote 98, provided support to the South Dakota National Guard. Rio Grande 1999 was conducted at Fort Bliss, Texas, with five Chemical battalions, one military police battalion, one quartermaster battalion, and one support engineer combat team. Rio Grande 2001 was conducted at Dugway Proving Ground, Utah. It provided support to the U.S. Air Force and Utah National Guard. Rio Grande 2002 was simultaneously conducted in four locations—Fort Hunter Liggett, California; Fort McCoy, Wisconsin; Camp Rapid, South Dakota; and Camp Guernsey, Wyoming. The Fort Hunter Liggett units supported a combined weapons of mass destruction (WMD) exercise at Coast Guard Island, Alameda, California, with the Coast Guard. At Fort McCoy, the exercise was held in conjunction with the Golden Medic Exercise, which provided medical units the opportunity to train with decontamination units and

chemically contaminated casualties and to get a firsthand look at how Chemical units decontaminate casualties using WMD equipment. Exercises at Camp Rapid and Camp Guernsey supported the joint exercise Golden Thunder. At Camp Rapid, the exercise supported the South Dakota National Guard; and at Camp Guernsey, it supported the Wyoming National Guard.

The 464th Chemical Brigade was one of the lead WMD training organizations, ensuring that assigned Chemical companies were trained in the use of fielded WMD equipment. The brigade also trained law enforcement agencies in preparation for Pope John Paul II's visit to the United States in October 1998. A team of instructors from the 464th devised a comprehensive training program on the fundamentals of chemical defense to assist a Federal Bureau of Investigation (FBI) special weapons and tactics (SWAT) team, also in preparation for the Pope's visit. This specialized training program was conducted at Fort Dix, New Jersey. In addition, the 464th compiled a training program for the Department of Justice/FBI-Northeast Region; New York City SWAT team; Newark FBI SWAT team; and Newark County Emergency Response organization to assist in planning for a WMD training event conducted at Fort Indiantown Gap, East Hanover, Pennsylvania, in April 1998. The brigade was also instrumental in coordinating training on Weapons of Mass Destruction Command, Control, and Coordination (WMD C3) for personnel from all major subordinate commands under the 99th RRC. The training was conducted with instructors from the Defense Nuclear Weapons School.

Mobilization and Deployment Support

While the brigade was not mobilized as a unit, several of its subordinate units were mobilized in support of Operations Desert Storm, Enduring Freedom, Noble Eagle, and Iraqi Freedom. The first units mobilized for Operation Desert Storm were the 336th Military Police Battalion, Oakdale, Pennsylvania; 307th Military Police Company, New Kensington, Pennsylvania; and 352d Military Police Company, Oakdale, Pennsylvania. They were soon followed by the 304th Military Police Company, Bluefield, West Virginia, and 363d Military Police Company, Grafton, West Virginia.

After 11 September 2001, the 464th was called upon to mobilize units to support the war effort. From 2002 to 2007, more than 1,000 Soldiers in 10 units (comprised of a total of 5 complete units and 19 derivative [partial] units) were mobilized. The first units alerted were the 249th Engineer Battalion, Company B, Team 11, Kittanning, Pennsylvania (in support of Operation Enduring Freedom in Afghanistan); 300th Chemical Company, Morgantown, West Virginia (in support of Operation Enduring Freedom in Jordan); 377th Chemical Company, Richmond, Virginia (initially in support of Operation Enduring Freedom, but diverted to support Operation Noble Eagle); 431st Chemical Detachment, Johnstown, Pennsylvania (in support of Operation Enduring Freedom in Kuwait); and the Army Reserve Unit-Consequence Management, Aberdeen Proving Ground, Maryland (mobilized to support Operation Noble Eagle at Aberdeen Proving Ground and the Department of State, Washington, D.C.).

(continued on page 45)



Feed the Flame: Put the Fire in the Dragon (Soldier)!

By Colonel Robert D. Walk and Lieutenant Colonel Richard D. Howe

The world is changing. As the Army transforms, the chemical, biological, radiological, and nuclear (CBRN) community must also transform. As a result of the changing nature of warfare from a linear battlefield (CBRN operations) to an asymmetric one (CBRN and hazmat operations, depending on the conditions), CBRN and hazmat operations are becoming more alike and less disparate. This article explores whether or not firefighters should become CBRN Soldiers.

Current Situation

Army firefighters (military occupational specialty [MOS] 21M) currently belong to the Engineer branch. They perform firefighting operations (structural, aircraft, wildland, and rescue), salvage hazmat, and conduct fire-protection functions. Due to the global nature of the problem, hazmat operations are a big part of a firefighter's duties.

Wherever there are industrial operations, there is hazmat. From a professional firefighter's perspective, every call involves a hazmat event at some level. For example, emergency medical service responses involving blood or other body fluids are hazmat incidents that personnel have learned to expect and are trained to handle. Smoke and fluids generated at an automobile accident also constitute hazmat. And hazmat is present in all military operations at all military bases. In fact, all chemical, biological, radiological, nuclear, and high-yield explosives operations are classified as hazmat operations. Firefighters must be qualified at the hazmat awareness and operations level during their initial-entry training. Firefighters can become hazmat technician-qualified at any level. And it is possible to obtain the

additional certification of hazmat incident commander as a staff sergeant. All Department of Defense (DOD) fire service training is certified by the International Fire Service Accreditation Congress, and the names of firefighters and their qualifications are entered into a national database.

CBRN specialists (MOS 74D) conduct CBRN reconnaissance and surveillance, perform decontamination operations, conduct obscuration operations, conduct CBRN sensitive-site exploitation, and operate and perform maintenance on assigned CBRN defense and individual protective equipment. In non-Chemical units, CBRN noncommissioned officers (NCOs) plan, conduct, and evaluate individual and collective CBRN training and provide technical advice on all CBRN operations and hazards for company level and higher organizations.

Differences and Similarities

Firefighters respond to fires and nonmilitary releases of hazmat; they are generally not meant to be employed under combat conditions. CBRN Soldiers respond to military releases of hazmat under combat conditions. While this contrast between the specialties is somewhat simplistic, it is appropriate.

Fire is a chemical reaction! To control a fire, the sources of the reaction—heat, oxygen, and fuel—must be eliminated. Firefighters normally use water to cool the source of ignition or deprive it of oxygen, thus stopping the reaction. The water is usually applied through the use of a pump and piping. When the pump and piping are placed on an emergency response vehicle to fight fires, the vehicle is referred to as a fire engine. If the

74D Responsibilities

- **74D10.** CBRN specialists support CBRN reconnaissance, surveillance, detection, decontamination, and obscuration operations and serve as company CBRN specialists.
- **74D20.** Soldiers supervise CBRN reconnaissance, surveillance, detection, decontamination, and obscuration operations and serve as company CBRN NCOs.
- **74D30.** Staff sergeants lead CBRN reconnaissance, decontamination, and obscuration squads and biological detection teams and serve as battalion CBRN NCOs who supervise and train company level CBRN NCOs and specialists and inspect company level CBRN readiness.
- **74D40.** Sergeants first class function as platoon sergeants; supervise CBRN reconnaissance, surveillance, detection, decontamination, and obscuration platoons; manage Chemical company operations; serve as CBRN staff advisors at battalion level and higher organizations; supervise and train subordinate level CBRN NCOs and specialists; and inspect subordinate unit CBRN readiness.
- **74D50.** First sergeants, master sergeants, and sergeants major provide staff supervision and coordinate, supervise, and conduct group, division, Corps, and Army level CBRN operations.

Specialized Chemical Branch Areas

- Technical escort units (ASI L3).
- Armored chemical-biological reconnaissance units (ASI L [Fox], L1 [Master Fox], and L6 [Stryker]).
- Army National Guard civil support teams (skill qualification identifier R [enlisted] and R1 [officer]).
- U.S. Army Reserve domestic-response casualty decontamination (operationally trained) and domestic-response reconnaissance (civilian hazmat-trained) units.

same pump and piping are placed on a vehicle to decontaminate hazmat and chemical agents, the vehicle is called a truck-mounted, decontamination apparatus. In fact, firefighting is a secondary mission for the decontamination apparatus.

Hazmat Operations

Hazmat has become a widely recognized threat in the United States. Any chemical, biological, or radiological material

that escapes from storage or use and becomes a threat to the American public is considered hazmat. Virtually every industrial operation, from a dairy to a chemical plant, can experience a situation that results in a hazmat response. When a city or a military base in the United States responds to a routine (non-terrorist-generated) hazmat incident, the primary responders (hazmat team) are generally firefighters by training, with additional hazmat specialty training. Why? Because firefighter training includes extensive hazmat training.

Industrial operations do not take place only in the United States. As our Soldiers discovered in Iraq, hazmat incidents collaterally result from combat operations and sensitive-site exploitation. Non-terrorist-generated hazmat incidents in the theater of operations still require a hazmat response. In recent cases, these responses have been conducted by hazmat-trained CBRN Soldiers. Why? Because firefighters in the theater of operations are focused on specific protection missions and may not be available. In contrast, there are many CBRN Soldiers and they represent the only trained capability available for responses.

CBRN Operations

CBRN incidents are also considered a threat to the Homeland. Because there is no demonstrable peacetime use for nuclear weapons, nuclear incidents always elicit a military response in addition to the normal nonmilitary response. When CBRN material is used as a weapon for targeting Soldiers on the battlefield, CBRN operations become necessary. The U.S. Army Chemical Corps responds with CBRN specialists and units to advise commanders, save Soldiers, and allow the mission to continue. Why? Because that is the designated mission of the Chemical Corps.

When terrorists use CBRN material as a weapon in a city or a military base, the first response includes the local hazmat team, which is usually staffed by firefighters. As the response develops, National Guard weapons of mass destruction–civil support teams (which are staffed with Soldiers and airmen who have been trained by the U.S. Army Chemical, Biological, Radiological, and Nuclear School) provide support. Other Chemical units, primarily from the Army Reserve and National Guard, can also respond to provide backup hazmat and mass decontamination support.

Response Operations

Chemical Corps command and control follow the military model of command and control, whereas the Fire Service uses the Incident Command System (ICS) for command and control. Because the military model was used as a basis for the ICS, the differences are primarily in nomenclature and focus. In addition, CBRN Soldiers and U.S. Army firefighters both receive training on the Military Command and Control System and the ICS. CBRN Soldiers focus more on the Military Command and Control System, while firefighters focus more on the ICS.

Use

War destroys infrastructure, which in turn results in hazmat incidents. On varying scales, examples include incidents in Grenada, Panama, Bosnia, Haiti, Kuwait, Afghanistan, and Iraq. In each of these locations, we have helped rebuild the infrastructure and assisted in government operations (firefighting, hazmat reduction, and disaster response) until the country's own government was capable of supporting itself. If we had not helped these nations rebuild, we may have won the battles, but would have lost the wars.

The number of deployable 21Ms in the Engineer branch is about 1,000. Due to force structure decisions, most Army firefighters are federal or contract civilians. While well-trained, civilian firefighters do not deploy. The Chemical Corps, by contrast, is much stronger; there are more than 20,000 CBRN-trained Soldiers in the Chemical Corps, and most have had some hazmat training. The 74D and 21M Soldiers must be able to work together, particularly in hazmat operations. One way to do this would be to create a single branch to oversee them—an all-hazard response branch.

Proposal

Transferring the firefighting proponenty to the Chemical Corps under the Maneuver Support Center would strengthen the Army's firefighters and CBRN Soldiers. The firefighting specialty would become a more significant part (about 10 percent) of the branch, so attention to firefighters' needs would increase. Firefighters would also benefit from improved developmental opportunities. Currently, advancement to the senior NCO level is limited due to the number and types of units. There are few staff positions at the senior NCO level, and firefighting warrant officers do not exist. A properly melded and reformed CBRN response branch would allow firefighters to develop into first sergeants, sergeants major, and warrant officers.

The Chemical branch would also benefit from a rebirth of the old concept of multiple-capability (hazmat, CBRN decontamination, and firefighting) decontamination units. CBRN training would include more common civilian response operations that focus on hazmat and the ICS, and military chemical doctrine would be adjusted to easily enable more civilian response operations. This would result in a more capable and adaptable CBRN response corps. Practicing skills on real, small-scale, civilian incidents would serve as great training and preparation for large-scale incidents.


Think of the training and operational possibilities that would exist if a firefighting platoon or detachment were organic

to a Chemical company! What if MOS 74 included "74Fs" ("F" for "firefighter"), vice 21Ms?

The firefighting MOS should be kept separate and distinct and designated "74F." To the maximum extent possible, working relationships—particularly in hazmat—should be fostered through cross training in advanced individual training. The Basic NCO Course should include firefighting, CBRN, and hazmat phases. The Advanced NCO Course should also include these same phases, but with a focus on leadership. At the master sergeant level, all eligible 74-series Soldiers would be considered for leadership positions and promotion to sergeant major.

Increasing the capabilities of the 74D CBRN Soldiers is also important. We need to have an additional skill identifier (ASI)-producing course in basic structural and wildland firefighting and ICS practices for nonfirefighting Soldiers. The goal of the course, which should be about eighty hours long, should be a solid familiarization for E-4s through E-7s. These Soldiers could provide basic leadership and instruction at fire incidents where their unit is tasked to fight fire or, with a little extra training, could be detailed to undermanned firefighting detachments.

Conclusion

The world is changing. The clear distinction between CBRN operations and hazmat and civil response operations is fading. These operations are now becoming one. At the U.S. Army Maneuver Support Center, all of the experts are in one place. Because the Engineer Corps is already sufficiently committed to doctrinal challenges, perhaps this one small element should be removed from their plate. The Chemical Corps should pick up the firefighting proponenty to maintain relevancy and to meet what will surely be future needs. 

Colonel Walk is an active U.S. Army Reserve Chemical officer assigned to Headquarters, U.S. Army Training and Doctrine Command, Fort Monroe, Virginia. He is the former Deputy Assistant Commandant for the U.S. Army Reserve, U.S. Army Chemical, Biological, Radiological, and Nuclear School, Fort Leonard Wood, Missouri.

Lieutenant Colonel Howe is a U.S. Army Reserve Infantry officer assigned to Headquarters, U.S. Army Training and Doctrine Command. While not serving on active duty from 1986 to 1995, he was a professional firefighter, emergency medical technician, and engineer with the City of Palm Bay, Florida. He is a graduate of the Smoke Diver Course, Florida State Fire College, Ocala, Florida.



20th SUPCOM (CBRNE) on the Road to Full Operational Capability

By Major Joseph Scrocca

Over the past four years, the U.S. Army has transformed to a more flexible, more deployable, and more lethal modular Army. Two of the most monumental changes affecting the Chemical Corps were the activation of the 48th Chemical Brigade in September 2007 and the continued growth and development of the 20th Support Command (SUPCOM) (Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives [CBRNE]).

During Operations Liberty Focus II and Agoge Focus II, conducted at Fort Hood, Texas, 14–17 September 2008, the 48th Chemical Brigade, 20th SUPCOM, demonstrated the ability to command and control the full spectrum of specialized CBRNE forces and capabilities in one of the largest CBRNE exercises ever conducted. In addition, the brigade continued to develop and refine the CBRNE battalion task force (TF) and company team concepts and exercise and amend logistical requirements for the brigade TF.

The magnitude of this exercise cannot be overstated. The 20th SUPCOM Headquarters and its partner, the Joint Elimination and Coordination Element, participated in the massive CBRNE operation, serving as the joint task force for the elimination of weapons of mass destruction (JTF-E).

The 48th Chemical Brigade comprised TF 48 of the JTF-E, conducting command and control of battalion TFs that consisted of elements from the 2d, 22d (Technical Escort [TE]), 23d, 83d, and 110th (TE) Chemical Battalions; 79th Explosive Ordnance Disposal (EOD) Battalion; and seven Chemical companies. The 180th Transportation Battalion served as the brigade combat sustainment support battalion. In addition, the 20th SUPCOM Nuclear Disablement Team (NDT) and two weapons of mass destruction coordination elements (WMD-CEs) served as advisors to the JTF-E and ground commanders on

weapons of mass destruction elimination (WMD-E) issues and procedures.

As part of Operation Liberty Focus II, the JTF-E conducted a mission readiness exercise during a final major operational rehearsal prior to the full operational capability (FOC) validation in 2009. The 20th SUPCOM has already achieved many key organizational and operational milestones on the road to FOC.

The 20th SUPCOM was activated at Aberdeen Proving Ground, Maryland, in October 2004. The 52d Ordnance Group (EOD), its five EOD battalions, and the 22d Chemical Battalion were assigned to the new headquarters. The mission was to provide an operational headquarters for command and control of Army CBRNE operations and to serve as the primary Army force provider of specialized CBRNE capabilities.



Soldiers from the 48th Chemical Brigade clear a bunker during Operation Liberty Focus II.

In June 2005, the 71st Ordnance Group (EOD) was activated at Fort Carson, Colorado. By June 2006, three new EOD battalions had been assigned to the 71st Ordnance Group and the 110th Chemical Battalion had been activated at Fort Lewis, Washington.

The 2006 Quadrennial Defense Review required further alterations to 20th SUPCOM structure, organization, manning, and equipment to meet the new requirement to stand up and serve as the headquarters for the JTF-E. The establishment of the CBRNE Analytical and Remediation Activity (with four remediation response teams, multiple mobile exploitation laboratories, and an aviation section) in May 2007 marked a key milestone in the command's ability to provide the Army with the full spectrum of specialized CBRNE forces and capabilities. The first major operational milestone was the August 2007 demonstration of the initial operational capability, which was validated during Operation Ulchi Focus Lens, Korea. The final major organizational component was completed in September 2007 when the 48th Chemical Brigade was activated and assumed command of three Chemical battalions and the TE units.



Soldiers from the 48th Chemical Brigade conduct decontamination during Operation Liberty Focus II.

Further contributing to the array of CBRNE forces and capabilities at its disposal, the 20th SUPCOM activated an NDT to counter radiological and nuclear threats and conduct nuclear disablement operations. (Another NDT is scheduled to stand up in 2009.) The command also established four WMD-CEs to coordinate CBRNE response efforts with major operational commands on the battlefield. (Two more WMD-CEs are scheduled to stand up in 2009.)

In addition to these internal assets, the 20th SUPCOM assumed operational control of the U.S. Army Reserve Consequence Management Unit in 2008 and has training readiness authority for the Army Reserve 111th EOD Group. Future force structure realignments include the scheduled incorporation of the 1st and 9th Area Medical Laboratories and the assignment of the Asymmetric Warfare Group in 2009.

The 20th SUPCOM continues to look to the future. During Operation Liberty Focus II, the command conducted exercises and continued to test and refine the CBRNE brigade, battalion, company, and team concepts that combine the reconnaissance, smoke, decontamination, and biological detection capabilities of traditional Chemical units with the capabilities of EOD units. The flexible capabilities of this unique force mixture have already been proven in TE units and will continue to be refined and improved, resulting in the most capable counter-CBRNE and WMD-E capability in the world.

The final milestone on the road to FOC for the 20th SUPCOM is a demonstration of the command's ability to serve as the combined joint TF headquarters for WMD-E, scheduled for Spring 2009 at Operation Key Resolve, Korea. ●●●

Major Scrocca is the public affairs officer for the 20th SUPCOM (CBRNE), Aberdeen Proving Ground, Maryland. He is a graduate of Saint Bonaventure University, New York, and the Lyndon B. Johnson School of Public Affairs, University of Texas at Austin.

ARMY CHEMICAL ONLINE REVIEW

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10th Mountain Division and Fort Drum Hold Mountain Warrior Green Dragon Ball

By Master Sergeant Paul Freeman

The Chemical, Biological, Radiological, and Nuclear (CBRN) Section, 10th Mountain Division (Light Infantry), and Fort Drum, New York, Dragon Soldiers conducted the 2008 Mountain Warrior Green Dragon Ball on 4 April 2008. Lieutenant Colonel George Gonas, chief of CBRN and Force Protection, 10th Mountain Division, hosted the event. Colonel Michael Bolluyt, chief of the Requirements Determination Division, Capabilities Development Integration Division, U.S. Army Maneuver Support Center, was the guest speaker. All Fort Drum Dragon Soldiers and their guests were invited to attend.

The event provided participants with the opportunity to gather, enjoy dining and dancing, and build teamwork within the community. Ten individuals who have contributed to the Chemical Corps were also formally recognized during the event.

After the formal posting of the colors, a somber Fallen Soldier Ceremony was conducted to recognize the supreme sacrifices of our fallen comrades.

The following awards were presented to the recipients:

- **Carol Ann Watson Award:** Mrs. Kerri Gonas.
- **Ancient Order of the Dragon:** Sergeant First Class James Sheets (Retired), Department of Veterans Affairs.
- **Honorable Order of the Dragon:**
 - Chief Warrant Officer Four Craig Boss (Retired), 10th Mountain Division.
 - Major Guillermo Santiago, 10th Division Special Troops Battalion.
 - Captain Hanibl Olmeda, 59th Chemical Company.
 - Sergeant First Class Aaron Atchley, 59th Chemical Company.
 - Sergeant First Class Terrence Bratton, 59th Chemical Company.
 - Sergeant First Class Alfred Domingo, 10th Mountain Division.
 - Sergeant First Class Cecil McCabe, 10th Combat Aviation Brigade.
 - Sergeant First Class Glynnis Moore, 10th Mountain Division.

As the guest speaker, Colonel Bolluyt shared his experiences and his insight for the future of the Chemical Corps. He also discussed some of the new-equipment initiatives designed to improve CBRN capabilities and better equip Dragon Soldiers.

Even in this time of continuous deployments, the Fort Drum Chemical Soldiers found time to pause, come together, and pass on traditions—actions that are becoming increasingly important in keeping our Army strong. Young Soldiers don't often have the opportunity for firsthand observation of unit pride and the traditions of a formal military gathering these days. For the Fort Drum CBRN community, the Mountain Warrior Green Dragon Ball was a significant investment in our future. Soldiers will carry on these traditions, promoting teamwork and building pride in our Corps and the Army. We can never allow these events to become unimportant in our military lives.

Editor's note: The 10th Mountain Division, CBRN Section, is currently deployed to Iraq in support of Operation Iraqi Freedom.

Master Sergeant Freeman currently serves as the 10th Mountain Division CBRN/Force Protection sergeant major for the Multinational Division–Center, Camp Victory, Iraq.



Awards presentation

DOCTRINE UPDATE

U.S. Army Maneuver Support Center Directorate of Training Doctrine Development Division

Publication Number	Title	Date	Description
Current Publications			
FM 3-11 MCWP 3-37.1 NWP 3-11 AFTTP(I) 3-2.42	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Defense Operations	10 Mar 03	A multiservice tactics, techniques, and procedures (MTTP) manual which provides commanders and staffs a key reference for the planning and execution of service chemical, biological, radiological, and nuclear (CBRN) defense operations, with focus on the passive-defense component of counterproliferation. Status: Under revision Fiscal Year (FY) 2009.
FM 3-11.3 MCRP 3-37.2A NTTP 3-11.25 AFTTP(I) 3-2.56	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Contamination Avoidance	2 Feb 06	An MTTP manual for conducting CBRN contamination avoidance. This revision combined Field Manual (FM) 3-3 and FM 3-3-1 into one publication. Status: Current.
FM 3-11.4 MCWP 3-37.2 NTTP 3-11.27 AFTTP(I) 3-2.46	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection	2 Jun 03	An MTTP manual which establishes principles for CBRN protection and addresses individual and collective protection (COLPRO) considerations for the protection of the force and civilian personnel. Status: Current.
FM 3-11.5 MCWP 3-37.3 NTTP 3-1.26 AFTTP(I) 3-2.60	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination	4 Apr 06	An MTTP manual which addresses the principles and levels of CBRN decontamination operations in a tactical environment. Status: Current.
FM 3-6 (FM 3-11.6) AFM 105-7 FMFM 7-11-H	Field Behavior of NBC Agents (Including Smoke and Incendiaries)	3 Nov 86	An MTTP manual which addresses the battlefield influences of weather and terrain and the use of smoke and obscurants on CBRN operations. Status: Under revision FY09 (will be renumbered FM 3-11.6 and supersede FM 3-6, FM 3-11.14, and FM 3-101).
FM 3-11.9 MCRP 3-37.1B NTRP 3-11.32 AFTTP(I) 3-2.55	Potential Military Chemical/Biological Agents and Compounds	10 Jan 05	An MTTP manual which provides commanders and staffs with general information and technical data concerning chemical-biological (CB) agents and other compounds of military interest, such as toxic industrial chemicals (TICs). Status: Current.
FM 3-11.11 MCRP 3-3.7.2	Flame, Riot Control Agent, and Herbicide Operations	19 Aug 96 C1 10 Mar 03	An MTTP manual which describes the tactics, techniques, and procedures (TTP) for employing flame weapons, riot control agents (RCAs), and herbicides during peacetime and combat. The distribution of this manual is restricted due to the sensitive nature of the information contained in it. Status: Current.
FM 3-11.14 MCRP 3-37.1A NTTP 3-11.28 AFTTP(I) 3-2.54	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Vulnerability Assessment	28 Dec 04	An MTTP manual for conducting CBRN vulnerability assessments; analyzing, managing, and assessing risks; and measuring, mitigating, and reducing vulnerabilities. Status: Under revision FY09; to be consolidated with FM 3-11.6.
FM 3-11.19 MCWP 3-37.4 NTTP 3-11.29 AFTTP(I) 3-2.44	Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical Reconnaissance	30 Jul 04	An MTTP manual for planning and conducting CBRN reconnaissance operations to detect, define, limit, mark, sample, and identify CBRN and toxic industrial material (TIM) contamination. Status: Under revision FY09 (will supercede FM 3-11.86).
FM 3-11.20	Technical Escort Battalion Operations	29 Aug 07	An Army-only manual which provides the TTP for the employment of technical escort battalions. The distribution of this manual is restricted due to the sensitive nature of the information contained in it. Status: Current.
<p>NOTE: Current CBRN publications can be accessed and downloaded in electronic format from the Reimer Digital Library at http://www.adtdl.army.mil/, the Chemical Knowledge Network (CKN) at https://www.us.army.mil/suite/portal.do?sp=409522, or the Maneuver Support Knowledge Network (MSKN) at https://www.us.army.mil/suite/page/275589.</p>			

DOCTRINE UPDATE

U.S. Army Maneuver Support Center Directorate of Training Doctrine Development Division			
Publication Number	Title	Date	Description
Current Publications (Continued)			
FM 3-11.21 MCRP 3-37.2C NTTP 3-11.24 AFTTP(I) 3-2.37	Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Consequence Management Operations	1 Apr 08	An MTTP manual which provides commanders and staffs a key reference for mitigating the CBRN aspects of consequence management. Status: Current.
FM 3-11.22	Weapons of Mass Destruction–Civil Support Team Operations	10 Dec 07	An Army-only manual which provides the suggested doctrinal TTP for use by weapons of mass destruction–civil support teams (WMD–CSTs), which are designed to provide support to local, state, and federal response systems. Status: Current.
FM 3-11.34 MCWP 3-37.5 NTTP 3-11.23 AFTTP(I) 3-2.33	Multiservice Tactics, Techniques, and Procedures for Installation CBRN Defense	6 Nov 07	An MTTP manual which provides a reference for planning, resourcing, and executing CBRN defense of theater fixed sites, ports, and airfields. Status: Current.
FM 3-50 (FM 3-11.50)	Smoke Operations	4 Dec 90 C1 11 Sep 96	An Army-only manual which provides the TTP for using smoke and obscurants to attack and defeat specific enemy targets, sensors, target acquisition systems, weapon guidance systems, and other enemy electro-optical devices. Status: Under revision FY09 (will be renumbered FM 3-11.50 and supersede FM 3-50 and FM 3-101-1).
FM 3-11.86 MCWP 3.37.1C NTTP 3-11.31 AFTTP(I) 3-2.52	Multiservice Tactics, Techniques, and Procedures for Biological Surveillance	4 Oct 04	An MTTP manual for planning and conducting biological surveillance operations to monitor, detect, sample, identify, report, package, and evacuate samples of biological warfare agents. Status: Under revision FY09; to be consolidated with FM 3-11.19.
FM 3-101	Chemical Staffs and Units	19 Nov 93	An Army-only manual which provides fundamental principles for chemical staff functions, command and control of Chemical units, and Chemical unit employment. Status: Under revision FY09; to be consolidated with FM 3-11.6.
FMI 3-90.10	Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Operational Headquarters	24 Jan 08	An Army-only tactics manual which provides the basic doctrine for the employment of a chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) operational headquarters to conduct tactical level weapons of mass destruction elimination (WMD-E) operations or transition to a joint task force-capable headquarters for WMD-E operations to support campaigns and civil authorities. Status: Under revision FY09.
<p>NOTE: Current CBRN publications can be accessed and downloaded in electronic format from the Reimer Digital Library at <http://www.adtdl.army.mil/>, the CKN at <https://www.us.army.mil/suite/portal.do?sp=409522>, or the MSKN at <https://www.us.army.mil/suite/page/275589>.</p>			
Emerging Publications			
FM 3-11.2	Multiservice Tactics, Techniques, and Procedures for Weapons of Mass Destruction Elimination (WMD-E) Operations	To be determined	An MTTP manual that provides the tactical doctrine and associated TTP that each Service provides in support of the joint WMD-E mission area in an effort to operate systematically to locate, secure, disable, and/or destroy a state or nonstate actor's WMD programs and related capabilities. Status: Under development FY09.
<p>NOTE: CBRN draft publications can be accessed and downloaded in electronic format from the CKN at <https://www.us.army.mil/suite/portal.do?sp=409522> or the MSKN at <https://www.us.army.mil/suite/page/275589>.</p>			



Professional Military Education

Soldier/Noncommissioned Officer Qualification Training. Five courses are taught by five Total Army School System (TASS) chemical, biological, radiological, and nuclear (CBRN) battalions. Additional information, including scheduled dates and times, for the following courses is available on the Army Training Requirements and Resources System (ATRRS) Web site at <https://www.atrrs.army.mil/>:

- **74D10 (Transition) Military Occupational Specialty (MOS) Course.** This is a four-phase course (formerly the Reclassification Course). Phase I is provided through distributed learning (dL). Phases II–IV consist of resident training conducted at the U.S. Army Chemical, Biological, Radiological, and Nuclear School (USACBRNS), Fort Leonard Wood, Missouri; and Soldiers can now complete them consecutively. This course is expected to be reduced to three phases in mid-2009.
- **74D Basic Noncommissioned Officer Course (BNCOC).** This is a four-phase course. Phase I, which is common to all MOSs, is offered as resident training at various locations. Phases II–IV consist of 74D-specific resident training at USACBRNS.
- **74D Advanced Noncommissioned Officer Course (ANCOC).** This is a three-phase course. There is no dL portion; the entire course is provided through classroom instruction at USACBRNS.
- **CBRN Defense Course.** This course is conducted by TASS battalions at various locations.
- **Joint Biological Point Detection Systems Course.** This course (formerly the Biological Integrated Detection System Course) is conducted by TASS battalions at various locations.

The code for TASS CBRN courses within ATRRS is R031 (previously B031), and all 74D TASS training is listed in the “Region R” screen. This should make it easier for Soldiers to schedule MOS-specific training.

The TASS Training Center is now operational at Fort Leonard Wood. The U.S. Army Reserve (USAR) plans to build an equipment set to alleviate availability issues.

Officer Training. The Reserve Component Chemical, Biological, Radiological, and Nuclear Captain’s Career Course (RC-CMC3) is a five-phase course. Phases I and II are provided through dL. Phase IV is currently under development. Phases III and V are two-week resident training conducted at USACBRNS. Phase III is branch-specific, focusing on CBRN and biological-agent effects, defense concepts, radiological operations, toxic-agent training, and hazmat awareness training. The successful completion of Phase II is a prerequisite for Phase III attendance. Training also includes the opportunity for certification at the hazmat awareness and operations level. Phase V consists of a computer-aided exercise that includes Joint Warning and Reporting Network Maneuver Control System training and culminates in a military decision-making process exercise using state-of-the-art battle simulation equipment. Two iterations of Phases III and V will be offered during Fiscal Year 2009—early spring and summer.

If you are a field grade Reserve Component (RC) officer and want to transfer into the Chemical Corps, contact the USACBRNS Deputy Assistant Commandant–Reserve Component (DAC-RC) for specific branch qualification information. You should also plan to attend the Joint Senior Leader’s Course at Fort Leonard Wood and complete the RC Senior Officer Course via dL. The Joint Senior Leader’s Course is a four-day course that offers outstanding presentations; training at the Chemical, Biological, Radiological, and Nuclear Decontamination Training Facility (CDTF); and the opportunity to interface with attendees from across the services.

Domestic Response Casualty Decontamination, CERFPs, and CST Training

The following training is available for USAR and Army National Guard (ARNG) Soldiers:

- **Mass Casualty Decontamination Course.** The USACBRNS offers a ten-day Mass Casualty Decontamination Course (School Code 031, Course 4K-F25/494-F-30), which is appropriate for chemical, biological, radiological, nuclear, and high-yield explosives-enhanced response force package (CERFP) and domestic-response casualty decontamination team members. In addition, CERFP members may complete the class to obtain operations level training.
- **CBRN Responder Course.** Anyone requiring hazmat technician level training may complete the CBRN Responder Course (School Code 031, Course 4K-F24/494-F29). The ten-day course is appropriate for CBRN consequence management response force members requiring hazmat technician certification. You may also complete the course to obtain hazmat operations level training.
- **Civil Support Skills Course.** This eight-week course (School Code 031, Course 4K-F20/494-F28) is typically attended by ARNG civil support team (CST) members, but members of all services and components may attend. Students receive advanced training in hazmat technician and incident command and CBRN survey, point reconnaissance, and sampling



operations in support of an incident commander at a weapons of mass destruction incident. The course provides training in command, control, and communications operations; personal protective equipment selection and use; and individual decontamination procedures. It also provides specialized training on a variety of military and commercial CBRN detection equipment and self-contained breathing apparatus certification. This course contains practical application and field training exercises and culminates with a situational training exercise.

Instructor Concerns

Instructors at Fort Leonard Wood have reported increasing concerns about Soldiers reporting with the following problems:

- **Incomplete/missing preexecution checklist (PEC).** The PEC (dated April 2007) must be complete and accurate. It is collected during inprocessing and must be signed by the unit commander. Units that send a Soldier to training without a PEC must provide one within seventy-two hours of the course start date.
- **Failure to complete dL courseware.** The 74D10 Phase I dL course, which takes about forty hours to complete, is a prerequisite to the Phase II resident course. Phases I and II (dL) of RC-CMC3 take about eighty hours to complete and are prerequisites to the Phase III resident course. Due to time constraints, students cannot complete dL courses while attending resident phases—there is simply not enough time.
- **Missing optical inserts for the M40 protective mask.** Training in the CDTF is a mandatory graduation requirement for all 74D training (74D10, BNCOC, and ANCOC). Students must have vision (aided or unaided) of at least 20/40 in one eye to be allowed into the CDTF for training. Because glasses and contacts cannot be worn in the CDTF, students **must** bring optical inserts from their home stations.
- **Missing or invalid profile.** Soldiers with a permanent profile must submit Department of the Army (DA) Form 3349, *Physical Profile*, during inprocessing; Blocks 12 and 16 (physician's information and approving authority) must be complete. Temporary profiles are unacceptable.

Unit-level training noncommissioned officers or points of contact with questions or concerns may contact the school representative by accessing the C3 screen in ATRRS. If no representative is available, contact Ms. Karen Campbell, 3d Brigade (Chemical), telephone: (860) 570-7117, email: <karen.a.campbell@usar.army.mil>.

USACBRNS RC Personnel

Drilling individual mobilization augmentee positions. There are twenty authorized drilling individual mobilization augmentee positions throughout USACBRNS, with twelve officer slots (O-3 through O-5) and eight noncommissioned officer slots (E-7 through E-9). The mission is to expand the USACBRNS training base in the event of full mobilization. We currently support and train the RC-CMC3. Our goal is 100 percent manning with qualified instructors. If you are ready to join our team, contact us!

Instructor and writer opportunities. There are USACBRNS administrative active duty for operational support opportunities available for MOS 74-series RC instructors and writers in grades E-5 through E-7 and O-2 through O-4. E-mail Master Sergeant Mark Vasquez at <margarito.vasquez@us.army.mil> if you are interested.

Contact Information

Colonel Lawrence Meder (DAC-RC), telephone: (573) 563-8050, e-mail: <lawrence.meder@us.army.mil>.

Lieutenant Colonel Chris Van Alstyne (DAC-NG) (permanent change of station scheduled for December 2008), telephone: (573) 563-7676, e-mail: <christian.vanalstine@us.army.mil>.

Master Sergeant Mark Vasquez (USAR training developer), telephone: (573) 563-7096, e-mail: <margarito.vasquez@us.army.mil>.

Master Sergeant Robert Wheat (ARNG training developer), telephone: (573) 563-7667, e-mail: <robert.wheat@us.army.mil>.

Ms. Sandy Meyer (secretary), telephone: (573) 563-6652, e-mail: <sandy.meyer@us.army.mil>.

Role of the Chemical Officer in the BCT Targeting Cycle (MDMP for Full-Spectrum Operations)

By Major Donald R. Twiss

Full-spectrum operations require that brigade combat team (BCT) staffs continually execute the military decision-making process (MDMP). The important role of the BCT Chemical officer in this targeting cycle can be overlooked if it is not actively advocated by the chemical, biological, radiological, and nuclear (CBRN) staff section. As an observer/controller at the National Training Center, Fort Irwin, California, I witnessed several methods of integrating Chemical officers into each phase of the targeting cycle.

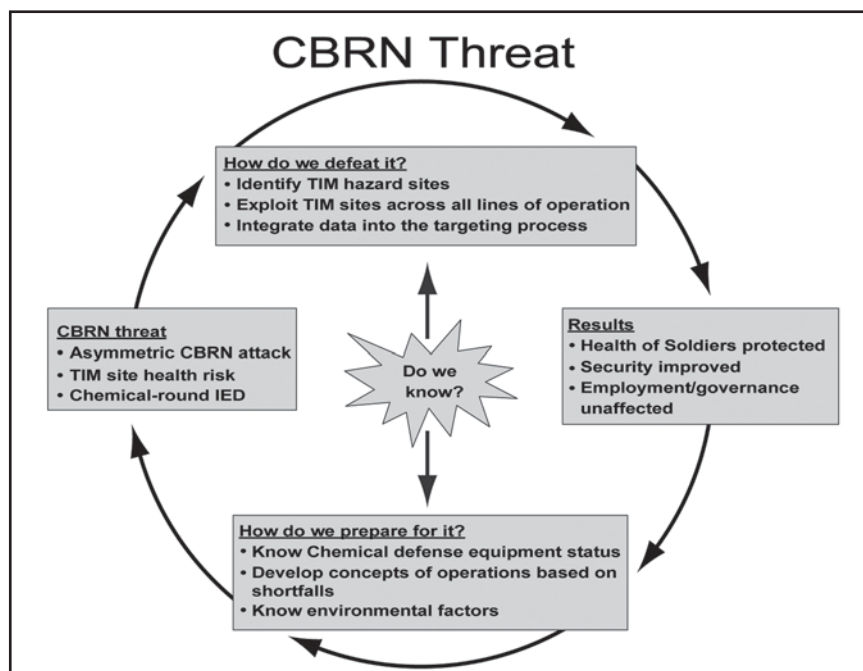
The targeting cycle is nothing more than an enduring MDMP. With an existing campaign plan, lines of operation, and the commander's guidance, it begins with a bottom-up assessment of the last targeting cycle—with each staff section or warfighting function developing a running staff estimate, which is a tool used to conduct initial mission analysis. For effective CBRN mission analysis, you—as the Chemical officer—must develop a solid running staff estimate for the BCT operating environment. Include current CBRN threats such as weaponized CBRN material, toxic industrial material (TIM), nonweaponized biological material, and estimated templated CBRN strikes (including improvised explosive devices and vehicle-borne improvised explosive devices with chemical accelerants or conventional attacks against a TIM facility). As required, identify terrain and weather conditions in the operating environment. The completion of the running staff estimate leads to a mission analysis (MA) brief to the BCT commander.

After the running staff estimate has been consolidated, include one or two slides in the MA brief to the BCT commander. During the brief, the BCT commander's wishes should become apparent, and you can tailor the presentation accordingly. For example, if the BCT commander mentions a governance compound within the district capital, discuss and emphasize TIM locations with a sphere of influence encompassing that capital. TIM facilities affect employment, governance, and security. Discuss other key information, such as that obtained during recent discoveries of mustard gas rounds or chlorine caches. Remember—be precise, be brilliant, and be gone. Have your running

staff estimate ready, and be able to answer questions about it. Have systems in place to get answers that you do not have.

Following the MA brief, the BCT commander issues guidance to the staff. Develop a course of action (COA) to support the guidance. This requires refining the initial staff estimate to focus on supporting the commander's intent. For example, suppose that the BCT commander's guidance is to protect the provisional governor and improve local economic conditions. A state-operated fertilizer plant in the governor's hometown can directly affect the BCT commander's goals. Consolidate information about the fertilizer plant, develop the required additional information, and determine steps that can be taken to support the commander's intent.

After the running staff estimate has been refined and the COA has been developed, the working groups convene. Working-group sessions are conducted according to an established battle rhythm. The naming conventions and proponents of the working groups change based on a host of issues. As a Chemical officer, you should attend the working group(s) that allows the most efficient presentation of your COA. I generally recommend the counter-improvised explosive device working group, but this is a



Sample COA process

very unit-centered decision. During the working-group sessions, present data and make recommendations for further action. In our example, you might recommend that the reconnaissance platoon conduct a survey of the fertilizer plant. The platoon would ascertain the condition of the facility, collect site samples, and determine the type and nature of chemicals present at the site. In addition, it would note the political and social views of the plant manager.

Working groups should provide an environment for open discussions, where all subject matter experts are encouraged to provide input from their warfighting function perspectives. COAs should be brought to the table and discussed by relevant parties, and then recommendations should be made. So, be prepared to provide input to COAs developed by other staff sections. For all of this to work, you must have the moral courage to be a proponent for the CBRN warfighting function.

The number and type of working groups depend on the BCT mission and staff personalities; however, the goal should be a consolidated working group that synchronizes resources and combat multipliers, brings developed COAs together, and deconflicts the plan. Attend the consolidated working-group meeting, and be ready to discuss and defend your COA if required. This is sometimes difficult because you may be the lowest-ranking officer at the meeting, and the senior officers may or may not recognize or appreciate the importance of CBRN issues. But, if you are intelligent, articulate, and well-informed, you can successfully stand up for your branch.

Following the consolidated working-group meeting, a refined COA brief is presented to the BCT commander, who approves, disapproves, or modifies the COA. After the commander has approved the release of the COA, the BCT issues an order. Once the order is received and executed, data collection for the next cycle begins. In the fertilizer plant example, the information request should generate further action such as the submission of a business grant to improve production or an increase in the level of security. Carefully craft the information request to answer the critical information requirement; simply instructing the BCT to conduct sensitive-site exploitation will not necessarily yield the critical information that is needed. Add any additional information that you collect to the running staff estimate, which is a living tool that must be continually updated. The updated running staff estimate prepares you to start the next targeting cycle.

As a Chemical officer, you play an important role in the BCT targeting cycle. When the process is carried out correctly, you become an additional staff officer, rather than an officer who has additional duties.

Major Twiss is currently completing the Intermediate-Level Education Program. He was formerly the CBRN observer/controller at the National Training Center.

Situation	Weather effects: How the current/projected weather will affect chemical agents and assets				
	Terrain effects: How the current/projected terrain will affect chemical agents and assets				
	Enemy capabilities:		Chemical agents:		Delivery systems:
	Templated strikes: (location, type, time)				
	Known strikes: (location, type, time)				
		TIC/TIM facilities	Industry	TIC/TIM	Location
	Brief updated information on security and site assessments				
MOPP	[Empty Box]				
	Decon Task Purpose Commander's intent	Map of AO with chemical-related graphics			
	Linkup points Vehicle decon Chemical casualty collection point				
Chemical assets	Recon Task Purpose Commander's intent		HRT Task Purpose Commander's intent		Smoke Task Purpose Commander's intent
	Constraints/issues/RFIs Highlight areas that need command emphasis			Host nation CBRNE asset support	
	[Empty Box]				

Sample CBRN running staff estimate

2008 U.S. ARMY CHEMICAL CORPS HALL OF FAME INDUCTEES

By Ms. Christy Lindberg

The U.S. Army Chemical Corps Hall of Fame award is the highest form of recognition offered by the Regiment. This coveted award honors those who have made landmark contributions to the overall history and traditions of the Chemical Corps or continue to work in ways that benefit the Corps. These individuals have distinguished themselves through advances in science and technology, a lifetime of service and devotion to the Corps, or gallantry in battle. The ranks of the Hall of Fame are inundated with scientists who tirelessly worked to protect the force through innovations and with Soldiers who exemplified the tenets of courage and honor. The following individuals were inducted into the 2008 Hall of Fame:



Colonel Stuart A. Hamilton (Retired)

Colonel Stuart A. Hamilton was born 17 April 1893. He graduated from the U.S. Naval Academy and began active duty as a second lieutenant in the U.S. Army Coast Artillery Corps. He later transferred to the Chemical Warfare Service (CWS) and went on to graduate from the Army Command and General Staff School and Chemical Warfare School.

Before the onset of World War II, Colonel Hamilton served on the General Staff of the Department of War in Washington, D.C. He established the CWS departmental chemical office in the Philippine Islands. There, he supervised the control of gas warfare planning and chemical supplies and equipment in the Far East Pacific Theater.

As the Chief Chemical Officer, U.S. Army Forces Far East, Hamilton proved to be very innovative and resourceful. He helped develop field expedients such as Molotov cocktails (bottles filled with a mixture of kerosene, gasoline, and crude oil). He established an emergency chemical lab to analyze captured Japanese materials. Under Colonel Hamilton's direction, the chemical lab used commercial, high-test hypochlorite (HTH)—a mustard decontamination agent—for the effective purification of drinking water. This alternative use of HTH undoubtedly prevented many Soldiers from contracting dysentery or typhoid during the siege of Bataan and Corregidor. In addition, an emergency plant was established to manufacture liquid bleach, which was used to kill tropical vectors, reducing the spread of malaria.

Colonel Hamilton diligently gathered information and samples of Japanese chemical warfare material, drafted detailed reports, and boxed the samples to be shipped back to Washington, D.C., for further testing. These were the first samples of Japanese chemical warfare material collected, and they surely assisted in intelligence analyses of the enemy capability to wage chemical warfare against Allied forces operating in the Pacific.

After the fall of the Philippines, Colonel Hamilton survived the infamous Bataan Death March and was forced into internment

at Hoten Prisoner-of-War Camp in Mukden, Manchuria, where he remained for three years. Upon his return home, Colonel Hamilton retired from the CWS. He died on 24 July 1956.

Colonel Hamilton's awards and decorations include the Legion of Merit, Purple Heart with one oak-leaf cluster, World War I Victory Medal, American Defense Medal with one service star (for service outside the continental United States), Asiatic-Pacific Campaign Medal with two stars for ground combat and service in the Philippine Islands, World War II Victory Medal, Philippine Defense Medal with one star for combat service, and Army General Staff Identification Badge.

Captain Frederick P. Smith

Captain Frederick P. Smith was born on 6 March 1946 in Oklahoma City, Oklahoma. He enlisted in the Army in July 1965. In 1967, he graduated from Officer Candidate School and was commissioned in the Chemical Corps. He later graduated from the Explosive Ordnance Disposal School, Nuclear Weapons School, Munitions Safety Course, and Safety School.



Following graduation from Officer Candidate School, Captain Smith served as the chemical, biological, and radiological explosive ordnance disposal field officer for the escort and disposal detachment of a technical escort unit at Edgewood Arsenal, Aberdeen Proving Ground, Maryland. In April 1970, he was attached to Headquarters Company, 2d Brigade, 1st Cavalry Division (Airmobile), U.S. Army Pacific, Republic of Vietnam. In October 1970, he began serving as the Assistant Division Chemical Officer, 184th Chemical Detachment (Direct Support), 1st Cavalry Division.

On 13 February 1971, Captain Smith was on a people sniffer mission over Binh Thuy Province, where he was using E158 aerial 2-chlorobenzalmalonitrile (CS) clusters to stir up enemy soldiers. The E158 was a modified Air Force munition consisting of clusters of CS canisters (each about the size of a D-cell battery) held in place by a plastic unit. A timing fuze was to detonate an igniting charge that, in turn, would send the smaller munitions over an area fifty meters in diameter, spraying CS as they went. Somehow, in the process of deploying the

munition, the arming wires were loosened and the E158s began detonating inside the Huey helicopter. Although Captain Smith was badly burned by the black powder bursting charges, he was able to push all of the clusters out of the helicopter. However, in the process, he went out with the munitions and fell 1,500 feet to his death. Captain Smith's quick heroic actions saved the rest of the crew and the helicopter.

Captain Smith's awards and decorations include the Silver Star, Bronze Star Medal with oak-leaf cluster, Air Medal with three oak-leaf clusters, Army Commendation Medal, Good Conduct Medal, National Defense Service Medal, Vietnam Service Medal, Republic of Vietnam Campaign Medal, Parachutist Badge, and Senior Explosive Ordnance Disposal Badge.



Mr. Garrett A. Morgan


Mr. Garrett A. Morgan was born on 4 March 1877 in Paris, Kentucky, to former slaves. The seventh of eleven children, Mr. Morgan spent his childhood attending school and working with his brothers and sisters on the family farm. At age fourteen, he moved to Cincinnati, Ohio, in search of employment.

Mr. Morgan became a prolific inventor and businessman. His most notable inventions included a gas mask, hair-straightening liquid, and a three-way traffic signal. The traffic signal consisted of a T-shaped pole unit that featured three hand-cranked positions—stop, go, and all-directional stop. The all-directional stop position halted traffic in all directions,

allowing pedestrians to cross streets more safely. One advantage of this traffic signal over others of its type was its ability to be operated from a distance using a mechanical linkage.

Shortly after obtaining a patent for a safety hood in 1914, Mr. Morgan had a chance to put that invention to the test. During the construction of a tunnel under Lake Erie in 1916, an explosion occurred. Three separate rescue parties entered the tunnel, but none returned. In desperation, officials who were familiar with Mr. Morgan and his safety hood summoned him. Morgan rushed to the scene, and his brother and two volunteers put on the hoods and went in. Morgan and his crew entered the tunnel again and again, pulling suffocating workers and rescuers to safety. The safety hood was later refined and became known as the Morgan gas mask.

Mr. Morgan was married to Mary Hasek in 1908, and they had three children. On 27 July 1963, Mr. Morgan died at the age of 86. He is buried at Lake View Cemetery in Cleveland, Ohio.

Some of Mr. Morgan's significant awards and citations include the Carnegie Medal, the gold Medal of Bravery from the City of Cleveland, a gold medal from the International Association of Fire Chiefs, and a gold medal from the International Exposition of Sanitation and Safety. The Garrett A. Morgan Cleveland School of Science in Cleveland, Ohio, is also named in his honor. 

Ms. Lindberg is the assistant historian at the U.S. Army Chemical, Biological, Radiological, and Nuclear School History Office, Fort Leonard Wood, Missouri.

("464th Chemical Brigade: The Final Chapter" continued from page 31)


The 458th Engineer Battalion was mobilized for the next Operation Iraqi Freedom rotation. The battalion deployed to Iraq, where it was divided to provide support to several forward operating bases. The Soldiers of the 458th completed a variety of missions, including route clearance along major supply routes, escort of captured enemy ammunition to secure collection and disposal sites, and horizontal and vertical construction. Horizontal construction missions included force protection upgrades to checkpoints, construction of traffic control points, hardening of communication send nodes, construction of fuel points, and emplacement of various concrete barriers.

In 2004, the 464th Chemical Brigade took command and control of the 444th Personnel Services Battalion and immediately began mobilizing postal detachments for Operation Iraqi Freedom 04-06. The postal detachments provided daily mail service for the bases that they served. The brigade continued to mobilize postal detachments for Operation Iraqi Freedom 05-07 to replace the detachments mobilized in 2004. In addition, another detachment from the 249th Engineer Battalion, Company B, Team 11, was mobilized to support Operation Iraqi Freedom.

In 2006, two derivative detachments from the 464th Chemical Brigade Headquarters Detachment were mobilized in

support of Operation Iraqi Freedom. Both of these detachments supported Central Command Headquarters.

In 2007, the 485th Chemical Battalion Headquarters and Headquarters Detachment was mobilized in support of Operation Iraqi Freedom. The 485th served as the camp command cell at Camp Virginia, Kuwait. The mission was a challenging one, as the camp population and dynamics changed on a daily basis.

The 464th Chemical Brigade was a significant asset to the U.S. Army Reserve and the U.S. Army Chemical Corps. The Soldiers of the brigade can proudly say "Mission complete." 

Endnote:

¹An explanation of the "Missing Man Table" can be found at <http://www.dtic.mil/dpmo/powday/missingman.htm>, accessed on 17 September 2008.

As a Soldier, Sergeant First Class Nist serves as the detachment sergeant for the Headquarters and Headquarters Detachment of the 464th Chemical Brigade. As a civil servant, she is employed as the staff operations and training specialist for the 464th. Sergeant First Class Nist holds a bachelor's degree in accounting.

(Photographs by Sergeant First Class Doug Lingenfelter)

2008 DISTINGUISHED MEMBERS OF THE CHEMICAL CORPS

By Ms. Christy Lindberg

Four names were added to the list of outstanding individuals serving the U.S. Army Chemical Corps. The award of the Distinguished Member of the Chemical Corps title means that these individuals have not only served a lifetime of service in the Corps, but also support the Chief of Chemical in implementing his vision of what the Corps is and where it is going in the future. The following individuals were inducted into the 2008 Distinguished Members of the Chemical Corps:



Colonel Jim Ferguson (Retired)

Colonel Jim Ferguson earned a degree in biology, with a minor in chemistry. In July 1953, he was commissioned as a second lieutenant in the Chemical Corps.

Colonel Ferguson's initial active duty tour was at Rocky Mountain Arsenal, Commerce City, Colorado. He was then assigned to the 464th Chemical Group, U.S. Army Reserve, New York, New York. This was the start of a twenty-nine-year career in the Reserves, nineteen of which were in troop program units and Chemical units, including the 402d Chemical Laboratory, Niagara Falls, New York.

Colonel Ferguson's most significant contribution to the Chemical Corps was his commitment to the development of the portable protective mask leakage tester, which became known as the M46 Joint Service Mask Leakage Tester. Colonel Ferguson also helped develop protective masks such as the XM-29, MCU-2/AP, M40/M42 series, M45, and M50-JSGPM; the Advanced Chemical-Agent Detection/Alarm; the Modular Decontamination System; and the Sensitive-Equipment Decontamination System. In addition, he participated in research programs involving anhydrous decontamination materials and new technologies for the destruction of chemical agents and nonstockpile material in support of the Chemical Demilitarization Program.

From December 1979 to December 1992, Colonel Ferguson chaired the Chemical Operations Division, American Defense Preparedness Association. In 1981, he became a charter member of the former Chemical Corps Association. That membership was transferred to the Chemical Corps Regimental Association (CCRA) when it was established, and he is now a lifetime member of the CCRA.

Colonel Ferguson's awards and decorations include the Legion of Merit, Meritorious Service Medal with two oak-leaf clusters, National Defense Service Ribbon, Armed Forces Reserve Medal with two hourglass attachments, and Silver Medal Award.

Colonel David G. Harrison (Retired)



Colonel David G. Harrison graduated from the University of Akron, Ohio, with a bachelor's degree in biology and was then commissioned in the Chemical Corps through the Reserve Officers' Training Program. He also holds a master's degree in management from Webster University, St. Louis, Missouri. In addition, he is a graduate of the Armed Forces Staff College, Command and General Staff College, and U.S. Army War College.

Colonel Harrison assumed duties as the assistant commandant of the U.S. Army Chemical School in September 1995. He also served in a variety of command and staff positions, including chemical officer of III Armored Corps, Fort Hood, Texas; commander of Pine Bluff Arsenal, Arkansas; chief of Nuclear, Chemical, and Biological Operations, Assistant Chief of Staff for Operations and Plans (G-3), Centre d'Entraînement au Combat (CENTAC), North Atlantic Treaty Organization, Heidelberg, Germany; deputy commander of Military Community Activity, chief of the Nuclear Surety Evaluation Team (Headquarters, 59th Ordnance Brigade), and commander of the 197th Ordnance Brigade, Pirmasens, Germany; chief of the Mobility Division, Material Integration Directorate, Combined Arms Combat Development Activity, Fort Leavenworth, Kansas; and commander of the 545th Ordnance Company, Munster-Dierberg, Germany.

Colonel Harrison has more than thirty years of experience in leadership, planning, supervision, and execution of nuclear, biological, and chemical responsibility. As director of the Homeland Security Institute, he established the first Department of Homeland Security Federally Funded Research and Development Center. As chief of the Operations Division, Chemical and Biological Directorate, Defense Threat Reduction Agency, he assumed organizational and program responsibility for a diverse science and technology portfolio of six major initiatives—managing nineteen scientists and engineers and a \$27 million budget. As the commander of Pine Bluff Arsenal,

he was the executive level manager of chemical ammunition production and storage, where he was in charge of 1,900 employees, a \$170 million budget, and \$1.5 billion in assets. As the assistant commandant of the U.S. Army Chemical School, he was responsible for technical education and nuclear, biological, and chemical doctrine and technology development.

Colonel Harrison's awards and decorations include the Legion of Merit with one oak-leaf cluster, Bronze Star Medal, Defense Meritorious Service Medal, Meritorious Service Medal with three oak-leaf clusters, Army Commendation Medal with one oak-leaf cluster, National Defense Service Medal with one oak-leaf cluster, Vietnam Service Medal, Labor Service Commemorative Badge, Republic of Vietnam Civic Action Medal, Meritorious Unit Commendation, and Cold War Medal.



Mr. W. Roger Gunter

During his military career, Mr. W. Roger Gunter served as the senior advisor for the Readiness Group, Fort Lewis, Washington (May 1993–May 1996); chief of the Combat Service Support Section, U.S. Army Safety Center, Fort Rucker, Alabama (May 1996–December 1997); first sergeant for the Defense Special Weapons Agency at Johnston Atoll in the Pacific (December 1997–December 1998); and first sergeant, 82d Chemical Battalion, and chief instructor, Chemical Defense Training Facility, Fort Leonard Wood, Missouri (July 2000–April 2001). Mr. Gunter also held numerous other staff positions and completed several operational assignments.

After his retirement in April 2001, Mr. Gunter joined Concurrent Technologies Corporation (CTC). At CTC, he has served as the senior chemical surety specialist for the Weapons of Mass Destruction–Response Element Advanced Laboratory Integrated Training and Indoctrination Program (April 2001–June 2002); program manager for Weapons of Mass Destruction Programs (July 2002–July 2003); manager of Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE) Response Programs (July 2003–September 2004); and director of CBRNE Response Programs (July 2003–September 2004).

In his current position as executive director, Asymmetrical Threat Technologies Operations Center, CTC, Mr. Gunter organizes, staffs, directs, and controls more than eighty technical staff, management, and leadership team members located in twelve states. He is also responsible for the operation of offices at Fort Leonard Wood; Charleston, Greenville, and Columbia, South Carolina; and Fayetteville, North Carolina. These offices are engaged in CBRNE solutions, law enforcement, improvised explosive device defeat, canine programs, technology road mapping, special operations, and environmental technology development and deployment.

Mr. Gunter has been instrumental in CTC's monetary support of CCRA, and he has continued to serve the Chemical Corps as the CCRA Vice President for Business Management

and Chief Operating Officer, providing 1,000 hours of volunteer service each year.

Mr. Gunter's awards and decorations include the President's Award of Excellence, Sergeant Morales Club Induction, Noncommissioned Officer of the Year, Sergeant Audie Murphy Club Induction, U.S. Army Leadership Award, Fort Leonard Wood Family of the Year Award, Bronze Star Medal, and numerous other U.S. Army awards and decorations.

Mr. Greg L. Frank




Mr. Greg L. Frank attended the University of South Dakota on a Reserve Officers' Training Corps scholarship and was commissioned as a second lieutenant in the Chemical Corps. From 1982 to 1983, he served as a platoon leader for the 12th Chemical Company, 1st Infantry Division. From 1983 to 1984, he was the battalion Chemical officer and assistant operations and training officer (S3) for the 1st Battalion, 34th Armor Regiment. He also served as the battalion ammunitions and training officers, and as the 1st Brigade atomic demolitions officer.

From 1984 to 1985, Mr. Frank was a chemist with the Chemical Laboratory Division, Dugway Proving Ground, Utah. There, he directed and performed chemical studies and developed procedures for chemical testing and analysis using modern analytical instrumentation. His work focused primarily on chemical warfare agents.

During 1985, Mr. Frank served as a project and test officer for the Chemical and Biological Defense Branch, Dugway Proving Ground. He developed detailed material test plans and test operational plans and ensured that the tests were conducted in a timely manner and according to standing operating procedures to ensure accurate and complete data collection, correlation, and reduction. While serving as a test officer, Mr. Frank worked on the M1 Tank Program (agent and simulant challenge tests), Binary Chemical Munition Program, evaluations of German C8 emulsion as a decontaminant, and the F-16 (ingress and egress in a chemical environment).

Mr. Frank joined Battelle Memorial Institute as a project manager and principal investigator in 1985. There, he managed the technical and financial aspects of numerous chemical and biological defense projects. His last position with Battelle was as the executive vice president for Battelle Science and Technology International, where he was responsible for more than 5,000 scientists, engineers, and supporting staff.

Mr. Frank holds a bachelor's degree in chemistry and a master's degree in analytical chemistry from the University of South Dakota, and he is a graduate of the Executive Management Program at Duke University. He is a lifetime member of the CCRA and is also a member of numerous other professional organizations. 

Ms. Lindberg is the assistant historian at the U.S. Army Chemical, Biological, Radiological, and Nuclear School History Office, Fort Leonard Wood, Missouri.

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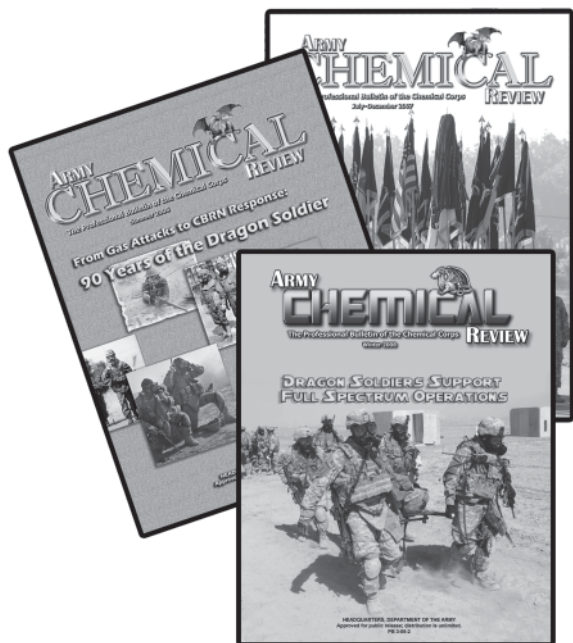
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